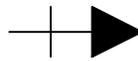
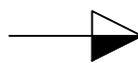
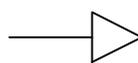
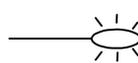
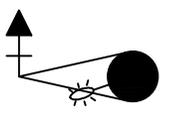
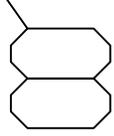


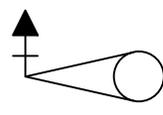
-  CONVENTIONAL SIGNAL HEAD WITH BACKPLATE
-  OPTICALLY LIMITING SIGNAL HEAD WITH BACKPLATE
-  PEDESTRIAN SIGNAL HEAD
-  EXISTING SIGNAL HEAD
-  OVERHEAD OR SHAFT MOUNTED SIGN
-  LUMINAIRE

-  CONTROLLER  
*(FRONT DOOR OF CABINET)*
-  SPLICE CABINET
-  PULL BOX
-  CONCRETE BASE
-  POWER SUPPLY
-  PEDESTRIAN PUSHBUTTON
-  STOP LINE
-  LANE USE

-  MAST ARM W/SIGNAL HEAD & LUMINAIRE
-  INDUCTION LOOP DETECTOR
-  VIDEO IMAGE DETECTOR
-  RADAR DETECTOR

- R RED BALL\*
- Y YELLOW BALL\*
- G GREEN BALL\*
- YL YELLOW LEFT ARROW\*
- L GREEN LEFT ARROW\*
- W WALK (MAN SYMBOL)
- DW DON'T WALK (HAND SYMBOL)

-  EXISTING CONTROLLER
-  EXISTING SPLICE CABINET
-  EXISTING PULL BOX
-  EXISTING CONCRETE BASE
-  SIGNAL FACE NUMBER
-  POST NUMBER
-  DETECTOR NUMBER
-  PULL BOX NUMBER

-  EXISTING MAST ARM
-  CONDUIT
-  BORED CONDUIT
-  EXISTING CONDUIT
- 4" PVC SIZE & TYPE OF CONDUIT
- 2-16C#12 NUMBER, CONDUCTORS, & AWG SIZE OF CABLE

\* - ALL 12" LENS WITH TUNNEL VISOR

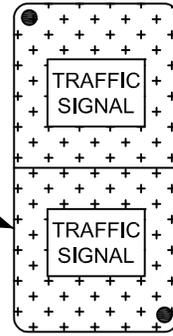
NOT TO SCALE

Stainless steel or brass  
Penta-head bolts  
(2 required)



Type I & II

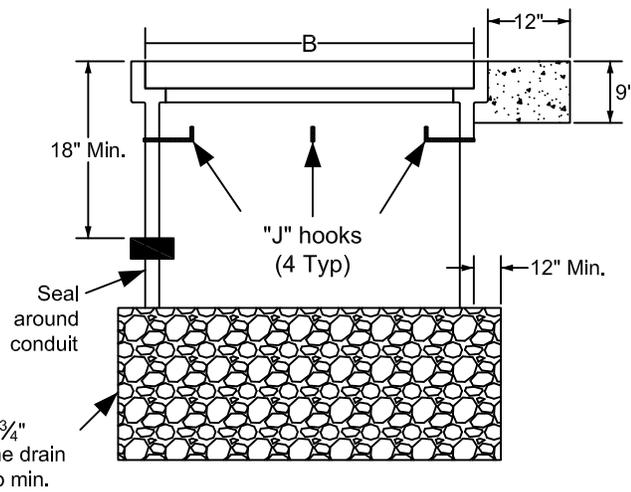
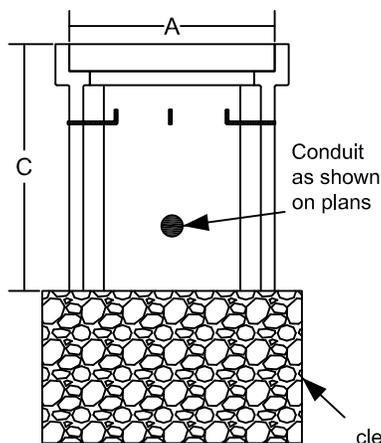
Skid resistant  
surface



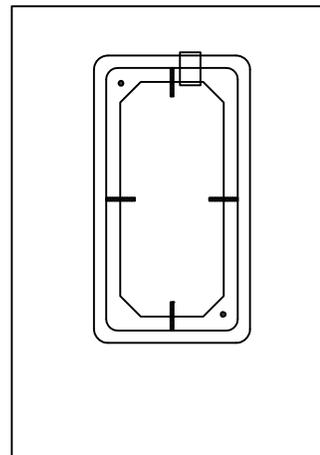
Type III

Two piece  
interlocking  
cover

Stainless steel  
or brass  
Penta-head bolts  
(2 minimum)



DIMENSIONS			
	TYPE I	TYPE II	TYPE III
A	17"	24"	30"
B	30"	36"	48"
C	24"	24"	36"

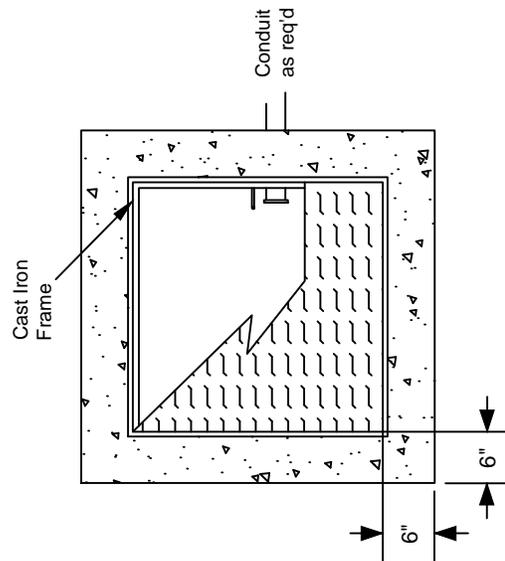
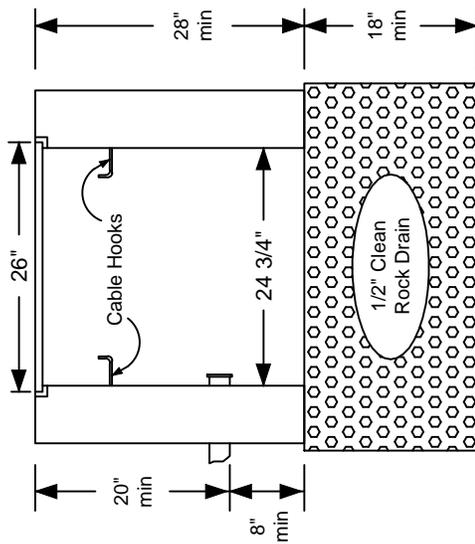
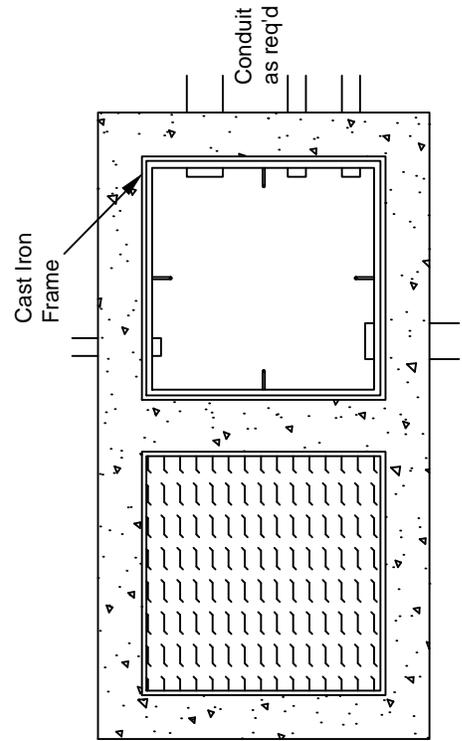
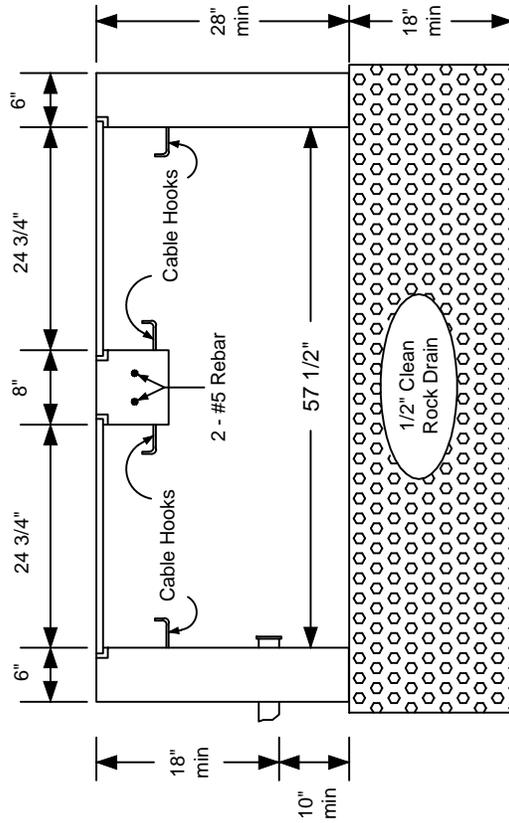
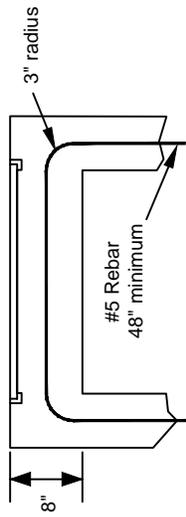


