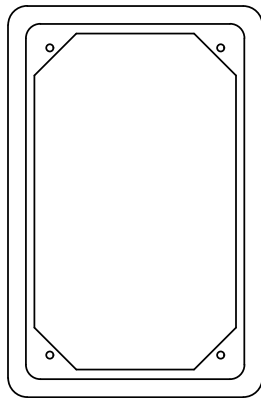
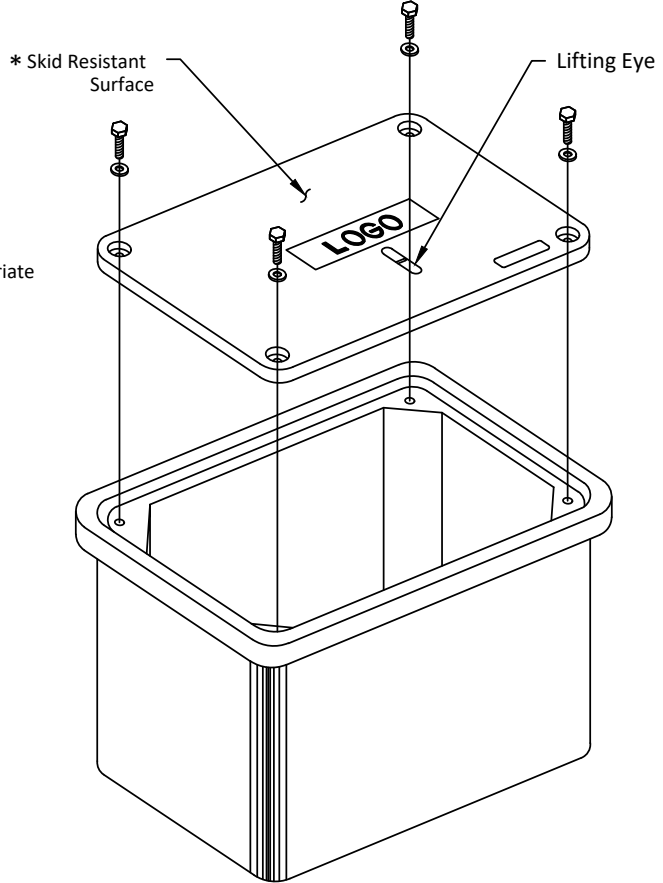


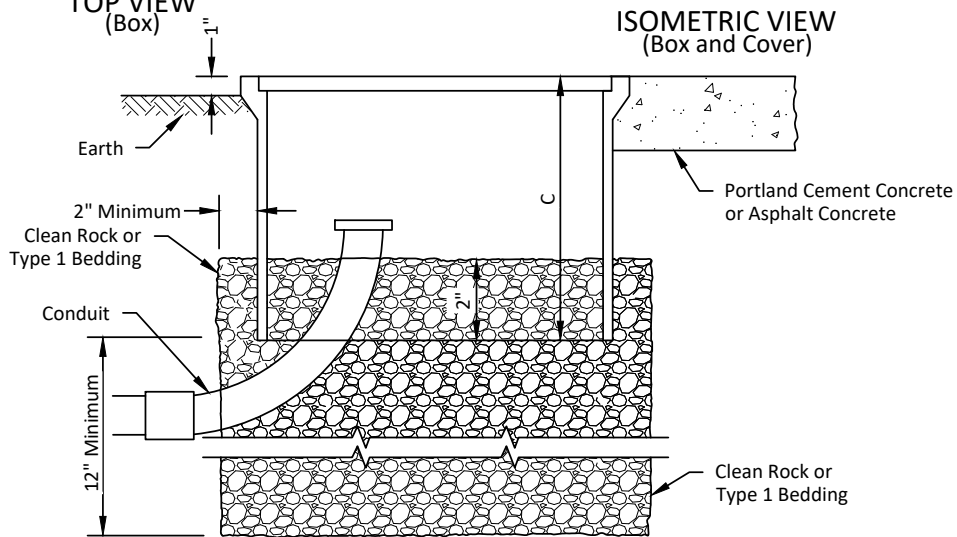
TOP VIEW
(Cover)



TOP VIEW
(Box)



ISOMETRIC VIEW
(Box and Cover)



SIDE VIEW
(Electrical Junction Box Installation Details)
(Buried No. 4 steel reinforcing bar not shown.)
N.T.S.

**ELECTRICAL JUNCTION BOXES
TYPE 1 THROUGH TYPE 4**

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"

Notes:

1. The cover will be gasketed with a minimum of two stainless steel bolts and washers.
2. The cover will have a lifting eye.
- * 3. The surface of the cover will have a minimum wet and dry coefficient of friction value of 0.5 as determined by ASTM F609.
- ** 4. 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 shall be "Lighting".
- *** 5. Two piece covers will be used for Type 4 junction boxes.
6. 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 the electrical junction boxes will be Tier 22 of ANSI/SCTE 77 2007.
7. The electrical junction boxes will be UL listed.
8. 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 "Junction Box".

N.T.S.

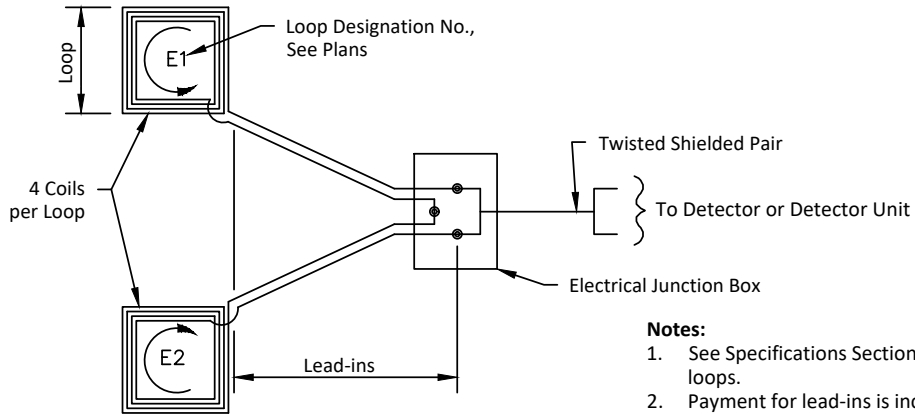
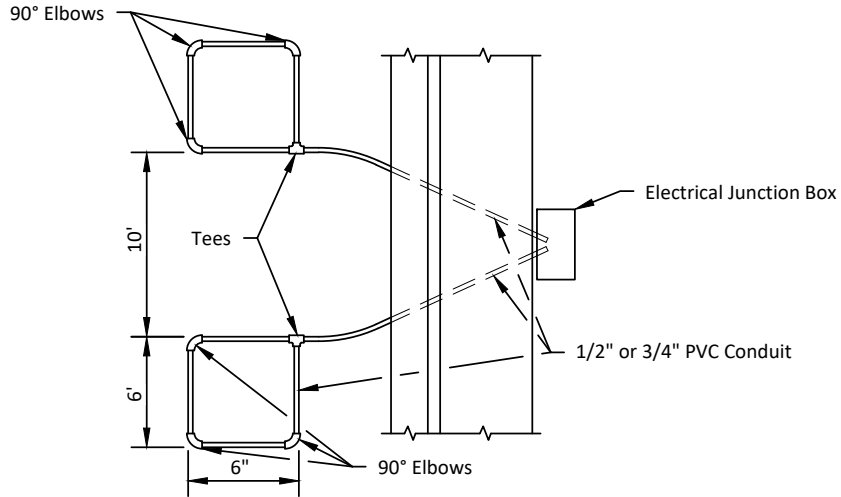
CITY OF RAPID CITY

PUBLIC WORKS DEPARTMENT

**ELECTRICAL JUNCTION BOXES
TYPE 1 THROUGH TYPE 4**

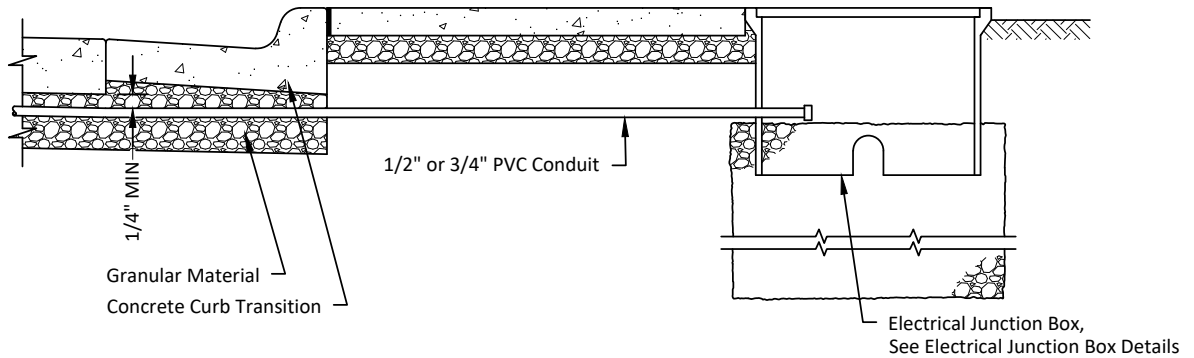
DATE: 8-19-22

Sec. - Sht.
93-1b



Notes:

1. See Specifications Section 93.2.Q for detector loops.
2. Payment for lead-ins is incidental to the contract unit price per each for "Detector Loop".



