

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	000p-491,000p-492, &000N-491	1	23

STATE OF SOUTH DAKOTA
DEPARTMENT OF TRANSPORTATION
PLANS FOR PROPOSED

PROJECT 000P-491, 000P-492,
& 000N-491

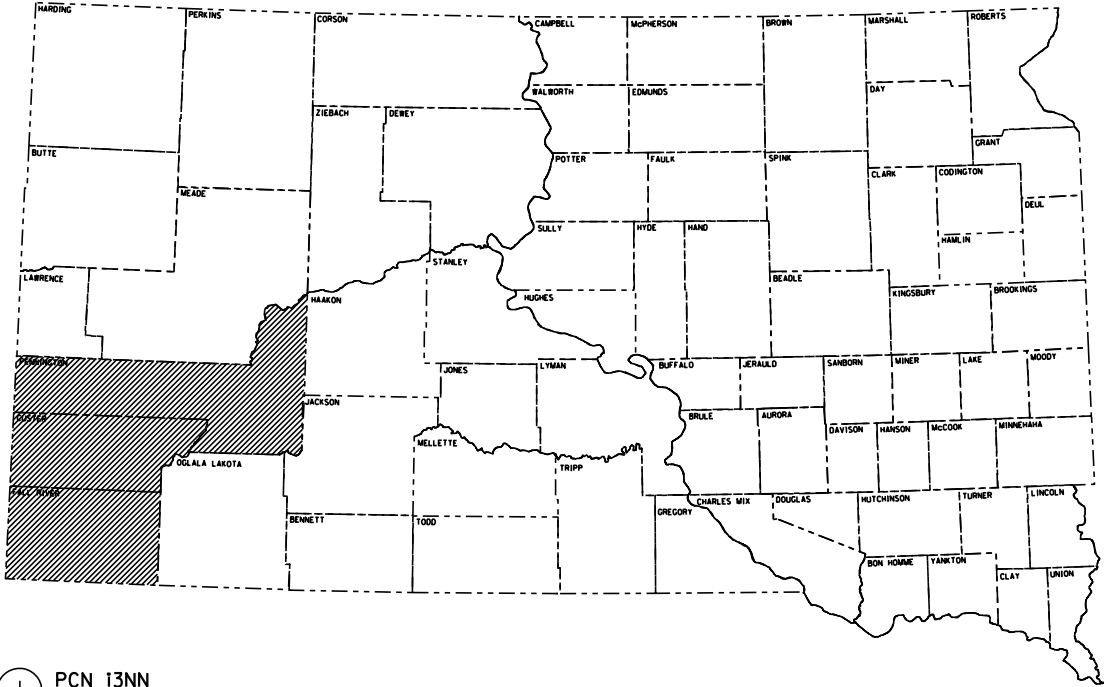
**CUSTER, FALL RIVER,
& PENNINGTON**

PCN i3NN, i3NP, & i3NO

Lighting Repair

INDEX OF SHEETS

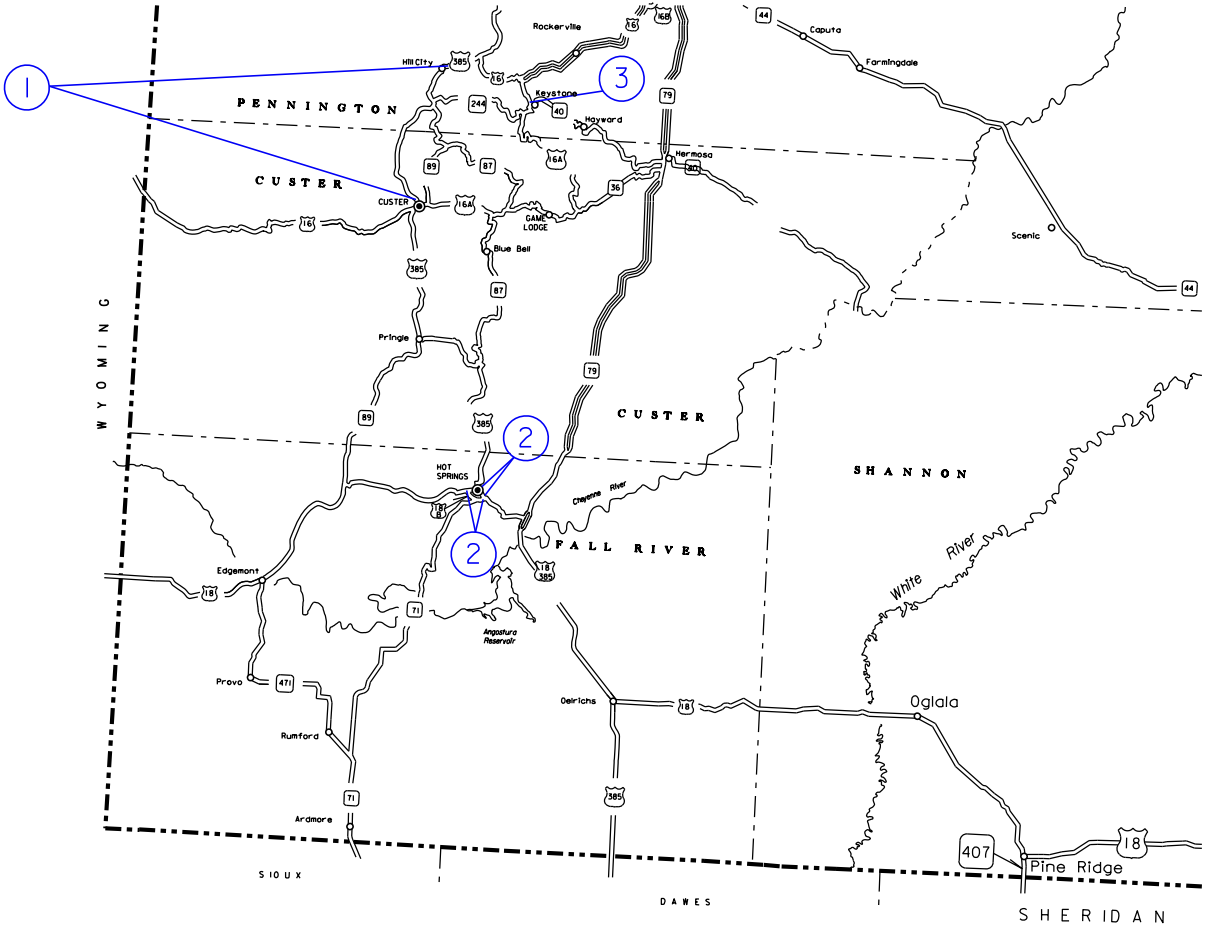
Sheet 1: Title Sheet
Sheet 2 - 5: Estimate of Quantities & Plan Notes
Sheet 6-18: Plan Sheets
Sheet 19 - 23: Standard Plates



① PCN i3NN
US16 MRM 26.18 - 41.48

② PCN i3NP
US385 MRM 35.79 - 36.71
US18B MRM 39.00 - 40.54

③ PCN i3NO
US16A MRM 56.92



PLOT SCALE - 1:200

PLOTTED FROM - TRCU10206

PLOT NAME - 1

FILE - ... \CUSTER AREA LIGHTING PLANS.DGN

ESTIMATE OF QUANTITIES

PCN I3NN

ESTIMATE OF QUANTITIES			
BID ITEM NUMBER	ITEM	QUANTITY	UNIT
009E0010	Mobilization	Lump Sum	LS
634E0010	Flagging	35	Hour
634E0100	Traffic Control	1080	Unit
634E0120	Traffic Control, Miscellaneous	Lump Sum	LS
635E7510	Remove and Reset Luminaire Pole	6	Each
900E2024	Miscellaneous Work, Electrical	Lump Sum	LS
900E2030	Miscellaneous Work	8	Site

PCN I3NP

ESTIMATE OF QUANTITIES			
BID ITEM NUMBER	ITEM	QUANTITY	UNIT
009E0010	Mobilization	Lump Sum	LS
460E0300	Breakout Structural Concrete	0.1	CuYd
462E0100	Class M6 Concrete	0.2	CuYd
480E0100	Reinforcing Steel	29	Lb
481E0507	No. 7 Rebar Splice	8	Each
634E0010	Flagging	35	Hour
634E0100	Traffic Control	1080	Unit
634E0120	Traffic Control, Miscellaneous	Lump Sum	LS
635E7510	Remove and Reset Luminaire Pole	3	Each
900E2030	Miscellaneous Work	4	Site

PCN I3NQ

ESTIMATE OF QUANTITIES			
BID ITEM NUMBER	ITEM	QUANTITY	UNIT
009E0010	Mobilization	Lump Sum	LS
634E0010	Flagging	35	Hour
634E0100	Traffic Control	1080	Unit
634E0120	Traffic Control, Miscellaneous	Lump Sum	LS
900E2030	Miscellaneous Work	1	Site

SCOPE OF WORK

Work on this project involves a wide range of repairs to various types of luminaire and signal poles. Repairs consist of installing nuts, bolts and washers, replacing covers, bases, anchor systems and removing and resetting of numerous poles.

SEQUENCE OF OPERATIONS

The Contractor shall complete all work within one specific location before beginning work at another location.

Luminaire poles and luminaire heads shall remain in service during hours of darkness. Necessary repairs shall not take the luminaire out of service during the nighttime hours. The exception to this would be the luminaire pole footing extension which requires removal of the luminaire pole for several days to allow the concrete to obtain required strength. The luminaire pole shall be operational within 5 calendar days of the concrete obtaining required strength.

Repairs to signal poles shall be accomplished during non-peak hours of 7 PM to 6 AM if the repairs require the traffic signal to be taken out of service. Intersection shall be signed in all 4 directions with stop signs and all 4 way, plaques.

GENERAL NOTES

1. The Contractor shall adequately support the luminaire poles/mast arms and the signal poles/mast arms during the repair process. Any damage caused to the poles, mast arms, pole bases, or any other component of the luminaire and signals shall be repaired or replaced by the Contractor at his expense. The Engineer shall have final approval of any repairs or replacements that are required.
2. Any damage caused by the contractor to the surrounding vegetated surface, will be repaired to the satisfaction of the engineer at no cost to the State.

ORIGINAL SHOP PLANS

The SDDOT has the original shop plans for the luminaire poles on file. The SDDOT will make these original shop plans available to the successful Contractor upon award of the project if requested. These original shop plans will also be made available, upon request to RC Area Engineer Mike Carlson, to any bidders on this project if requested. Please submit requests for original shop plans to Tim.Wicks@state.sd.us
Original shop plans will be provided in PDF format.

REPLACEMENT PARTS

All replacement parts on this contract shall be obtained from the company that furnished the original luminaire components. Replacement bolts, nuts and washers shall be approved by the pole manufacturer.

Replacement parts shall have the same protective coating as the original components.

The Contractor shall be responsible for furnishing certification for replacement parts per the SDDOT Materials Manual.

ORIGINAL LUMINAIRE POLE SUPPLIER CONTACT INFORMATION

SUPPLIER

Valmont Industries, Inc.
<http://www.valmont.com/valmont/products/pole-structures>
One Valmont Plaza
Omaha, Nebraska 68154-5215
402-963-1000
Fax: 402-963-1198

SUPPLIER

Millerbernd Manufacturing Company
http://www.millerberndmfg.com/steel_lighting_poles/
Steve Klobe
Regional Manager ND,SD & MN
Inside Sales
Customer Service
320-485-2111
sklobe@millerberndmfg.com

SUPPLIER

Ameron Pole Products
<http://www.ameronpoles.com/>
Northwest Regional Sales Office
9661 Dutchess Place
South Jordan, UT 84095
801-631-3650
Fax: 801-657-4505

UTILITIES

Utilities are not planned to be affected on this project. If utilities are identified near the improvement area through the SD One Call Process as required by South Dakota Codified Law 49-7A and Administrative Rule Article 20:25, the Contractor shall contact the Project Engineer to determine modifications that will be necessary to avoid utility impacts.

TRAFFIC CONTROL

Traffic control shall be per the standard plates included in this set of plans. Flaggers shall be utilized as necessary. A lane closure shall be in place if any activity impacts a lane of traffic when applicable. All lanes shall be open to traffic during non-working hours.

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

Storage of vehicles and equipment shall be as near the right-of-way line as possible. Contractor's employees should mobilize at a location off the right-of-way and arrive at the work sites in a minimum number of vehicles necessary to perform the work. 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.

Work activities during non-daylight hours are subject to prior approval

Work zones for luminaire repair shall not exceed 1500' (4 blocks) in length without prior approval from the Engineer.

TRAFFIC CONTROL CONTINUED

Traffic approaching the project from intersecting roadways, streets, and approaches must be adequately accommodated. Major intersections or large commercial entrances may require additional signing, flaggers, and channelizing devices on a temporary basis until work activities pass these areas.