9" Thick concrete  
pad 12" all sides

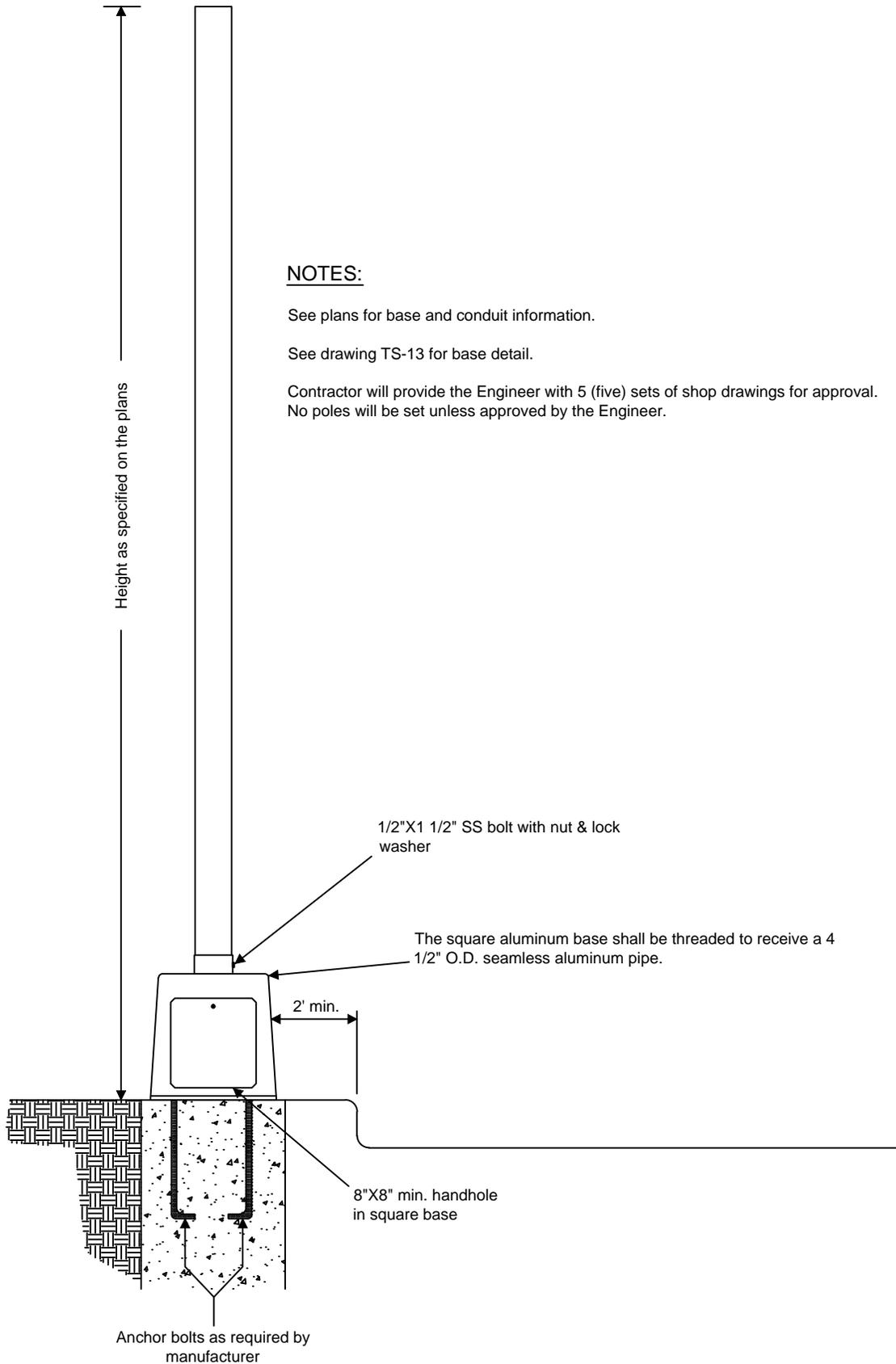
Notes:

1. Preformed pull boxes shall be used unless otherwise specified on the plans.
2. Lift opening is required on all covers.
3. All dimensions are nominal.
4. If extensions are needed, they shall be compatible and from the same manufacturer.

NOT TO SCALE



NOT TO SCALE



**NOTES:**

See plans for base and conduit information.

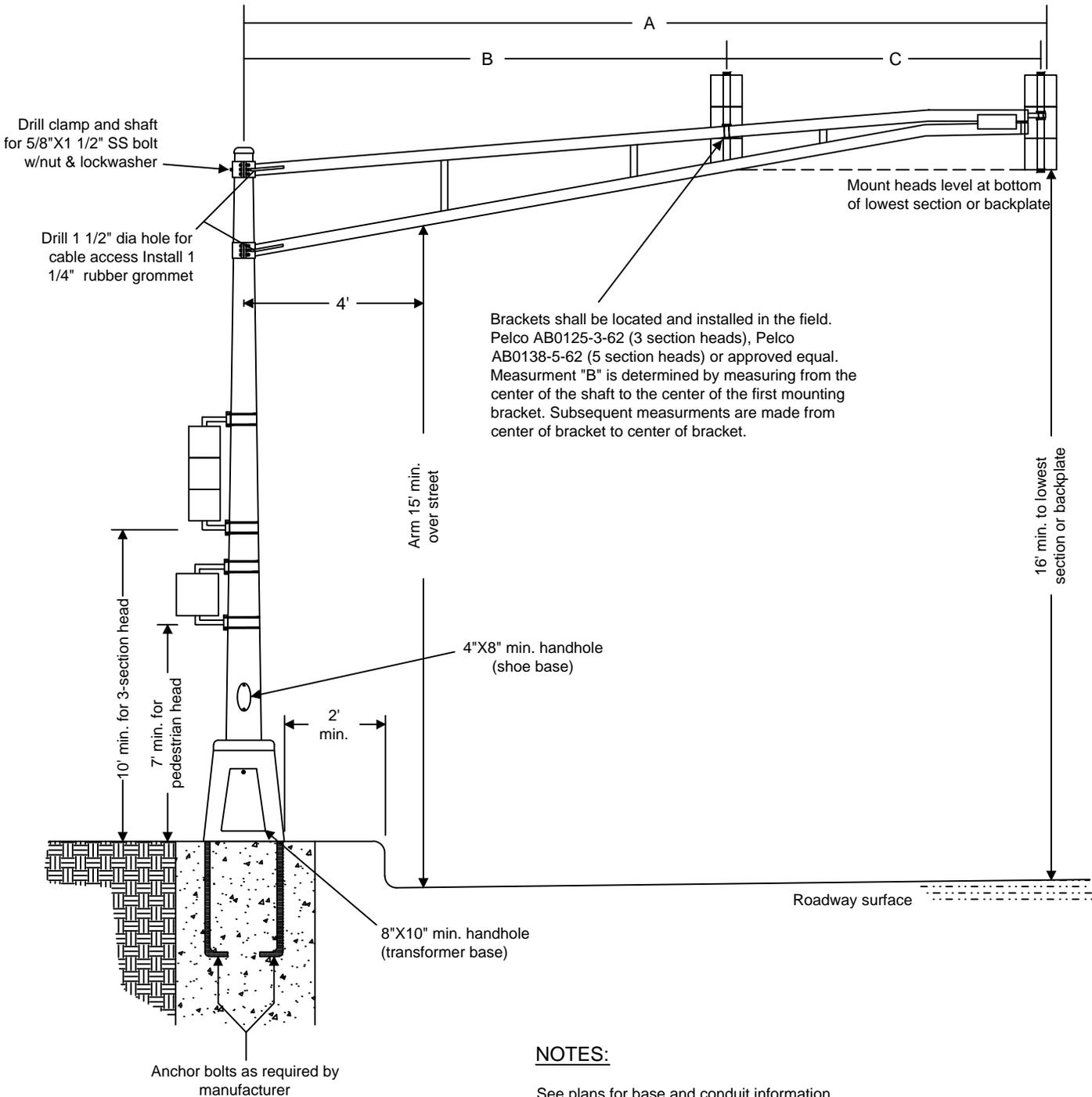
See drawing TS-13 for base detail.

Contractor will provide the Engineer with 5 (five) sets of shop drawings for approval. No poles will be set unless approved by the Engineer.

NOT TO SCALE

# TYPE A

See plans for arm length and signal spacing details



**NOTES:**

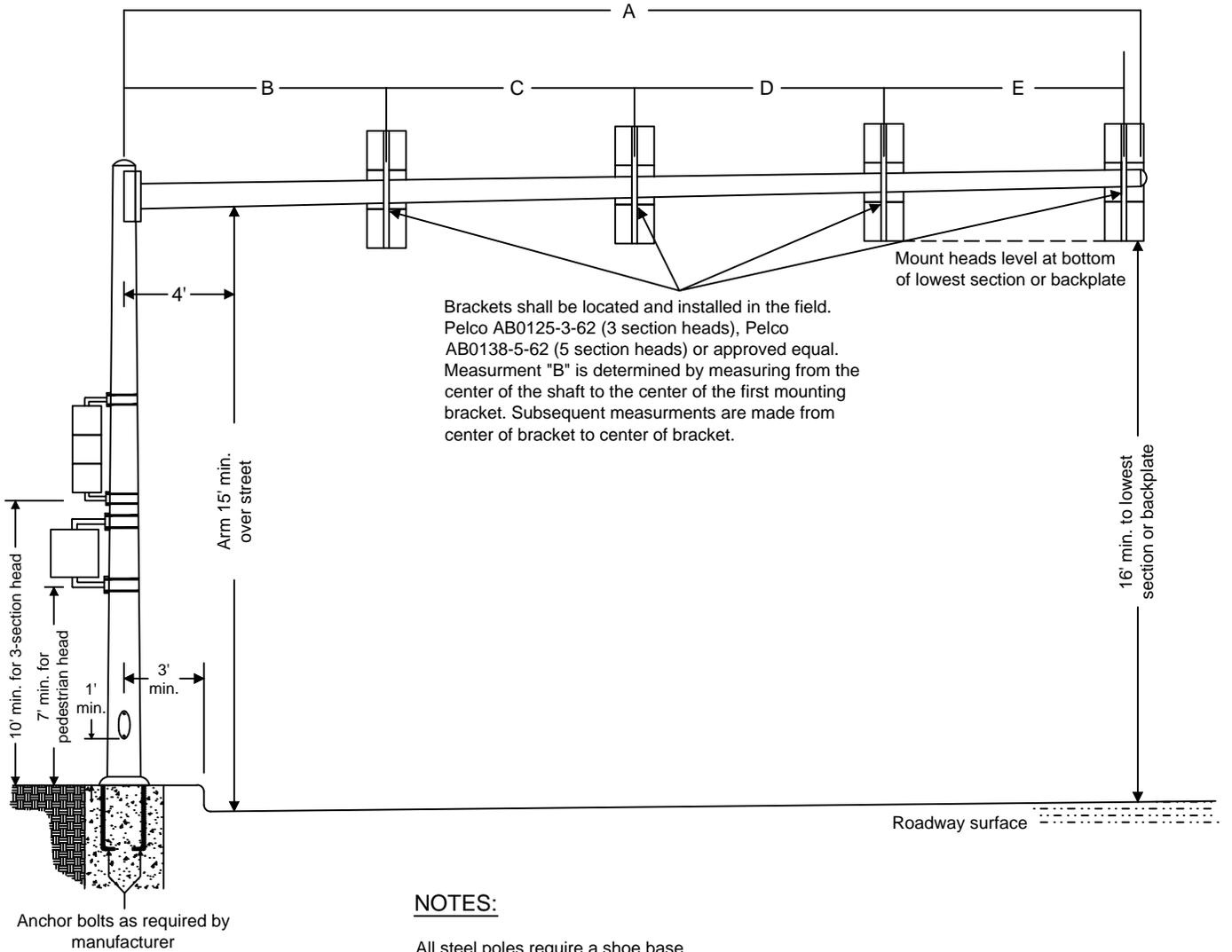
- See plans for base and conduit information.
- A transformer base will be provided with Mast Arms 25' or less in length. Mast arms greater than 25' require shafts equipped with a shoe base.
- Contractor will provide the Engineer with 5 (five) sets of shop drawings for approval. No poles will be set unless approved by the Engineer.

