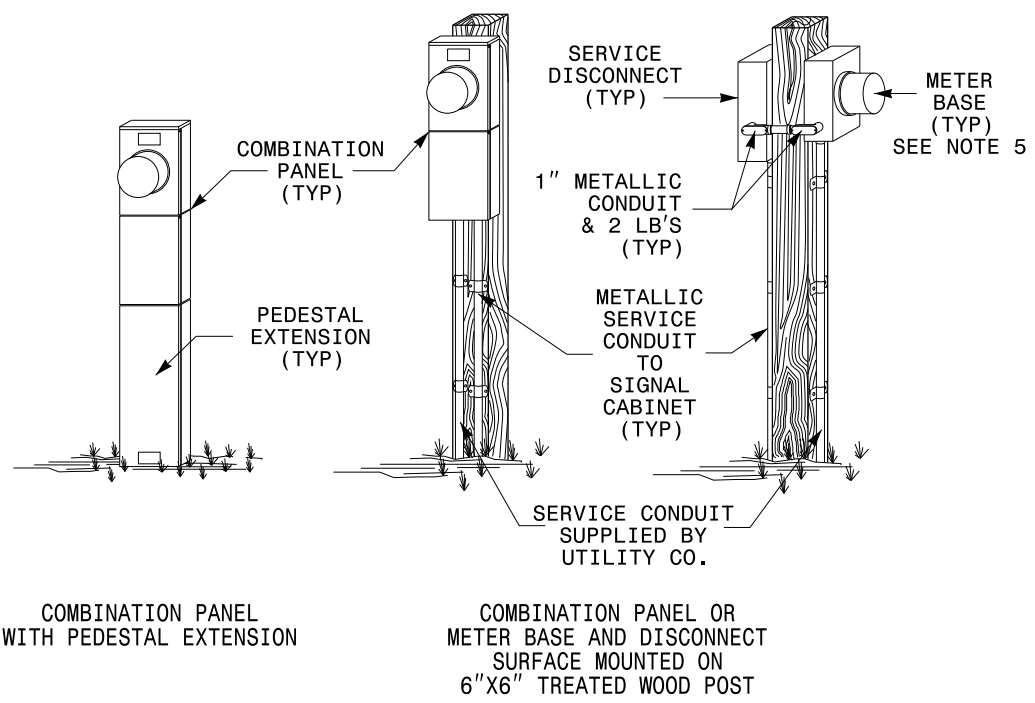


**GROUND MOUNTED SERVICE EQUIPMENT OPTIONS  
FOR UNDERGROUND ELECTRICAL SERVICE**



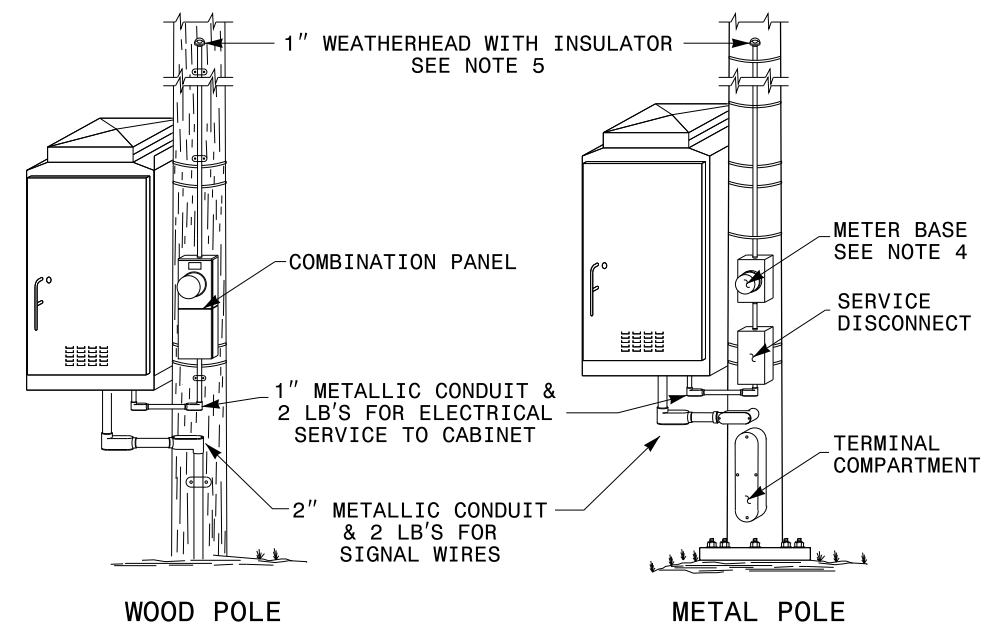
COMBINATION PANEL WITH PEDESTAL EXTENSION

COMBINATION PANEL OR METER BASE AND DISCONNECT SURFACE MOUNTED ON 6"X6" TREATED WOOD POST

**NOTES**

1. LOCATE THE SERVICE EQUIPMENT NEAR THE SIGNAL CABINET IN A MANNER THAT WILL ALLOW EASY ACCESS TO THE SERVICE DISCONNECT. LOCATE SERVICE EQUIPMENT SO AS NOT TO OBSTRUCT SIGHT DISTANCE OF VEHICLES TURNING RIGHT ON RED.
2. FOR GROUND MOUNTED ELECTRICAL SERVICE INSTALLATIONS WHEN POST MOUNTING IS CHOSEN, INSTALL TREATED WOOD POSTS A MINIMUM OF 3 FEET INTO THE GROUND.
3. INSTALL ALL METER BASES MOUNTED IN PEDESTALS AT A HEIGHT NOT TO EXCEED 5 FEET AS MEASURED FROM THE CENTER OF THE METER. INSTALL ALL OTHER METER BASES AT A HEIGHT BETWEEN 4 FEET AND 5 FEET AS MEASURED FROM THE CENTER OF THE METER. SEAL ANY UNUSED MOUNTING HOLES ON COMBINATION PANELS, METER BASES AND SERVICE DISCONNECTS.
4. INSTALL OVERHEAD ELECTRICAL SERVICE ON POLES AS SHOWN WHEN UNDERGROUND SOURCE IS NOT AN OPTION. COMBINATION PANELS, OR METER BASES AND SERVICE DISCONNECTS, MAY BE INSTALLED ON POLES WHEN POLE MOUNTED SIGNAL CABINETS ARE REQUIRED FOR THE INSTALLATION. DO NOT ROUTE UNFUSED OVERHEAD ELECTRICAL SERVICE CONDUCTOR INSIDE OF METAL POLES.
5. TYPICAL POINT OF DELIVERY FOR UNDERGROUND SERVICE IS INSIDE OF METER BASE. TYPICAL POINT OF DELIVERY FOR OVERHEAD SERVICE IS AT THE WEATHERHEAD ENTRANCE AT THE TOP OF THE SERVICE RISER.

