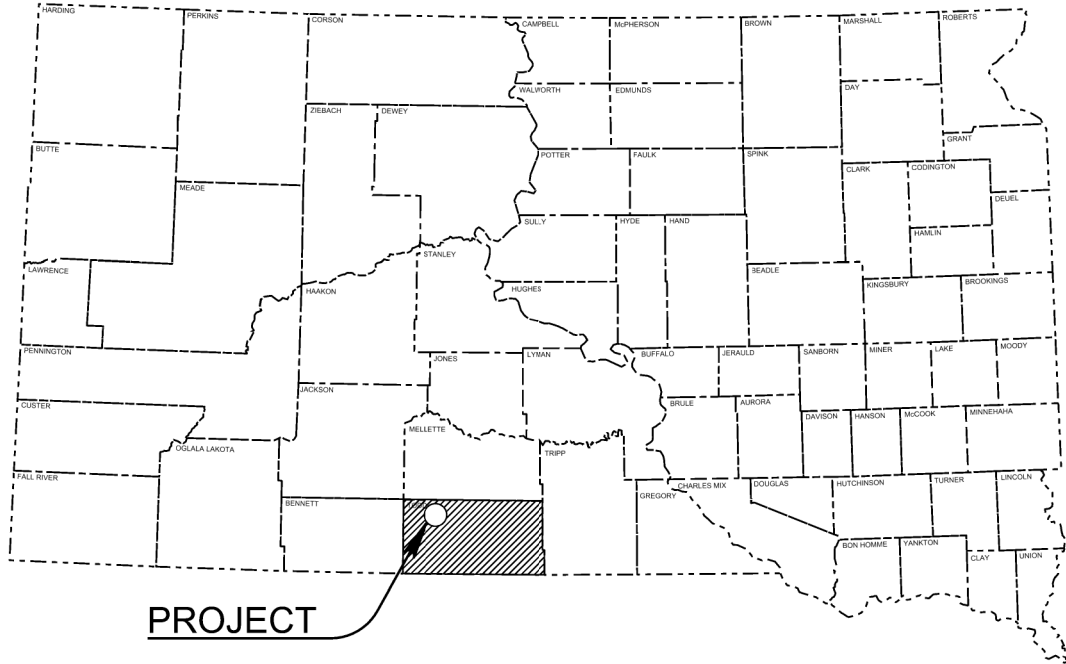


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STATE OF SOUTH DAKOTA
DEPARTMENT OF TRANSPORTATION
PLANS FOR PROPOSED
PROJECT 063-392
SD HWY 63
TODD COUNTY
ROADWAY LIGHTING REHABILITATION
PCN 14JL

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	063-392	1	21

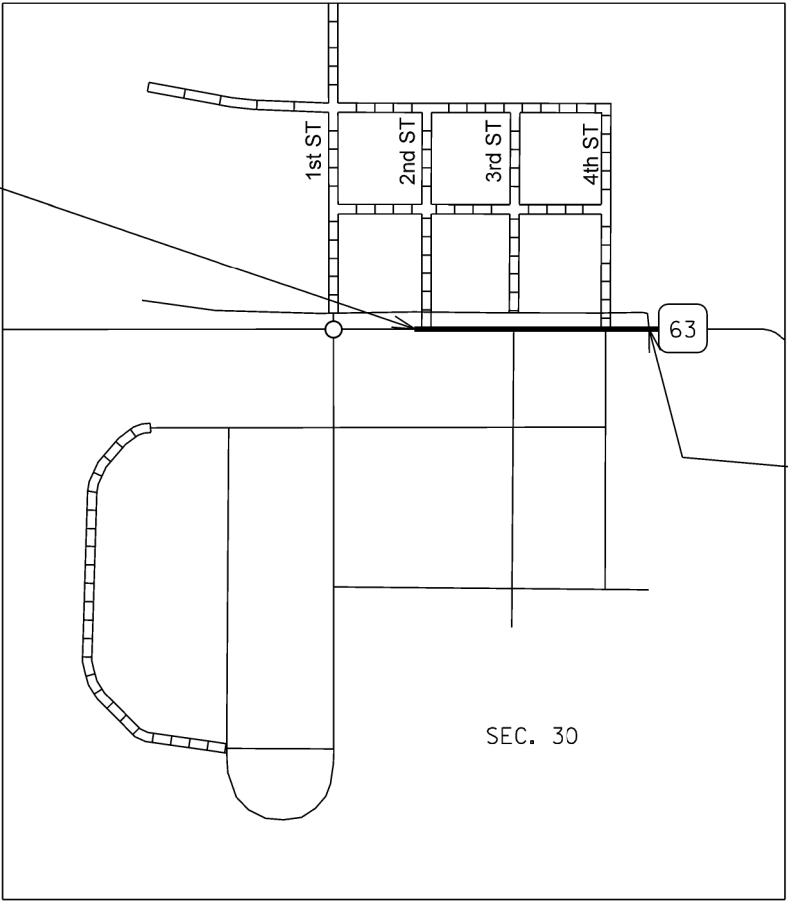
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SHEET 2-4	Notes
SHEET 5-12	Original Construction Plans
SHEET 13-17	Original Shop Drawings
SHEET 18-20	Standard Plates

End Project
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DESIGN DESIGNATION	
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ADT (2036)	1549
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T DHV	1.9%
T ADT	4.1%

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STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	063-392	2	21

Plotting Date: 03/22/2017

ESTIMATE OF QUANTITIES

BID ITEM NUMBER	ITEM	QUANTITY	UNIT
* 009E0010	Mobilization	Lump Sum	LS
* 110E1540	Remove Luminaire Pole Footing	3	Each
* 250E0010	Incidental Work	Lump Sum	LS
* 634E0010	Flagging	100.0	Hour
* 634E0110	Traffic Control Signs	169.0	SqFt
* 634E0120	Traffic Control, Miscellaneous	Lump Sum	LS
* 635E0040	Breakaway Base Luminaire Pole with Arm, 40' Mounting Height	2	Each
* 635E3330	Roadway Luminaire, 250 Watt with Photoelectric Cell	9	Each
* 635E4900	Breakaway Transformer Base	2	Each
* 635E5020	2' Diameter Footing	21.0	Ft
* 635E7505	Reset Luminaire Pole	2	Each
* 635E8115	1.5" Rigid Conduit, Schedule 40	50	Ft
* 635E9016	1/C #6 AWG Copper Wire	2,868	Ft
* 635E9710	2/C #10 AWG Copper Pole and Bracket Cable	204	Ft

* - Denotes Non-Participating

SPECIFICATIONS

Standard Specifications for Roads and Bridges, 2015 Edition and Required Provisions, supplemental specifications, and Special Provisions as included in the Proposal.

ENVIRONMENTAL COMMITMENTS

An Environmental Commitment is a measure that SDDOT commits to implement in order to avoid, minimize, and/or mitigate a real or potential environmental impact. Environmental commitments to various agencies and the public have been made to secure approval of this project. An agency mentioned below with permitting authority can influence a project if perceived environmental impacts have not been adequately addressed. Unless otherwise designated, the Contractor's primary contact regarding matters associated with these commitments will be the Project Engineer. These environmental commitments are not subject to change without prior written approval from the SDDOT Environmental Office. The environmental commitments associated with this project are as follows:

COMMITMENT B4: BALD EAGLE

Bald eagles are known to occur in this area.

Action Taken/Required:

If a nest is observed within one mile of the project site, notify the Project Engineer immediately so that he/she can consult with the Environmental Office for an appropriate course of action.

COMMITMENT H: WASTE DISPOSAL SITE

The Contractor shall furnish a site(s) for the disposal of construction and/or demolition debris generated by this project.

Action Taken/Required:

Construction and/or demolition debris may not be disposed of within the Public ROW.

The waste disposal site(s) shall be managed and reclaimed in accordance with the following from the General Permit for Construction/Demolition Debris Disposal Under the South Dakota Waste Management Program issued by the Department of Environment and Natural Resources.

The waste disposal site(s) shall not be located in a wetland, within 200 feet of surface water, or in an area that adversely affects wildlife, recreation, aesthetic value of an area, or any threatened or endangered species, as approved by the Project Engineer.

If the waste disposal site(s) is located such that it is within view of any ROW, the following additional requirements shall apply:

1. Construction and/or demolition debris consisting of concrete, asphalt concrete, or other similar materials shall be buried in a trench completely separate from wood debris. The final cover over the construction and/or demolition debris shall consist of a minimum of 1 foot of soil capable of supporting vegetation. Waste disposal sites provided outside of the Public ROW shall be seeded in accordance with Natural Resources Conservation Service recommendations. The seeding recommendations may be obtained through the appropriate County NRCS Office. The Contractor shall control the access to waste disposal sites not within the Public ROW through the use of fences, gates, and placement of a sign or signs at the entrance to the site stating "No Dumping Allowed".

2. Concrete and asphalt concrete debris may be stockpiled within view of the ROW for a period of time not to exceed the duration of the project. Prior to project completion, the waste shall be removed from view of the ROW or buried and the waste disposal site reclaimed as noted above.

The above requirements will not apply to waste disposal sites that are covered by an individual solid waste permit as specified in SDCL 34A-6-58, SDCL 34A-6-1.13, and ARSD 74:27:10:06.

Failure to comply with the requirements stated above may result in civil penalties in accordance with South Dakota Solid Waste Law, SDCL 34A-6-1.31.

All costs associated with furnishing waste disposal site(s), disposing of waste, maintaining control of access (fence, gates, and signs), and reclamation of the waste disposal site(s) shall be incidental to the various contract items.

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STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	063-392	3	21

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SCOPE OF WORK

The work includes rehabilitation of 9 light poles on SD 63 in Parmelee, SD. Work includes removal and replacing footings, resetting of three poles with new bases, furnishing and installing one new pole and arm and replacing all the luminaires with new. Work also includes the required ancillary work for conduit, wiring, reshaping the disturbed ground, etc. to complete the rehabilitation work.