NOT TO SCALE

DEPARTMENT OF PUBLIC WORKS SPRINGFIELD, MO.	<b>ALUMINUM MAST ARM</b>	ADOPTED:
		TS-5

# TYPE S

See plans for arm length and signal spacing details



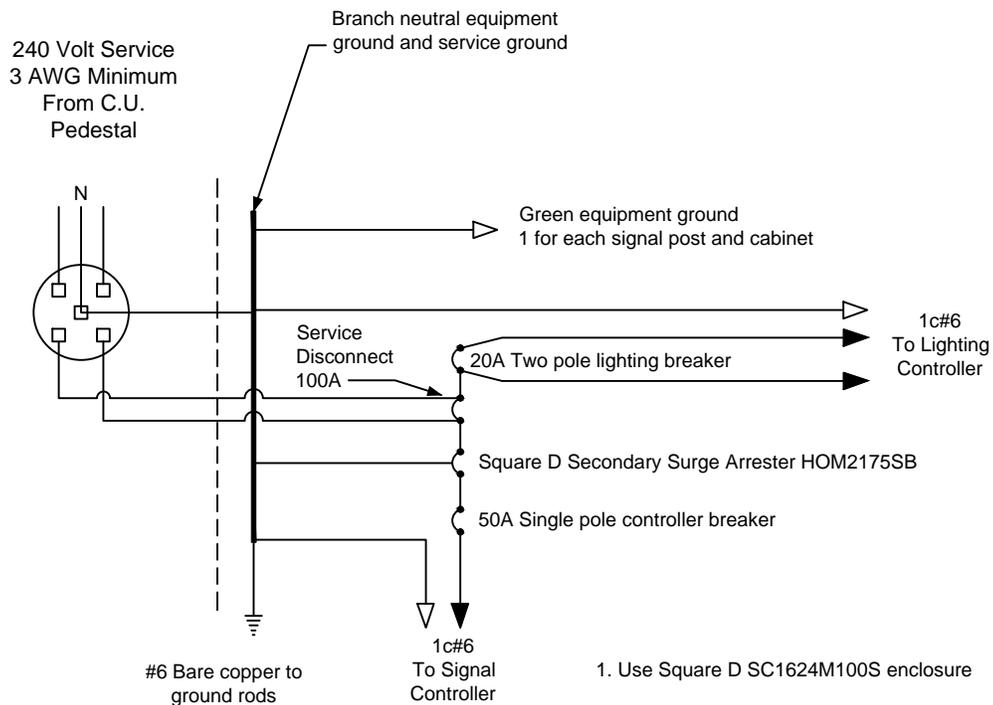
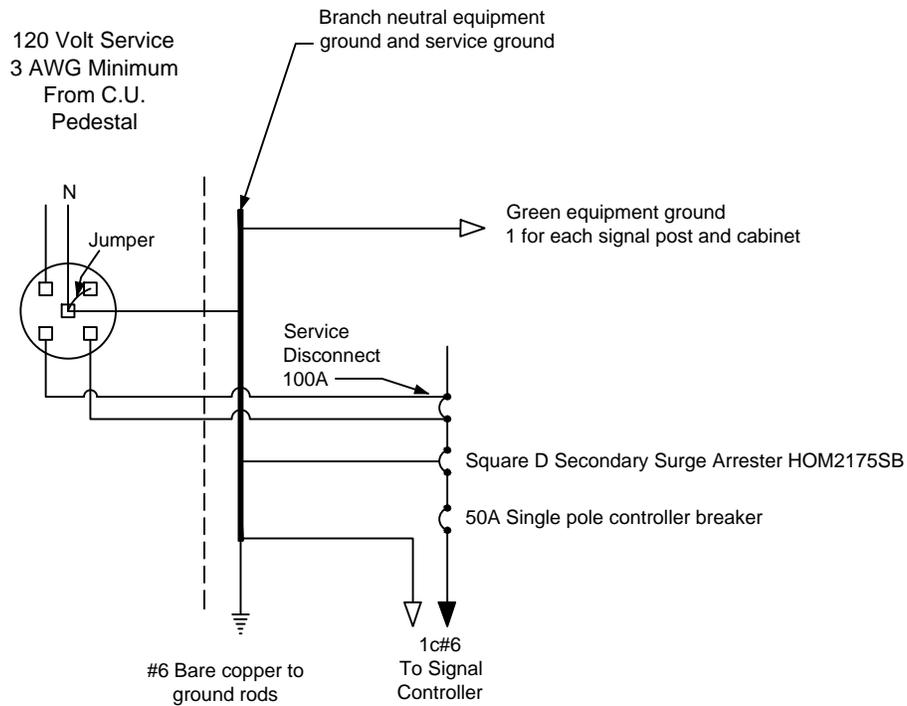
**NOTES:**

All steel poles require a shoe base.

See plans for base and conduit information.

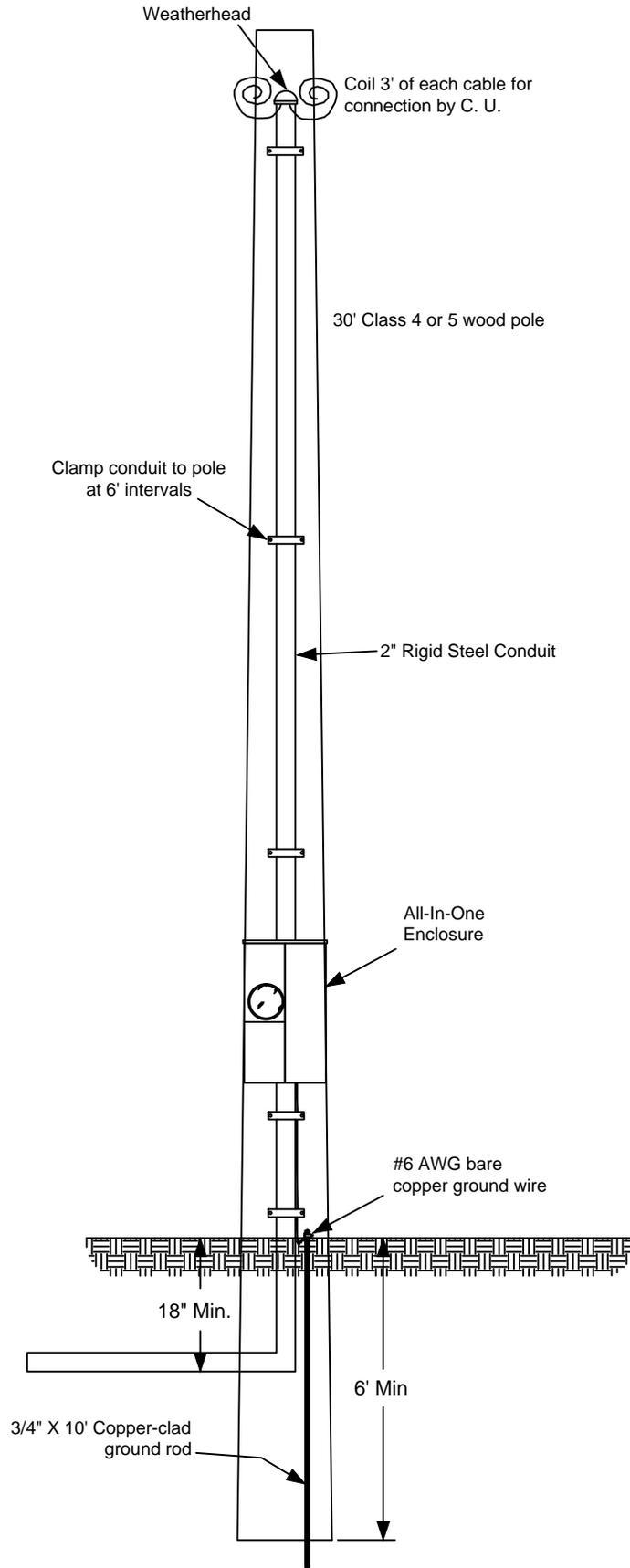
Contractor will provide the Engineer with 5 (five) sets of shop drawings for approval. No poles will be set unless approved by the Engineer.

NOT TO SCALE



1. Use Square D SC1624M100S enclosure
2. Power cable to the controller and lighting controller shall be black and one white neutral - do not mark with tape.

NOT TO SCALE



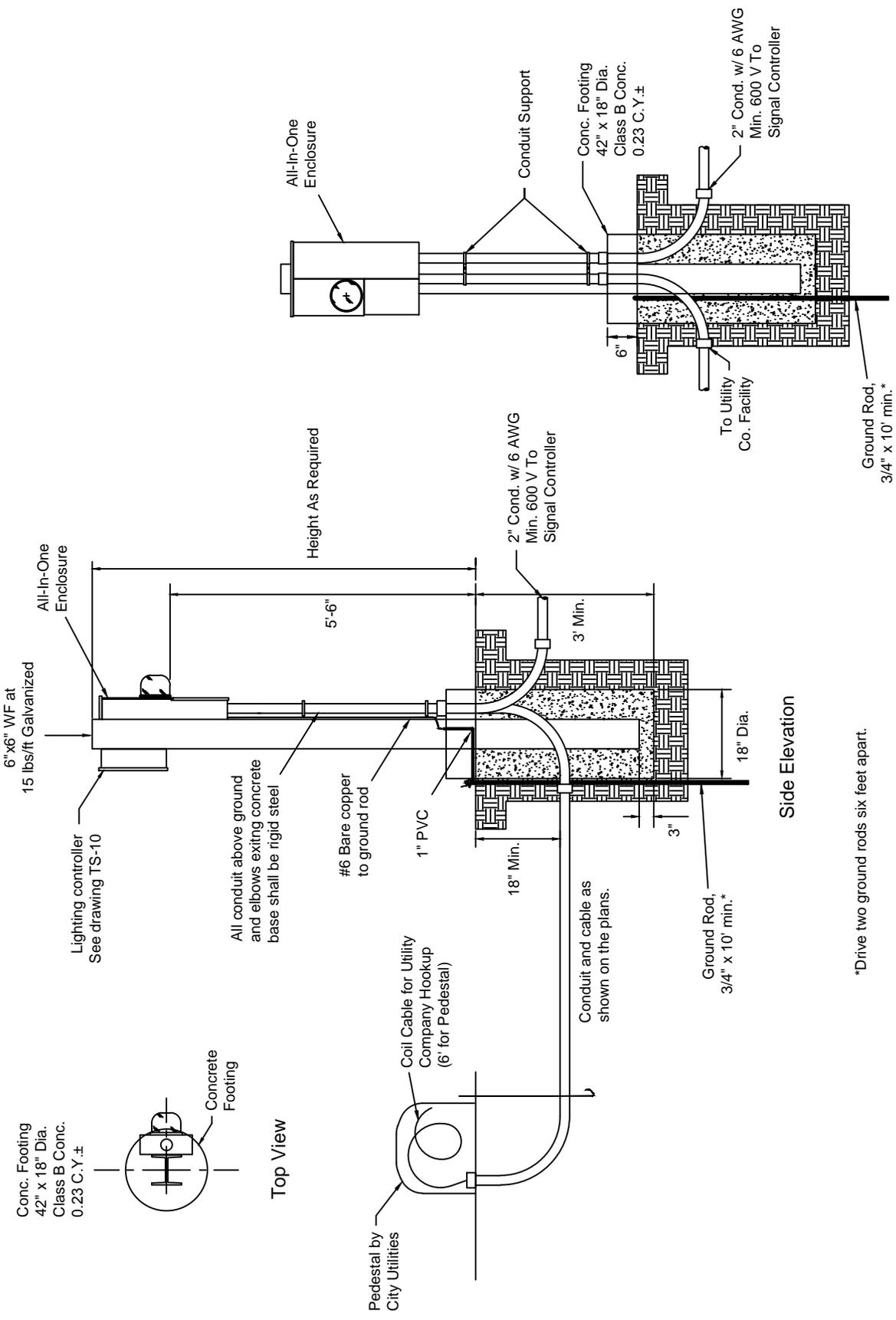
NOT TO SCALE

DEPARTMENT OF PUBLIC WORKS  
SPRINGFIELD, MO.