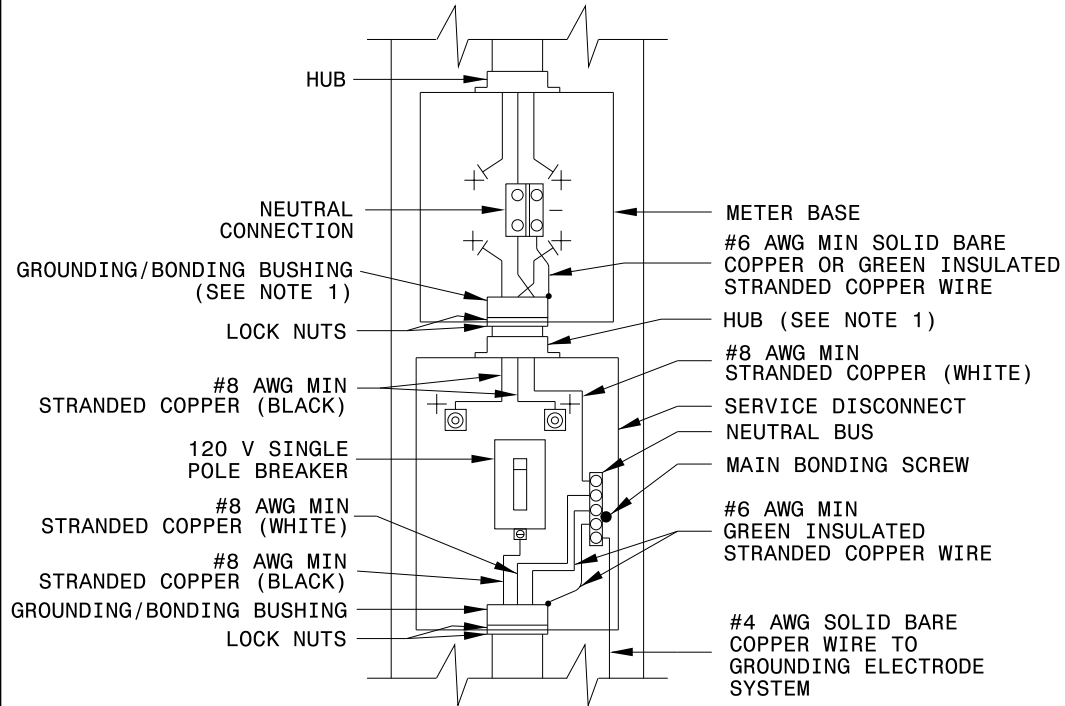
**POLE MOUNTED SERVICE EQUIPMENT OPTIONS FOR  
OVERHEAD ELECTRICAL SERVICE**



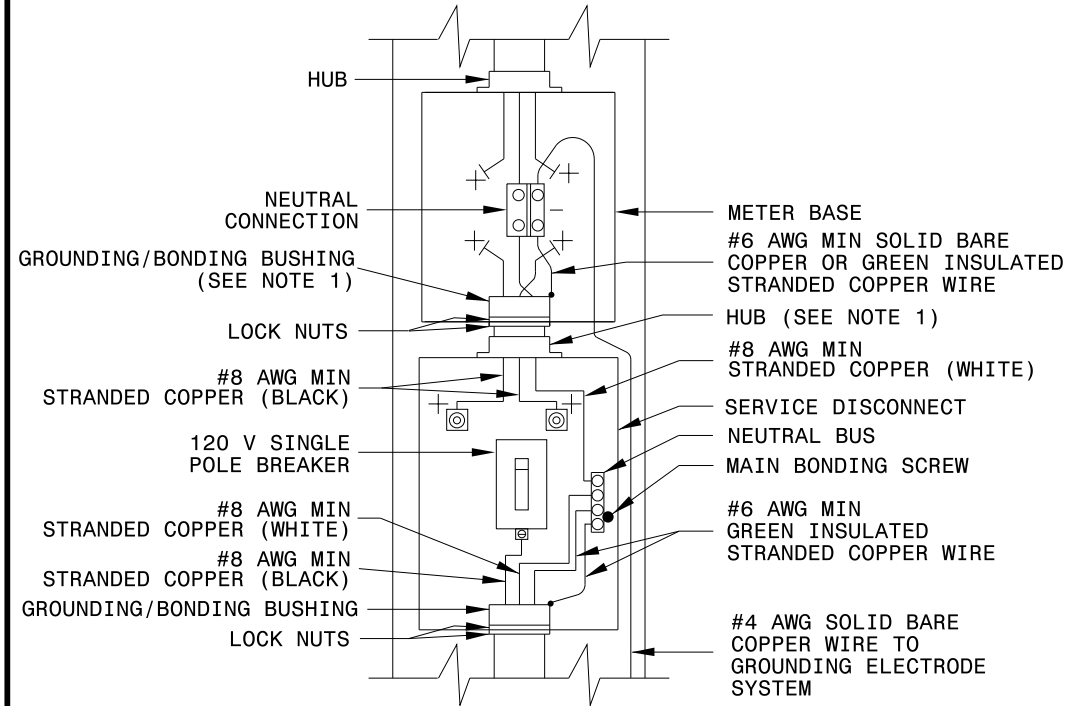
WOOD POLE

METAL POLE

TYPICAL ELECTRICAL CONNECTION DETAIL FOR  
OVERHEAD SERVICE INSTALLATION  
(SHOWN WITH METER BASE/SERVICE DISCONNECT OPTION AND WITH  
GROUNDING ELECTRODE CONDUCTOR TERMINATED IN DISCONNECT)