SCOPE of WORK TABLE

LUMINAIRE DESIGNATION	DESCRIPTION OF WORK	Current Station	New Station
L1-L5	Install New Luminaire with P.E	351+15 to 361+75	--
JB1	Tie in for L6-L9	362+14 - 22'LT	--
L6	Remove and replace existing pole footing, reset existing pole on a new breakaway base and install new luminaire with P.E	364+15 - 22'LT	364+10 - 22'LT
L7	Reset existing pole on a new breakaway base and install new luminaire with P.E.	366+55 - 22'LT	--
L8	Remove and replace existing pole footing, install new pole on a new breakaway base and install new luminaire with P.E	368+95 - 22'LT	368+90 - 22'LT
L9	Remove and replace existing pole footing, install new pole on a new breakaway base and install new luminaire with P.E	371+35 - 22'LT	371+30 – 22'LT

GENERAL MAINTENANCE OF TRAFFIC

Removing, relocating, covering, salvaging and resetting of existing traffic control devices, including delineation, shall be the responsibility of the Contractor. Cost for this work shall be incidental to the contract unit prices for the various items unless otherwise specified in the plans. Any delineators and signs damaged or lost shall be replaced by the Contractor at no cost to the State.

Indiscriminate driving and parking of vehicles within the right-of-way will not be permitted. Any damage to the vegetation, surfacing, embankment, delineators and existing signs resulting from such indiscriminate use shall be repaired and/or restored by the Contractor, at no expense to the State, and to the satisfaction of the Engineer.

GENERAL MAINTENANCE OF TRAFFIC-CONTINUED

If operations exist where the traveling public will be delayed at a flagging station more than 5 minutes, it is required that the flaggers and pilot car operators all have radio or telephone contact with one another. This equipment is to be used to assist with Traffic movement in the event that an emergency vehicle such as ambulance, police or fire vehicles need to pass through the project in an expedient manner.

The maximum allowed delay at a flagger station shall be 15 minutes. Work zone lengths in the field shall be adjusted accordingly to comply with the maximum allowed delay.

ROAD WORK AHEAD, FLAGGER, ONE LANE ROAD AHEAD, signs may be mounted on portable supports. Any other signs used may be mounted on portable supports as long as the duration is not more than 3 calendar days. If the duration is more than 3 calendar days, the signs shall be mounted on fixed location breakaway sign supports. The bottom of signs on portable supports shall not be less than 7 feet above the pavement in urban areas, and 1 foot above the pavement in rural areas. Signs mounted on portable supports shall be moved as necessary to keep current with the work activities.

All lanes shall be open to traffic at night.

REMOVALS

The footings of existing luminaire poles at L6, L8 & L9 shall be removed by the Contractor to a minimum of 3' below the ground surface. Restoration and compaction of the disturbed area shall be to the satisfaction of the Engineer.

All costs for removing and disposing of the footings of the existing luminaire poles shall be incidental to the contract unit price per each for "Remove Luminaire Pole Footing".

LUMINAIRE FOOTINGS

The footing at L7 is still usable and will not require replacement.

New luminaire footings will be installed at L6, L8 & L9 and at a minimum of 5' west of the location of the removed footings and at the current offset from the highway, or as directed by the Engineer. Installation information for each footing is detailed in the "Table of Luminaire Footings" and the Standard Plates.

During construction of the cylindrical footings, concrete placement operations should closely follow excavation procedures. The longer the excavations are left open the more likely caving may occur. If caving soils are encountered during excavation, casing may be required to construct the cylindrical footings.

Concrete shall not be dropped through standing water. If water is present in the excavation, it shall be removed prior to concrete placement or the concrete shall be tremied. If caving occurs during dewatering the concrete shall be placed through a tremie or by means of a casing.

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STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
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LUMINAIRE FOOTINGS CONTINUED

All costs for the installation of the new luminaire footings shall be incidental to the contract unit price per foot for “2’ Diameter Footing”.

Table of Luminaire Footings

Site Designation	Footing Diameter	Footing Depth	Spiral Diameter	Spiral Length	Vertical Reinforcement
L6	2’ - 0”	7’ - 0”	1’ - 8”	49’ - 6”	8-#7 x 6’ - 6”
L8	2’ - 0”	7’ - 0”	1’ - 8”	49’ - 6”	8-#7 x 6’ - 6”
L9	2’ - 0”	7’ - 0”	1’ - 8”	49’ - 6”	8-#7 x 6’ - 6”

WIRE SPLICING FOR LIGHTING

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

SHOP DRAWING AND CATALOG CUTS SUBMITTALS

The Contractor shall submit shop drawings and catalog cuts in accordance with Section 985 of the Specifications.

Adobe PDF submittals shall be sent to the following email: John.less@state.sd.us

CONDUIT

The Contractor shall install new conduit to tie in all of the new relocated footings into the existing conduit line. Sites L6 and L8 shall require approximately 20 ft. of conduit per each site. Site L9 shall require approximately 10 ft.

All costs for the installation of the new conduit shall be incidental to the contract unit price per foot for “1.5” Rigid Conduit, Schedule 40”.

POWER SUPPLY REWIRING

The Contractor shall remove and dispose of all off the existing power wire from JB1 east to L9 and install new power supply wire.

All costs for the removal and installation of the new wire shall be incidental to the contract unit price per foot for “1/C #6 AWG Copper Wire”.

RESETTING OF SALVAGED POLES AND ARMS

Prior to ordering the new pole and arm called out in these plans, the Contactor shall inspect the poles and arms that are to be reset for any defects or deficiencies that would result in their inability to be put back into service. If any poles or arms are found deficient, the Contractor shall immediately notify the Engineer.

The salvaged poles and arms for resetting are located in the Mission Maintenance Yard in Mission, SD. The Contractor will be required to contact Gregg Ulmer, Unit 392 Maintenance Supervisor, at 605-842-0810 to gain access to the poles and arms. The Contractor will be responsible for all costs to load and deliver the salvaged poles and arms for reset in Parmelee, SD.

All new hardware will be used to assemble the pole and arm.

It shall be the Contractor’s responsibility to obtain the bolt circle pattern and anchor bolts for the relocated poles from the pole manufacturer listed below. The poles were originally installed under Project P3063(25)29; PCN 651H, see plans for original construction information. The originally installed anchor bolts were a “J-hook” style which is no longer acceptable. A recommendation design for the new anchor bolts will be required from the manufacture and supplied to the Engineer for approval.

Valmont Industries, Inc. – ORIGINAL CONSTRUCTION SOURCE
P.O. Box 358
Valley, NE 68064
Phone (402) 359-2201

Luminaire poles damaged during relocation shall be replaced by the Contractor at no cost to the State.

All costs involved with resetting the existing luminaire poles and arms including new anchor bolts with associated hardware, shall be incidental to the contract unit price per each for “Reset Luminaire Pole”.

BREAKAWAY BASES FOR RESET POLES

Along with the resetting of the two poles and arms, the Contractor shall supply and install two new breakaway bases. The breakaway bases shall be the same type as used in the original construction. If this type of breakaway base is no longer available from the manufacture, a recommendation for the new breakaway base will be required from the manufacture and supplied to the Engineer for approval.

All costs involved with supplying and installing the new breakaway bases for the rest poles including associated hardware, shall be incidental to the contract unit price per each for “Breakaway Transformer Base”.

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STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
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NEW POLE AND ARM

The Contract shall supply and install two new breakaway base, a 40' pole with a 4' Arm. This pole should be of the same type as originally installed as noted in these plans. If this type of pole, arm, and base is no longer available from the manufacture, a recommendation for the new pole, arm, and base will be required from the manufacture and supplied to the Engineer for approval.

All costs involved with supplying and installing the new breakaway base, pole and arm, including associated hardware, shall be incidental to the contract unit price per each for "Breakaway Base Luminaire Pole with Arm, 40' Mounting Height".

POLE WIRING

The Contractor shall supply and install new pole wire at the four sites.

All costs for the supplying and installation of the new pole wire shall be incidental to the contract unit price per foot for "2/C #10 AWG Copper Pole and Bracket Cable".

LUMINAIRES

The contractor shall supply and install four new luminaires.

The original lighting design plans provides 0.80 and greater average maintained foot-candles and a uniformity ratio (average maintained to minimum maintained foot-candles) of 3:1 and less using the following parameters:

- Setback:0 Ft.
- Lamp Loss Factor (LLF):0.7
- Width of Lighted Area:32 Ft.
- Spacing:240 Ft.
- Configuration:One-Sided
- Mounting Height:40 Ft.
- Lamp:250W HPS

The following luminaires meet the requirements for this design:

- a.) General Electric:Test No. 35-177317 High Pressure Sodium, Medium, semi-cutoff, Type III
- c.) Crouse Hinds:Test No. OVY2S2E High Pressure Sodium, Medium, semi-cutoff, Type III

The approved isofootcandle data for each case shall be used to determine the correct socket position at each site. Each luminaire shall be installed with its lamp socket in the proper position and in a level attitude.

INCIDENTAL WORK

Incidental work includes, but is not limited to, the restoration of all disturbed areas to the satisfaction of the Engineer.

LIGHTNING PROTECTION

All luminaire poles shall be equipped with industrial lightning arrestors compliant with current NEMA and UL Standards for lightning arrestors. Cost for ground rods and lightning arrestors shall be incidental to the contract unit price each for "Reset Luminaire Pole" and "Breakaway Base Luminaire Pole with Arm, 40' Mounting Height."