The bottom of signs on portable or temporary supports shall not be less than seven feet above the pavement in urban areas and one foot above the pavement in rural areas. Portable sign supports may be used as long as the duration is less than 3 days. If the duration is more than 3 days the signs shall be on fixed location, ground mounted, breakaway supports.

The Contractor shall provide documentation that all breakaway sign supports comply with FHWA NCHRP Report 350 or MASH crash-worthy requirements. The Contractor shall provide installation details at the preconstruction meeting for all breakaway sign support assemblies.

The Contractor shall accommodate pedestrian traffic, including those with disabilities. Bicycle traffic shall also be accommodated. If work shall impact the sidewalks the Contractor shall accommodate pedestrian traffic while repair work is underway with manned crossing assistance (crossing guards) combined with an accessible path. Payment for crossing guards shall be paid for under the contract item FLAGGING.

Traffic Control units, as shown in the Estimate of Quantities, are estimates. Contractor's operation may require adjustments in quantities, either more or less. The quantity of traffic control units paid for will be for the greatest number of installations per sign in place at any one time regardless of the number of set-ups on the project. Payment will be for those signs ordered by the Engineer and used on each project PCN.

In some locations work may be accomplished from behind the curb without impeding traffic. Repair locations within the City limits of Deadwood and Lead, may need to be scheduled to accommodate work areas and or special events held within these two locations. Contacts for these locations, are Ron Green @ 605-578-3082, Deadwood and John Bunch @ 605-584-1401, Lead.

ESTIMATE OF SIGN QUANTITIES FOR EACH PCN I3NN, I3NP,& I3NQ

SIGN CODE	SIGN SIZE	DESCRIPTION	NUMBER REQUIRED	UNITS PER SIGN	UNITS
E5-1a	60" x 48"	EXIT ### WITH 45 DEGREE ARROW (1 or 2 digits)	1	38	38
G20-2	48" x 24"	END ROAD WORK	1	24	24
R1-3P	16" x 18"	ALL WAYS	4	15	60
R1-1	36" x 36"	STOP	4	27	108
W3-1	48" x 48"	STOP AHEAD (SYMBOL)	4	34	136
W3-4	48" x 48"	BE PREPARED TO STOP	4	34	136
W4-2	48" x 48"	LEFT OR RIGHT LANE ENDS (SYMBOL)	2	34	68
W4-3	48" X 48"	ADDED LANE (SYMBOL)	1	34	34
W5-4	48" X 48"	RAMP NARROWS	1	34	34
W20-1	48" x 48"	ROAD WORK ##### FT. OR AHEAD	5	34	170
W20-4	48" x 48"	ONE LANE ROAD ##### FT. OR AHEAD	2	34	68
W20-5	48" x 48"	LT. OR RT. LANE CLOSED ##### FT. OR AHEAD	2	34	68
W20-7	48" x 48"	FLAGGER (SYMBOL)	2	34	68
W21-5	48" x 48"	SHOULDER WORK	2	34	68
TOTAL UNITS					1080

REPLACE LUMINAIRE POLE BASE COUPLERS

The fluted aluminum couplers and skirting at the base of the luminaire pole shall be replaced with Transpo Pole Safe couplers and skirting. The Tables of Luminaire/Signal Repair indicate the luminaire poles which require this coupler and skirting replacement. It shall be the contractor responsibility to verify size of anchor bolts to ensure the correct couplers are purchased. It is anticipated that Model 4100 Transpo Pole Safe couplers, for 1" diameter anchor bolts will be used for replacements on this poroject.

Couplers and skirting shall be installed per Transpo Pole Safe installation instructions. Installation may require sizing of the anchor bolt projection height, cleaning of the anchor bolt, and cold galvanizing of the anchor bolt.
http://www.transpo.com/pdfs/Pole-Safe_Website_Update/Pole_Safe_Design_Book_2013.pdf

All costs associated with furnishing, replacing and installing the couplers and skirting shall be incidental to the contract unit price per each for REMOVE AND RESET LUMINAIRE POLE.

REPLACE BOLT/BOLTS ON BACKSIDE OF MAST ARM

The Tables of Luminaire/Signal Repair indicates signal poles which require the bolts connecting the mast arm and/or anti-rotation bolt on the arm to pole connection to be replaced.

The Contractor shall be responsible for reviewing the original shop plans and providing the proper replacement bolts. Existing washers at the connection may be reused if they are in good condition.

All costs associated with furnishing and replacing the bolt and washers at the mast arm connection to the pole shall be incidental to the contract unit price per site for MISCELLANEOUS WORK. Each signal pole requiring this work shall constitute 1 Site for payment purposes, regardless of the number of bolts requiring replacement.

INSTALL BOLT, NUT AND/OR WASHER

The Tables of Luminaire/Signal Repair indicate the luminaire pole locations which require the installation of bolts, nuts or washers on the base connection or breakaway assembly.

All costs associated with furnishing and installing bolts, nuts and or washers shall be incidental to the contract unit price per site for MISCELLANEOUS WORK. Each luminaire pole requiring this work shall constitute 1 Site for payment purposes, regardless of the number of nuts and washers installed.

The Contractor shall be responsible for reviewing the original shop plans and working with the original supplier to determine the proper hardware to install at each location.

If the installation of the bolts, nuts or washers requires removal of the luminaire pole from the luminaire base, the Contractor shall be compensated by the contract item REMOVE AND RESET LUMINAIRE POLE in addition to the contract item MISCELLANEOUS WORK.

TIGHTEN BOLT AND/OR NUT

The Tables of Luminaire/Signal Repair indicate the luminaire pole locations which require tightening of bolts and nuts.

Anchor bolts shall be tightened in accordance with Section 635 of the Standard Specifications and the Supplemental Specifications to the Standard Specifications. Transformer bases shall be tightened in accordance with base manufacturer's recommendations.

The Tables of Luminaire/Signal Repair indicate the number of anchor rod nuts that were determined to be loose at the time of inspection. All anchor rod nuts at a pole location requiring anchor rod nuts to be tightened shall be torqued to the proper specifications, regardless of the number of nuts indicated to be loose.

All costs associated with tightening in place nut/nuts shall be incidental to the contract unit price per site for MISCELLANEOUS WORK. Each luminaire pole requiring this work shall constitute 1 Site for payment purposes. If the tightening requires removal of the luminaire pole from the luminaire base, the Contractor shall be compensated by the contract item REMOVE AND RESET LUMINAIRE POLE in addition to the contract item MISCELLANEOUS WORK.

MISCELLANEOUS WORK

The contract item Miscellaneous Work encompasses several items of work as indicated in the various Tables of Luminaire/Signal Repair. Each item of work indicated under the contract item Miscellaneous Work shall constitute one payment of the contract item MISCELLANEOUS WORK. Thus, the Contractor may be compensated several times for the contract item Miscellaneous Work at one pole location.

REMOVE AND RESET LUMINAIRE POLE

If repair work requires the removal of the luminaire pole from the pole base, the contract item REMOVE AND RESET LUMINAIRE POLE shall be paid to the Contractor in addition to any of the other contract items such as MISCELLANEOUS WORK. The Engineer shall have final authority as to when the contract item Remove and Reset Pole is paid for. Removal of the luminaire pole to make repairs to the pole or replace parts on the pole generally will not constitute removal and resetting of pole.

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REPLACE / REPAIR / SECURE HAND HOLE COVERS

The Tables of Luminaire/Signal Repair indicate the luminaire pole locations which require repairs and or reattachment of the hand hole access covers.

If an access cover is not presently attached to the hand hole access, or the access cover is damaged, the Contractor shall furnish and install a new access cover. Replacement covers shall be pre-approved before use.

If the present attachment for the access cover is damaged and/or does not adequately secure the access cover in place, the Contractor shall be responsible for preparing and implementing a plan that adequately secures the access cover and still allows for easy removal of the access cover. Theft deterrent covers may be a potential option if the present covers and attachments are significantly damaged. The repair plan shall be approved by the Engineer prior to implementation.

All replacement materials shall have the same surface finish as the original part. If any component has the protective galvanizing damaged, the damaged area shall be repaired as per the Repair Galvanized Coating notes within these plans.

All costs associated with furnishing and installing an access cover and/or making repairs to allow for the securing of an access cover shall be incidental to the contract lump sum price for MISCELLANEOUS WORK, ELECTRICAL.

REPLACE POLE CAP

The Tables of Luminaire/Signal Repair indicate the luminaire pole locations which require installation of a luminaire pole cap. The Repair Comments in the Tables of Luminaire/Signal Repair indicate some locations where only the pole cap set screw needs to be replaced.

All costs associated with furnishing and installing a new pole cap or furnishing and installing a new pole cap set screw shall be incidental to the contract lump sum price for MISCELLANEOUS WORK, ELECTRICAL. There will be no additional compensation to the Contractor if the Repair Comments in the Tables of Luminaire/Signal Repair indicate to replace the set screw and the Contractor is required to furnish and install a new pole cap to complete the repair.

REPLACE SIGNAL HEAD BACKPLATE

The Tables of Luminaire/Signal Repair indicate the signal pole locations which require installation of a signal head backplate.

All costs associated with furnishing and installing a new signal head backplate shall be incidental to the contract lump sum price for MISCELLANEOUS WORK, ELECTRICAL.

REPAIR GALVANIZED COATING

The Tables of Luminaire/Signal Repair indicate the luminaire poles which require repair to the galvanized pole or mast arm surface.

The galvanizing repairs shall be in compliance with ASTM A 780 specifications for Zinc-rich Paint.

The steel surface shall be cleaned of all rust, scale, oil, grease and foreign matter prior to coating. The galvanizing product shall be applied according to the product application instructions.

The Contractor shall furnish the Engineer with the Zinc-rich Paint product name, application instructions and documentation that the product complies with ASTM A 780 for Paints Containing Zinc Dust.

All costs associated with repairing the galvanized surface shall be incidental to the contract lump sum price for INCIDENTAL WORK.

ANCHOR BOLT COVERS

The Tables of Luminaire/Signal Repair indicate the luminaire poles which require replacement of damaged or missing die cast anchor bolt nut covers.

All replacement materials shall have the same surface finish as the original part. If any component has the protective galvanizing damaged the damaged, area shall be repaired as per the Repair Galvanized Coating notes within these plans.

All costs associated with furnishing and installing new die cast anchor bolt nut covers shall be incidental to the contract unit price per each for ANCHOR BOLT COVER..

SHOP DRAWING AND CATALOG CUTS SUBMITTALS

The Contractor shall submit shop drawings and catalog cuts in accordance with Section 985 of the Standard Specifications or in Adobe PDF format.

Adobe PDF submittals shall be sent to the following email addresses:

Pete.Longman@state.sd.us

BREAKAWAY BASES

The Tables of Luminaire/Signal Repair indicate the locations which require installation of a new breakaway bases.

A statement is required, signed by a Professional Engineer registered in the State of South Dakota, 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. If requested, test data of production samples to support the certification shall be provided.

All costs associated with furnishing and installing a new Breakaway Base Assembly shall be incidental to the contract unit price per site for MISCELLANEOUS WORK. Each luminaire pole requiring this work shall constitute 1 Site for payment purposes.

In addition to the Breakaway Base Assembly, it requires removal of the luminaire pole from the existing luminaire base and the Contractor shall be compensated by the contract item REMOVE AND RESET LUMINAIRE POLE in addition to the contract item MISCELLANEOUS WORK.

REPAIR CONCRETE FOOTING

The footing to be repaired shall consist of cleaning exposed concrete to the satisfaction of the Engineer and patched with an approved patching material from the Approved Products List. All cost to clean, form and patch footing shall be incidental to the contract unit price for INCIDENTAL WORK. Due to size of the patch, it is anticipated that the pole and base will not need to be removed to accommodate the repair of the footing.