ALTERNATE ELECTRICAL CONNECTION DETAIL FOR  
OVERHEAD SERVICE INSTALLATION  
(SHOWN WITH METER BASE/SERVICE DISCONNECT OPTION AND WITH  
GROUNDING ELECTRODE CONDUCTOR TERMINATED IN METER)

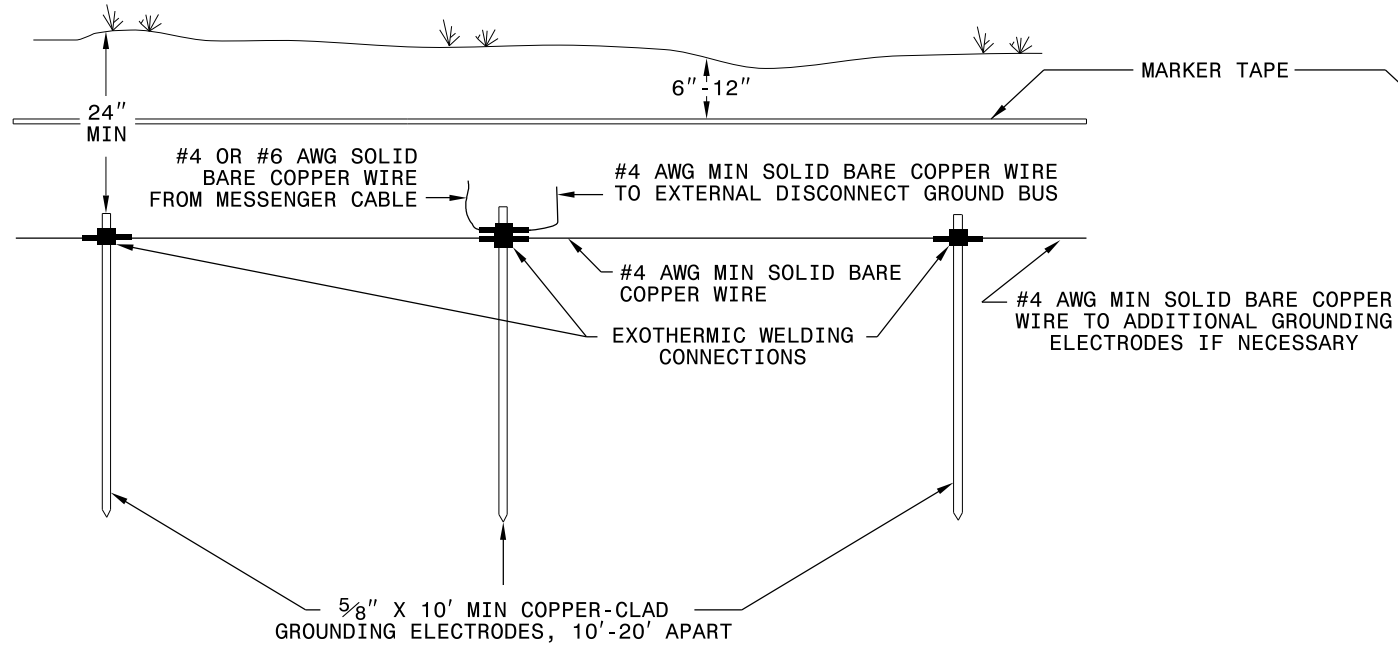


**NOTES**

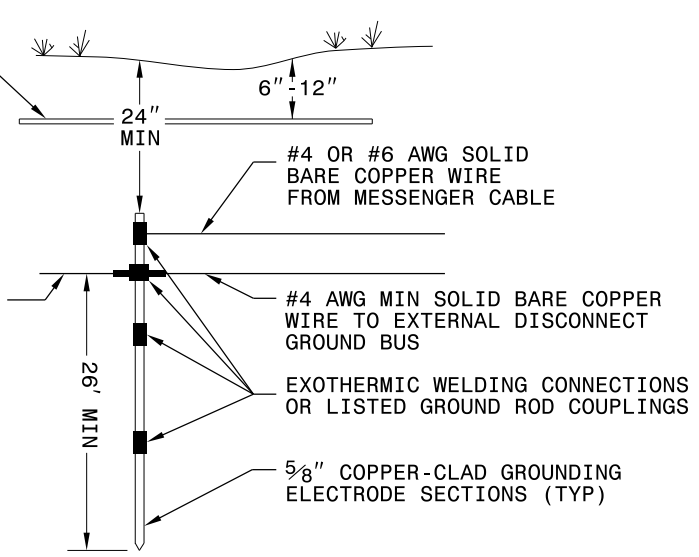
1. WHEN USING A HUB LISTED AS A GROUNDING HUB (UL TYPES DWTT AND KDER), THE BONDING BUSHING IN THE METER BASE IS NOT NECESSARY.