ITEMIZED LIST FOR TRAFFIC CONTROL SIGNS

SIGN CODE	SIGN DESCRIPTION	CONVENTIONAL ROAD			
		NUMBER	SIGN SIZE	SQFT PER SIGN	SQFT
W20-1	ROAD WORK AHEAD	4	48" x 48"	16.0	64.0
W20-4	ONE LANE ROAD AHEAD	2	48" x 48"	16.0	32.0
W20-7	FLAGGER (symbol)	2	48" x 48"	16.0	32.0
W21-5	SHOULDER WORK	2	48" x 48"	16.0	32.0
G20-2	END ROAD WORK	2	36" x 18"	4.5	9.0
		CONVENTIONAL ROAD TRAFFIC CONTROL SIGNS SQFT			
		169.0			

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	063-392	6	21

Plotting Date: 03/22/2017

ESTIMATE OF QUANTITIES

BID ITEM NUMBER	ITEM	TOTAL QUANTITY	UNITS	LEGEND	REMARKS
009.0001	MOBILIZATION	LUMP SUM	L.S.		
250.0001	INCIDENTAL WORK	LUMP SUM	L.S.		
634.0100	TRAFFIC CONTROL	298	UNIT		
634.0101	TRAFFIC CONTROL MISC.	LUMP SUM	L.S.		
634.0102	FLAGGING	20	HOUR		
635.0037	FOOTING 2.0 FT DIAMETER	63	L.F.	○	SEE SHEET # 10
635.0043	ELECTRICAL SERVICE CABINET	1	EA.	◀	
635.0155	12 INCH DIAMETER JUNCTION BOX	1	EA.	⊠	
635.0404	1½" RIGID CONDUIT	1,990	L.F.	—	
635.0520	1/C #6 AWG COPPER	6,450	L.F.	⑥	
635.0529	2/C #10 AWG COPPER POLE & BRACKET CABLE	459	L.F.	⑩	
635.0610	40' POLE-BRKY BASE 1-4' ARM	9	EA.	⊕	TRANSFORMER BASE
635.0700	RDY LUMINAIRE 250W WITH P.E.	9	EA.	•	

SPECIFICATIONS

Standard Specifications for Roads and Bridges, 1990 Edition, and Required Provisions, Supplemental Specifications, and/or Special Provisions as Included in the Proposal, and the current edition of the FHWA Manual on Uniform Traffic Control Devices.

POLES

New poles and pole bases shall be Galvanized steel and shall be bid in accordance with the following:

Galvanized Steel: Galvanizing shall be in accordance with AASHTO Specification M111 (ASTM 123). Steel shall be in accordance with ASTM A36, A242, A588, or A595 Grade A or B. A595 material shall be limited to 3/8 inch maximum thickness. Steel pole material with a thickness of 1/2 inch, to 2 inches, shall satisfy Charpy V-Notch toughness test requirements of 15 ft. lb. at 40 degrees F. For steel pole material over 2 inches, contact the Office of Bridge Design for Charpy Impact requirements.

INCIDENTAL WORK

Incidental work shall include the following:

- Asphalt Concrete repair when not covered by a specific bid item.
- Holes shall be backfilled to the satisfaction of the Engineer.
- Seeding and Sodding
- Concrete repair when not covered by a specific bid item.
- Restoration of all disturbed areas to the satisfaction, Engineer.
- Tree Trimming as necessary to provide adequate lighting.

BREAKAWAY BASES

A statement is required, signed by a Registered Professional Engineer, certifying that the breakaway base devices meet the design requirements, including breakaway and structural adequacy, of the "AASHTO Specifications for Structural Supports for Highway Signs, Luminaires, and Traffic Signals". The physical testing procedures outlined in section 8 of the Fifth Edition of the Aluminum Association's "Specifications for Aluminum Structures", may be used to establish service limits for structural adequacy certification of aluminum breakaway transformer bases and frangible couplings. If requested, test data of production samples to support the certification shall be provided.

GENERAL

- All Utility companies shall be contacted by the Contractor two days before subsurface work is commenced and before the Contractor is ready to hook up to electrical power.
- Grounding conduits and the end points of continuous steel conduit bonded systems shall have grounding bushings.
- Utility companies are listed in the proposal

CONDUIT INSTALLATION

The Contractor shall not use a machine requiring flowing water for installation of conduit under streets or roadways unless specifically permitted by the Engineer.

PLAN NOTES

LUMINAIRES

The accepted design for luminaires shall provide not less than 0.80 avg. maint. footcandles and a uniformity ratio (avg. maint. to min. maint.) of not greater than 3:1 using the following parameters.

- a) Setback: 0 FL
- b) Lamp Loss Factor (LLF): 0.7
- c) Width of Lighted Area: 32 FL
- d) Spacing: 240 FL
- e) Configuration: One Sided
- f) Mounting Height: 40 FL
- g) Lamp: 250 Watt HPS

The following luminaires meet the requirements for this design:

- General Electric - Test No. 35-177317 Medium, Semi-cutoff, Type III
- Crouse-Hinds - Test No. OVY2S2E Medium, Semi-cutoff, Type III

Three copies of the Isotocandle charts and utilization curves shall be furnished to the Engineer for approval. This approval must have been received by the Contractor before the luminaires may be installed.

The approved Isotocandle data for each case shall be used to determine the correct socket position at each site. Each luminaire shall be installed with its lamp socket in the proper position and in a level attitude.

TRAFFIC CONTROL

The Contractor will be required to maintain traffic in accordance with Section 4.4 of the Standard Specifications, 1990 Edition, and the traffic control details in these plans.

- The Contractor shall conduct his work from the paralleling service road to the north whenever possible. If the Contractor must interfere with SD 63 traffic all traffic lanes shall be restored to normal operation during non-working hours.
- No work shall be conducted between the hours of sunset and sunrise other than the testing of the lighting fixtures.
- The Contractor shall be required to protect pedestrian traffic from open excavation and other hazards with a snow fence or an alternate approved by the Engineer.
- All vehicles and/or equipment located in or adjacent to the traveled lane shall be kept to a minimum and display amber warning lights visible from all directions. No equipment, materials and/or vehicles shall be stored within the highway ROW overnight or during periods of nonactivity.
- Channelizing devices shall be placed along the shoulder/roadway edge to mark the work zone as directed by the Engineer. All channelizing devices in a series shall be of the same type. The spacing between channelizing devices shall not exceed 2 times the posted speed limit. If plastic drums are used they must be of a two-part type construction with a breakaway base.
- The Contractor is responsible for any damage he causes to existing utilities and shall coordinate his work with the utility companies to provide ample time for locator service and/or adjustments prior to beginning work that may affect utilities.

ANCHOR BOLTS

1. DESIGN

- Loading:** AASHTO Standard Specifications for Structural Supports for Highway Signs, Luminaires, and Traffic Signals (hereafter referred to as the Specification).
- Allowable Stresses:** As per Section 3 of the Specification.
- Fatigue:** Perform fatigue stress calculations for all anchor bolts as per 1.9.6 of the Specification. Use the Category E (Redundant) allowable at two million cycles.

2. MATERIAL

- Bolts:** ASTM A307, A449, A687, or a material on an approved list maintained by the Department.
2.1.1 Approved List for Anchor Bolt Material: The Department maintains a list of approved anchor bolt material. To be considered for addition to the list, furnish typical Charpy V-Notch Energy, ultimate tensile, and yield strength reports in accordance with ASTM A370. Minimum average Charpy Impact values shall be 15 ft.-lb. at minus 20 Degrees F. State what allowable stresses are to be used for designs based on the proposed material.

- Nuts:** ASTM A194, 2H or ASTM A563, DH. All nuts are to be heavy hex.

- Washers:** ASTM F436 or F959.

3. THREADS

- Types:** Rolled threads are required.
- Thread Series:** Use UNC for all bolts.
- Length:** Provide a threaded length at least three inches below the top of the concrete. That is, minimum thread length shall be the bolt projection plus three inches.

4. ANCHORAGE METHOD

- Anchor bolts shall either be threaded full length or swaged. Submit proposed alternate mechanical anchorage details for prior approval.
- Swaged Anchorage:** A minimum of 20% of the embedded bolt surface shall be covered with deformations whose radial dimensions are 15% to 20% of the bolt diameter.

5. BOLT FINISH

- Galvanize anchor bolts, nuts, and washers in accordance with ASTM A153 or B695, Class 50. The minimum length of galvanizing on anchor bolts shall be the bolt projection plus three inches.

6. DOCUMENTATION

- For acceptance of A307, A449, and A687 anchor bolt material, provide certified test reports for hardness and tensile strength in accordance with the corresponding ASTM specification; Include Charpy V-Notch Energy for A687. For acceptance of anchor bolts from the approved list, furnish certified test reports for ultimate tensile and yield strength, and Charpy V-Notch Energy. Submit the required documentation to the Engineer for approval prior to installation.

7. PAYMENT

- Payment for furnishing and installing anchor bolts shall be included in the bid item for the concrete into which they are installed. Such payment shall also include costs for mechanical testing and reporting.**

Original Construction Plans

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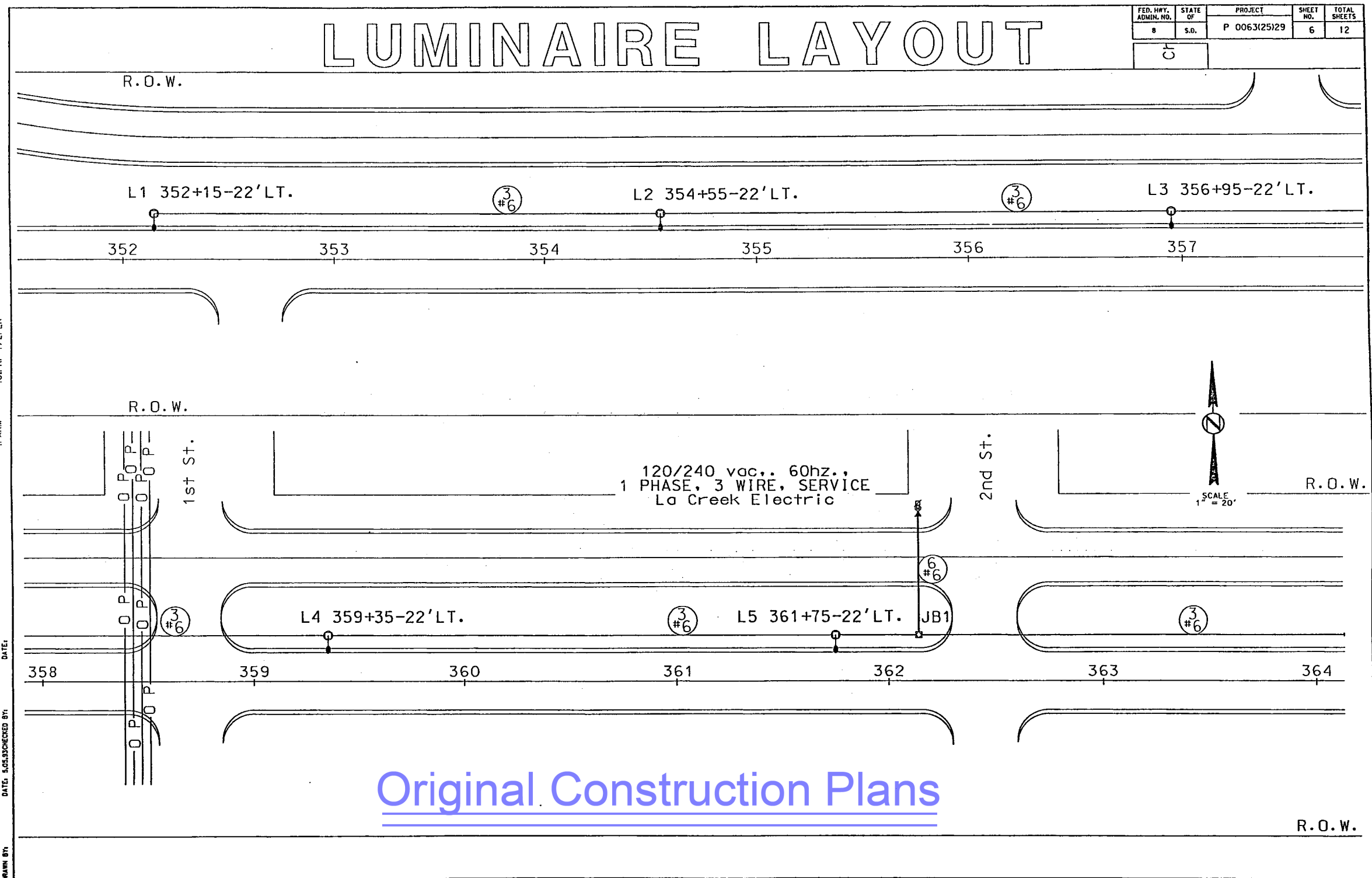
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STATE OF SOUTH DAKOTA	PROJECT 063-392	SHEET 7	TOTAL SHEETS 21
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Original Construction Plans