TABLE OF LUMINAIRE/SIGNAL REPAIR IN CUSTER, FALL RIVER, AND PENNINGTON COUNTIES, Project No. 000P-491 - PCN i3NN, 000P-492 - PCN i3NP, 000N-i3NQ																						STATE OF SOUTH DAKOTA	PROJECT		SHEET	TO SH
																							000p-491,000p-492, &000N-49		5	
Project No.	Struc #	County	City	Hwy	Location Description	Latitude	Longitude	635E7500 Remove and Reset Lumi-naire Pole (Each)	Extend Footing (Site)		(N.A.B.I.)		INCIDENTAL WORK		Replace Pole to Base Coupler (Site)	MISCELLANEOUS WORK					ELECTRICAL		Repair Comments			
																Replace damaged footing (Site)	Install bolt, nut and/or washer (Site)	Replace Luminaire or traffic Signal Hardware (Site)	Replace Transformer Base (Site)	Tighten bolt and/or nut (Site)	Repair/ Secure hand hole covers (Site)					
Project No. 000P-491, PCN i3NN	T21000251	Custer	Custer	US16	US16 & US385	43.76354	-103.60979	1									1						Install ASTM F436 /ASTM F959 heavy washers under the anchor rod nuts. Monitor the fine crack in pole to base coupler at the screw recess, to make sure the crack does not progress.			
	T21000253	Custer	Custer	US16	US16 & US385	43.76382	-103.60967	1						1			1						Install ASTM F436 /ASTM F959 heavy washers under the anchor rod nuts. Replace the pole to base coupler due to crack damage.			
	T21000246	Custer	Rural	US16	US16 & Ave. of the Chiefs	43.82045	-103.63997											1					Replace the missing shroud on the mast arm mounted traffic signal.			
	T21000248	Custer	Rural	US16	US16 & Ave. of the Chiefs	43.82004	-103.64029													1			Tighten mast arm connection to the pole to close the 3/8" gap on the top side of the mast arm where it connects to the pole. May need to support the mast arm while tightening.			
	L02678020	Pennington	Hill City	US16	Mc Gregor st and 16	43.93102	-103.57571	1								1							Repair anchorage so that anchor rod nuts are fully engaged.			
	L02678041	Pennington	Hill City	US16	16 and Deerfield	43.93408	-103.5753	1									1				1		Two anchor rods are not long enough to engage the pole base. One anchor rod nut is not fully engaged. Repair or replace anchorage system. Repair hand hole security to the pole.			
	L02678049	Pennington	Hill City	US16	Newton Ave and 16	43.93455	-103.57269	1									1	1					One anchor rod nut is loose. 1 anchor rod nut not engaged by 3 threads. Repair anchorage system to stabilize the pole and fully engage anchor rod nuts.			
	L02678057	Pennington	Hill City	US16	Hill City	43.93494	-103.56918										1						Repair anchorage so that all anchor rods are fully engaged with anchor rod nuts and have adequate room for properly sized washers.			
	L02699001	Pennington	Hill City	US16	Hill City	43.92679	-103.57631	1															Extend footing to match grade elevation. The Bridge Office can provide details for this work upon request.			
Project No. 000P-492, PCN i3NP	L27849003	Fall River	Hot Springs	US385	Hot Springs	43.43	-103.48										1						Replace missing washers on anchor rod nuts.			
	L27879014	Fall River	Hot Springs	US385	Hot Springs	43.44076	-103.47519	1	1										1				Extend footing to match grade elevation. Replace transformer base if necessary.			
	L27853002	Fall River	Hot Springs	US18B	SD71 and US18B Hot Springs	43.4202	-103.47688	1								1							Repair the damage to footing.			
	L27851002	Fall River	Hot Springs	US18B	US18 and US18B Hot Springs	43.43	-103.49	1											1				Extend footing to match grade elevation. Replace transformer base.			
Project No. 000N-491, PCN i3NQ	T02000233	Pennington	Keystone	US16A	US16A & SD40	43.89353	-103.42522										1						Install proper washer size and material (ASTM F436 or ASTM F959) under the anchor rod nuts. Monitor the crack at the set screw where the signal brackets mount to the pole to ensure the crack does not progress.			
Total Project No. 000P-491, PCN i3NN								6	0	0	0	0	0	1	4	3	1	0	1	1	0					
Total Project No. 000P-492, PCN i3NP								3	1	0	0	0	0	0	1	1	0	2	0	0						
Total Project No. 000N-491, PCN i3NQ								0	0	0	0	0	0	0	0	1	0	0	0	0						
Total								9	1	0	0	0	0	1	5	5	1	2	1	1	0					

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SPECIFICATIONS-

- Design Specifications: AASHTO Standard Specifications for Highway Bridges, 2002 Edition and AASHTO Standard Specifications for Structural Supports for Highway Signs, Luminaries and Traffic Signals, 2013 Edition with 2015 interims.
- Construction Specifications: South Dakota Standard Specifications for Roads and Bridges, 2004 Edition and required Provisions, Supplemental Specifications and Special Provisions as included in the Proposal.

GENERAL NOTES-

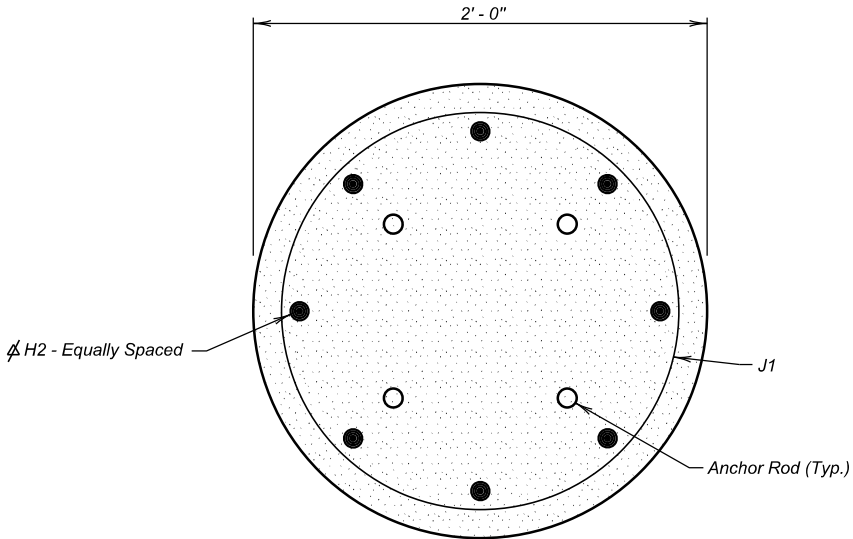
- Luminaire Pole Footing Extension shall be constructed in conformance with Section 635 of the Specifications.
- All exposed edges shall be chamfered $\frac{3}{4}$ ".
- All reinforcing steel shall conform to ASTM A615 Grade 60.
- All concrete shall be Class M6.
- Unit Stresses: Concrete f_c = 1800 psi
Reinforcing Steel f_s = 24000 psi
- All anchor rod extension couplings shall be certified to obtain at least 125 percent of the yield stress of the anchor rod. The threads of the couplings must be compatible with the anchor rods. All costs involved with furnishing and installing of the anchor rods, nuts and couplings shall be incidental to the contract unit price per cubic yard for Class M6 Concrete.
- Anchor rods shall match or exceed existing. As per shop plans:
 - Anchor rods shall be 1" diameter and conform to ASTM F1554, Grade 105.
 - Anchor rods shall be galvanized per ASTM F2329. Thread to be Class 2A per American Standard B1.1, (.030 oversize after galvanizing).
- All rods to be rolled thread.
- No welding is allowed on anchor rods.
- Original construction plans allowed the option of 6 - No. 8 H2 bars or 8 - No. 7 H2 bars. Quantities are based on 8 - No. 7 H2 bars. Actual steel used shall be field verified by Contractor to match existing steel. Payment for reinforcing steel shall be for plans quantity.

DESIGN MIX OF CONCRETE

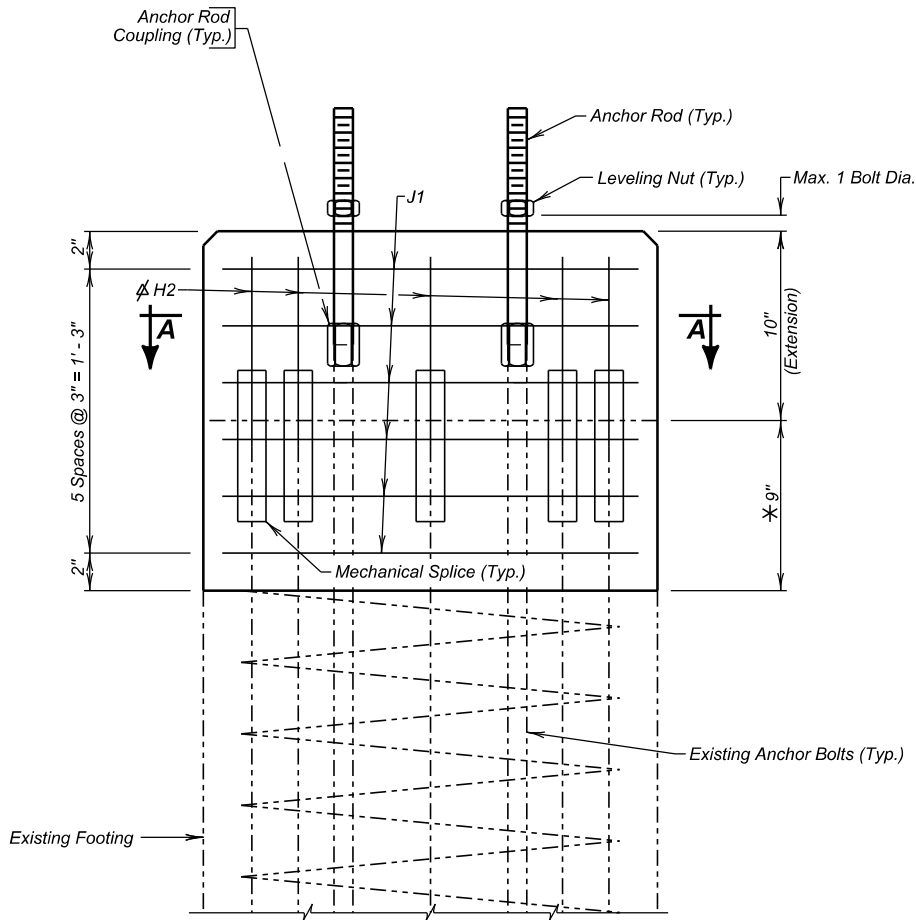
The type of cement, concrete strength requirements, aggregate requirements, slump and air requirements for the contract item Class M6 Concrete shall conform to the requirements of Section 462 of the Specification.

BREAKOUT STRUCTURAL CONCRETE

- This work shall consist of breaking out and disposing of structural concrete and spiral reinforcement. All broken out concrete and other discarded material shall be disposed of on a site obtained by the Contractor and approved by the Engineer.
- To insure straight break lines, $\frac{3}{4}$ " deep saw cuts will be required at the lines defining the breakout llines.
- Salvage all of the vertical reinforcing steel, anchor bolts and conduit in the footing to be used in new construction. Care shall be taken not to damage the existing vertical reinforcing steel, anchor rods and conduit during the breakout operations. These reinforcing bars, anchor rods and all concrete surfaces in the breakout area on which new concrete is to be cast shall be thoroughly cleaned by sandblasting to the satisfaction of the Engineer prior to placement of new concrete.
- Any additional breakout required due to spalling or cracking of the existing footing will be determined by the Engineer. Where additional breakout is required, care shall be taken not to damage any of the existing reinforcing steel. All steel will be left in place and thoroughly cleaned by sandblasting.
- Plans quantity payment will be full compensation for this item regardless of the quantity actually broken out.
- Breakout Structural Concrete will be paid for at the contract unit price per cubic yard. This payment shall be full compensation for furnishing all materials, labor, tools and equipment necessary or incidental to breaking out the structural concrete. Payment includes, but is not limited to, excavation required to perform the required breakout, saw cutting, breaking out concrete, cleaning and sandblasting reinforcing steel and concrete surfaces, and removing and disposing of all waste materials to satisfactorily complete the work.



SECTION A - A

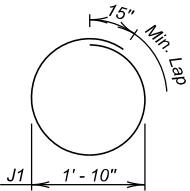


ELEVATION

REINFORCING SCHEDULE

Mk.	No.	Size	Length	Type
H2	8	7	0' - 10"	Str.
J1	6	3	7' - 0"	T3

Bending Details



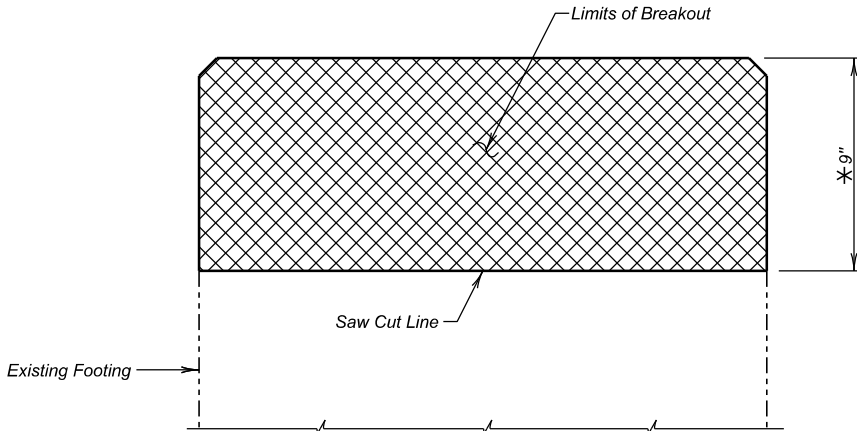
NOTES:
All dimensions are out to out of bars.

ESTIMATED QUANTITIES

ITEM	UNIT	QUANTITY
Class M6 Concrete	Cu. Yd.	0.2
Reinforcing Steel	Lb.	29
Breakout Structural Concrete	Cu. Yd.	0.1
No. 7 Rebar Splice	Each	8

Quantities based on original construction plans using 8 - No. 7 H2 bars, match existing reinforcing steel.