N.T.S.

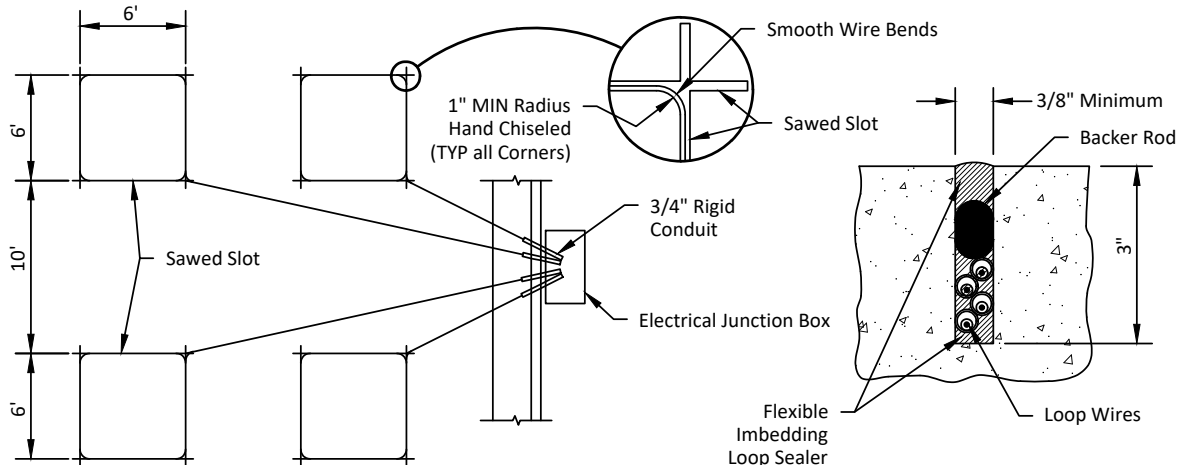
CITY OF RAPID CITY

PUBLIC WORKS DEPARTMENT

PREFORMED DETECTOR LOOP

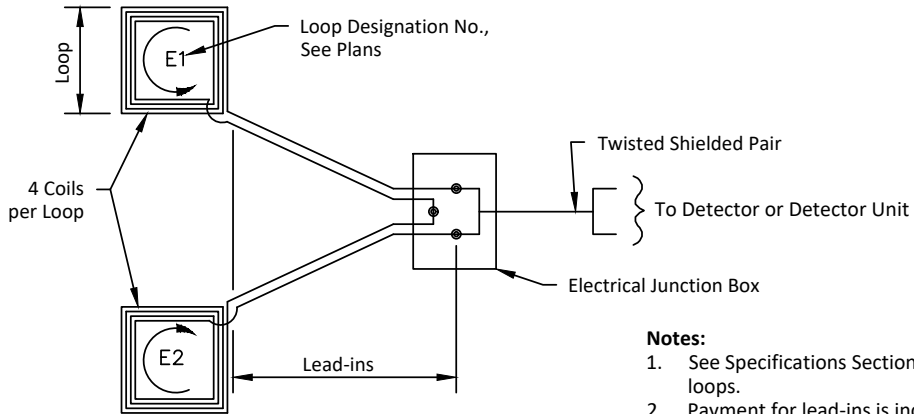
DATE: 8-19-22

Sec. - Sht.
93-2



SAWED SLOT LAYOUT

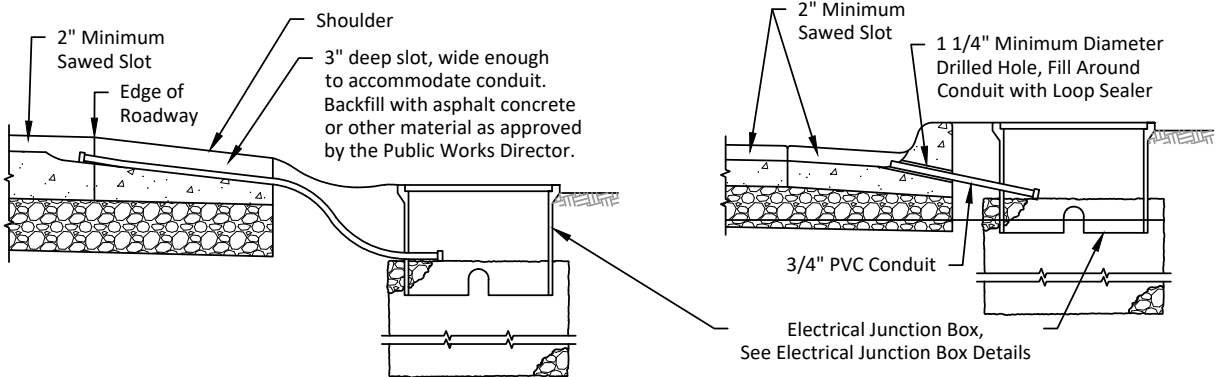
SAWED SLOT SECTION VIEW



WIRING DIAGRAM

Notes:

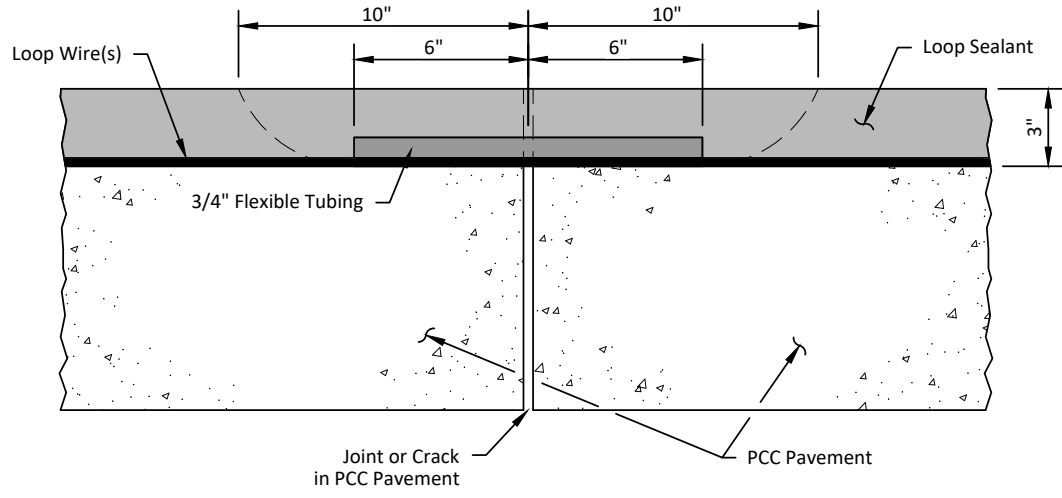
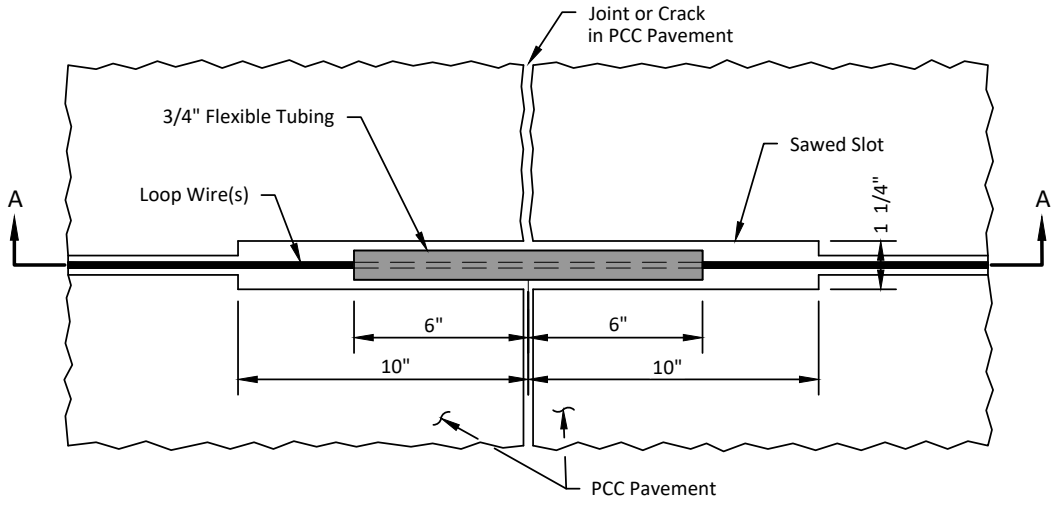
1. See Specifications Section 93.2.R for detector loops.
2. Payment for lead-ins is incidental to the contract unit price per each for "Detector Loop".