**TYPE I POWER SUPPLY**

ADOPTED:

TS-8

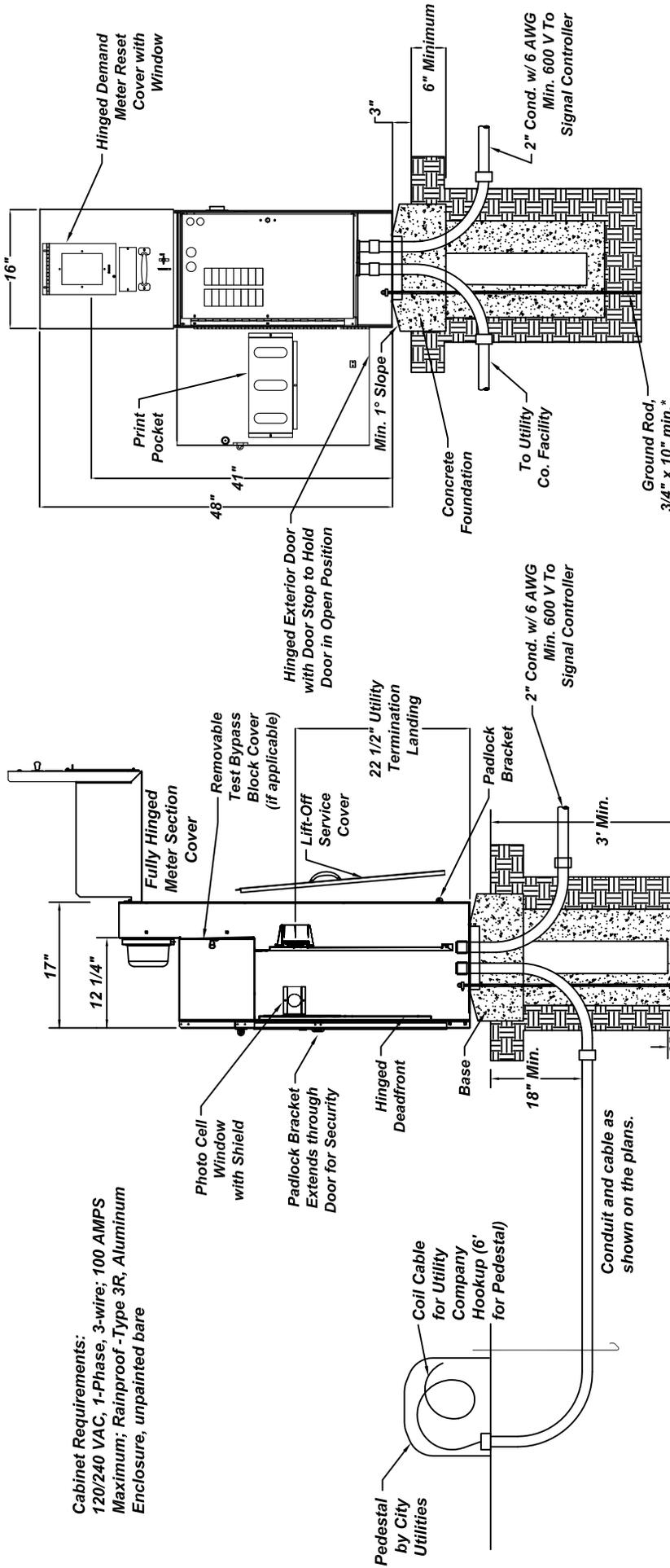


\*Drive two ground rods six feet apart.

The Contractor is required to obtain an Electrical permit from Building Development Services for new or relocated power supplies. The permit fee is the responsibility of the Contractor.

NOT TO SCALE

**Cabinet Requirements:**  
 120/240 VAC, 1-Phase, 3-wire, 3-wire; 100 AMPS  
 Maximum; Rainproof - Type 3R, Aluminum  
 Enclosure, unpainted bare



**FRONT ELEVATION**

**SIDE ELEVATION**

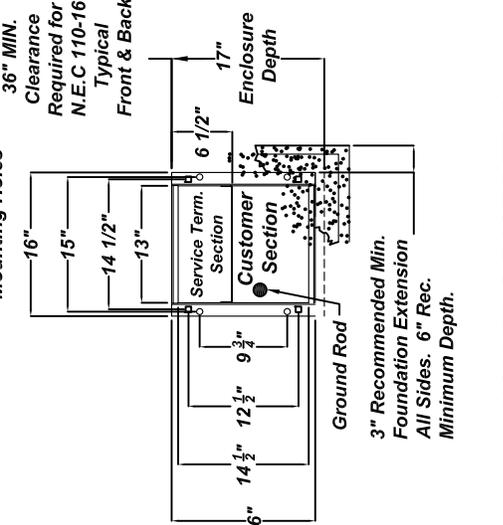
- Pedestal Mounting Holes
- Anchor Bolt Mounting Holes

3" Recommended Minimum Foundation Extension All Sides

6" Recommended Minimum Foundation Depth Below Grade Level

36" Minimum Pedestal Clearance Typical Front and Back Required per N.E.C. 110-16

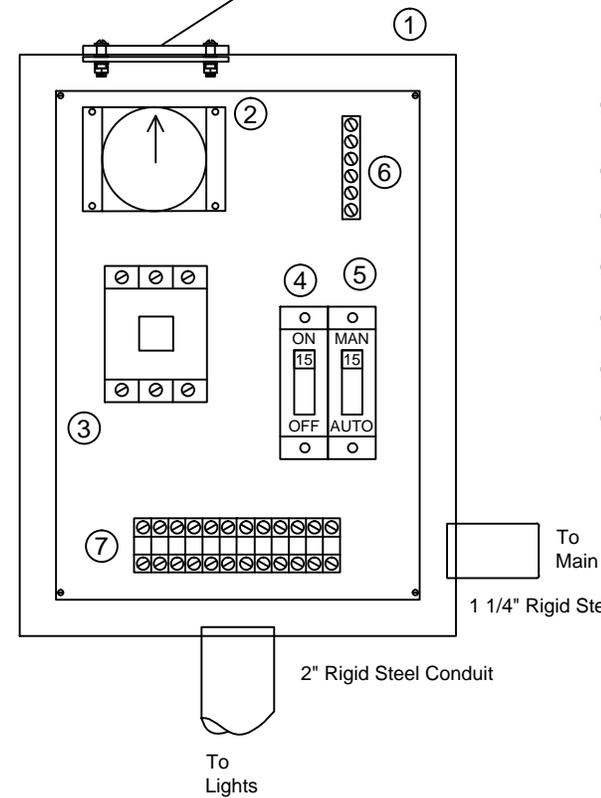
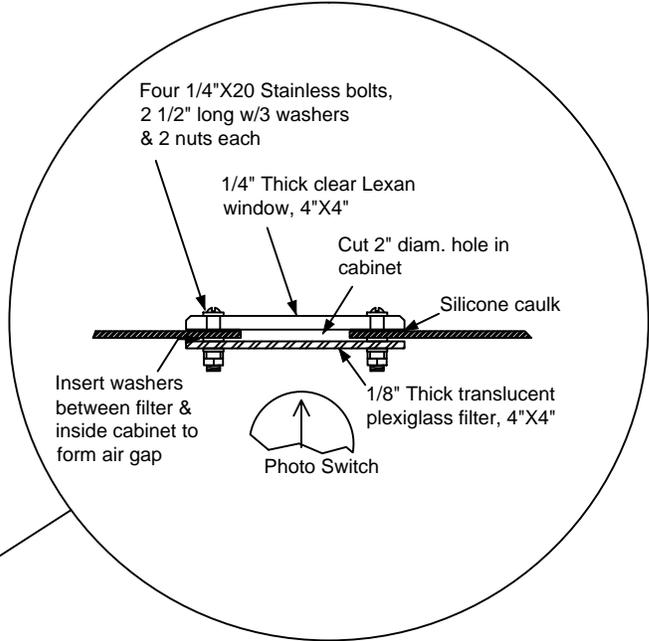
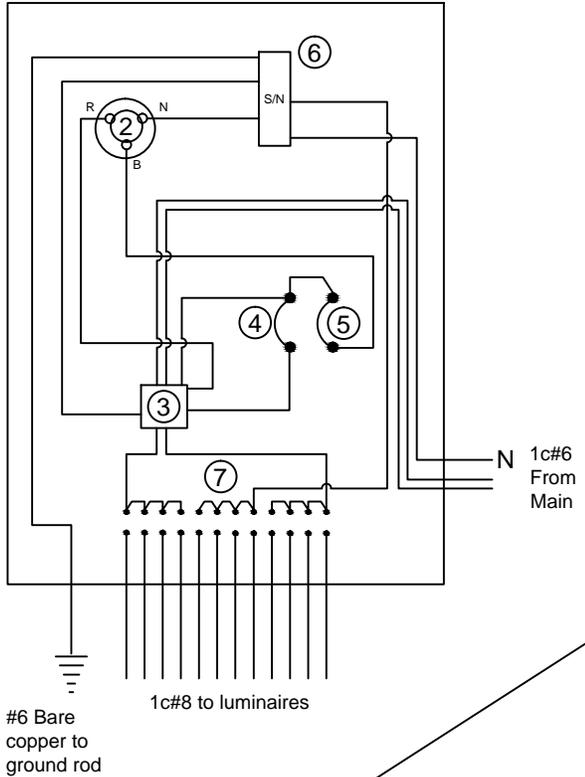
(4) 5/8-11 X 18" (450MM 16 UNC) Anchor Bolts Recommended



**MOUNTING BASE DETAIL**

The Contractor is required to obtain an Electrical permit from Building Development Services for new or relocated power supplies. The permit fee is the responsibility of the Contractor.