* Dimension may vary to accommodate mechanical splice.



ELEVATION - BREAKOUT DETAILS

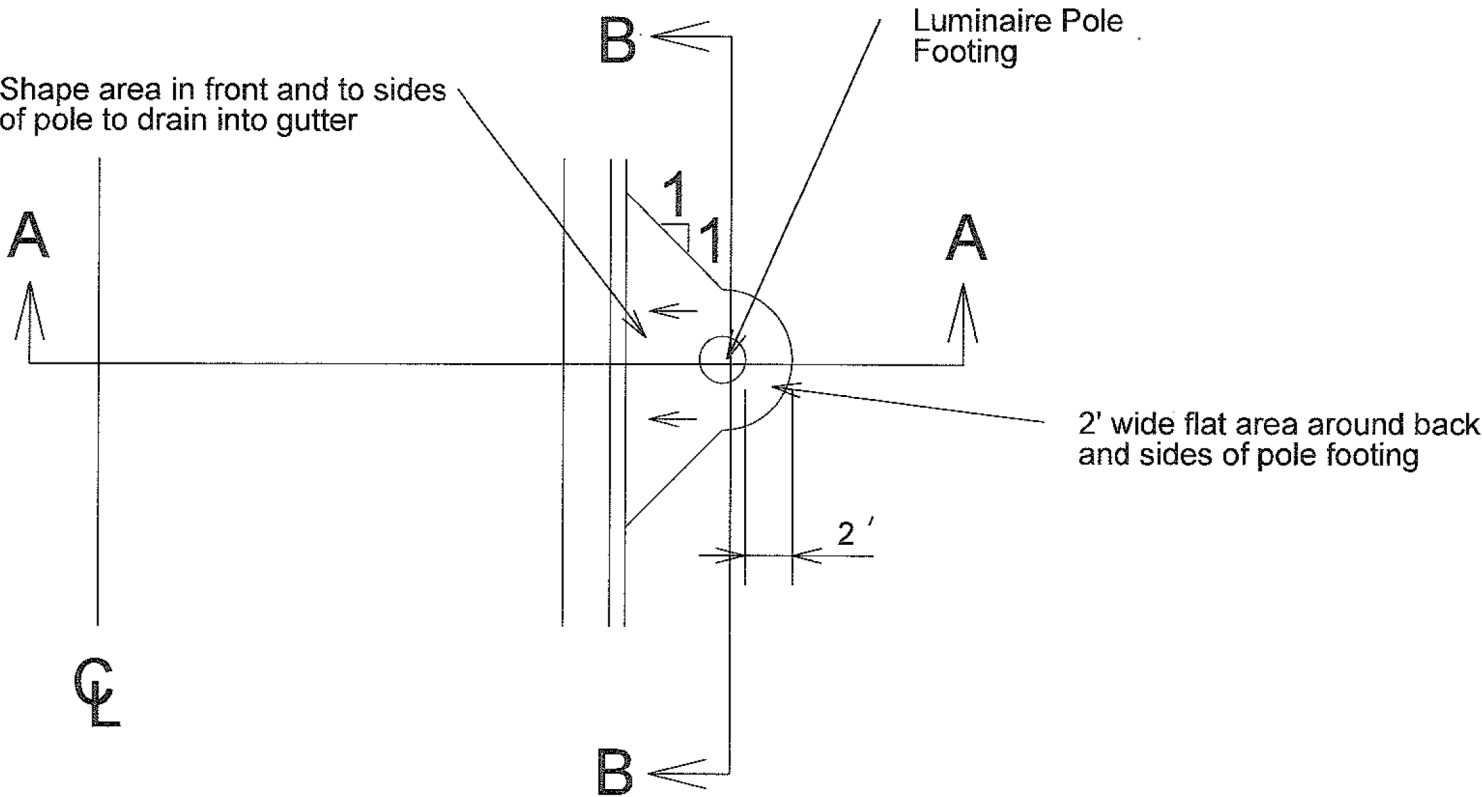
DETAILS
FOR
LUMINAIRE POLE FOOTING EXTENSION
L2
PCN I3NP
FALL RIVER COUNTY
S. D. DEPT. OF TRANSPORTATION
MARCH 2015

1 OF 1

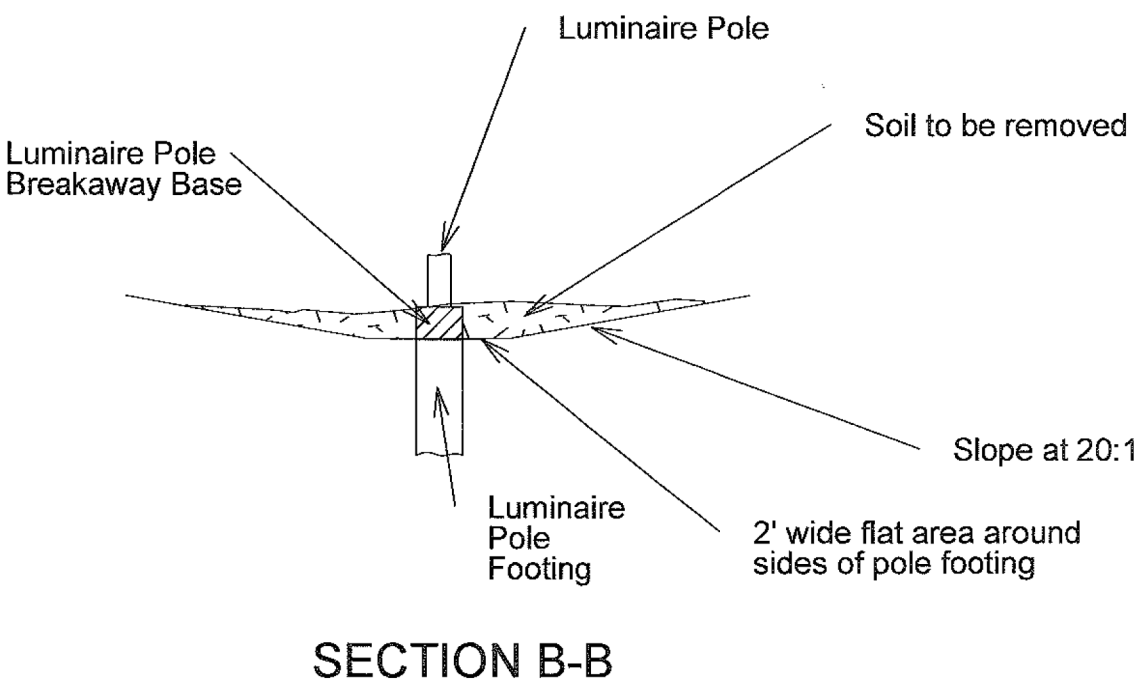
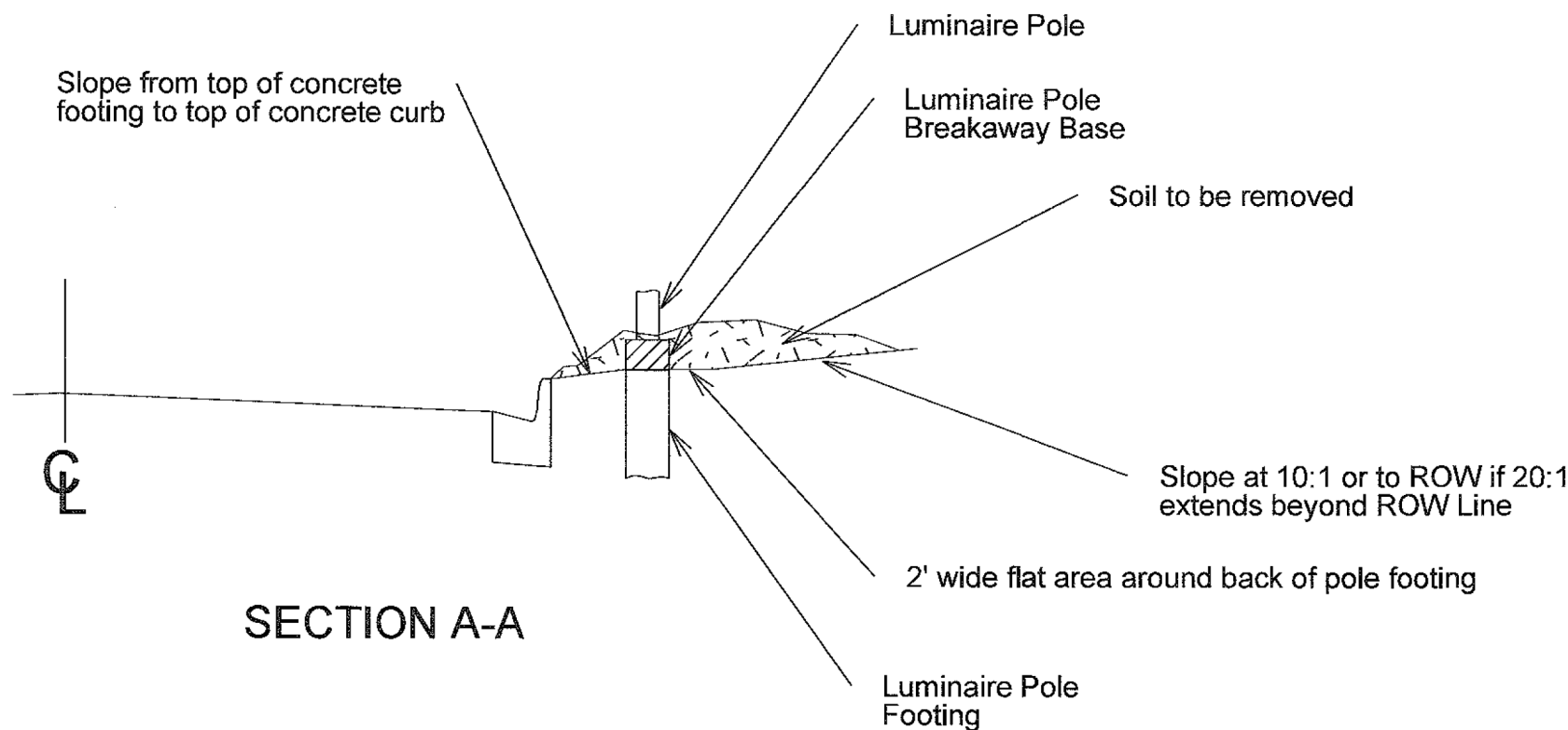
PLANS BY :
OFFICE OF BRIDGE DESIGN, SOUTH DAKOTA DEPARTMENT OF TRANSPORTATION

DESIGNED BY JMH FRIV13NP	CK. DES. BY BB I3NPGA01	DRAFTED BY MG	Kevin N. Boeden BRIDGE ENGINEER
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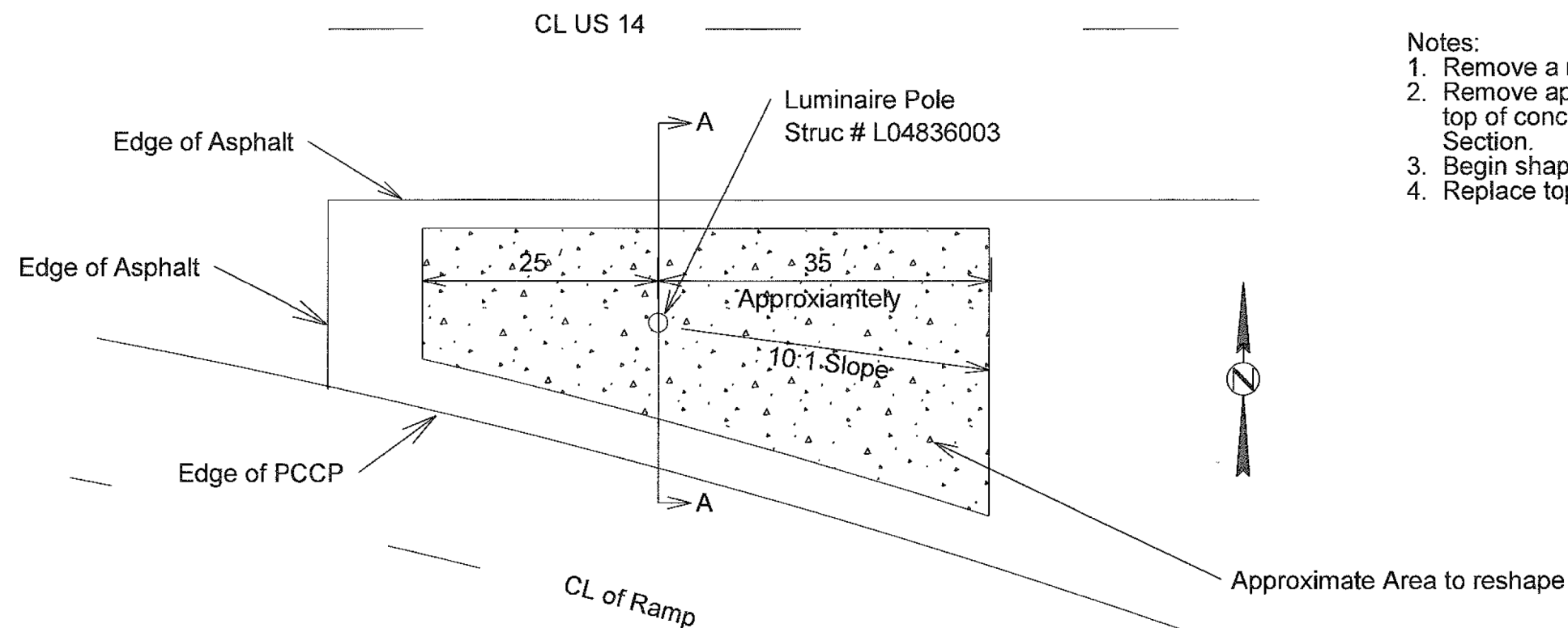
DETAILS FOR SHAPING AROUND LUMINAIRE POLE IN A CURB & GUTTER SECTION