1-12

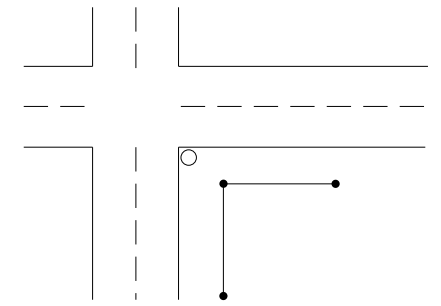
MULTIPLE ELECTRODES



SECTIONAL ELECTRODES

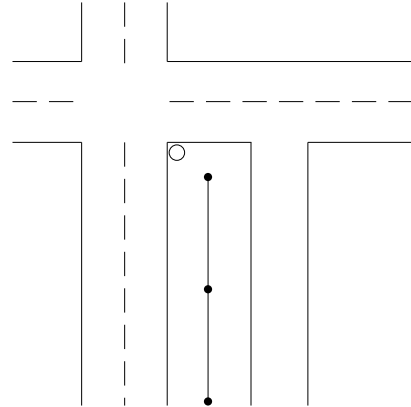


UNRESTRICTED SHOULDER



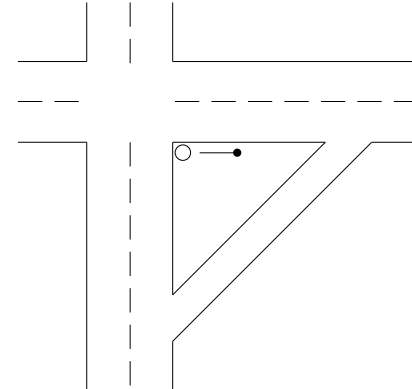
PLACE GROUNDING ELECTRODES AT 90°

LIMITED SHOULDER



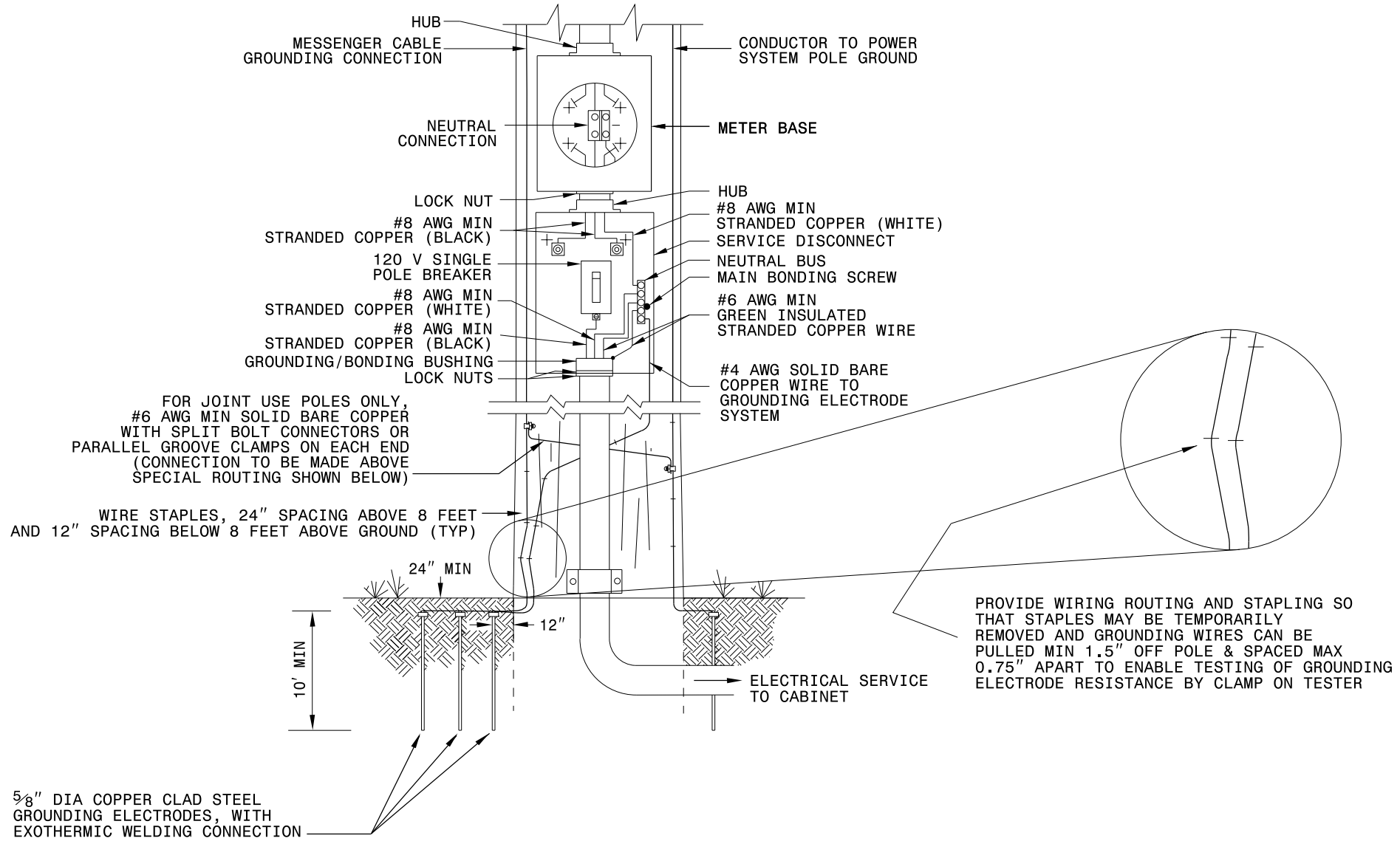
PLACE GROUNDING ELECTRODES IN A STRAIGHT LINE