LEAD-IN THROUGH SHOULDER DETAIL

N.T.S.

LEAD-IN THROUGH CURB AND GUTTER DETAIL



Note:
 All costs for constructing the sawed-in detector loop protection including labor, equipment, and materials shall be incidental to the contract unit price per each for Sawed-In Detector Loop.

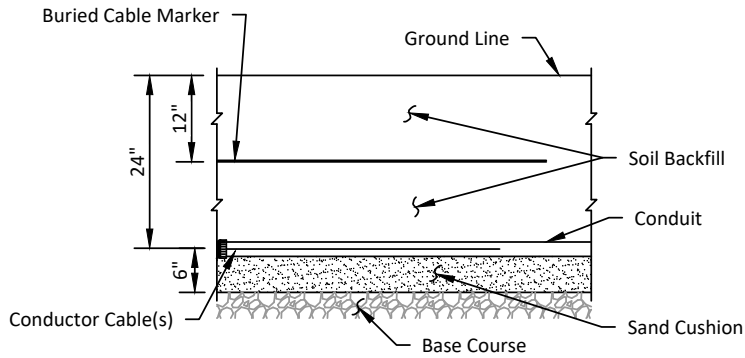
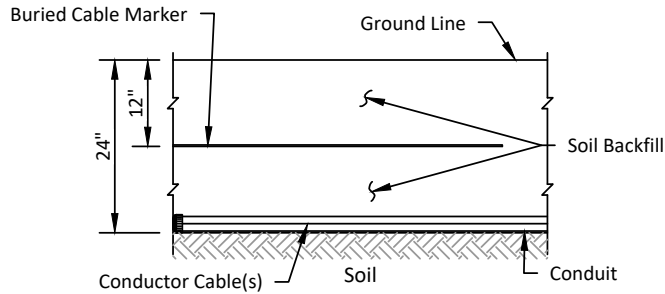
N.T.S.

CITY OF RAPID CITY PUBLIC WORKS DEPARTMENT

**SAWED-IN DETECTOR LOOP PROTECTION
 AT JOINT OR CRACK IN PCC PAVEMENT**

DATE: 8-19-22

Sec. - Sht.
 93-3b



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 conduit.

N.T.S.

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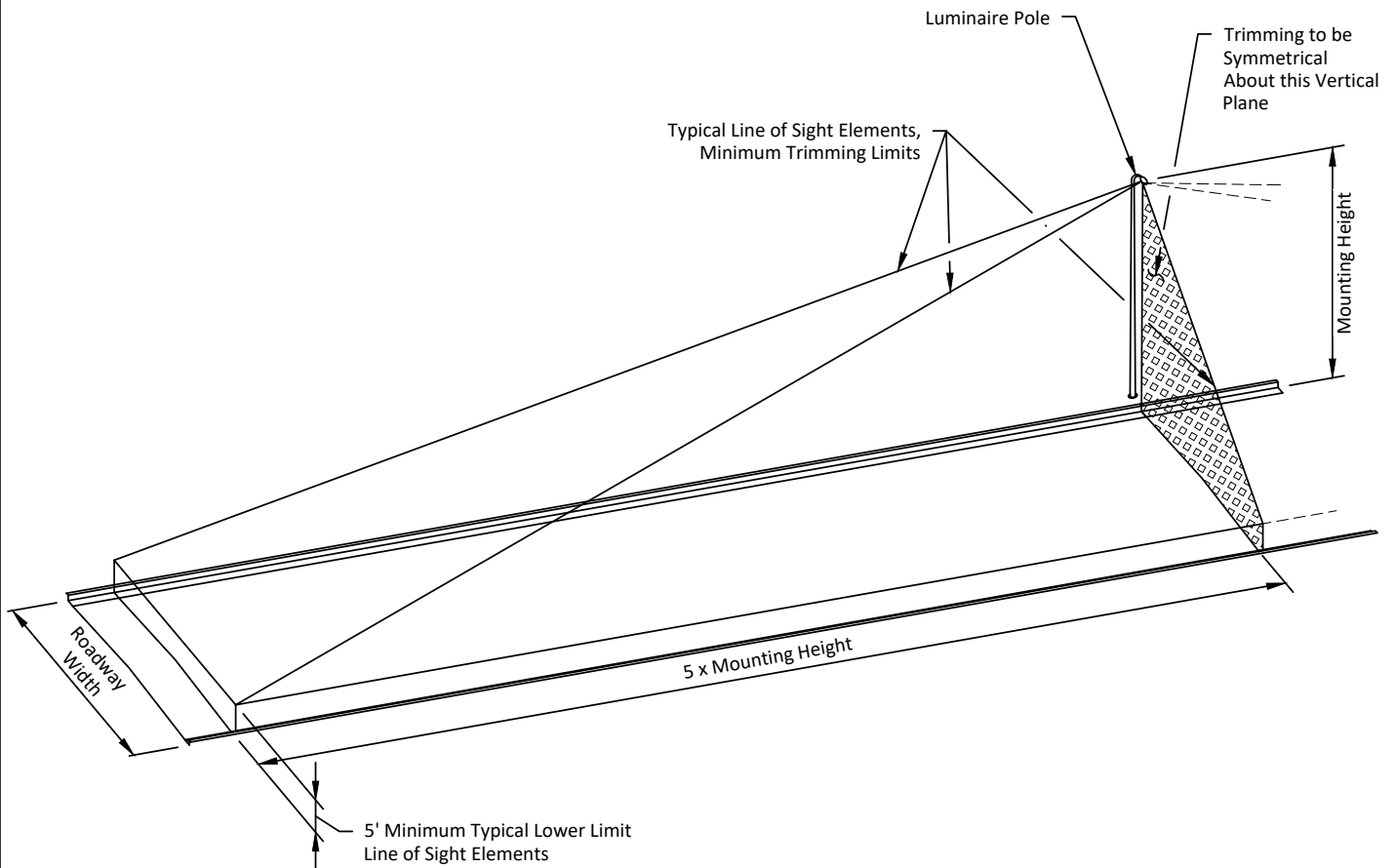
CONDUIT INSTALLATION

DATE: 8-19-22

Sec. - Sht.
93-4

Notes:

1. Tree Trimming shall be done in accordance with proper tree trimming practices. The underside of each branch to be removed shall have a groove sawed through the bark (1/2" minimum depth) before any sawing is started on the top side of the branch.
2. Tree trimming shall be applied around each light source installed within the limits of the project.
3. The tree trimming limits as shown on this sheet represents the minimum amount of trimming required. Additional tree trimming required shall be as directed by the Engineer.
4. All foliage and branches shall be removed from the limits defined below by the Completion Date of the project.
5. Costs for Tree Trimming for Roadway Lighting shall be incidental to the various contract bid items.