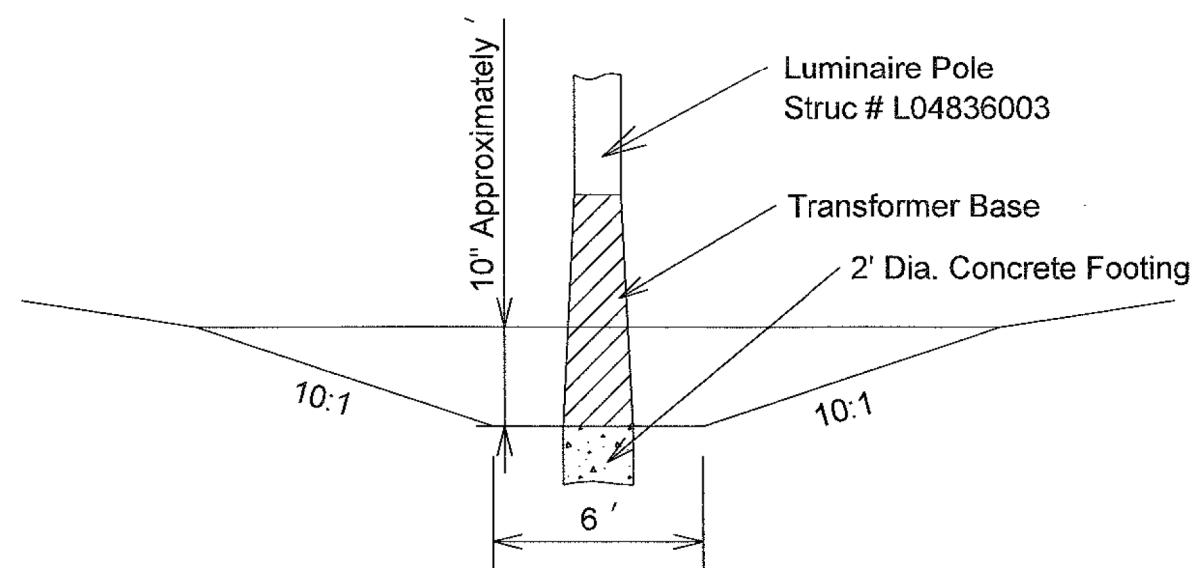
- Notes:
1. Remove a minimum of 3" of Topsoil over the work area.
 2. Rake areas upon completion of work and prior to seeding.
 3. The detail on this sheet is a concept of how to shape the areas. The Contractor shall work with the Engineer to shape areas around the luminaire pole bases so that water drains away from the concrete footing.
 4. In some instances the poles are in a fill section and drainage can be completed by draining water away from the highway.



DETAIL FOR SHAPING AT LUMINAIRE POLE STRUCTURE

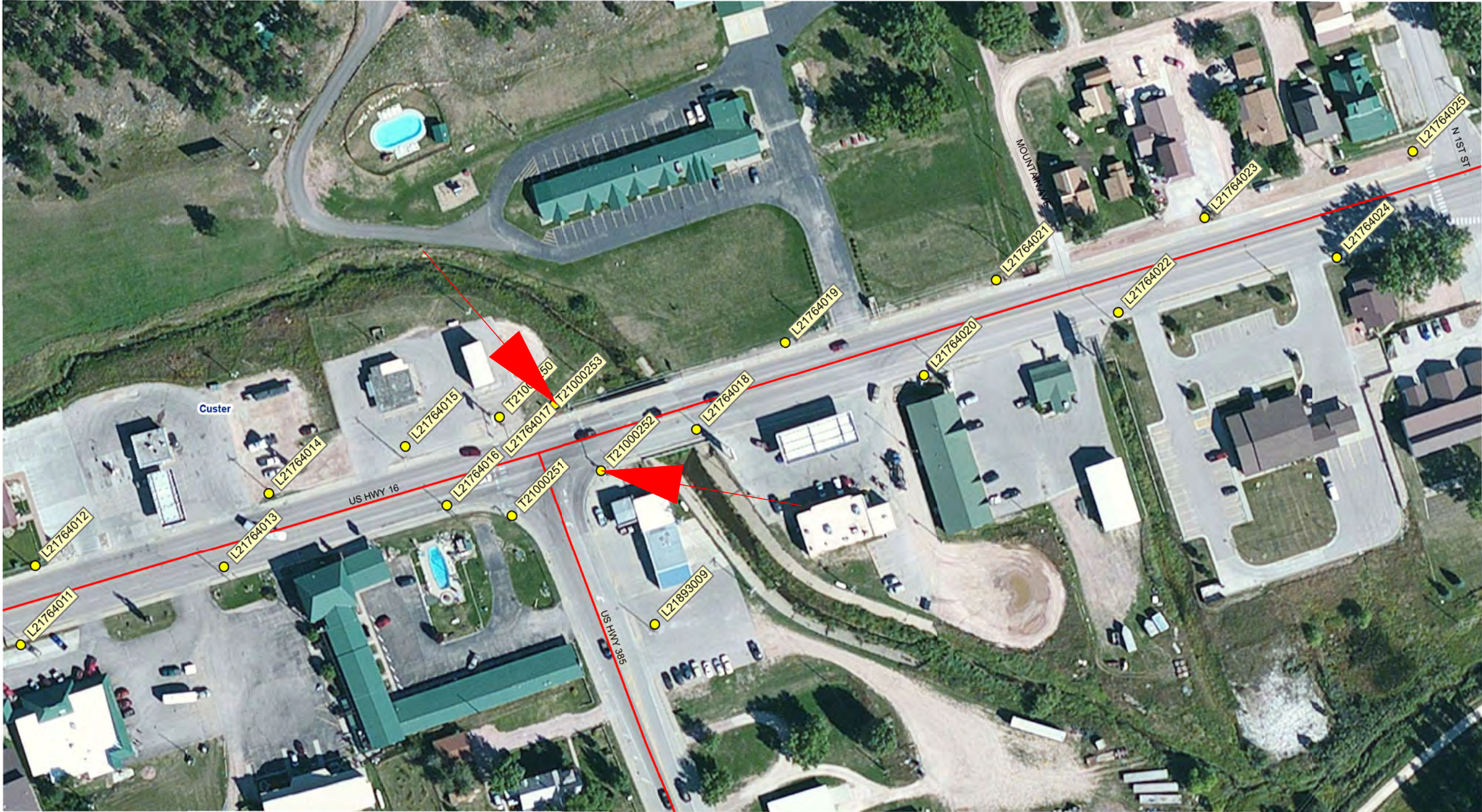


- Notes:
1. Remove a minimum of 3" of Topsoil over the work area.
 2. Remove approximately 10" of material (includes topsoil depth) so that top of concrete luminaire footing is exposed. Shape as per the Typical Section.
 3. Begin shaping 25' to the west of the luminaire pole.
 4. Replace topsoil and reseed area after work is completed.



SECTION A-A

PCN I 3NN LIGHTING LAYOUT



CUSTER

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	000p-491,000p-492, &000N-491	10	23

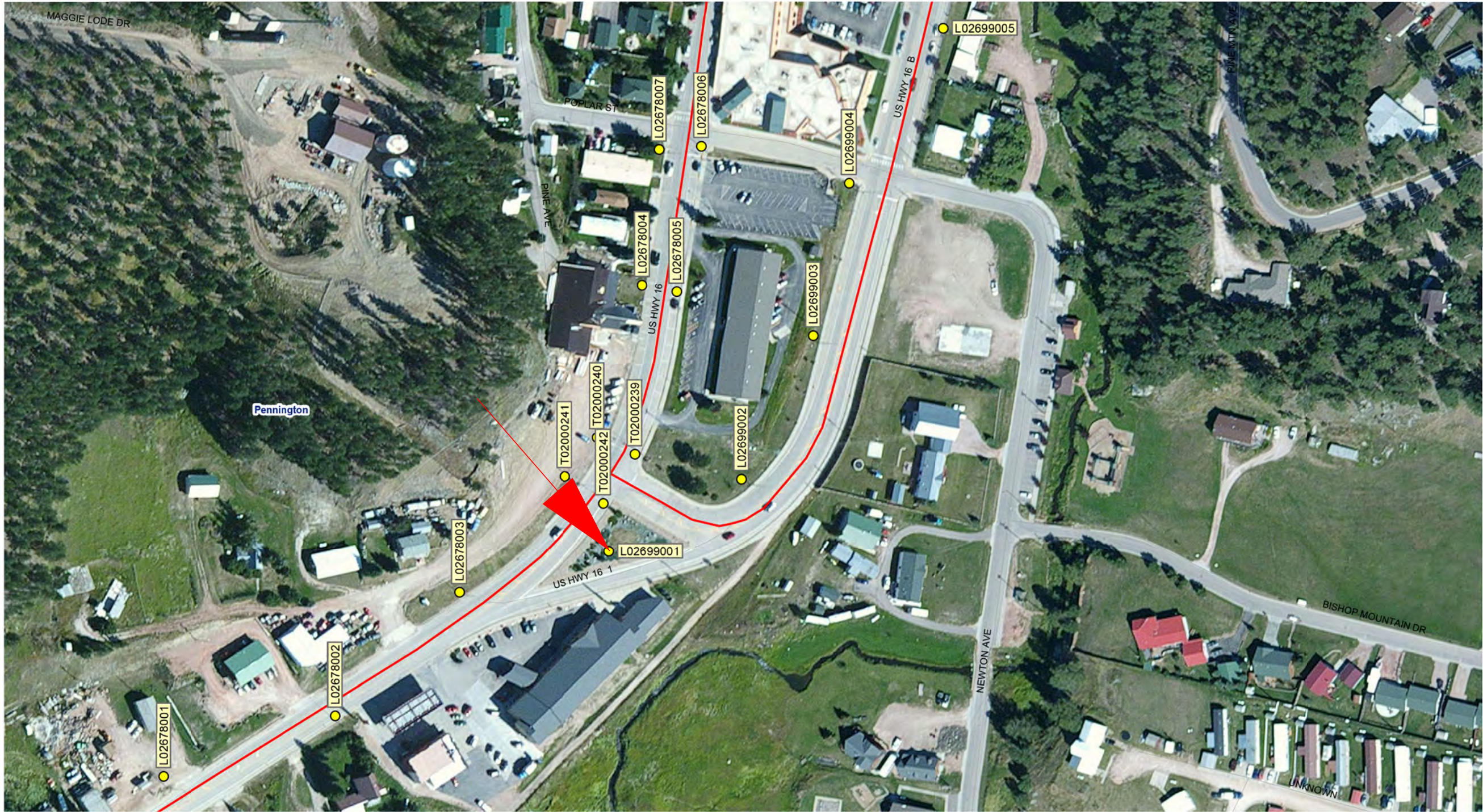
PCN I 3NN LIGHTING LAYOUT



USTER - CRAZY HORSE

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	000p-491,000p-492, &000N-491	11	23

PCN I 3NN LIGHTING LAYOUT



HILL CITY

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	000p-491,000p-492, &000N-491	12	23

PCN I 3NN LIGHTING LAYOUT



HILL CITY

PLOT SCALE - 1:200

PLOTTED FROM - TRCU10206

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	000p-491,000p-492, &000N-491	13	23

PCN I 3NN LIGHTING LAYOUT



HILL CITY

PLOT NAME - 6

FILE - ... \CUSTER AREA LIGHTING PLANS.DGN

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	000p-491,000p-492, &000N-491	14	23

PCN I 3NP LIGHTING LAYOUT



HOT SPRINGS

PLOT SCALE - 1:200

PLOTTED FROM - TRCU10206

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	000p-491,000p-492, &000N-491	15	23