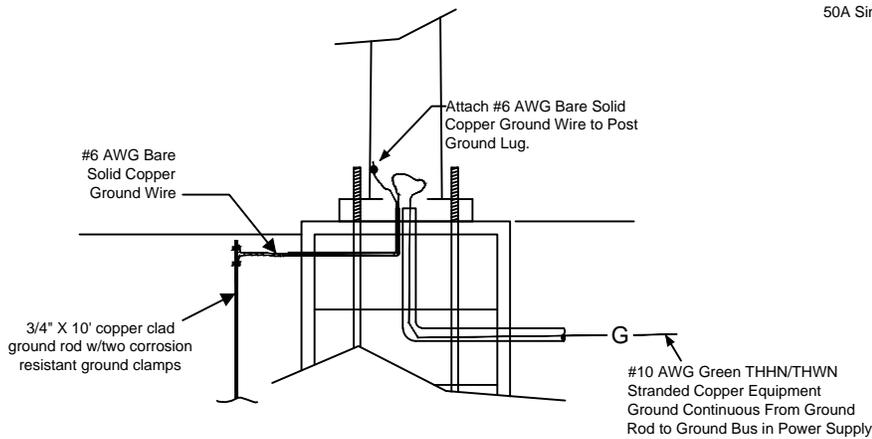
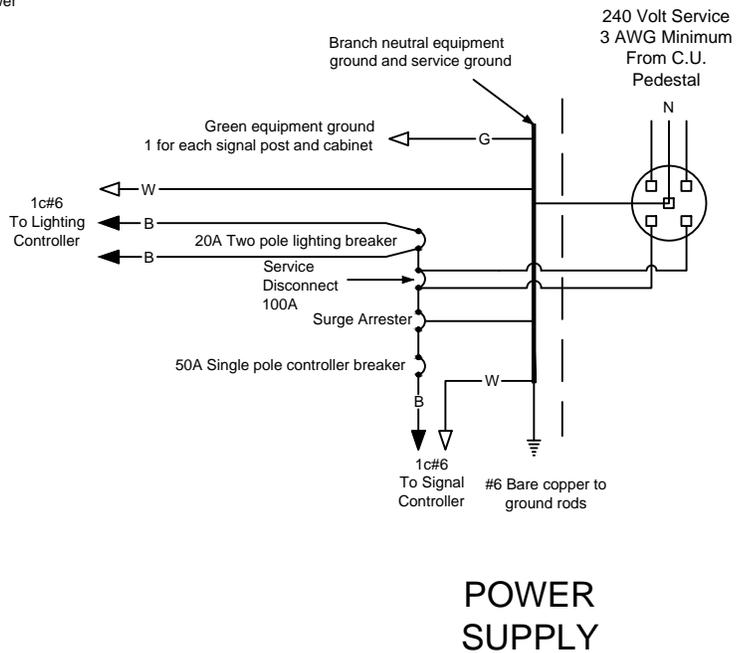
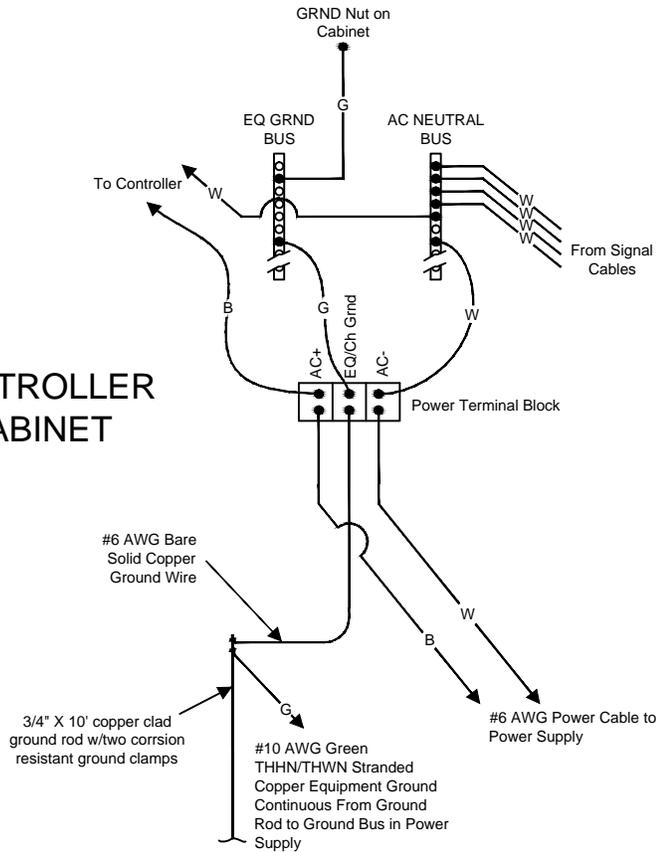
NOT TO SCALE



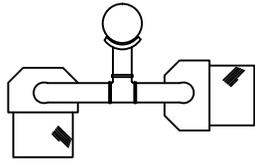
- ① 14"H x 12"W x 6"D 14 Ga. watertight aluminum or stainless steel enclosure
- ② Photoelectric Switch & Socket, 240V
- ③ Lighting Contactor, 2 Pole, 60 Amp, 240 V
- ④ 15 AMP single pole Control Breaker, 240 V
- ⑤ 15 AMP single pole Auto-Manual Switch, 240 V
- ⑥ Neutral Terminal Strip
- ⑦ Lighting Terminal Block, 600V, 12 position, insulated from back panel, barrier between each terminal & each end, accept #8 AWG cable

NOT TO SCALE

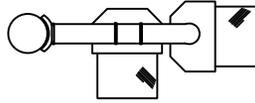
# CONTROLLER CABINET



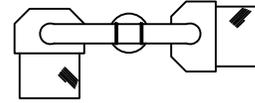
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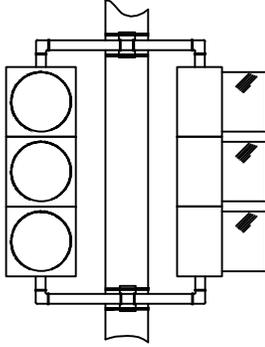
TYPE I  
"O"



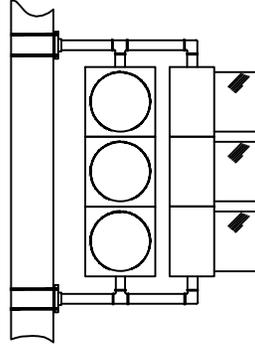
TYPE II  
"O"



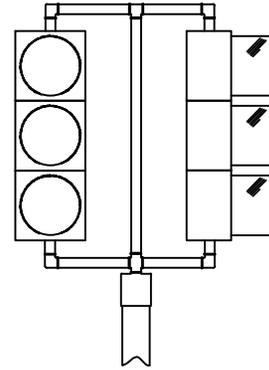
TYPE I  
"T"



SIDE MOUNT

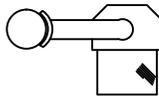


SIDE MOUNT



TOP MOUNT

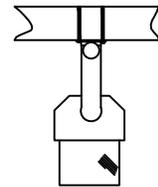
## TWO WAY BRACKETS



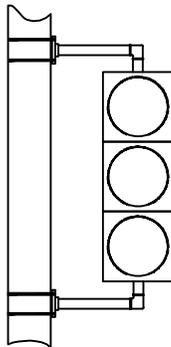
TYPE I  
"O"



TYPE I  
"T"



TYPE S



SIDE MOUNT

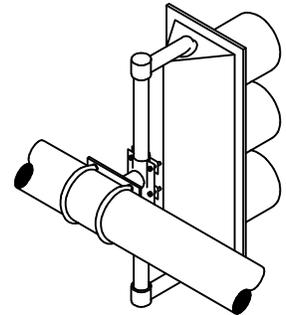


TOP MOUNT

T=Top Mount

O=On Side Mount

S="Astro-Brac"  
3, 4, or 5 Section

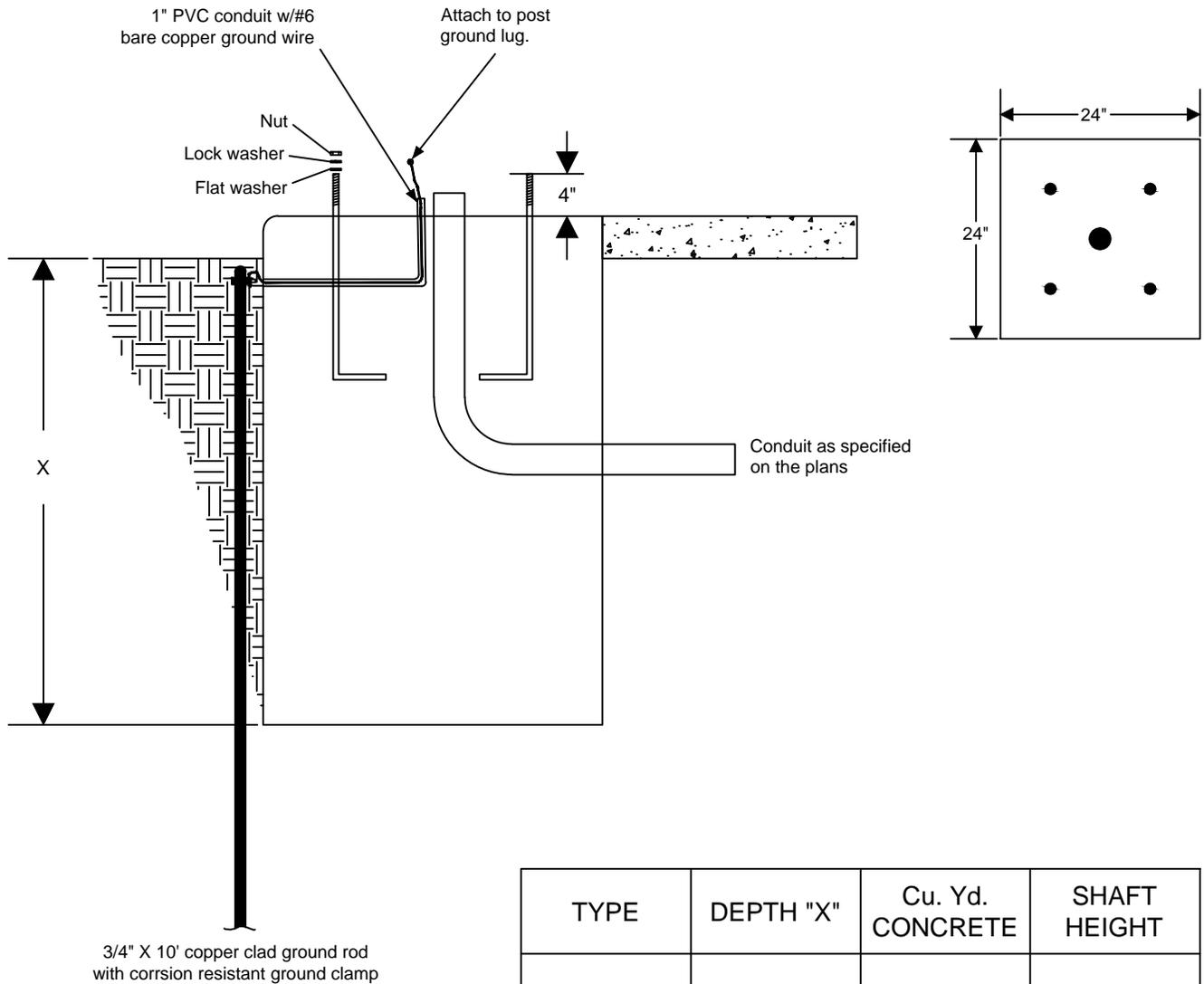


## ONE WAY BRACKETS

## ONE WAY BRACKETS

SIDE MOUNT Type I and Type II brackets are attached to mast arm poles and 10' or 14' pedestals using stainless steel banding.  
TOP MOUNT Type I and Type II brackets are attached to 10' or 14' pedestals using an appropriately sized slip fitter.

NOT TO SCALE



TYPE	DEPTH "X"	Cu. Yd. CONCRETE	SHAFT HEIGHT
A-3	3'	.33	10'
A-4	4'	.59	14'

### TYPE "A" SIGNAL BASE NOTES

1. Anchor bolt size, anchor bolt protection, and bolt circle shall be as shown on approved pole drawings.
2. Anchor bolts and conduit shall be held rigidly in place before and during concrete placement. Anchor bolts shall be set in place by means of a template constructed to space the anchor bolts in accordance with the pattern as shown on the manufacturer's approved pole drawings. The center of the template shall correspond to the center of the base.
3. Concrete shall be consolidated by an internal vibrator.
4. Set top of base 4" above grade if in parkway away from sidewalk and form the final 12" of base square. If base is adjacent to or in sidewalk, form the final 6" of base square after the post and mast arm has been set and plumbed. Final top elevation shall match sidewalk.
5. Install preformed expansion material where base abutts sidewalk/concrete.
6. Conduits shall extend a nominal 2" above the base.