N.T.S.

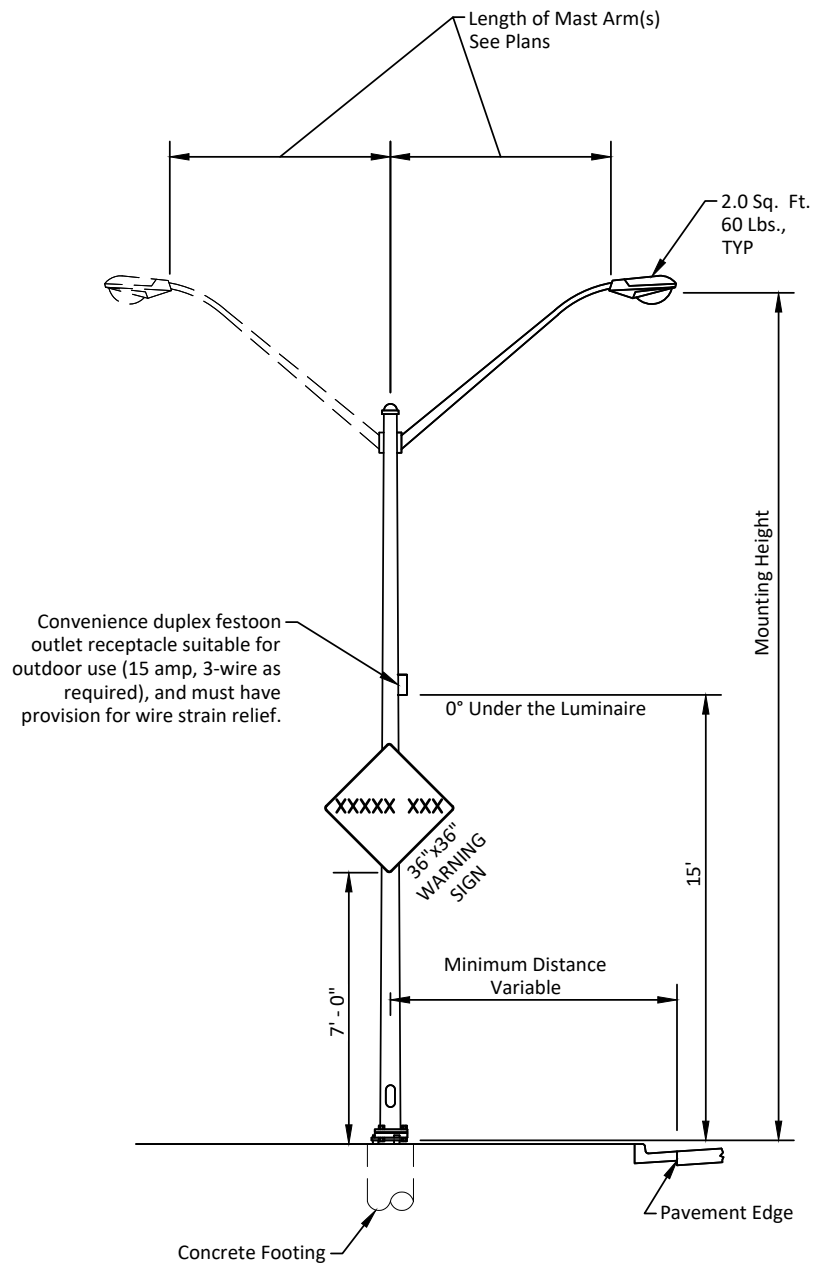
CITY OF RAPID CITY

PUBLIC WORKS DEPARTMENT

TREE TRIMMING FOR ROADWAY LIGHTING

DATE: 8-19-22

Sec. - Sht.
93-5



Notes:

1. Single Tube, Truss, or Davit types of mast arms are all acceptable, but only one type shall be provided for each contract. The mixing of different types is not permitted without special approval by the Traffic Engineer.
2. Luminaire poles shall be designed to support a 36" x 36" Warning sign banded to the pole as shown.

N.T.S.

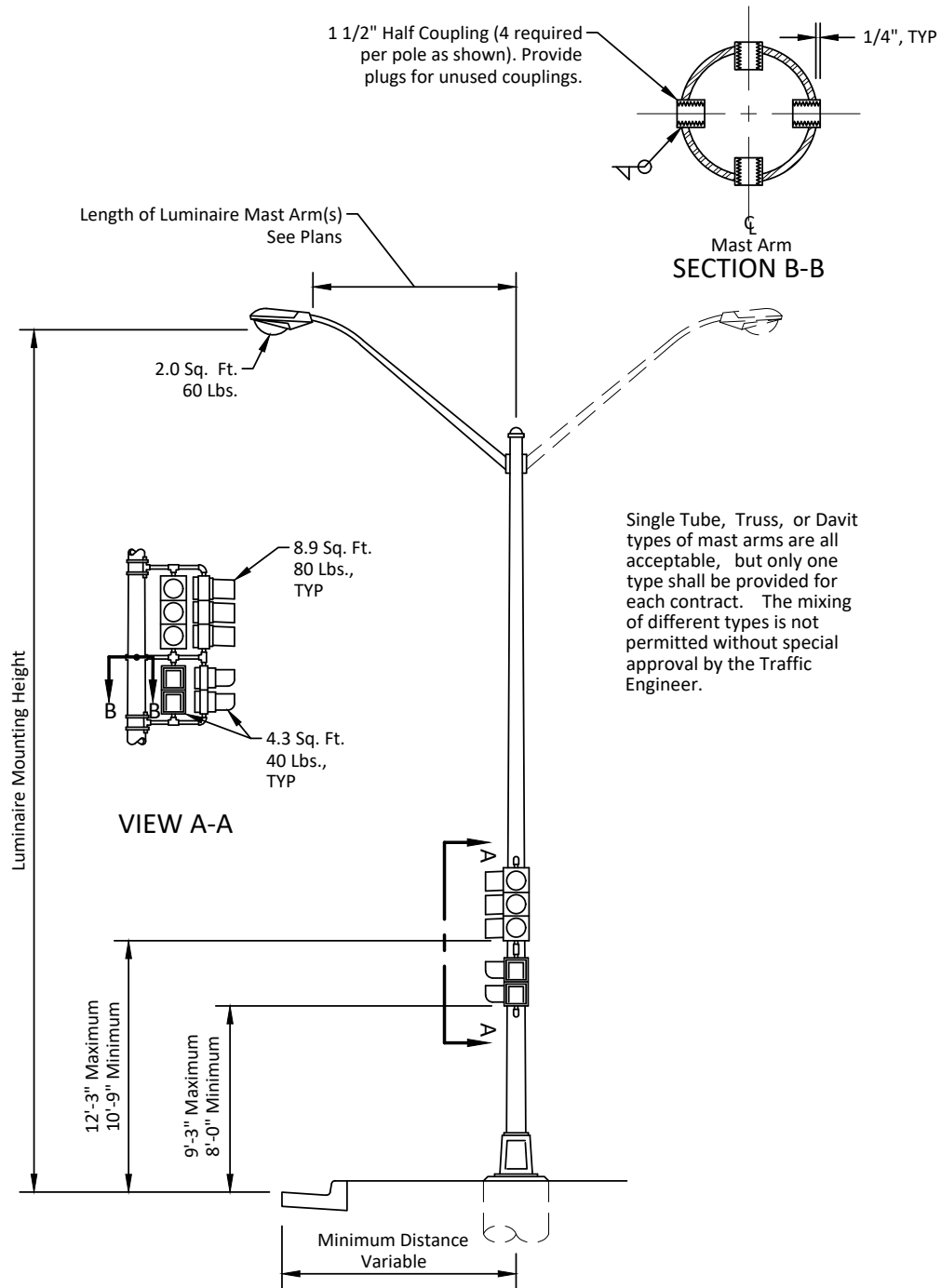
CITY OF RAPID CITY

PUBLIC WORKS DEPARTMENT

**STEEL ROADWAY LUMINAIRE POLE
WITH MAST ARM(S)**

DATE: 8-19-22

Sec. - Sht.
93-6



Notes:
Backplates shall be installed on all signal heads. For clarity the signal heads are shown on this detail with backplates removed so that the mounting hardware is visible.