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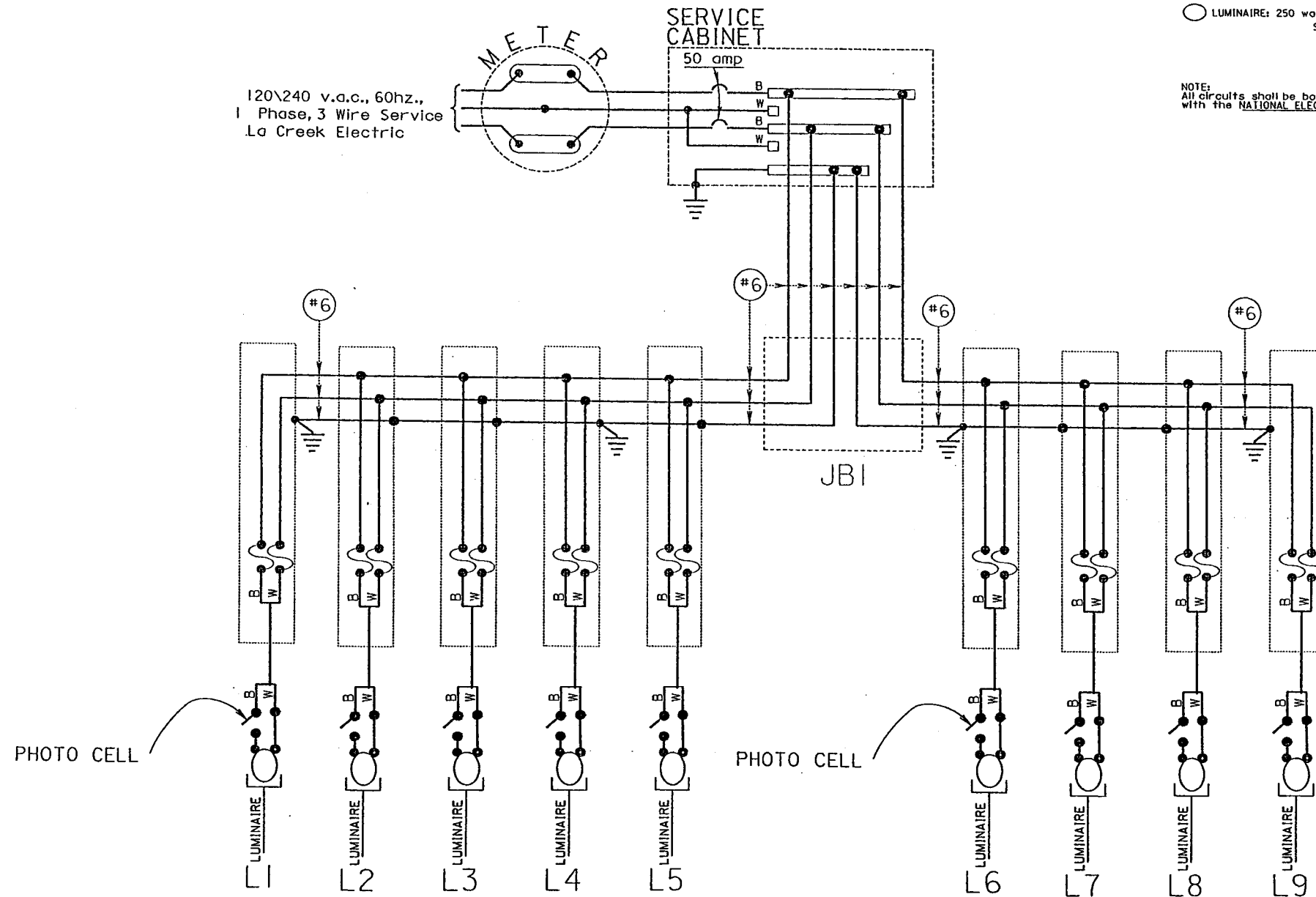
Original Construction Plans

WIRING DIAGRAM

- LEGEND:
- FUSE: 4 amp. Non-Time Delay or 1 8/10 amp. Dual Element
 - LUMINAIRE: 250 watt High Pressure Sodium Lamp W/P.E.

NOTE: All circuits shall be bonded in accordance with the NATIONAL ELECTRICAL CODE.

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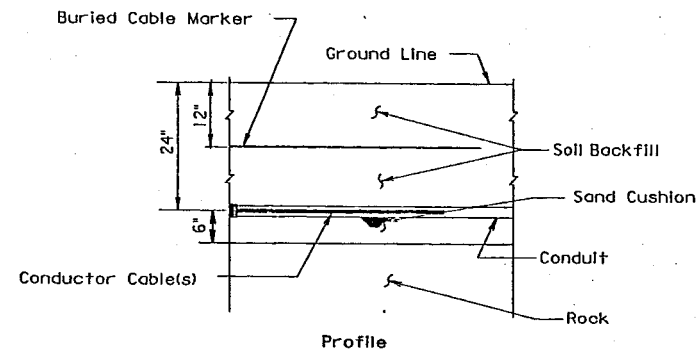
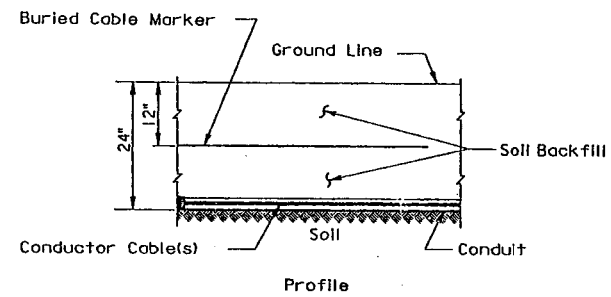
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Original Construction Plans



BURIED CABLE MARKER shall be plastic, approximately 6" wide, able to sustain a minimum of 350% tolerance elongation without tearing, and shall 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 shall be printed in a contrasting color on the cable marker. The buried cable marker shall be subject to approval by the Engineer; its cost shall be included in the linear foot bid price for electric conductor.

NOVEMBER 26, 1990

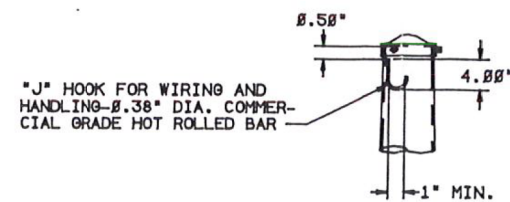
SPECIFICATION REFERENCE NO. 635	STATE OF SOUTH DAKOTA DEPARTMENT OF TRANSPORTATION CONDUIT INSTALLATION DETAILS	PLATE NUMBER 635.02B
--	---	----------------------------

SHEET OF SHEETS

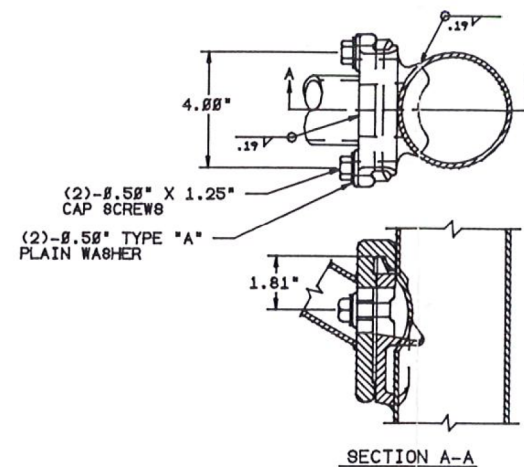
BEST POSSIBLE IMAGE

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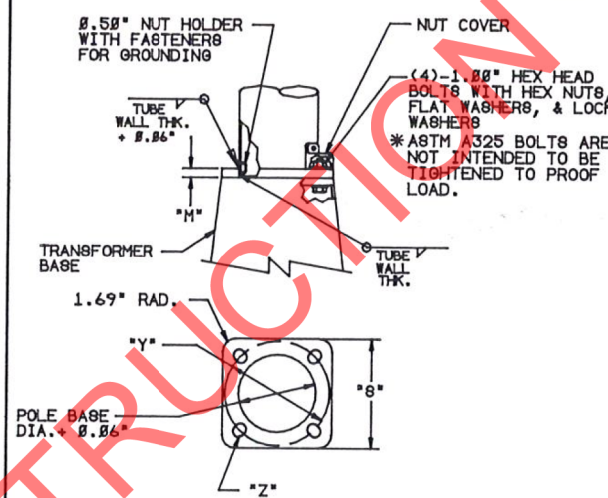
03/22/2017