PCN I 3NP LIGHTING LAYOUT



HOT SPRINGS

PLOT NAME - 8

FILE - ... \CUSTER AREA LIGHTING PLANS.DGN

PCN I 3NP LIGHTING LAYOUT



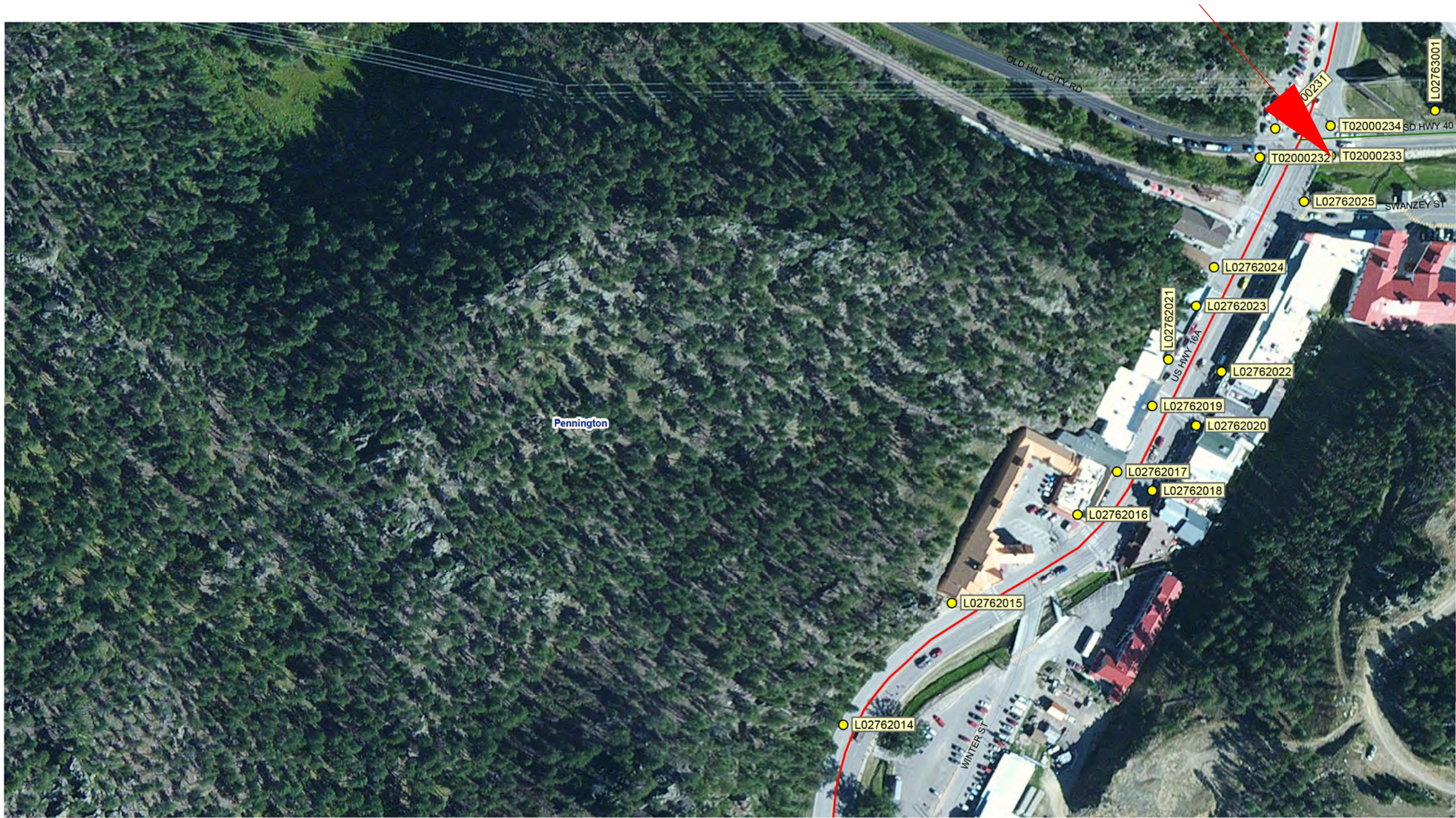
HOT SPRINGS

PCN I 3NP LIGHTING LAYOUT



HOT SPRINGS

PCN I 3NQ LIGHTING LAYOUT



KEYSTONE

The signs illustrated are not required if the work space is behind a barrier, more than 2 feet behind the curb, or 15 feet or more from the edge of any roadway.

The signs illustrated shall be used where there are distracting situations; such as: vehicles parked on shoulder, vehicles accessing the work site via the highway, and equipment traveling on or crossing the roadway to perform work operations.

The ROAD WORK AHEAD sign may be replaced with other appropriate signs, such as the SHOULDER WORK sign. The SHOULDER WORK sign may be used for work adjacent to the shoulder.

* If the work space is on a divided highway, an advance warning sign should also be placed on the left side of the directional roadway.

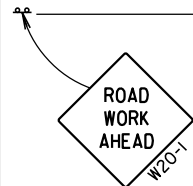
For short term, short duration, or mobile operations, all signs and channelizing devices may be eliminated if a vehicle with an activated flashing or revolving yellow light is used.



Posted Speed Prior to Work (M.P.H.)	Spacing of Advance Warning Signs (Feet) (A)
0 - 30	200
35 - 40	350
45 - 50	500
55	750
60 - 75	1000



A



July 1, 2005

Published Date: 4th Qtr. 2014

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GUIDES FOR TRAFFIC CONTROL DEVICES
WORK BEYOND THE SHOULDER

PLATE NUMBER
634.01

Sheet 1 of 1

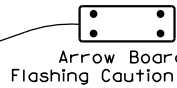
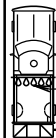
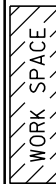
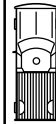
* In situations where multiple work locations in a limited distance make it practical to place stationary signs, the distance between the advance warning sign and the work should not exceed 5 miles.

The ROAD WORK NEXT xx MILES sign may be used instead of the ROAD WORK AHEAD sign if the work locations occur over a distance of more than 2 miles.

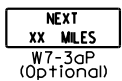
Arrow board is required for intermittently and continuously moving mobile operations when work exceeds 1 hour.

** If the work space is on a divided highway, an advance warning sign should also be placed on the left side of the directional roadway.

In situations where the distance between the advance warning signs and the work is 2 miles to 5 miles, a Supplemental Distance plaque should be used with the ROAD WORK AHEAD sign.



Truck-Mounted Attenuator
(Optional)



September 22, 2014

Published Date: 4th Qtr. 2014

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GUIDES FOR TRAFFIC CONTROL DEVICES
MOBILE OPERATIONS ON SHOULDER

PLATE NUMBER
634.04

Sheet 1 of 1

Posted Speed Prior to Work (M.P.H.)	Spacing of Advance Warning Signs (Feet) (A)	Spacing of Channelizing Devices (Feet) (G)
0 - 30	200	25
35 - 40	350	25
45 - 50	500	50
55	750	50
60 - 65	1000	50

- Flagger
- Channelizing Device

For low-volume traffic situations with short work zones on straight roadways where the flagger is visible to road users approaching from both directions, a single flagger may be used.

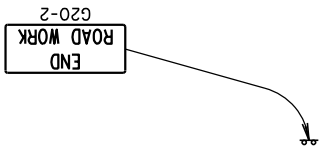
The ROAD WORK AHEAD and the END ROAD WORK signs may be omitted for short duration operations (1 hour or less).

For tack and/or flush seal operations, when flaggers are not being used, the FRESH OIL sign (W21-2) shall be displayed in advance of the liquid asphalt areas.

Flashing warning lights and/or flags may be used to call attention to the advance warning signs.

The channelizing devices shall be drums or 42" cones.

Channelizing devices are not required along the centerline adjacent to work area when pilot cars are utilized for escorting traffic through the work area.

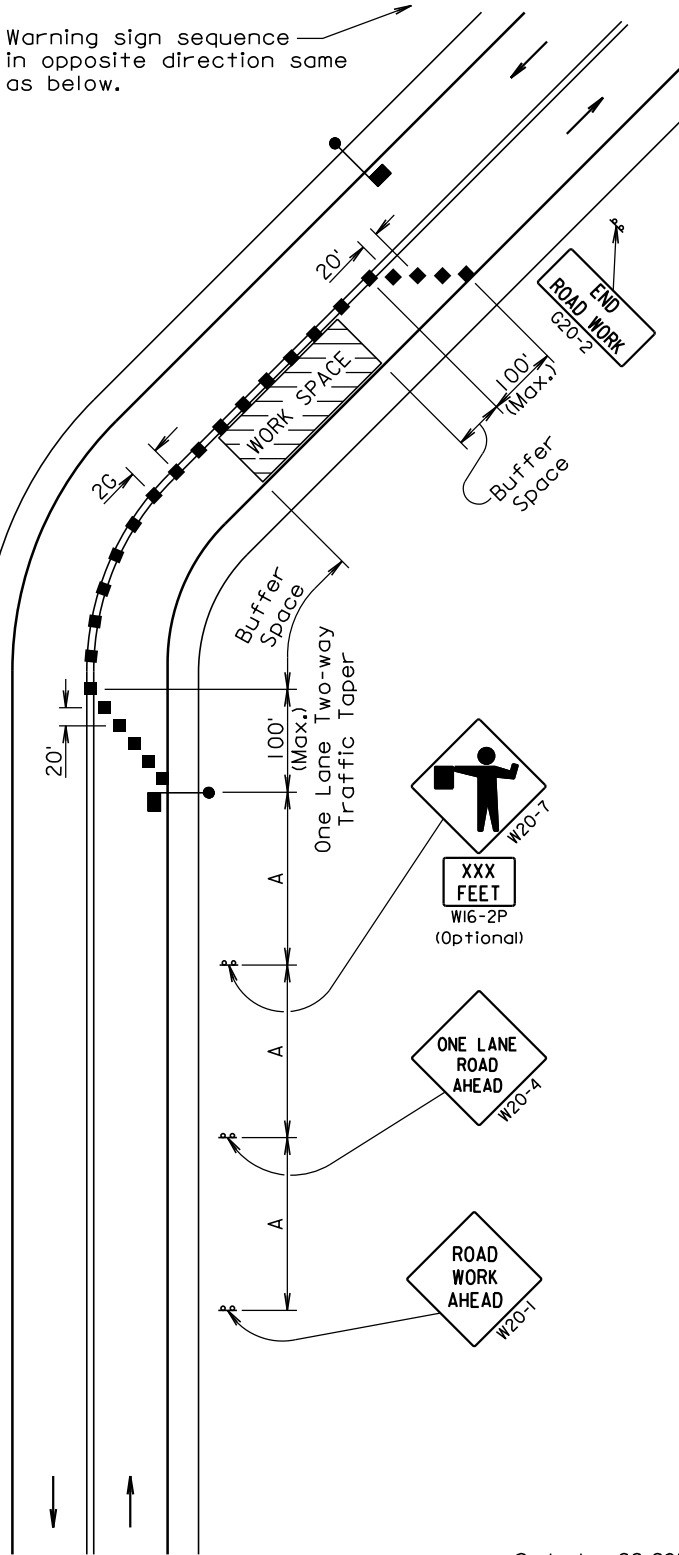


Channelizing devices and flaggers shall be used at intersecting roads to control intersecting road traffic as required.

The buffer space should be extended so that the two-way traffic taper is placed before a horizontal or vertical curve to provide adequate sight distance for the flagger and queue of stopped vehicles.

The length of A may be adjusted to fit field conditions.

Warning sign sequence in opposite direction same as below.



September 22, 2014

Posted Speed Prior to Work (M.P.H.)	Spacing of Advance Warning Signs (Feet) (A) (B) (C)	Taper Length (Feet) (L)	Spacing of Channelizing Devices (Feet) (G)
0 - 30	200	180	25
35 - 40	350	320	25
45 - 50	500	600	50 *
55	750	660	50 *
60 - 65	1000	780	50 *

* Spacing to be every 40' for 42" cones.