N.T.S.

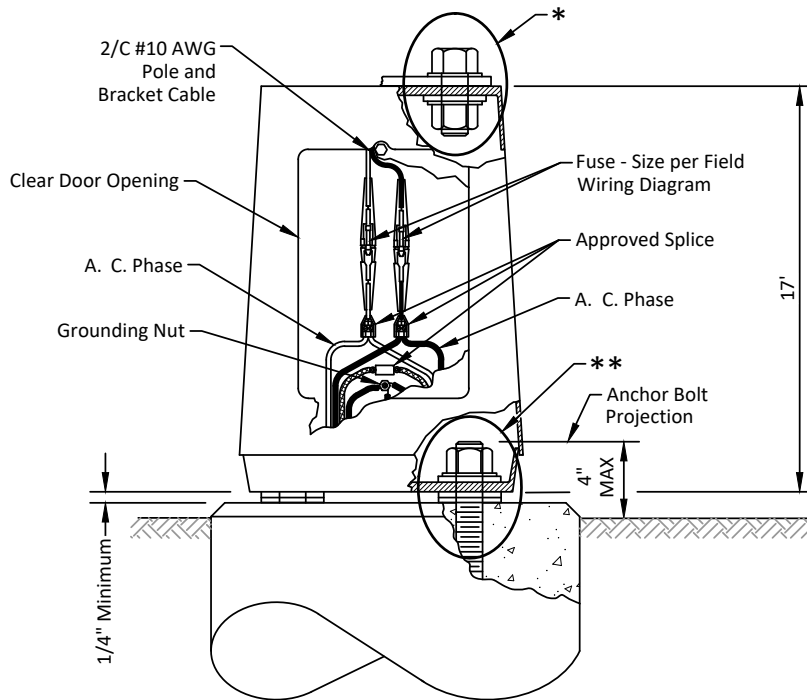
CITY OF RAPID CITY

PUBLIC WORKS DEPARTMENT

ROADWAY LUMINAIRE POLE (SIGNALS BANDED TO LUMINAIRE POLE)

DATE: 8-19-22

Sec. - Sht.
93-7



Notes:

1. Base details are provided for example only and are not intended to be a complete design.
2. Fused connectors shall be breakaway type.
- * 3. Hardware connecting the pole to the base shall be installed in accordance with the manufacturer's recommendation.
- ** 4. 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.

N.T.S.

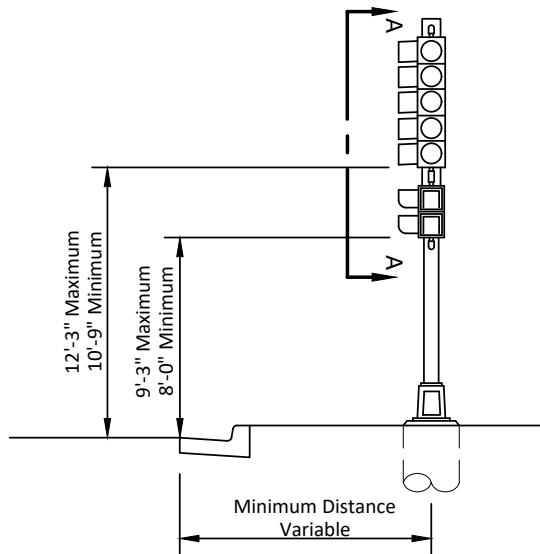
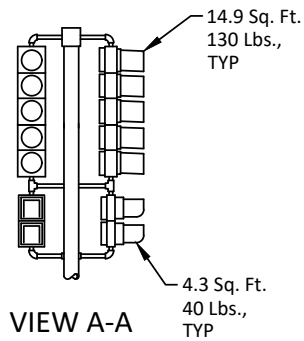
CITY OF RAPID CITY

PUBLIC WORKS DEPARTMENT

**ROADWAY LUMINAIRE POLE
BREAKAWAY TRANSFORMER BASE**

DATE: 8-19-22

Sec. - Sht.
93-8



Note:

1. Base details are provided for example only and are not intended to be a complete design.
2. Pedestrian push buttons installed on signal poles shall be in compliance with details 93-12a and 93-12b and MUTCD dimensions and clearances.

N.T.S.

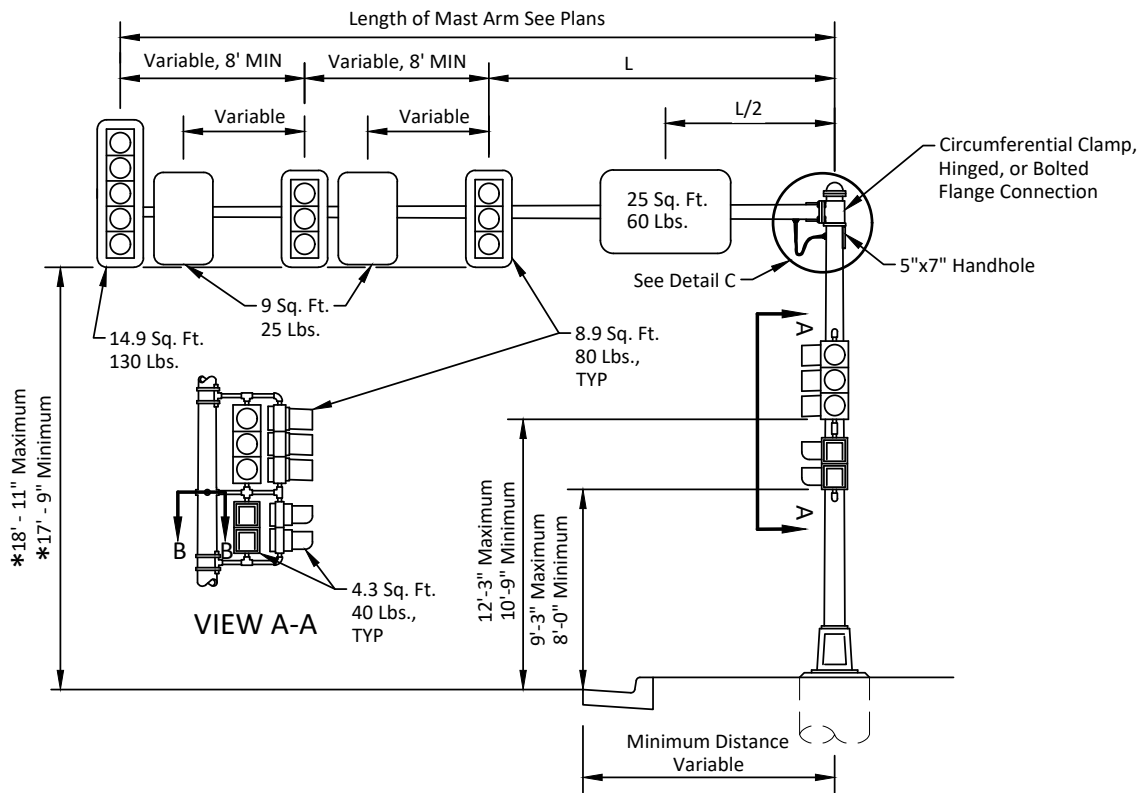
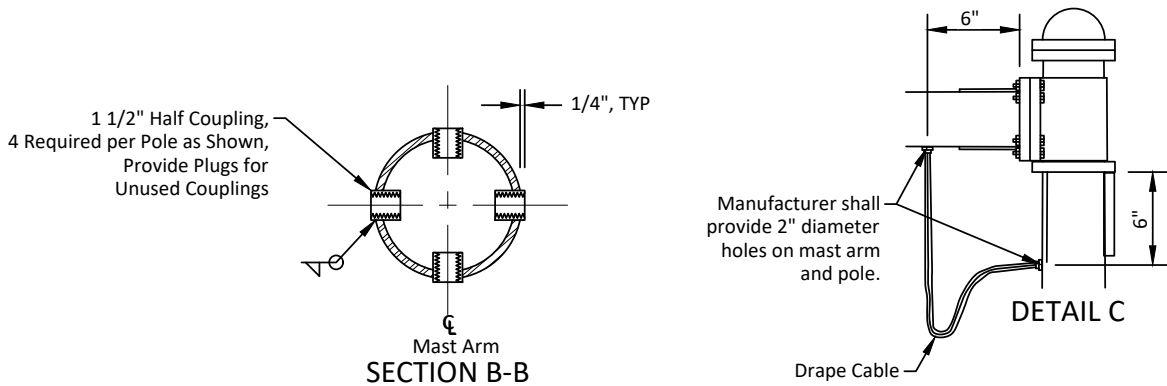
CITY OF RAPID CITY