RESTRICTED SPACE



1-12

ENGLISH STANDARD DRAWING FOR  
**ELECTRICAL SERVICE GROUNDING**  
 GROUNDING AND BONDING - WOOD POLES



ENGLISH STANDARD DRAWING FOR  
**ELECTRICAL SERVICE GROUNDING**  
 GROUNDING AND BONDING - WOOD POLES

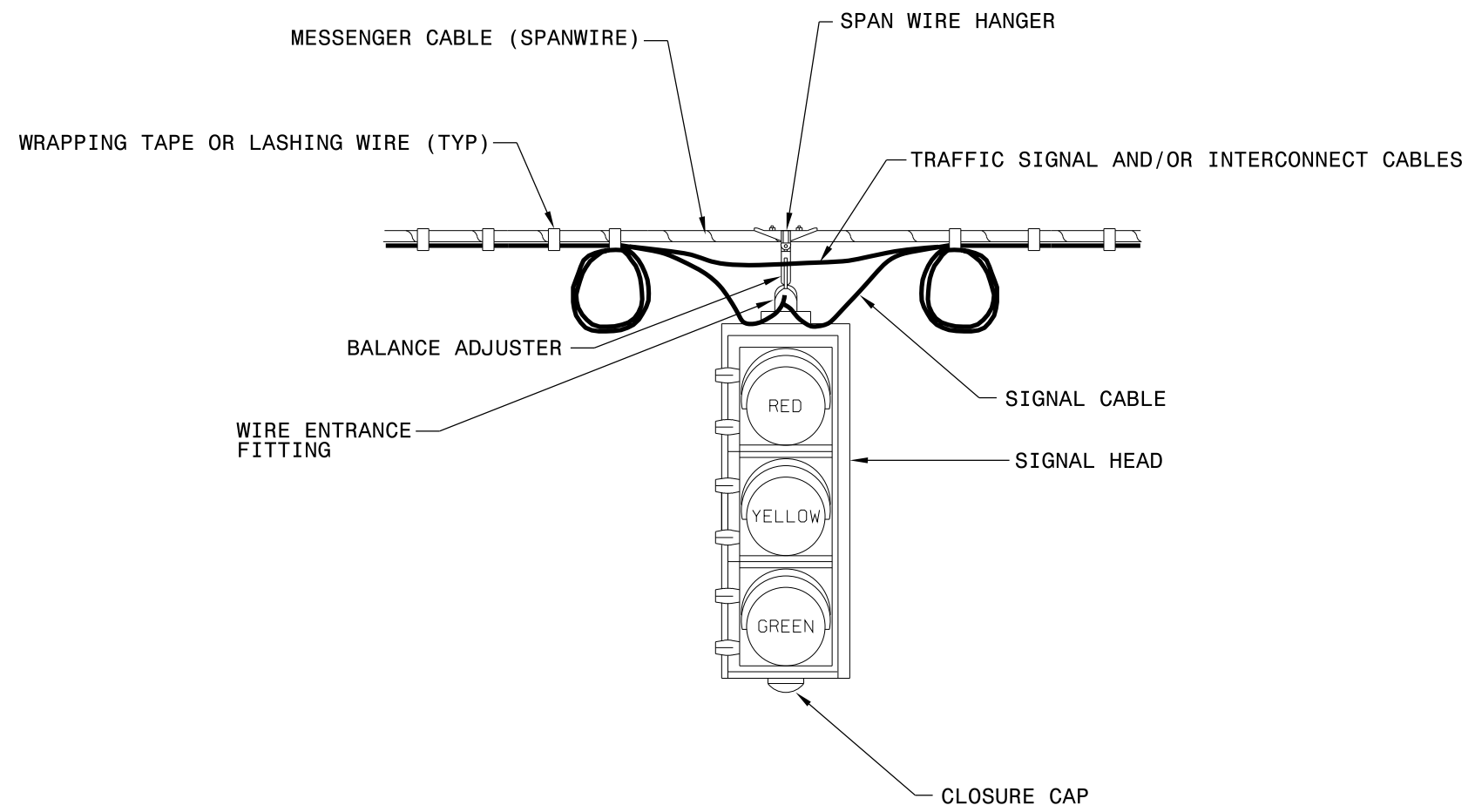
STATE OF NORTH CAROLINA  
DEPT. OF TRANSPORTATION  
DIVISION OF HIGHWAYS  
RALEIGH, N.C.

1-12

ENGLISH STANDARD DRAWING FOR  
**SIGNAL HEADS**  
VEHICULAR SIGNAL HEADS

SHEET 1 OF 2

1705.01



STATE OF NORTH CAROLINA  
DEPT. OF TRANSPORTATION  
DIVISION OF HIGHWAYS  
RALEIGH, N.C.