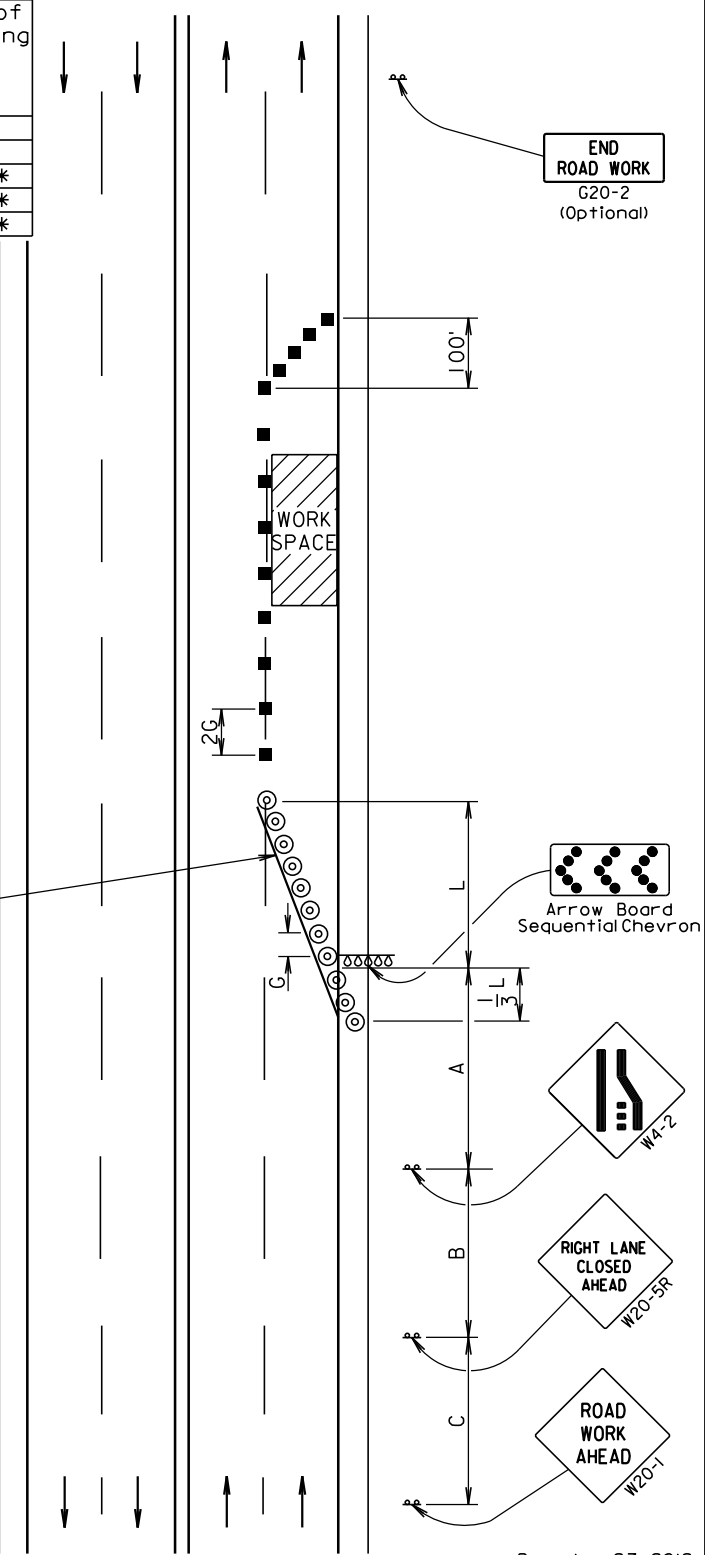
⊙ Reflectorized Drum

■ Channelizing Device shall be 42" cones or drums

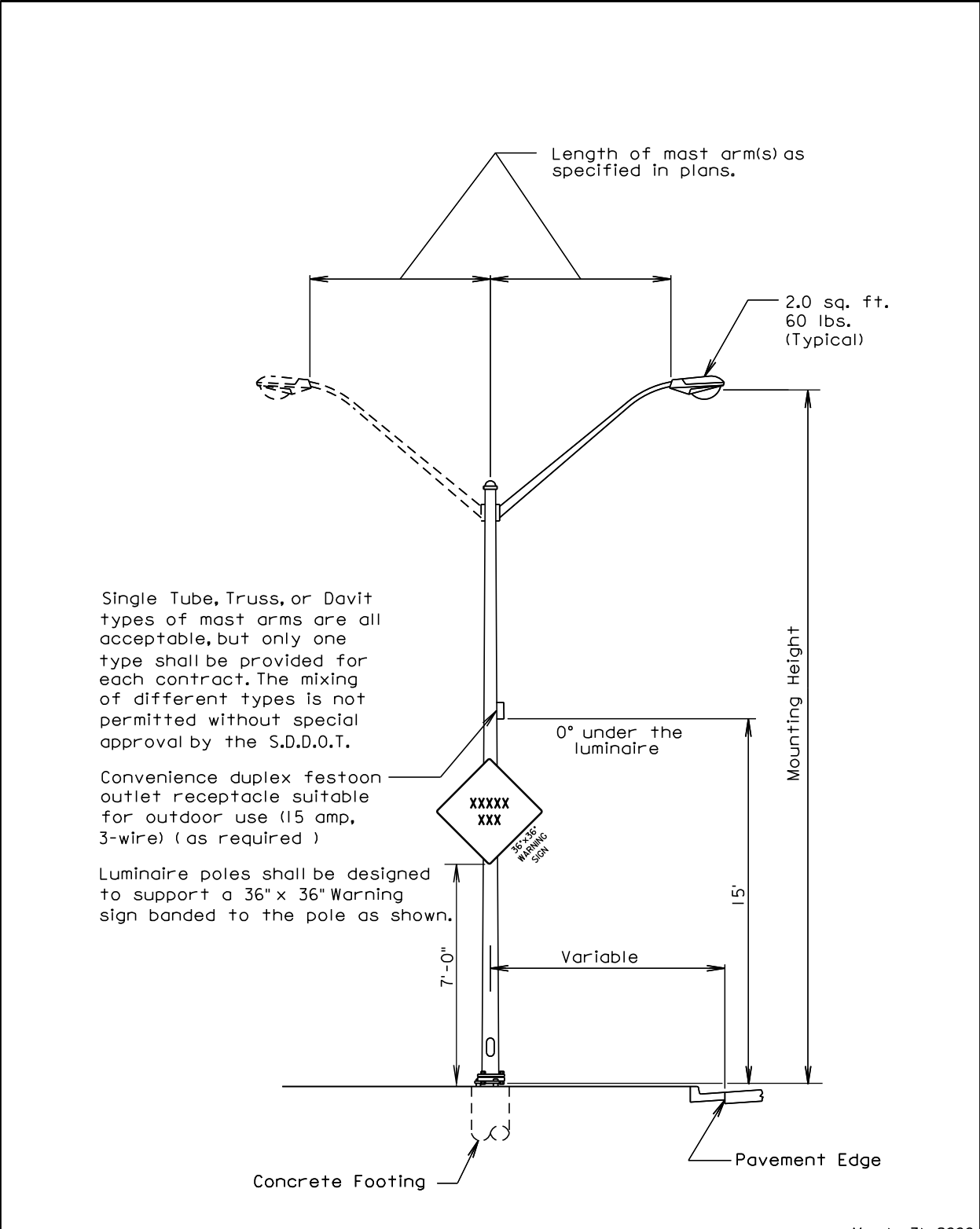
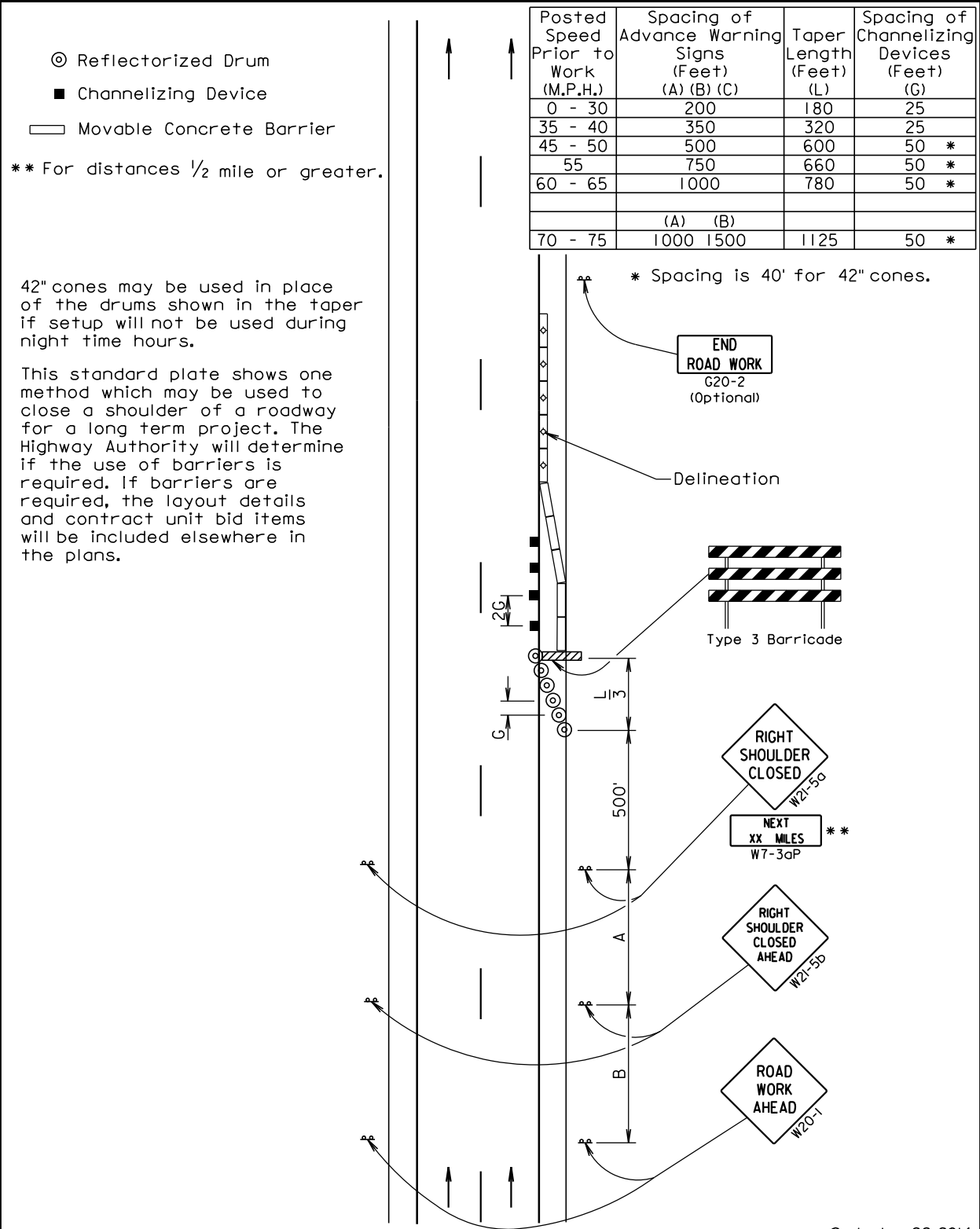
42" cones may be used in place of the drums shown in the taper if setup will not be used during any night time hours.

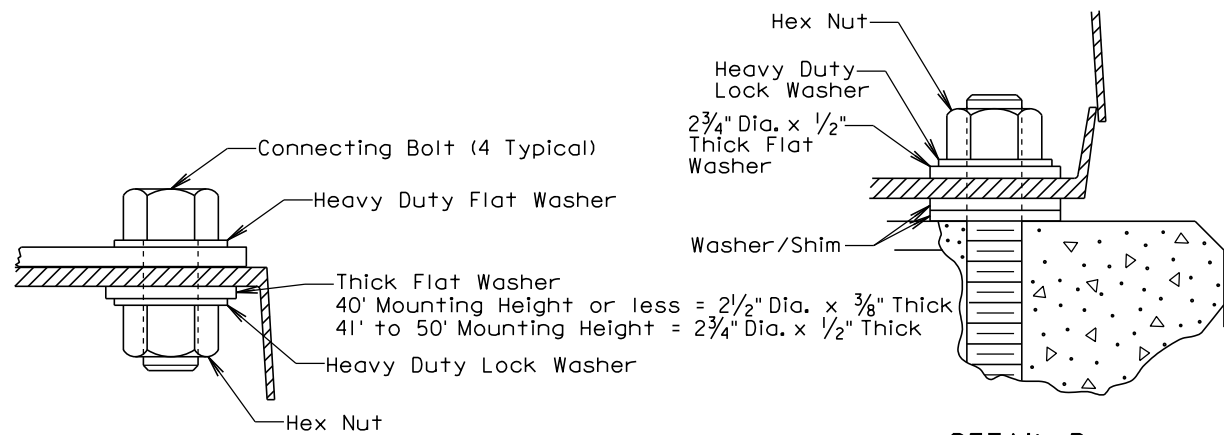
4" white temporary pavement marking shall be used for overnight and long term operations.

Longitudinal dimensions may be adjusted to fit project conditions such as horizontal curves, vertical curves, and other site restrictions.