PUBLIC WORKS DEPARTMENT

SIGNAL POLE (PEDESTAL)

DATE: 8-19-22

Sec. - Sht.
93-9



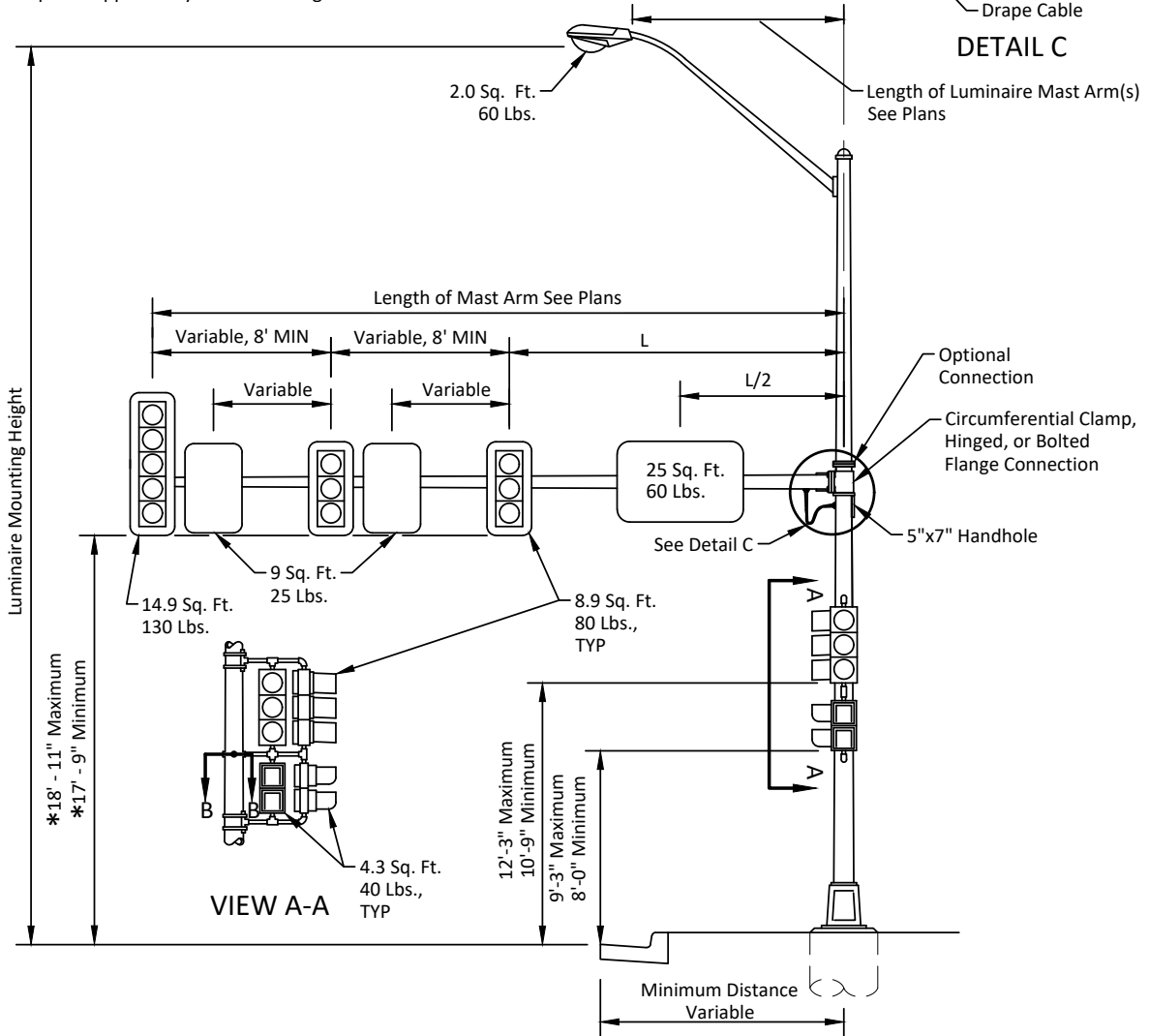
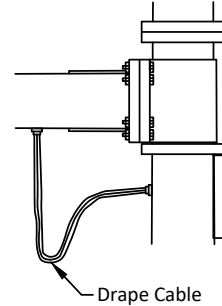
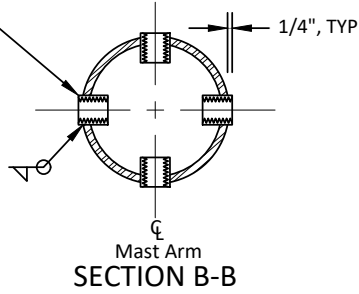
Notes:

1. Some of the signal heads are shown with backplates removed so that the mounting hardware is visible.
- *2. The signal height allowances shown above are based on a horizontal distance greater than 53' between the signals and stop line. For horizontal distance of 53' and less between the signals and the stop line, the height allowances shall be as specified in Section 4D.15 of the MUTCD.
3. Pedestrian push buttons installed on signal poles shall be in compliance with details 93-12a and 93-12b and MUTCD dimensions and clearances.

N.T.S.

Single Tube, Truss, or Davit types of mast arms are all acceptable, but only one type shall be provided for each contract. The mixing of different types is not permitted without special approval by the Traffic Engineer.

1 1/2" Half Coupling,
4 Required per Pole as Shown,
Provide Plugs for
Unused Couplings