DETAIL 1	POLE TOP
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DETAIL 2	LUMINAIRE ARM ATTACHMENT
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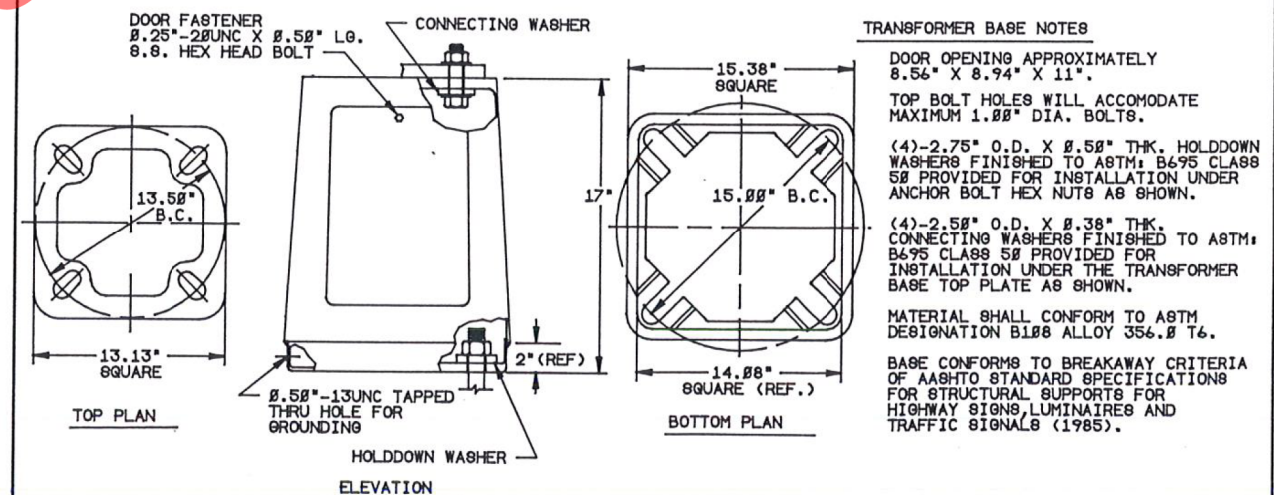
DETAIL 3	POLE BASE
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This approval pertains only to those items not specifically detailed on the plans or in the specification and it does not relieve the Contractor of any of his responsibility under the contract for the successful completion of the work.

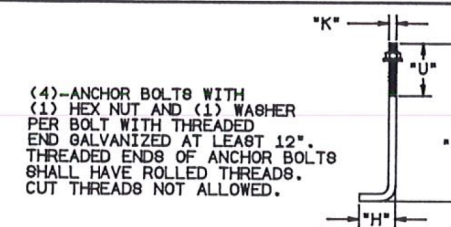
Traffic Section
South Dakota Department of Highways

CP *9/13/93*
Date



COMPONENT	ASTM DESIGNATION	MIN. YIELD (KSI)	COMPONENT	ASTM DESIGNATION	MIN. YIELD (KSI)
POLE SHAFT	A595 GR.A	55	GALVANIZING-POLE & ARM	A123	
ARM PIPE		36	GALVANIZE-ACCESSORIES	A153	
SIMPLEX ATTACHMENTS	A27 GR65-35				
BASE PLATE	A36	36			
ANCHOR BOLTS	A687	185			
T-BASE CONN. BOLTS	A325 *				

[illegible]

DETAIL 4	MØ93 T-BASE
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DETAIL 5	ANCHOR BOLT
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REV.	DATE	REVISION	
			
			
VALMONT INDUSTRIES, INC. VALLEY, NEBRASKA 68064 (402) 389-2201			
JOB NAME	8D DOT P3063(25)29(PCEMS 651H)		
BOLD TO	CRESCENT		
SHIP TO	NORDSTROM ELECTRIC		
P.O. NO.	016003431		
AGENT	THE CARNES GROUP		
ORDER NO.:			43826-93
DATE:	8-16-93	DRWN:	DBK
CHK:	GM		SHEET 1 OF 1
TITLE			DRAWING NO.
LIGHTING STRUCTURES			BSD43026

1:200
Plot Scale -

Plotted From -
In:1m19

Plotting Date: 03/22/2017

GUIDE FORM SPECIFICATIONS

M-400R2 LUMINAIRE

TYPE 013

GENERAL DESCRIPTION

The complete luminaire designated _____ (identify) shall be a GE M-400R2 roadway luminaire, ordering number _____ (specify M4RRXXXXXXXXXX, M4TRXXXXXXXXXX), or approved equal, to operate one _____ (specify (200, 250, 310 or 400) watt high pressure sodium (HPS) or 400 watt mercury) lamp from a nominal _____ (specify 120, 208, 240, 277 or 480) volt, 60 Hertz power source and shall be capable of starting and operating the specified lamp within the limits specified by the lamp manufacturer. The luminaire shall contain a completely prewired integral ballast and optical assembly that shall provide an IES Distribution Type _____ (specify according to photometric selection table). Labeling shall be in accordance with ANSI standards.

MECHANICAL CONSTRUCTION

The luminaire shall include a precision die-cast aluminum upper and lower housing and shall have an electrocoat gray paint finish. Lower housing shall be hinged and separable and shall hold refractor in place. The internal slipfilter shall contain four bolts which do not pass through the housing but tighten from below with lower housing in dropped position. The one-piece pipe clamp shall be capable of adapting to 1 1/4- through 2-inch pipe bracket without rearrangement of clamp or bolts, and shall be adjustable $\pm 5^\circ$ from horizontal. (There shall be an optional prewired no-tool photoelectric control receptacle.)

There shall be a polymer bird guard, shipped installed and an external quick-release stainless steel bail latch requiring no tools and operable with lineman's gloves.

BALLAST OPERATION

The luminaire shall contain a standard _____ (specify) ballast* in full compliance with lamp-ballast specifications available to the fixture manufacturer from the lamp manufacturers at the time of fixture manufacture.

The ballast shall reliably start and operate the lamp in ambient temperatures down to -20°F for mercury or -40°F for HPS.

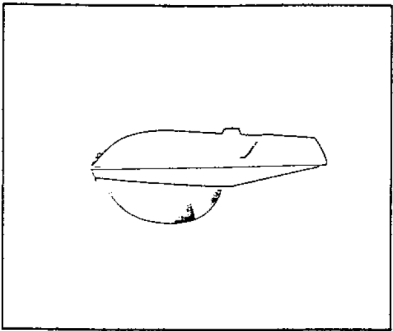
The luminaire and ballast shall be from the same manufacturer.

M4RR

The ballast shall be prewired to the lamp socket and dead-back terminal board, requiring connection of power supply leads to the terminal board only. The plug-in ignitor for HPS lamps shall be removable without the use of tools.

M4TR

The ballast components including ballast, dead-back terminal board and ignitor (for HPS luminaires) shall be mounted on an easily removable power tray. The tray shall be held in place by two key-hole slot screws.



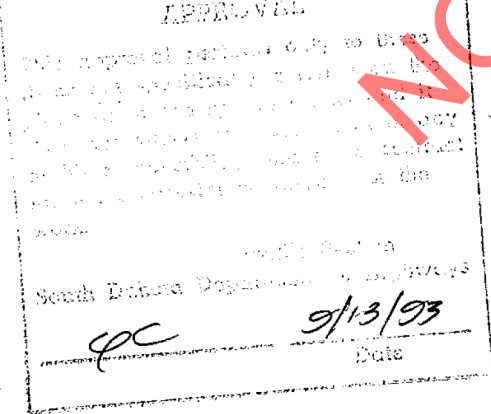
OPTICAL ASSEMBLY

The optical assembly shall contain a precision-formed aluminum reflector with a chemically-bonded lightweight non-breakable glass ALGLAS® finish on both the inside and outside surfaces providing corrosion resistance, durability, and ease of cleaning; and a _____ (specify LEXAN® polycarbonate resin or heat/impact-resistant glass) prismatic refractor with gasketing between the reflector and the refractor. (For lamps over 150 watts, use glass refractor only.)

The optical assembly shall have a _____ (specify non-wicking felt gasket which acts as filter by excluding particulate contamination when the luminaire is closed, or an elastomer gasket), around the edge of the reflector. (With the elastomer gasket specify there shall be an activated charcoal filter to permit passage of air and therefore allow for breathing of the luminaire during normal off-on heating and cooling cycles, filtering out gaseous contaminants such as hydrocarbons.)

The optical assembly shall contain an adjustable heavy-duty mogul base socket with nickel-plated tempered brass split-shell lamp grips and a free-floating, spring-loaded center contact.

*REFER TO PRODUCT PAGE FOR BALLAST SELECTIONS. FOR MORE DEFINITIVE INFORMATION, REFER TO BALLAST SPECIFICATIONS IN TECHNICAL DATA SECTION.



Plot Scale - 1:200

Inv1mt19

Plotted From -

ROADWAY



LIGHTING SYSTEMS

STATE OF SOUTH DAKOTA	PROJECT 063-392	SHEET 16	TOTAL SHEETS 21
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Plotting Date: 03/22/2017

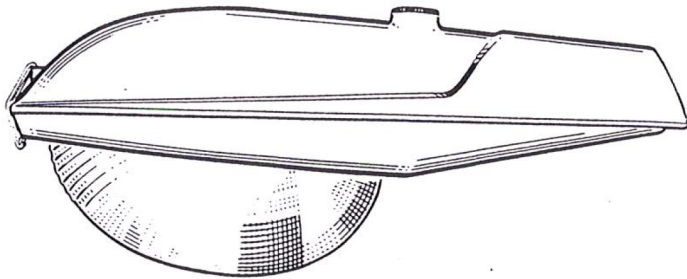
M-400R2 LUMINAIRE

APPLICATIONS

Street, highway, parking lot and area lighting.