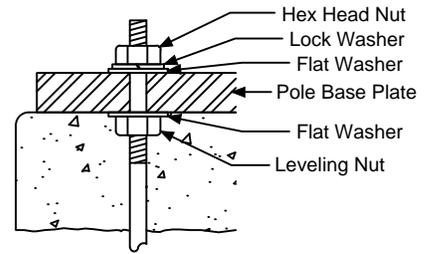
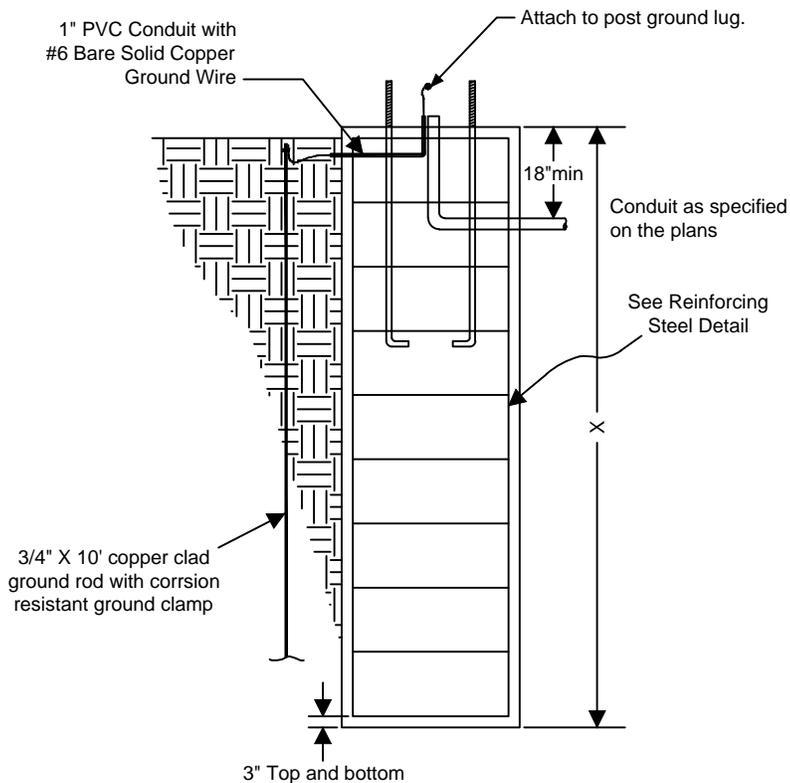
NOT TO SCALE

DEPARTMENT OF PUBLIC WORKS  
SPRINGFIELD, MO.

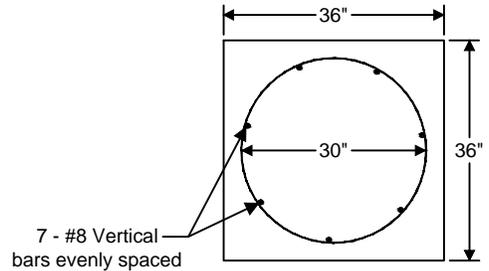
**TYPE "A" SIGNAL BASE**

ADOPTED:

TS-13



**ANCHOR BOLT DETAIL**



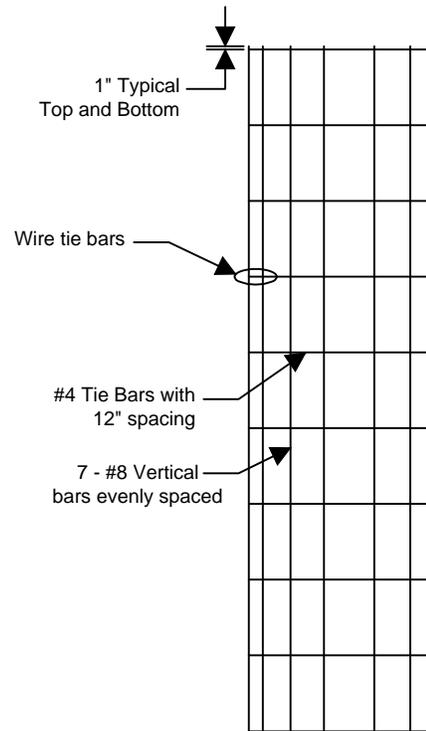
**TOP VIEW**

TYPE	DEPTH "X"	Cu. Yd. CONCRETE	ARM LENGTH
D-5	5'	1.38	25' or less
D-8	8'	2.16	30-35'
D-10	10'	2.69	40'-45'
D-12	12'	3.21	50'-55'

Mast arms are ordered in 5' increments.  
 Mast arms 60' or longer require a special base design.

**TYPE "D" SIGNAL BASE NOTES**

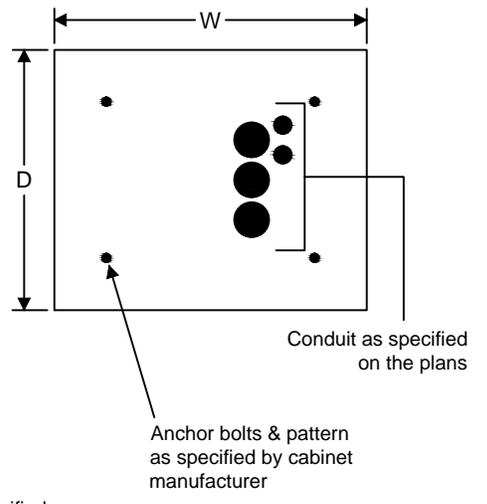
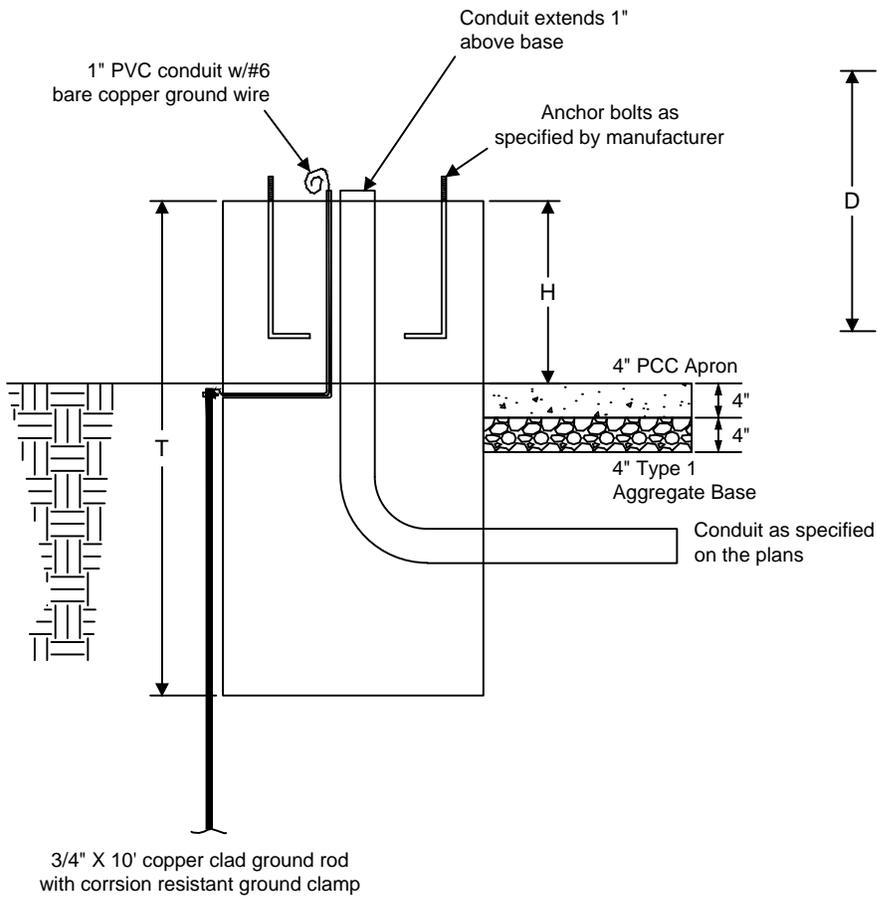
- Anchor bolt size, anchor bolt protection, and bolt circle shall be as shown on approved pole drawings.
- Anchor bolts and conduit shall be held rigidly in place before and during concrete placement. Anchor bolts shall be set in place by means of a template constructed to space the anchor bolts in accordance with the pattern as shown on the manufacturer's approved pole drawings. The center of the template shall correspond to the center of the base.
- Concrete shall be consolidated by an internal vibrator.
- Set top of base 4" above grade if in parkway away from sidewalk and form the final 12" of base square. If base is adjacent to or in sidewalk, form the final 6" of base square after the post and mast arm has been set and plumbed. Final top elevation shall match sidewalk.
- Install preformed expansion material where base abutts sidewalk/concrete.
- Conduits shall extend a nominal 2" above the base.



**SIDE VIEW**

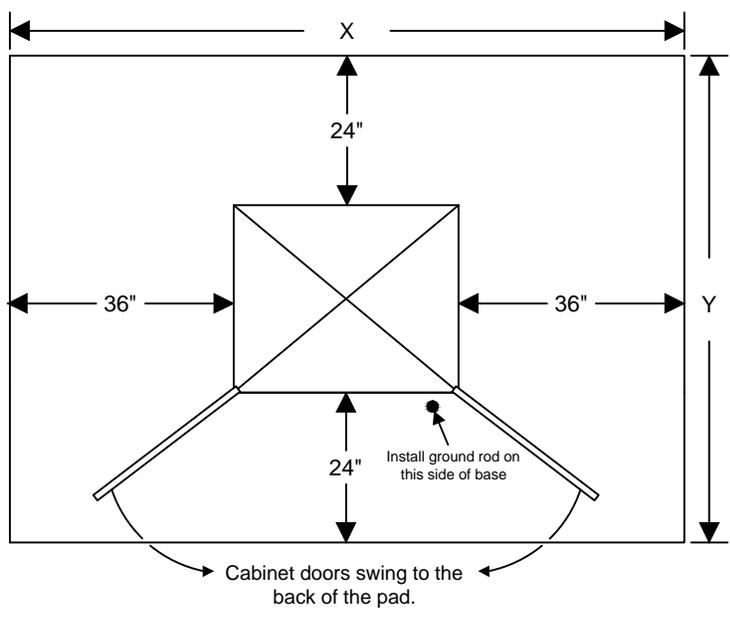
**REINFORCING STEEL DETAIL**

NOT TO SCALE

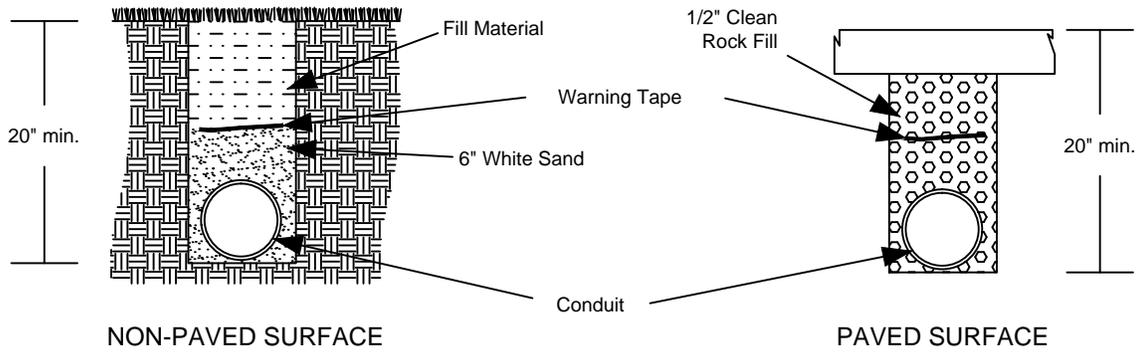


Cubic Yards Concrete				
	B	BS	C	D
With Apron	1.83	1.70	1.65	2.57
Without Apron	1.23	1.10	1.02	1.83