1-12

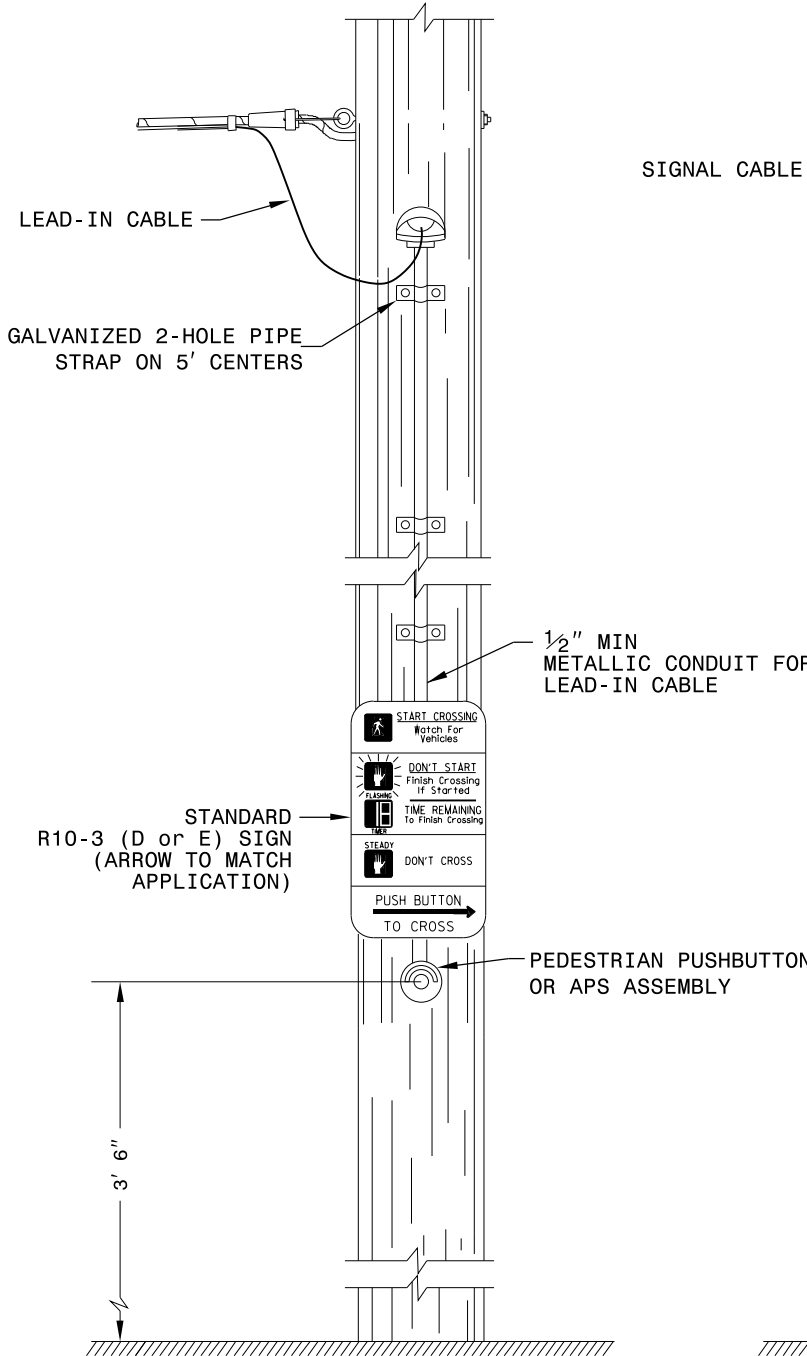
ENGLISH STANDARD DRAWING FOR  
**SIGNAL HEADS**  
VEHICULAR SIGNAL HEADS

SHEET 1 OF 2

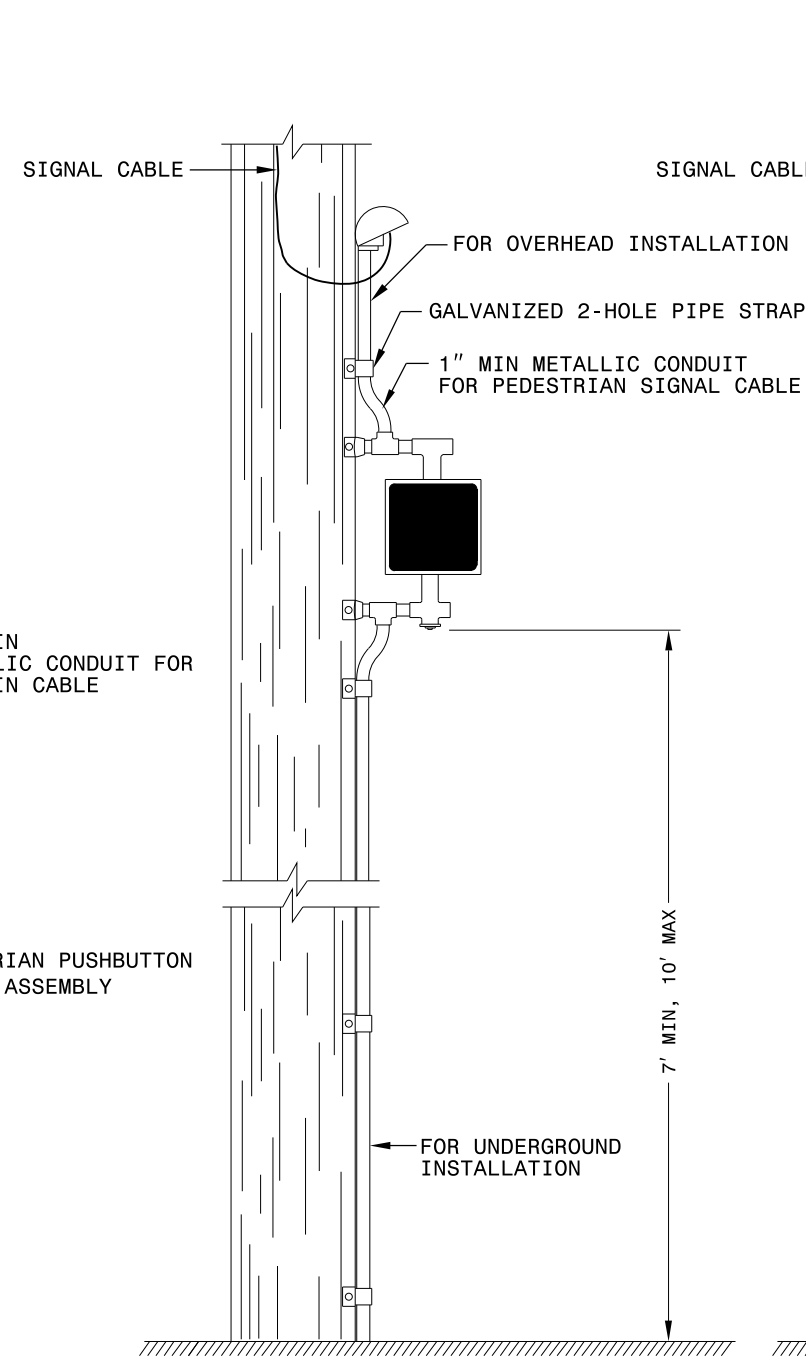
1705.01



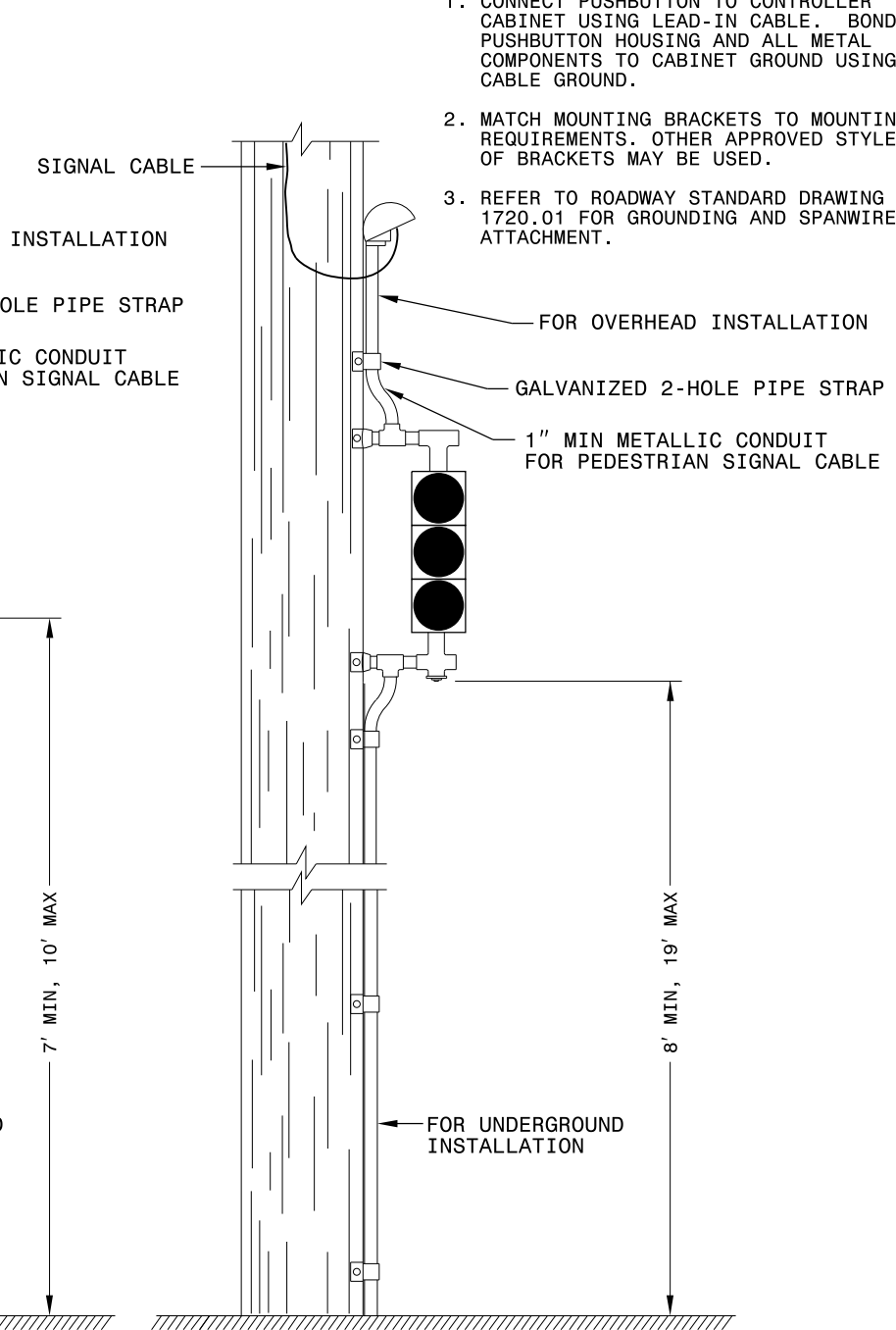
**FRONT VIEW**



**SIDE VIEW**



**SIDE VIEW**



**NOTES**

1. CONNECT PUSHBUTTON TO CONTROLLER CABINET USING LEAD-IN CABLE. BOND PUSHBUTTON HOUSING AND ALL METAL COMPONENTS TO CABINET GROUND USING CABLE GROUND.