SPECIFICATION FEATURES

- Universal four-bolt slipfitter
- Die-cast aluminum housing with electrocoat gray paint finish
- Adjustable mogul base socket
- Adjustable mogul base socket (street side)
- No-tool PE receptacle
- Plug-in ignitor
- External stainless steel bail latch



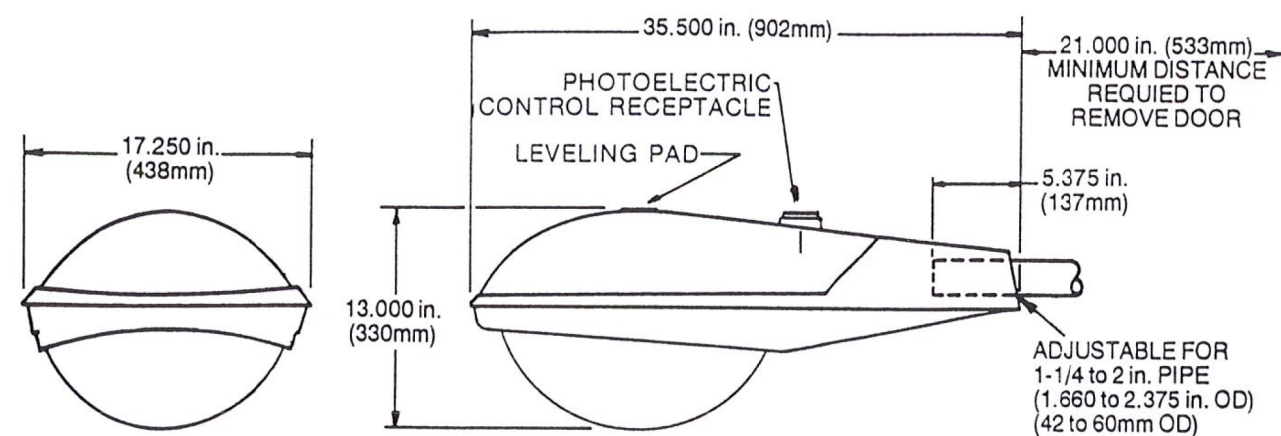
ORDERING NUMBER LOGIC

PRODUCT ID XXXX	WATTAGE XX	LIGHT SOURCE X	VOLTAGE X	BALLAST TYPE X	PE FUNCTION X	LENS TYPE (PRISMATIC REFRACTOR) X	IES DISTRIBUTION TYPE X X X	OPTIONS XXX
M4RR = M-400R2 M4TR = M-400R2 with Power Tray	20 = 200 25 = 250 31 = 310 40 = 400	S = HPS C = Merc Standard: Lamp not included	0 = 120/208/240/277 Multivolt 1 = 120 2 = 208 3 = 240 4 = 277 5 = 480 7 = 120X240 Ballast 8 = 240V 120V PE R Not recon-nectable D = 347 NOTE: Dual voltage con-ected for lower voltage	See Ballast Selection Table A = Autoreg C = Merc-Reg H = HPF Reactor or Lag M = Mag-Reg N = NPF Reactor or Lag	1 = None 2 = PE Receptacle NOTE: Receptacle connected same voltage as unit except as noted. Order PE Control separately.	G = Glass L = Polycarbonate (250 watt maximum) S = Short M = Medium S = Semi-cutoff N = Non-cutoff	See Photometric Selection Table 2 = Type II 3 = Type III 4 = Type IV	F = Fusing (Not available with multivolt or dual voltage)



M-400R2 LUMINAIRE

DIMENSIONS



PHOTOMETRIC SELECTION TABLE

Wattage	Light Source	IES Distribution Type Photometric Curve Number 35-17---- (Socket Position) All with glass prismatic refractor only. All light sources are clear unless otherwise indicated.					
		MN3	MN4	MS2	MS3	SN3	SN4
200, 250, 310, 400	HPS	7319 (2A)	7351 (3A)	7317 (1B)	7318 (2B)	N/A	N/A
400	Merc	7337 (1A)	7338 (2A)	N/A	N/A	N/A	N/A
400	Merc (Coated)	N/A	N/A	N/A	N/A	7334 (1A)	7335 (2A)

Note: N/A = Not Available

BALLAST SELECTION TABLE

Wattage	Light Source	Ballast Type Voltage								
		Multivolt	120	208	240	277	347*	480	120X240	240X20 PE R
200, 250	HPS	A, M	A, H, M, N	A, H, M, N	A, H, M, N	A, M	A, M	A, M	A, M	A, H, M, N
310, 400	HPS	A, M	A, M	A, H, M, N	A, H, M, N	A, M	A, M	A, M	A, M	A, H, M, N
400	Merc	C	A, C, N	A, C	A, C, H, N	A, C, H, N	N/A	A, C	C	A, C, H, N

NOTE: N/A = Not available
* = Not available in 200 or 310W

DATA

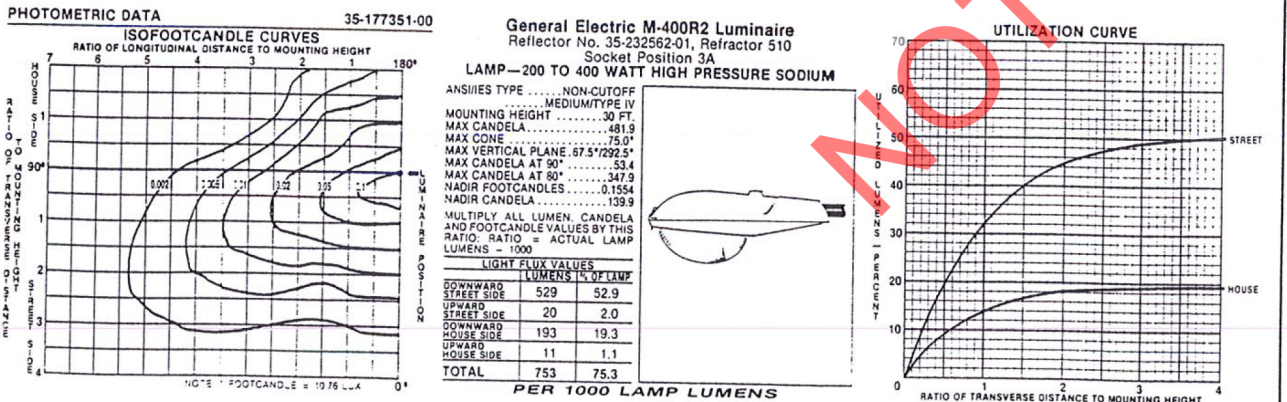
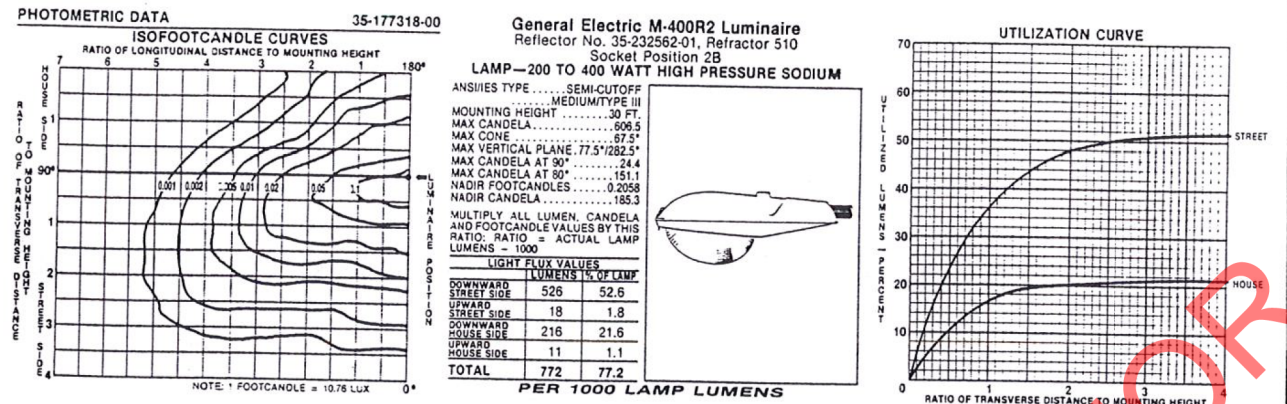
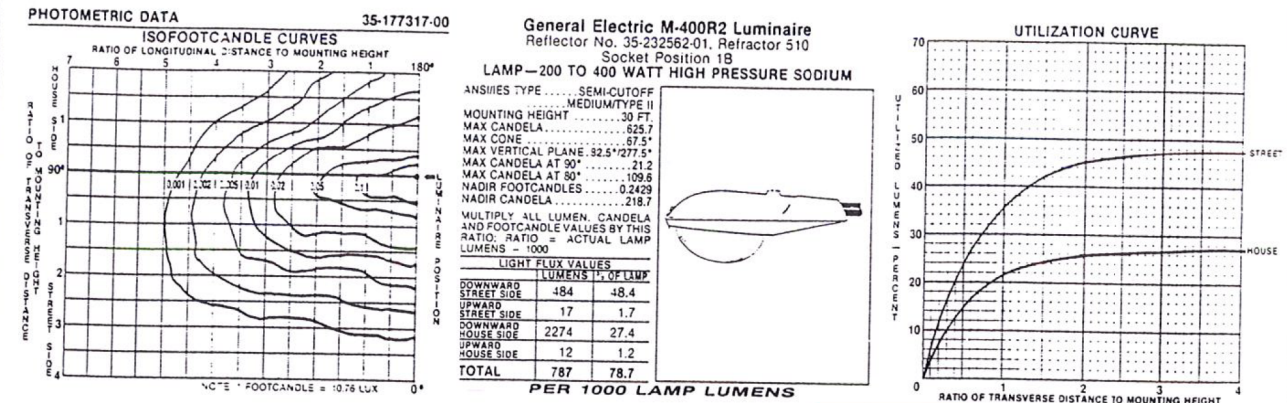
Approximate Net Weight:	32-39 Lbs 15-18 Kgs
Effective Projected Area (max):	1.1 Sq Ft .1 Sq M
Suggested Mounting Height:	30-50 Ft 9-15 M