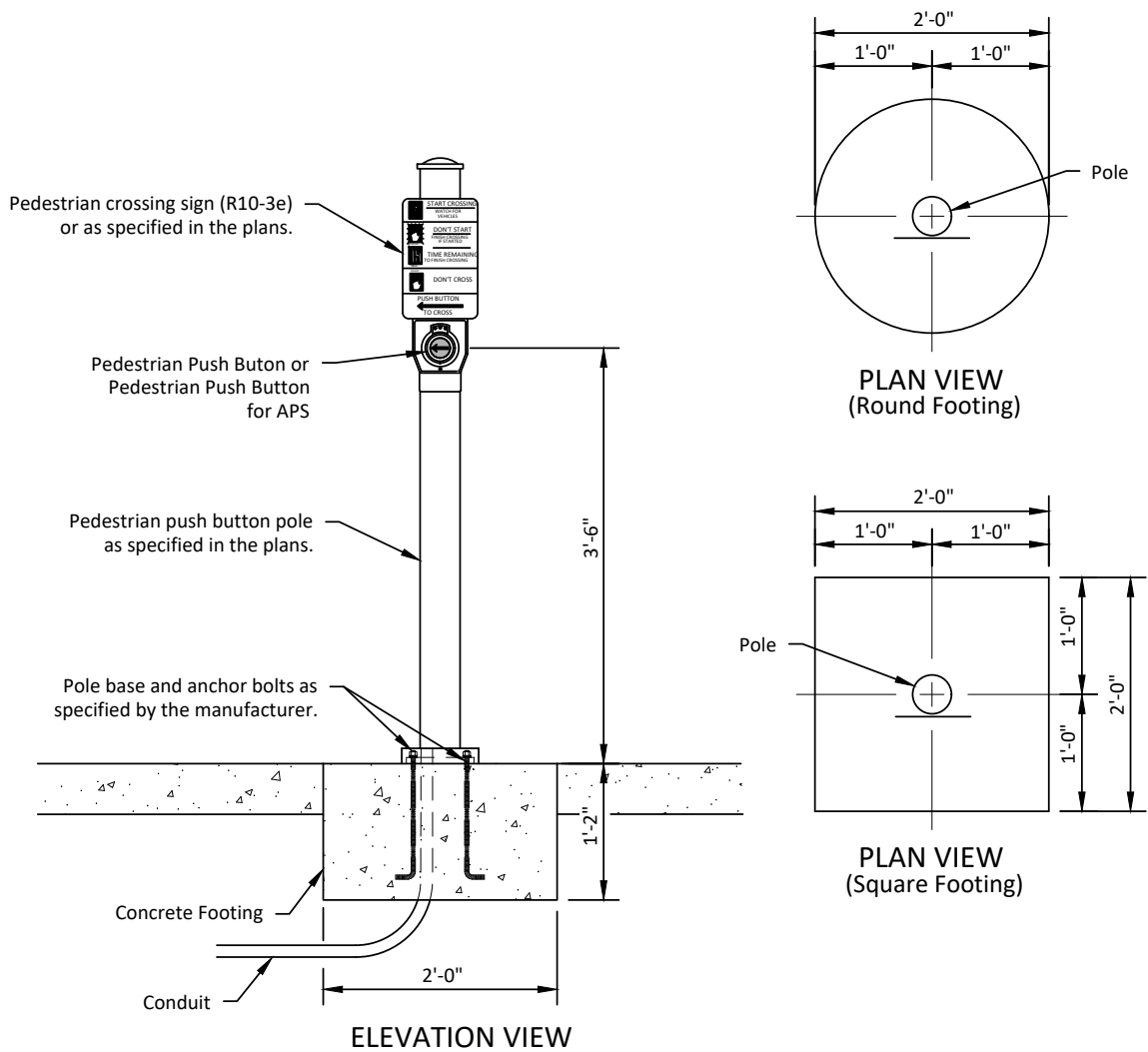


Notes:

1. Some of the signal heads are shown with backplates removed so that the mounting hardware is visible.
- * 2. The signal height allowances shown above are based on a horizontal distance greater than 53' between the signals and stop line. For horizontal distance of 53' and less between the signals and the stop line, the height allowances shall be as specified in Section 4D.15 of the MUTCD.
3. Pedestrian push buttons installed on signal poles shall be in compliance with details 93-12a and 93-12b and MUTCD dimensions and clearances.

N.T.S.

SIGNAL POLE (WITH MAST ARM AND LUMINAIRE EXTENSION)



Notes:

1. The pedestrian push button pole shall be as specified in the plans.
2. The Contractor shall install either the round or the square concrete footing. For informational purpose, the quantity of concrete for one footing is 0.14 cubic yards for the round footing and 0.17 cubic yards for the square footing.
3. The concrete for the footing shall be Class M6 concrete.
4. All costs for furnishing and installing the pedestrian push button pole including labor, equipment, and materials including the concrete footing, pole, cap, and the conduit in the footing shall be incidental to the contract unit price per each for "Pedestrian Push Button Pole".

N.T.S.

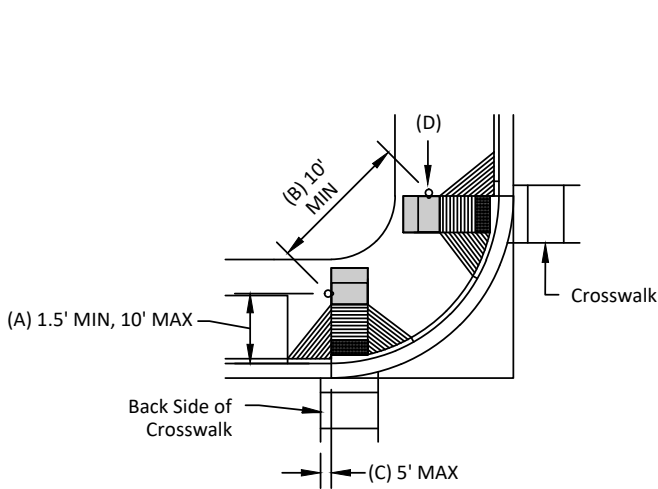
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PUBLIC WORKS DEPARTMENT

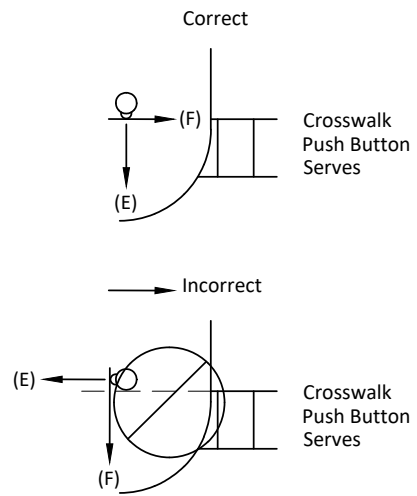
PEDESTRIAN PUSH BUTTON POLE

DATE: 8-19-22

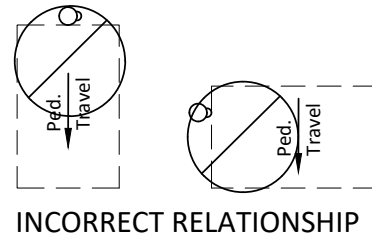
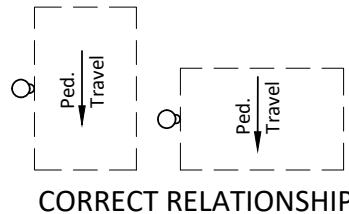
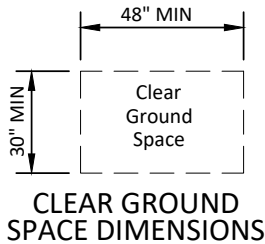
Sec. - Sht.
93-12a



PUSH BUTTON RELATIONSHIP TO CURB RAMP AND CROSSWALK



PUSH BUTTON ORIENTATION TO CROSSWALK



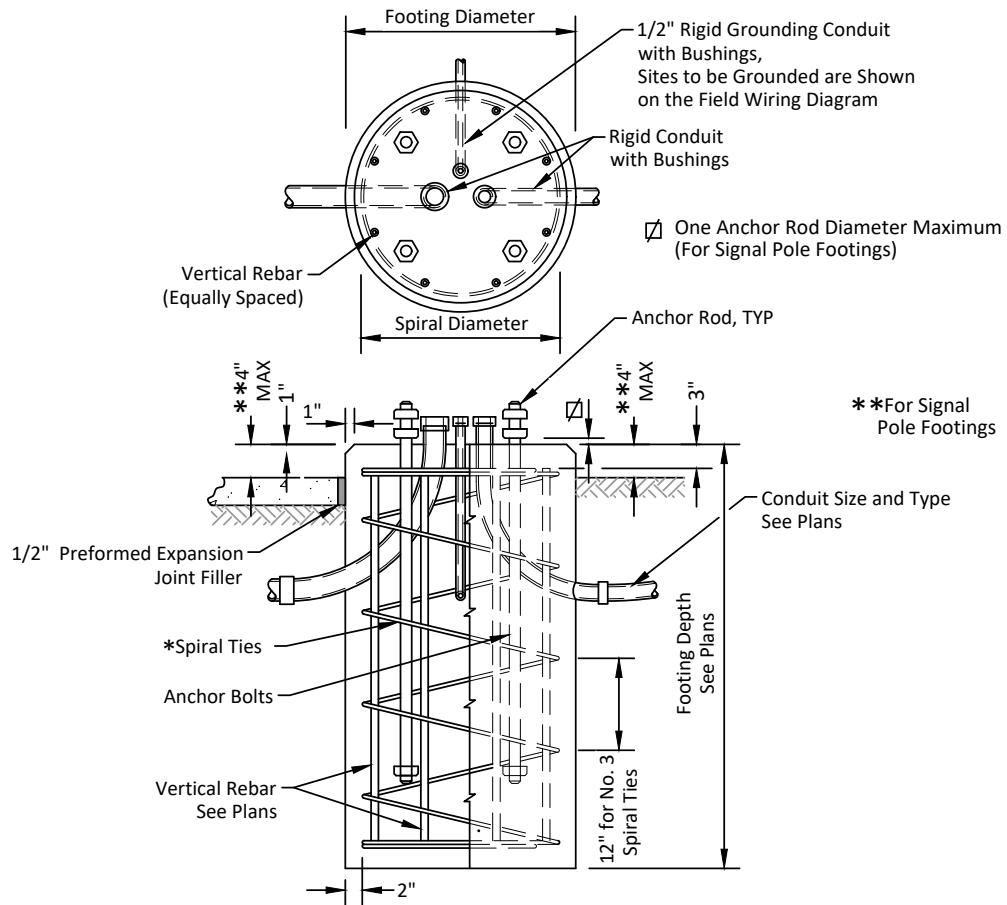
Clear space not adjacent to push button

Push button not centered on Clear space

Notes:

1. Pedestrian Push Button Location and Orientation Requirements:
 - A. Within 10' from the front face of curb.
 - B. Where two push buttons are provided, the push buttons shall have at least 10' of separation from each other.
 - C. If two curb ramps are used, the push button shall be within 5' of the backside of the crosswalk.
 - D. The push button shall be mounted adjacent to a clear ground space (within 10" maximum reach). The clear ground space will be a least 30" x 48" and will slope no more than 50:1 (2%) in any direction. The push button will be centered on either side of the clear ground space (either the 30" or 48" side). The 30" x 48" clear ground space shall not touch the detectable warning panel.
 - E. The push button shall face the edge of roadway.
 - F. The push button face shall be parallel to the crosswalk being used.
2. The push button poles will not interfere with the minimum clear width of the Pedestrian Access Route.

N.T.S.



Notes:

- *1. Circular ties may be used in lieu of the spiral ties. The No. 3 ties shall be spaced 12" apart except for the top two which shall be spaced 6" apart. The ties shall be lapped 18" and the laps shall be staggered around the cage.
- 2. Spiral ties shall have 1-1/2 extra turns at each end.
- 3. See Section 93 of the Specifications for footing materials.
- 4. Conduits and bushings may project 2 1/2" to 6" above footing for fixed base poles but shall not project above the slip plane or fracture plane for breakaway poles.
- 5. Conduits shall be sealed water-tight during all phases of construction until poles are in place.
- 6. The anchor rods shall fit inside the reinforcing steel cage. If the anchor rods designed by the Pole Manufacturer do not fit, contact the Engineer for footing redesign. No additional payment will be made for the redesigned footing.
- 7. Costs of conduit and conduit bushings shown on footing detail shall be incidental to the footing bid item(s).
- 8. The pole shall not be installed until the concrete has attained design strength (4000 psi).
- 9. The contour of the area surrounding the breakaway pole shall be flat, though not necessarily level for a distance of 5' in all directions. The Contractor may be required to provide finish grading at some breakaway pole locations.

N.T.S.

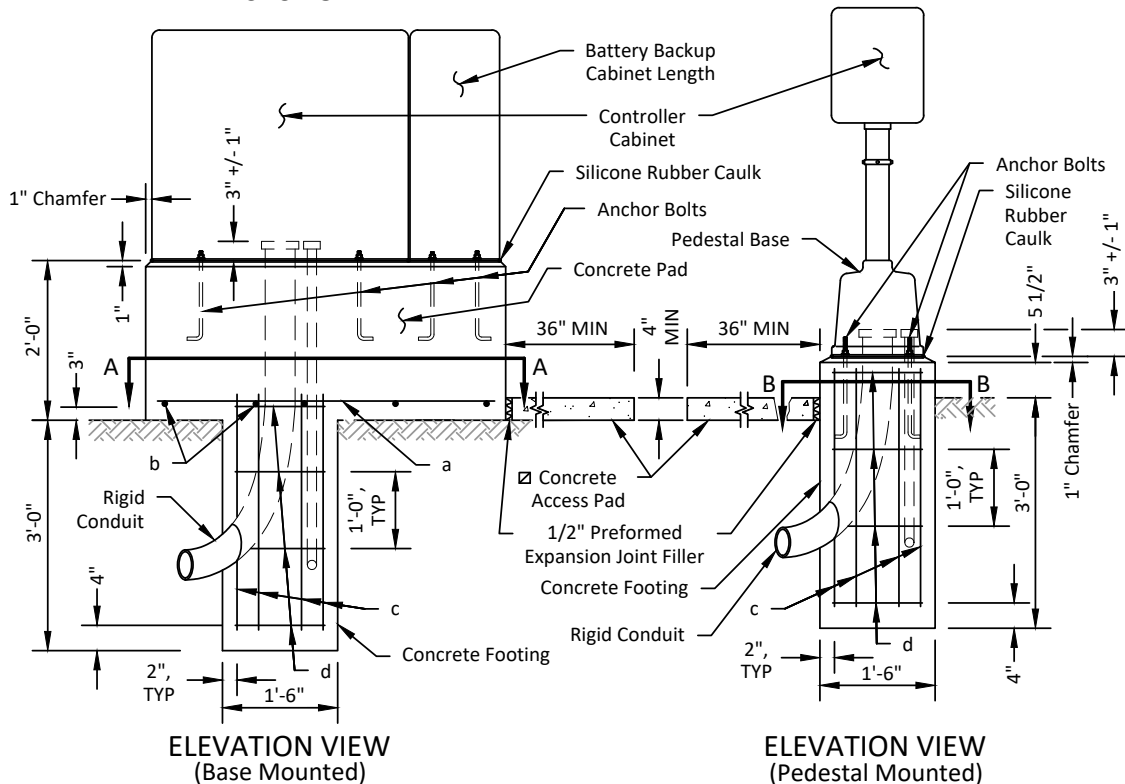
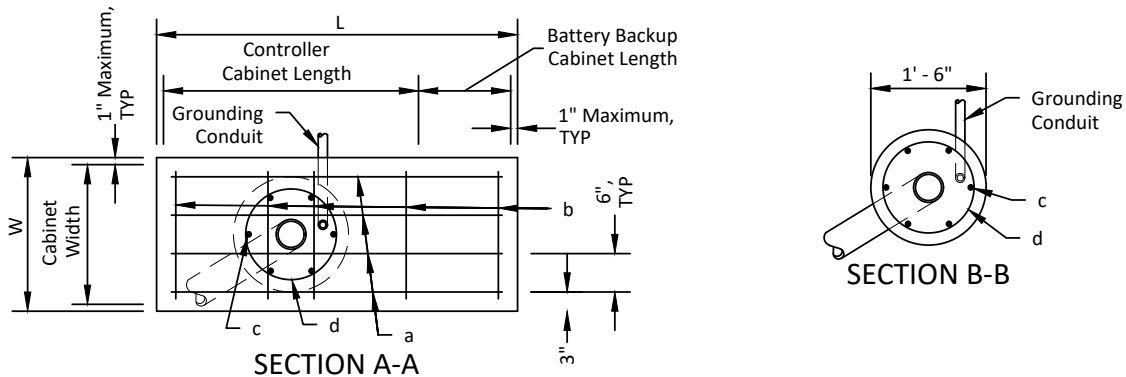
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PUBLIC WORKS DEPARTMENT

POLE FOOTING

DATE: 8-19-22

Sec. - Sht.
93-13



Notes:

1. The concrete pad shall conform to the base of the controller and battery backup cabinets to the satisfaction of the Engineer.
2. Conduits shall be sealed water-tight until the conductor cables are installed.
3. If the controller and battery backup concrete pad and footing is not located within or adjacent to an existing sidewalk, the Contractor shall provide a concrete access pad as directed by the Engineer.
4. Anchor bolts and related hardware shall conform to the controller and battery backup cabinets manufacturer's specifications.
5. A continuous bead of silicone rubber caulk shall provide a weather-tight seal between the concrete pad or footing, and the cabinet or base.
6. Minimum clear cover for reinforcing steel is shown above unless otherwise noted.

N.T.S.

REINFORCING SCHEDULE (For One Footing)					
Mk.	No.	Size	Length	Type	Bending Detail
a	*	3	L - 4"	Str.	<p>Type T3</p>
b	*	3	W - 4"	Str.	
c	6	6	3'-0"	Str.	
d	4	3	4'-0"	T3	

Note: Dimensions are out to out of bar
* Vary number of bars as required by footing size.

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CONTROLLER CABINET AND FOOTING

DATE: 8-19-22

Sec. - Sht.
93-14