2. MATCH MOUNTING BRACKETS TO MOUNTING REQUIREMENTS. OTHER APPROVED STYLES OF BRACKETS MAY BE USED.
3. REFER TO ROADWAY STANDARD DRAWING 1720.01 FOR GROUNDING AND SPANWIRE ATTACHMENT.

STATE OF NORTH CAROLINA  
DEPT. OF TRANSPORTATION  
DIVISION OF HIGHWAYS  
RALEIGH, N.C.

**1-12**

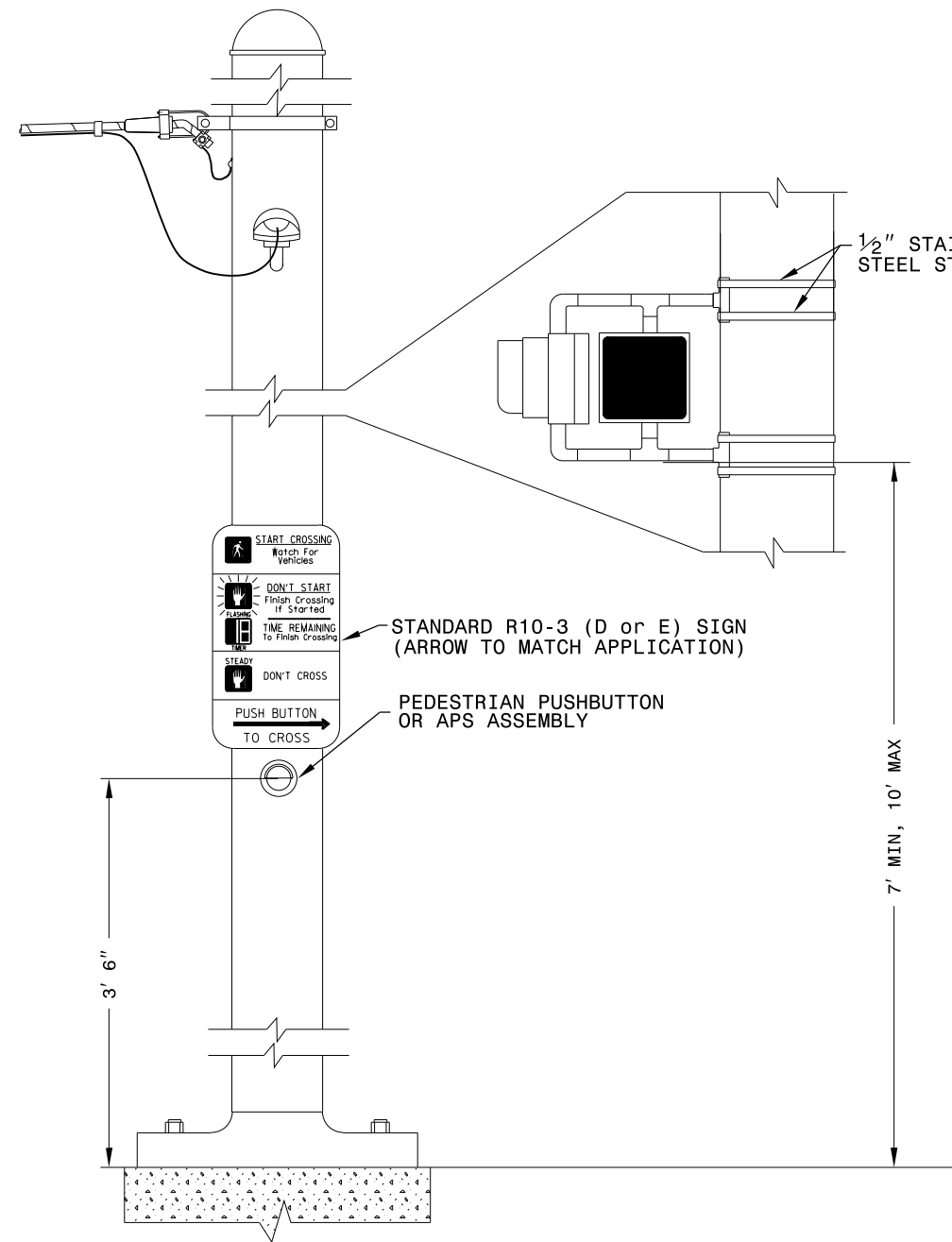
ENGLISH STANDARD DRAWING FOR  
**SIGNAL HEADS**  
WOOD POLE MOUNTING