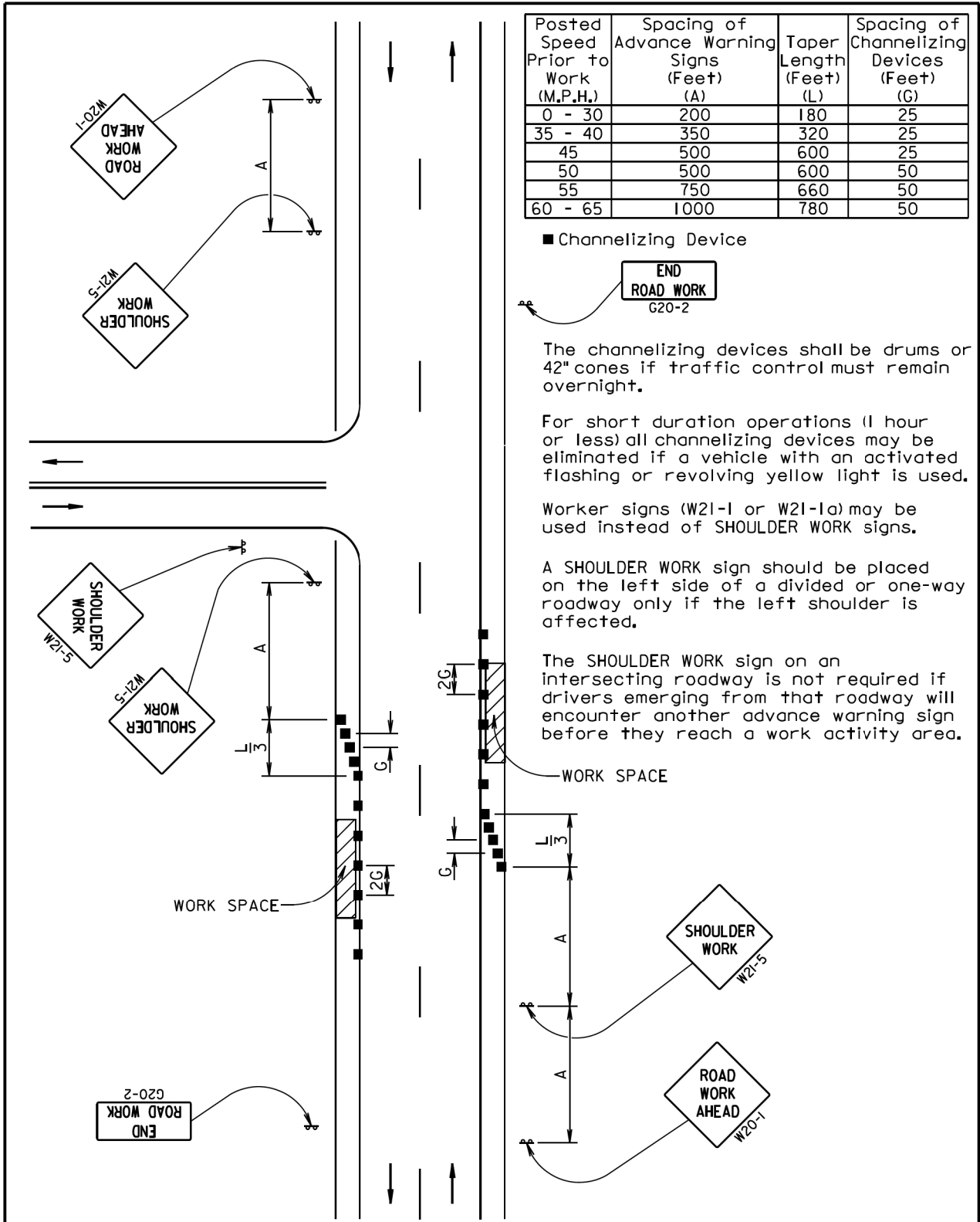
REFERENCES

See Page 6980 for
Distribution Type
Classification
See Page 6900 for start
of Accessories
See Page 8000 for Pole
Selection