Dimensions				
	B	BS	C	D
W	30"	30"	36"	54"
D	30"	30"	30"	36"
H	28"	21"	8"	8"
T	64"	57"	44"	44"
X	102"	102"	108"	126"
Y	78"	78"	78"	84"

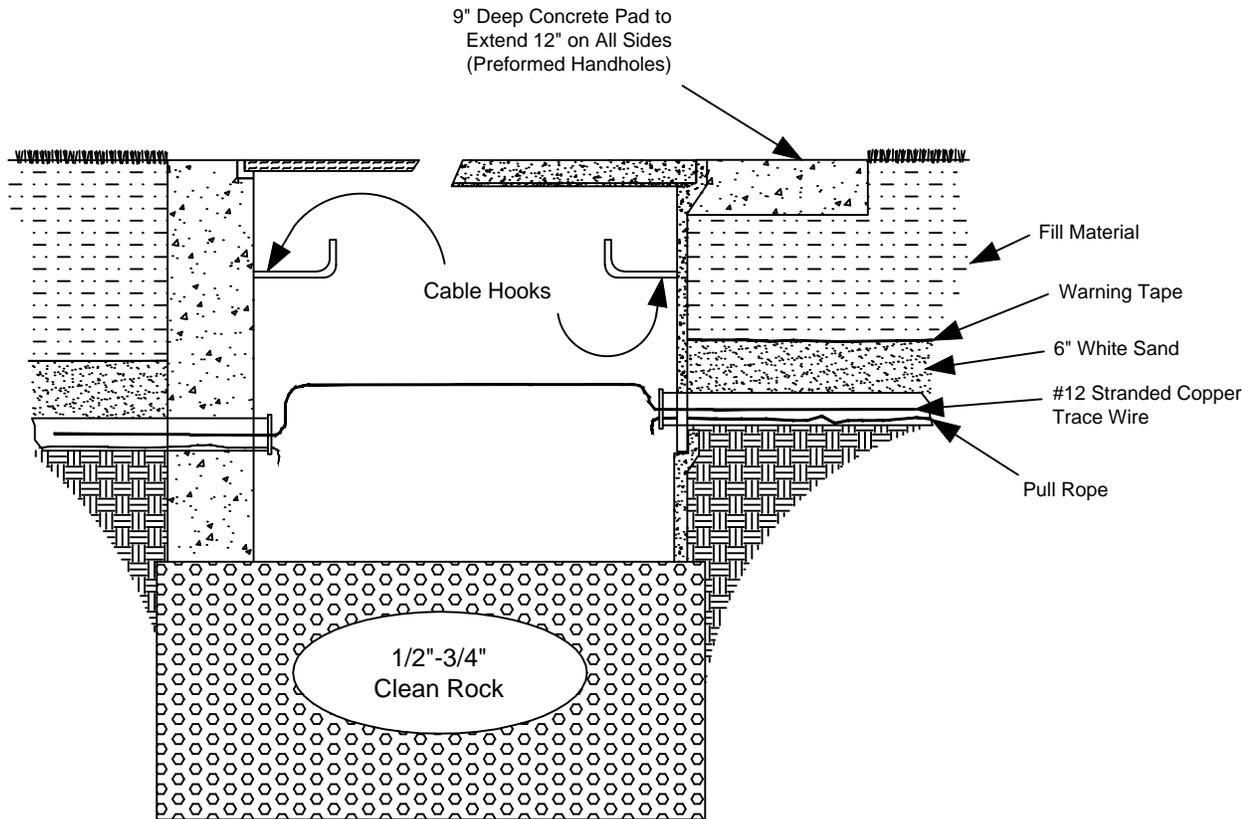


NOT TO SCALE



**NOTES:**

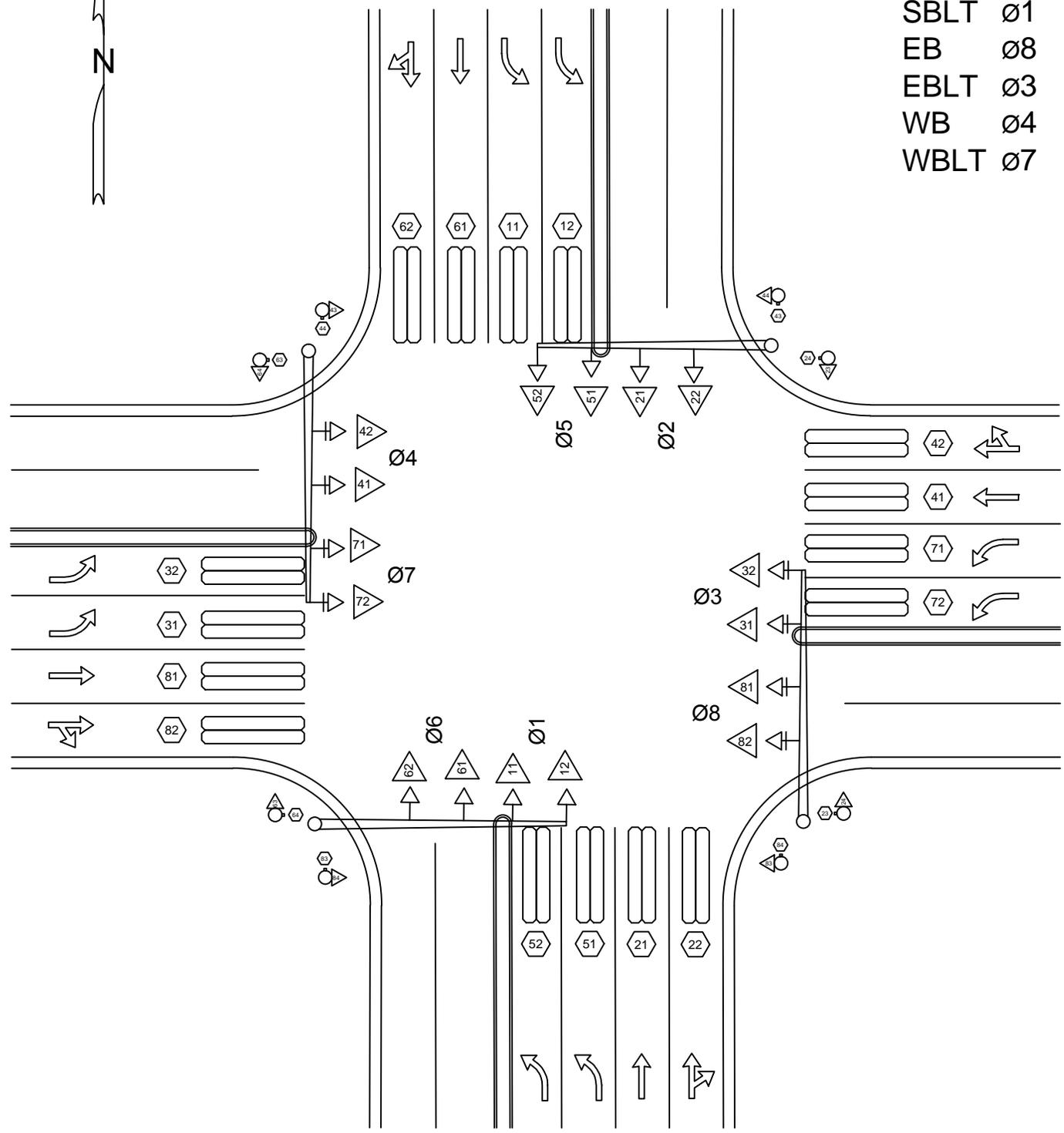
1. All conduit in trench, except interconnect conduit, shall be Schedule 40 PVC, unless otherwise specified.
2. Interconnect conduit shall be continuous Schedule 40 Heavy Duty Polyethylene, orange in color.
3. Trench shall be a minimum of 20" deep and shall be free of rocks and debris.
4. The conduit shall be covered with 6" of white sand if under non-paved surface and 1/2" clean rock fill if under paved surface..
5. Interconnect conduit shall be marked with an orange marking tape provided by the City.
6. The trench shall then be backfilled with material free of large rocks, broken concrete, and other debris.
7. A green jacketed #14 stranded copper trace wire shall be installed in all interconnect conduit.
8. Do not ground trace wire nor extend into controller cabinets.
9. No splices will be allowed in HDPE conduit.



NOT TO SCALE



- NB Ø2
- NBLT Ø5
- SB Ø6
- SBLT Ø1
- EB Ø8
- EBLT Ø3
- WB Ø4
- WBLT Ø7



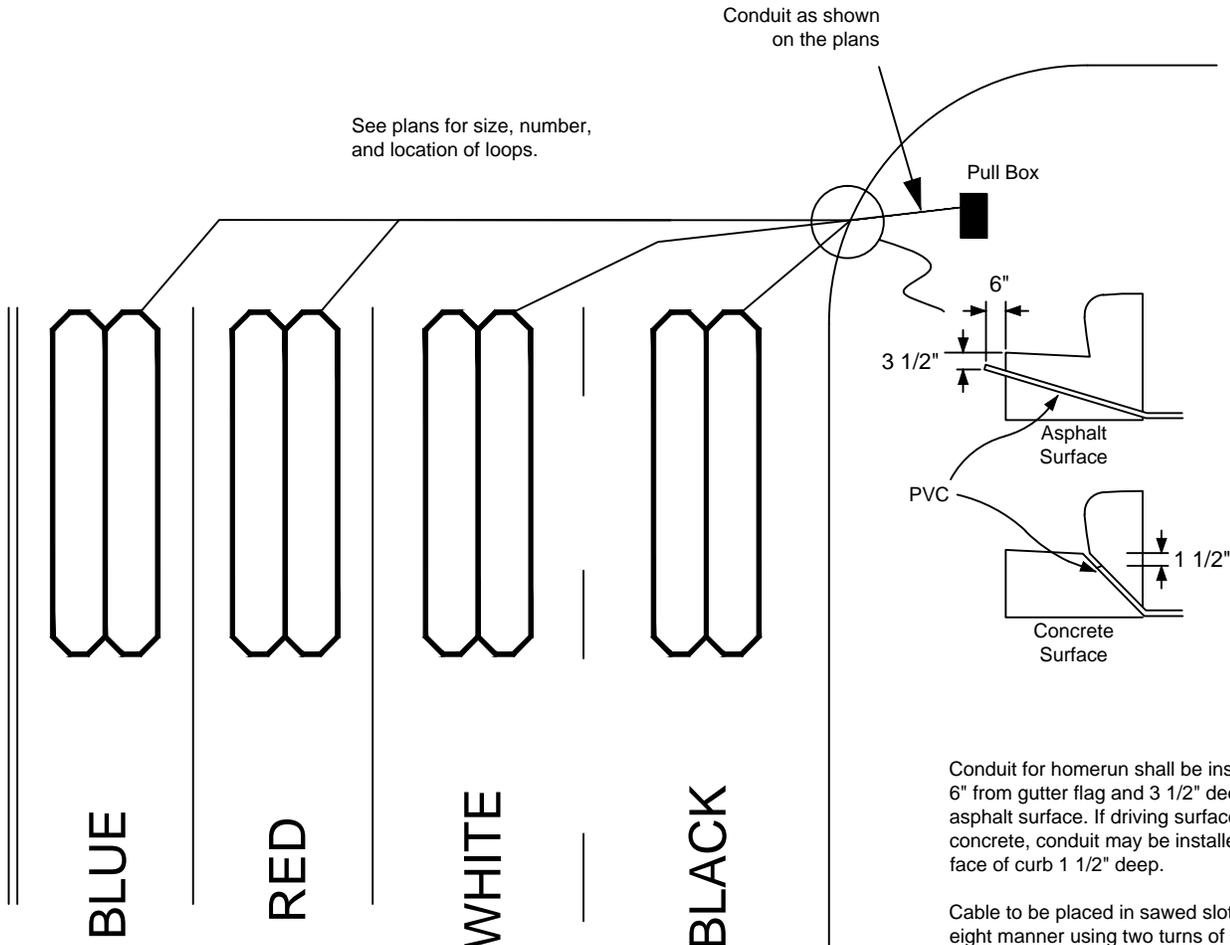
NOT TO SCALE

DEPARTMENT OF PUBLIC WORKS  
SPRINGFIELD, MO.