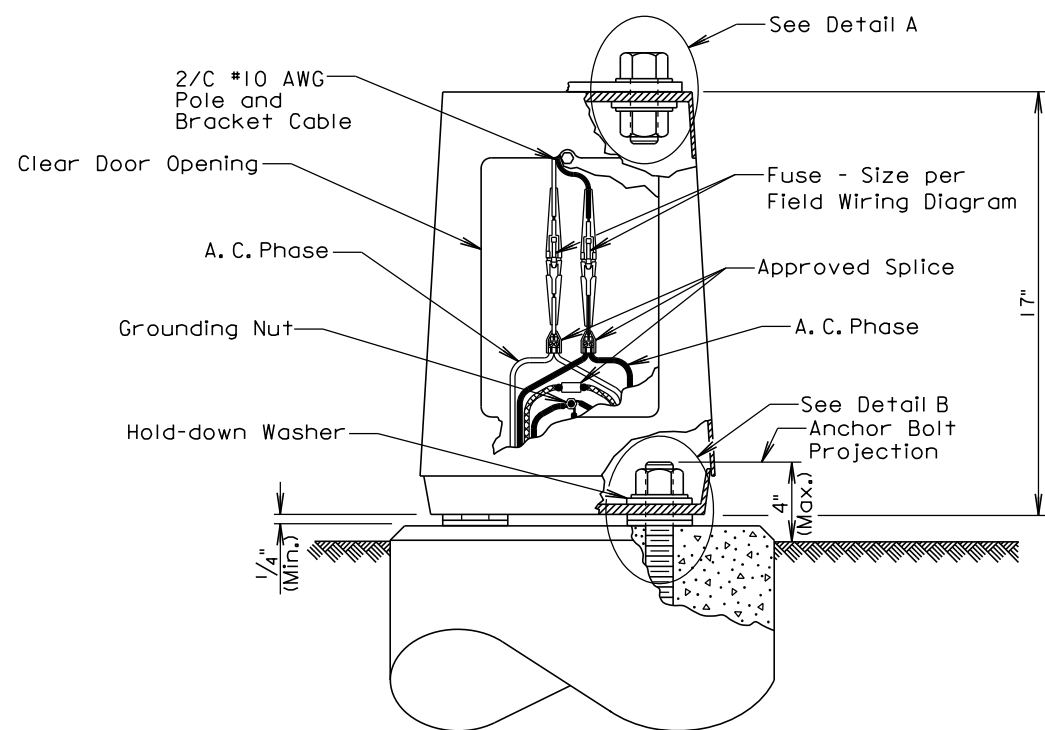
December 23, 2012





DETAIL A

DETAIL B



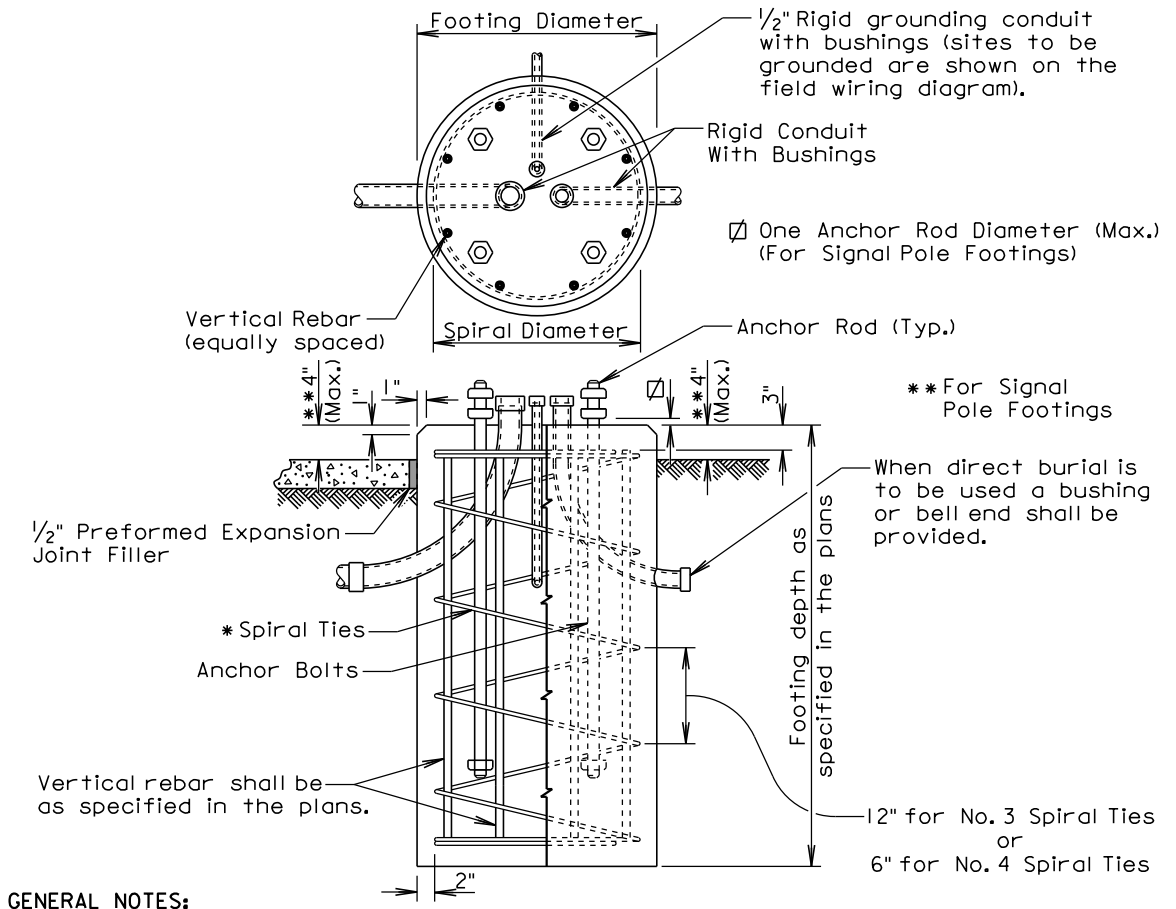
GENERAL NOTES:

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

Connectors shall be breakaway type.

The Contractor shall install "U" shaped shims or round flat washers if shimming is necessary to install the light poles plumb and level. The washers and shims shall be installed around the anchor bolts.

June 26, 2013



GENERAL NOTES:

* The tie sizes are specified in the plans. 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 No. 4 ties shall be spaced 6 inches apart except for the top two which shall be spaced 3 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 Standard 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).

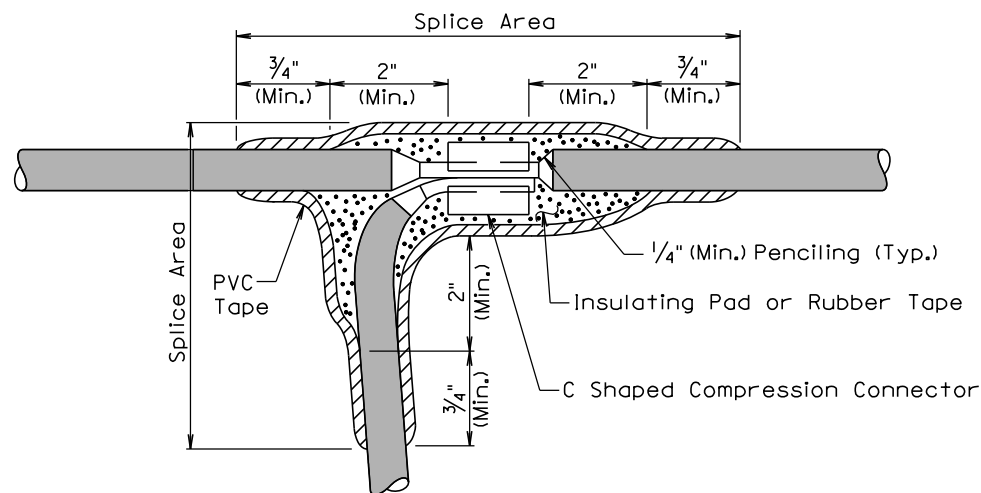
The pole shall not be installed until the concrete has attained design strength (4000 psi).

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.

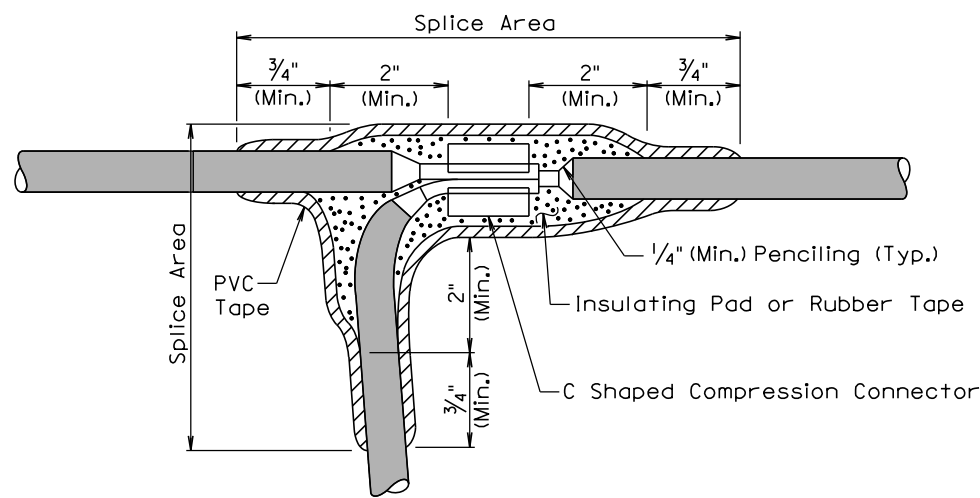
September 6, 2013

Published Date: 1st Qtr. 2015	S D D O T	ROADWAY LUMINAIRE POLE BREAKAWAY TRANSFORMER BASE	PLATE NUMBER 635.21
			Sheet 1 of 1

Published Date: 1st Qtr. 2015	S D D O T	POLE FOOTING	PLATE NUMBER 635.55
			Sheet 1 of 1

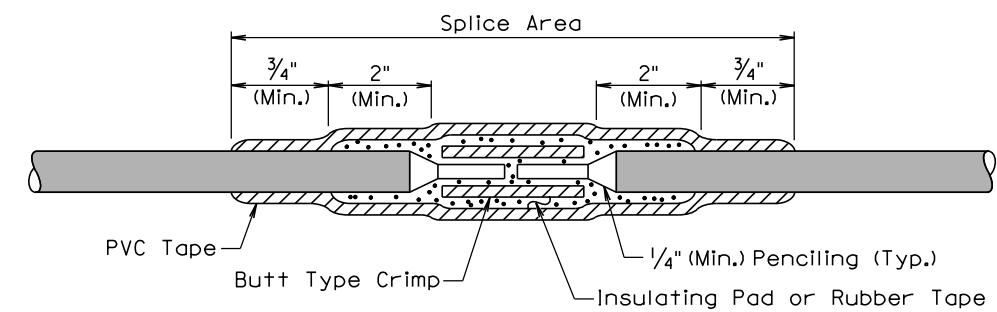


TYPE C SPLICE
(Between 1 free end and 1 through conductor)

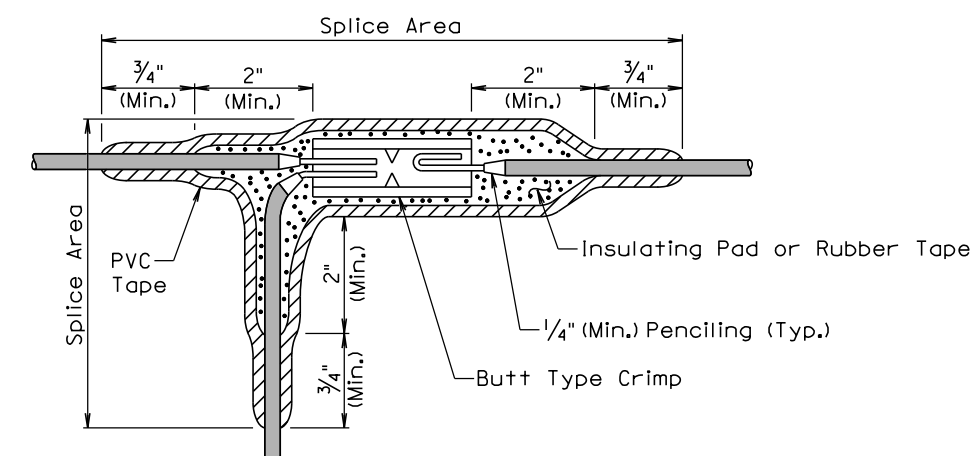


TYPE T SPLICE
(For 3 free ends)

February 14, 2010



TYPE S SPLICE
(Between 2 free ends)



TYPE ST SPLICE
(For 3 free ends)

GENERAL NOTES:

The splice shall be environmentally sealed for protection from weather, moisture, and abrasion in accordance with the method stated below.

The rubber tapes shall be rolled after application.

Method for insulating splice area:

1. The splice area shall be completely covered with electrical insulating coating and dried.
2. Apply two layers of 1/8" minimum thickness electrical insulating pad or two layers of half lapped synthetic oil resistant self fusing rubber tape.
3. Three layers of half lapped polyvinyl chloride tape shall be applied.
4. The entire splice area shall be covered with electrical insulating coating and dried.

February 14, 2010