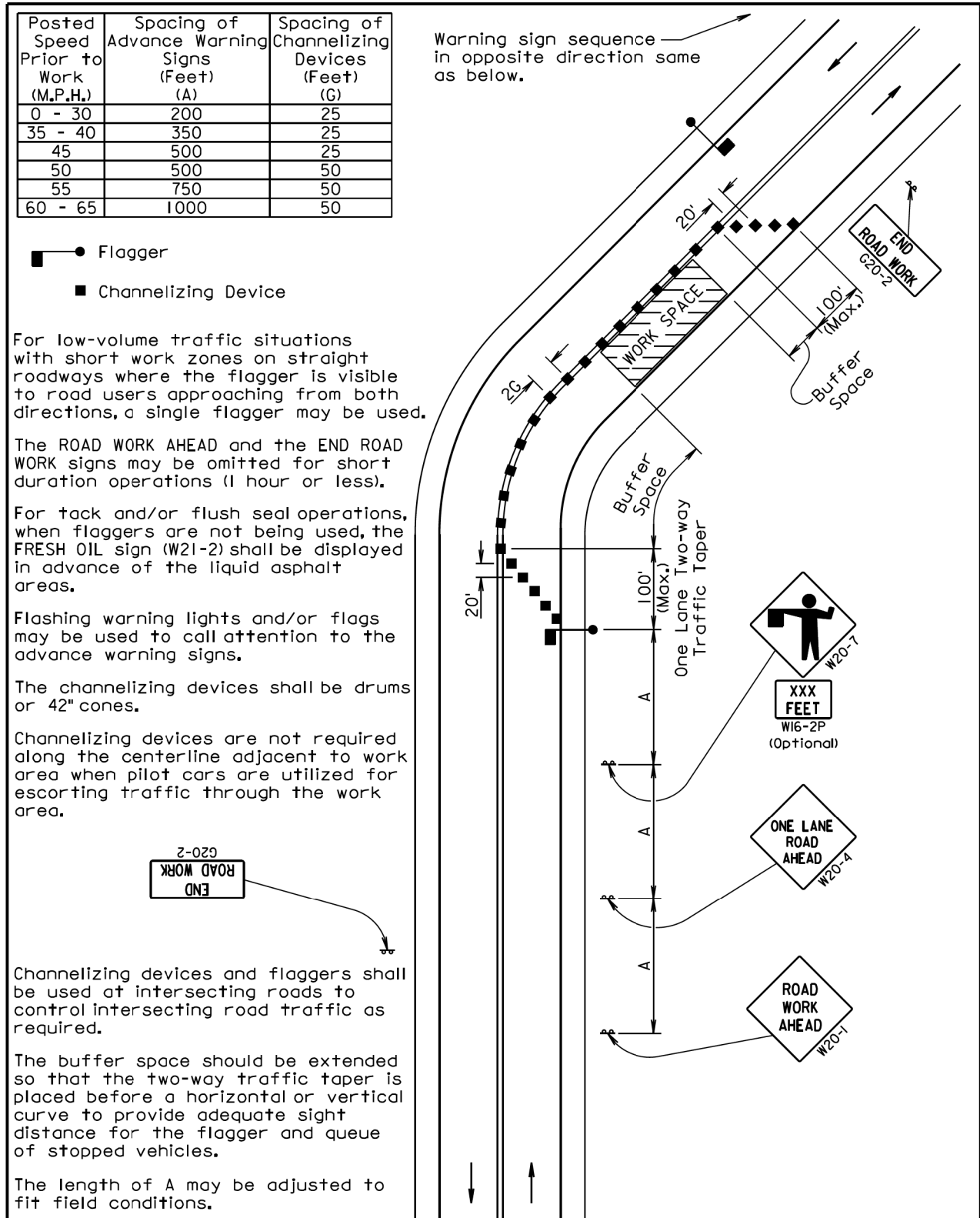


PHOTOMETRIC DATA
M-400R2 LUMINAIRE

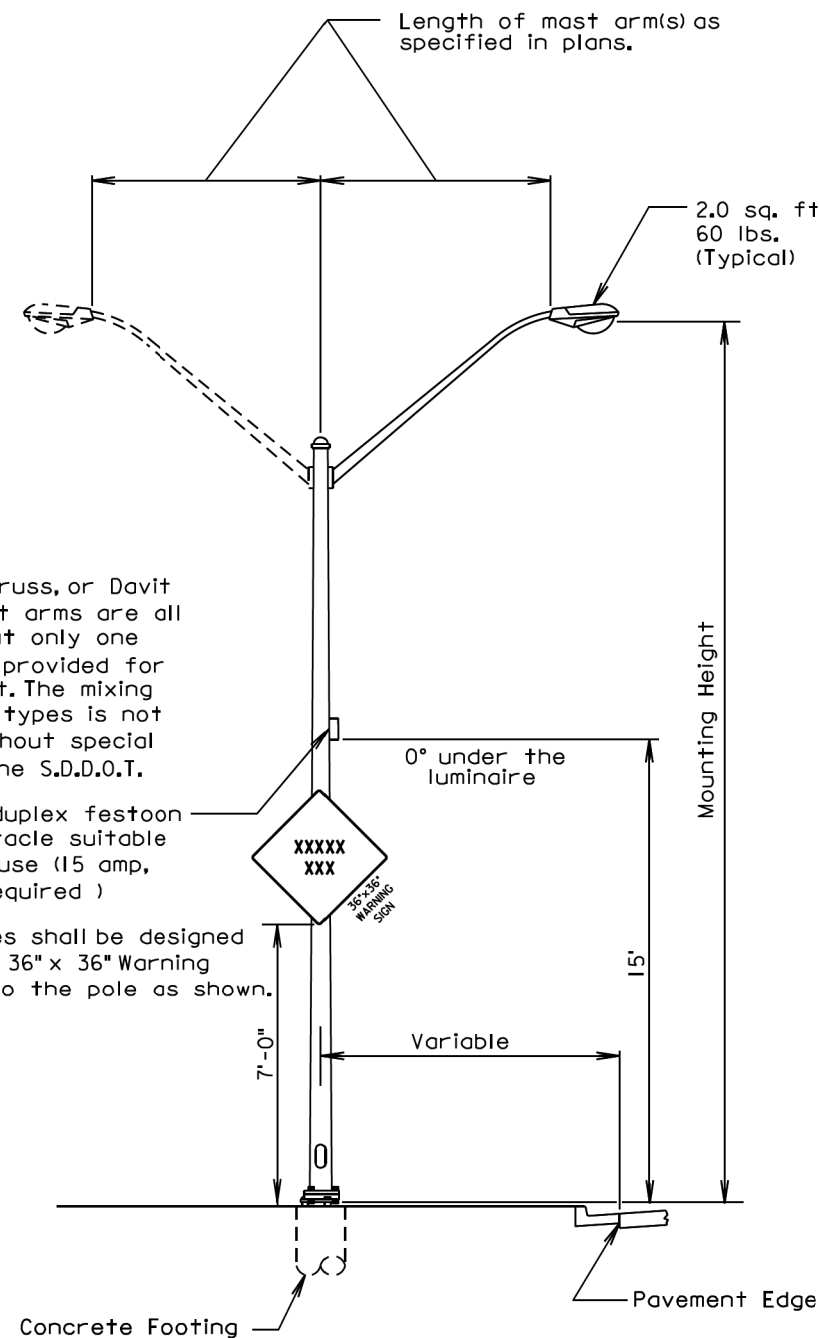




June 3, 2016

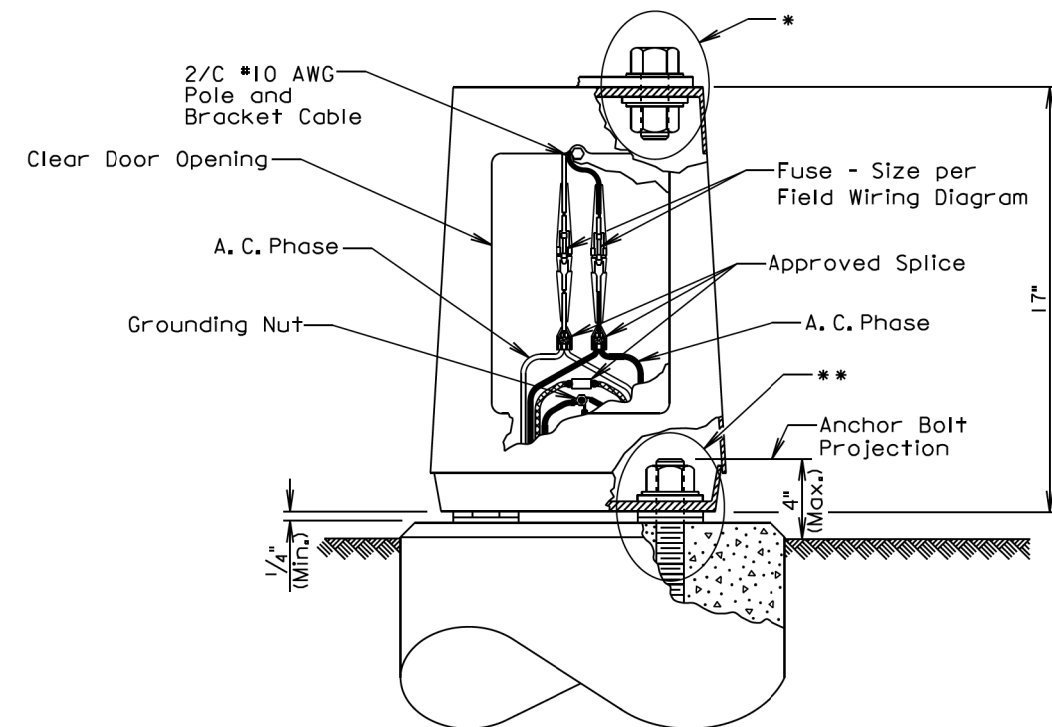


June 3, 2016



March 31, 2000

Published Date: 1st Qtr. 2017	S D D O T	STEEL ROADWAY LUMINAIRE POLE WITH MAST ARM(S)	PLATE NUMBER 635.01
			Sheet 1 of 1



GENERAL NOTES:

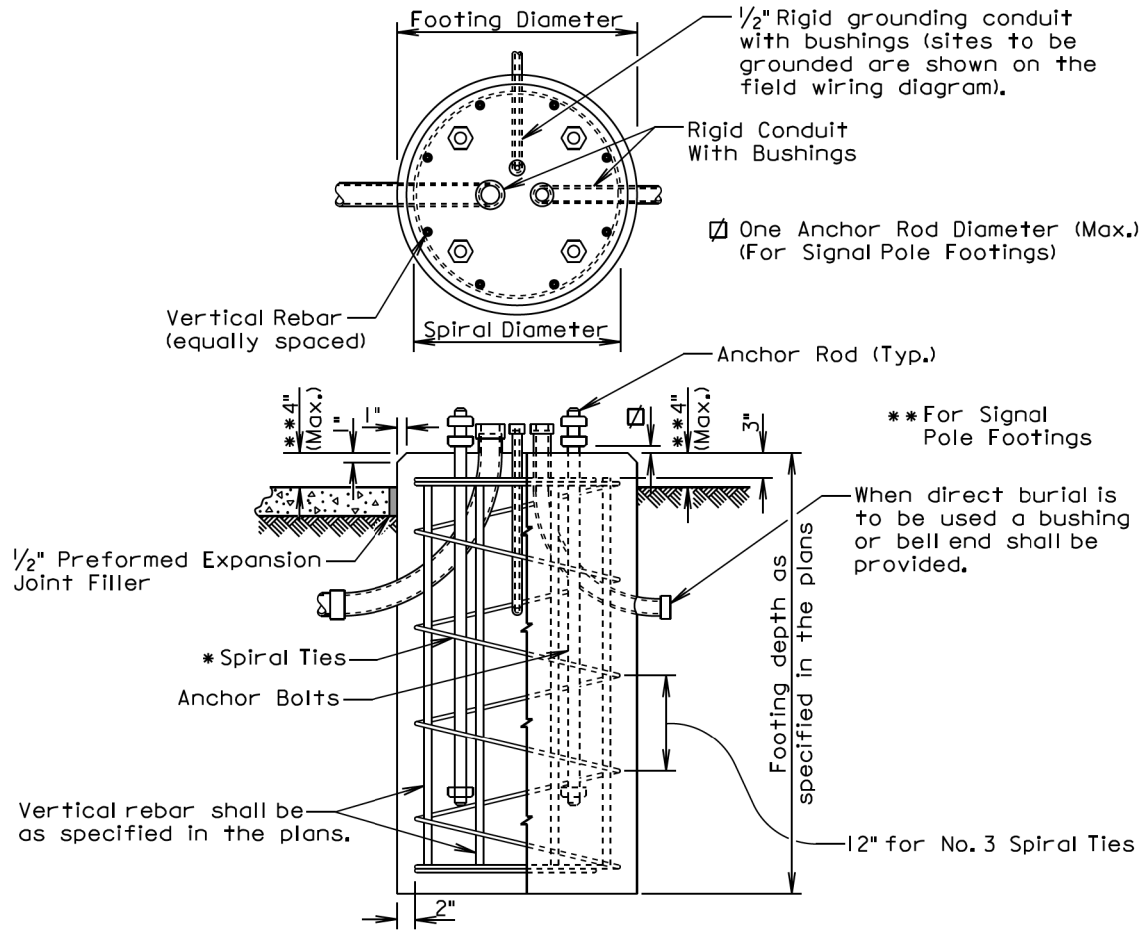
Base details are provided for example only and are not intended to be a complete design. Fused connectors shall be breakaway type.

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

**Hardware connecting the base to the footing shall be installed in accordance with the manufacturer's recommendation. The Contractor shall 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 shall be installed around the anchor bolts.

September 6, 2015

Published Date: 1st Qtr. 2017	S D D O T	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 shall be spaced 12 inches apart except for the top two which shall be spaced 6 inches apart. The ties shall be lapped 18 inches and the laps shall be staggered around the cage.

Spiral ties shall 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 shall not project above the slip plane or fracture plane for breakaway poles.

Conduits shall be sealed water-tight during all phases of construction until poles are in place.

The anchor rods shall 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.

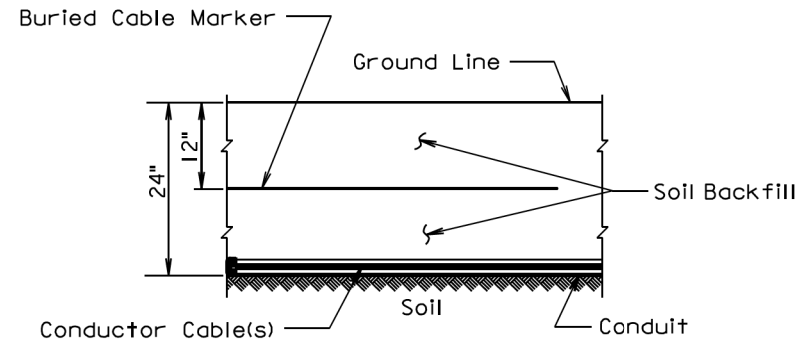
Costs of conduit and conduit bushings shown on footing detail shall be incidental to the footing bid item(s).

The pole shall not be installed until the concrete has attained design strength (4000 psi).

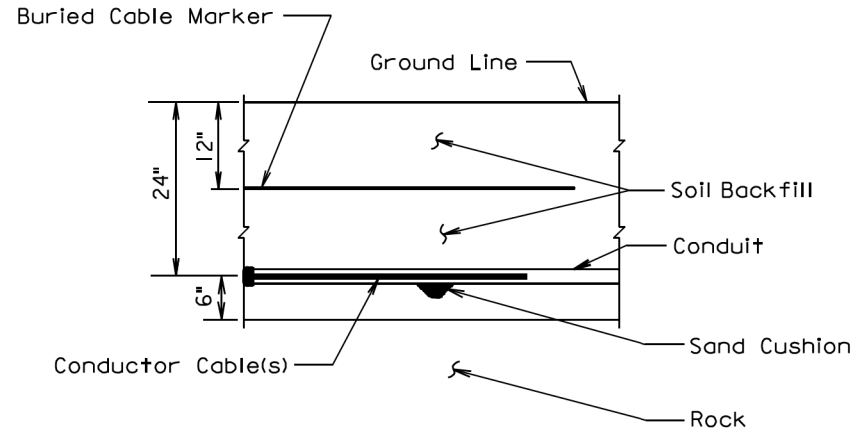
The contour of the area surrounding the breakaway pole shall be flat, though not necessarily level for a distance of 5 feet in all directions. The Contractor may be required to provide finish grading at some breakaway pole locations.

June 26, 2015

Published Date: 1st Qtr. 2017	S D D O T	POLE FOOTING	PLATE NUMBER 635.55
			Sheet 1 of 1



SECTION VIEW



SECTION VIEW

GENERAL NOTE:

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

March 31, 2000

Published Date: 1st Qtr. 2017	S D D O T	CONDUIT INSTALLATION	PLATE NUMBER 635.76
			Sheet 1 of 1