**SIGNAL PHASING LAYOUT**

ADOPTED:

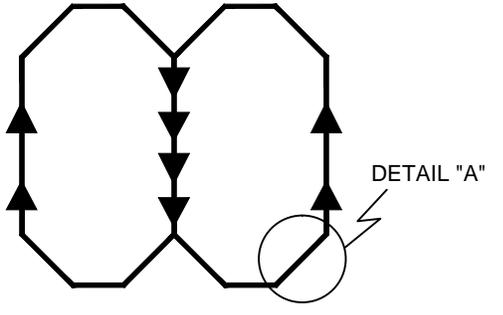
TS-17



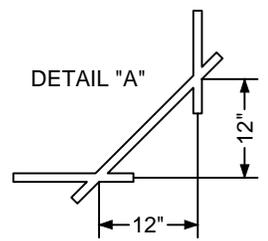
Conduit for homerun shall be installed 6" from gutter flag and 3 1/2" deep in asphalt surface. If driving surface is concrete, conduit may be installed at face of curb 1 1/2" deep.

Cable to be placed in sawed slot in a figure eight manner using two turns of cable, resulting in a 2-4-2 configuration.

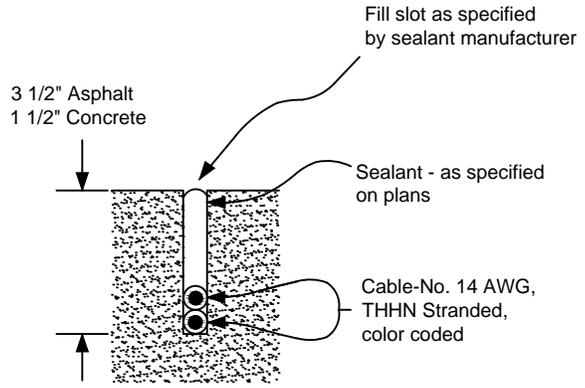
Twist homerun cable 3 turns per foot.



Overlap saw cuts to ensure full depth at corners. Cut 45 degree corners as shown.

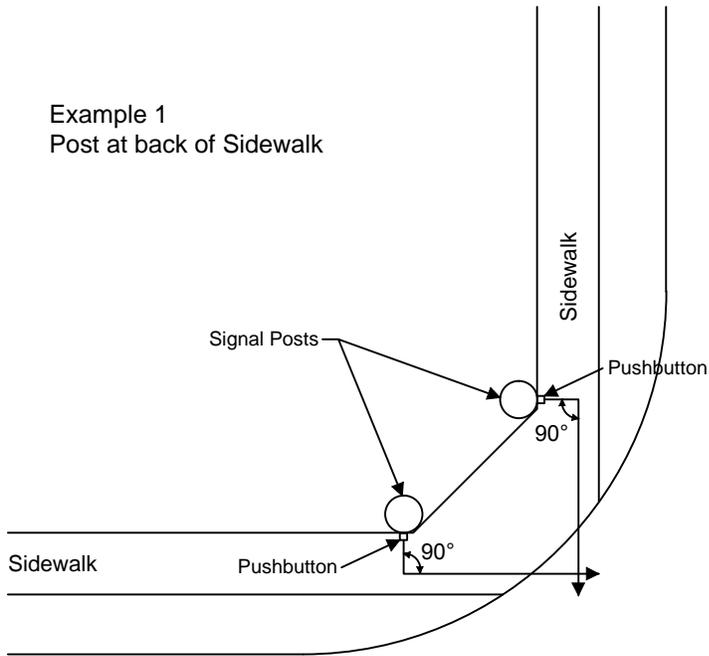


NOT TO SCALE



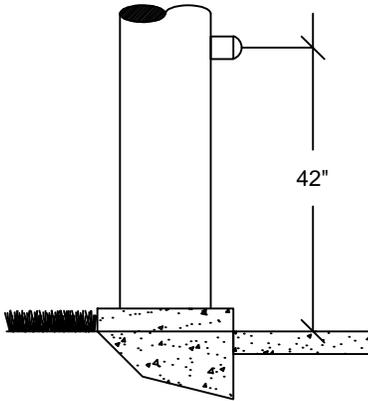
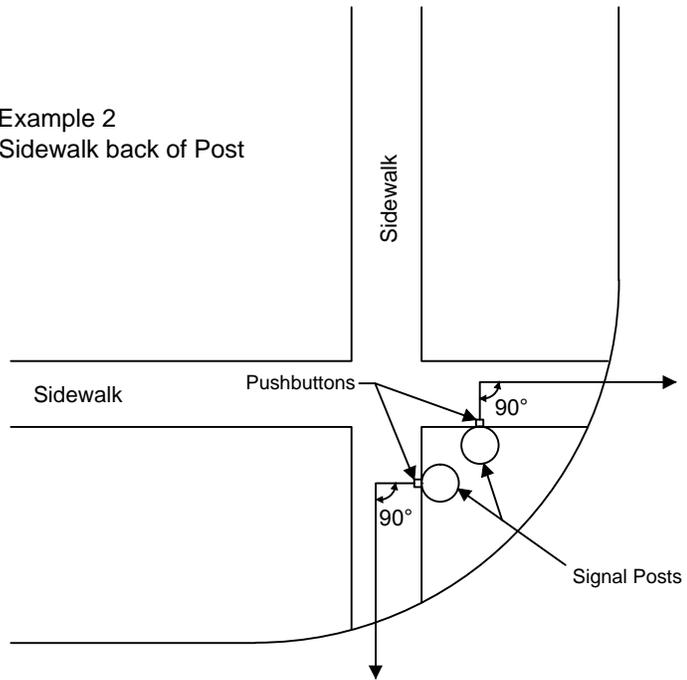
Lanes shall be designated from right to left, with the curb lane being lane 1. Black cable shall be used for lane 1, white for lane 2, red for lane 3, and blue for lane 4.

Example 1  
Post at back of Sidewalk

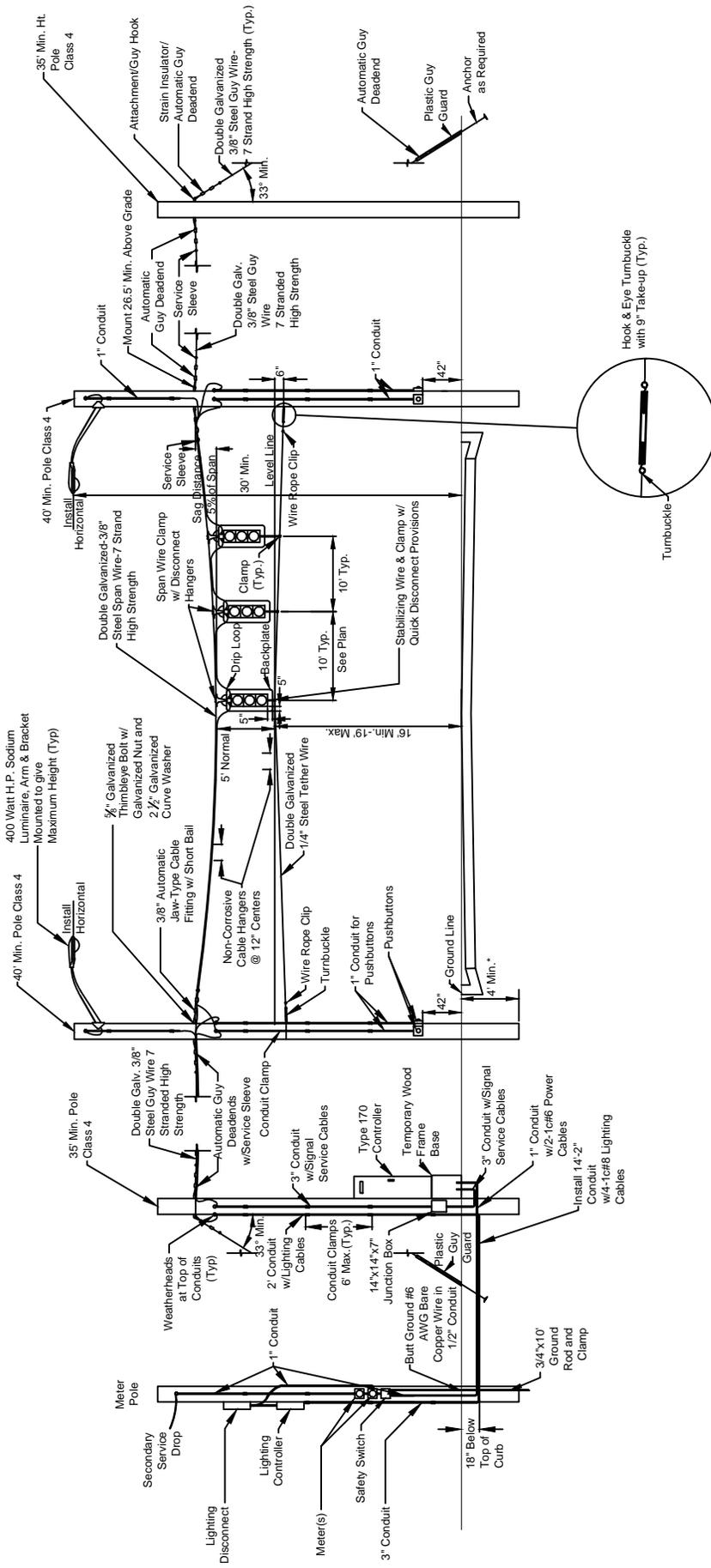


Rule of Thumb: Install the Pushbutton at 90 degree angle to the alignment of crosswalk it serves, 42" above sidewalk grade. Install on the faces adjacent to the sidewalk.

Example 2  
Sidewalk back of Post



NOT TO SCALE



**NOTE:**  
 Place pole 4' in ground minimum.  
 Add 1' depth for every 5' in excess of 20' pole length.

NOT TO SCALE