STATE OF NORTH CAROLINA  
DEPT. OF TRANSPORTATION  
DIVISION OF HIGHWAYS  
RALEIGH, N.C.

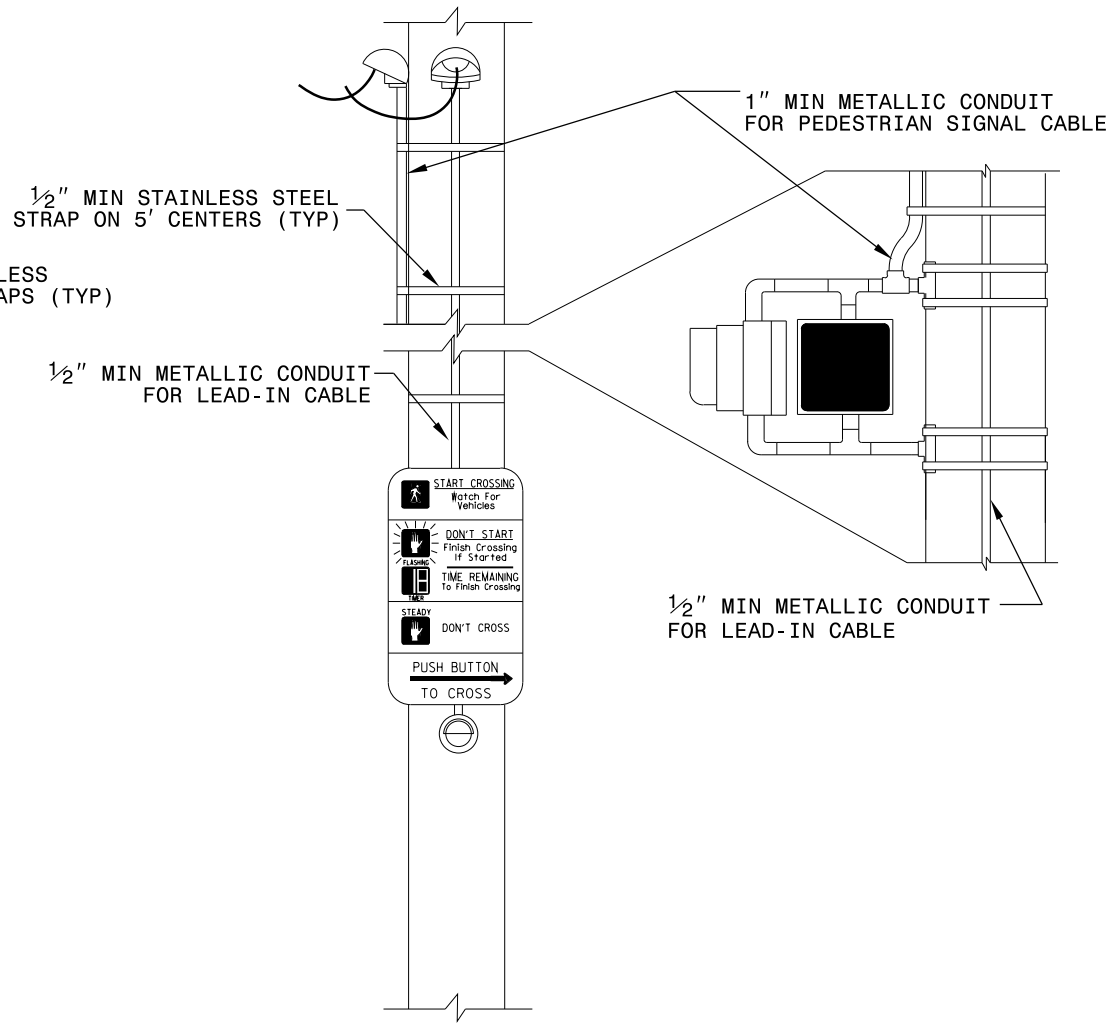
**1-12**

ENGLISH STANDARD DRAWING FOR  
**SIGNAL HEADS**  
WOOD POLE MOUNTING

**PREFERRED**



**ALTERNATE**

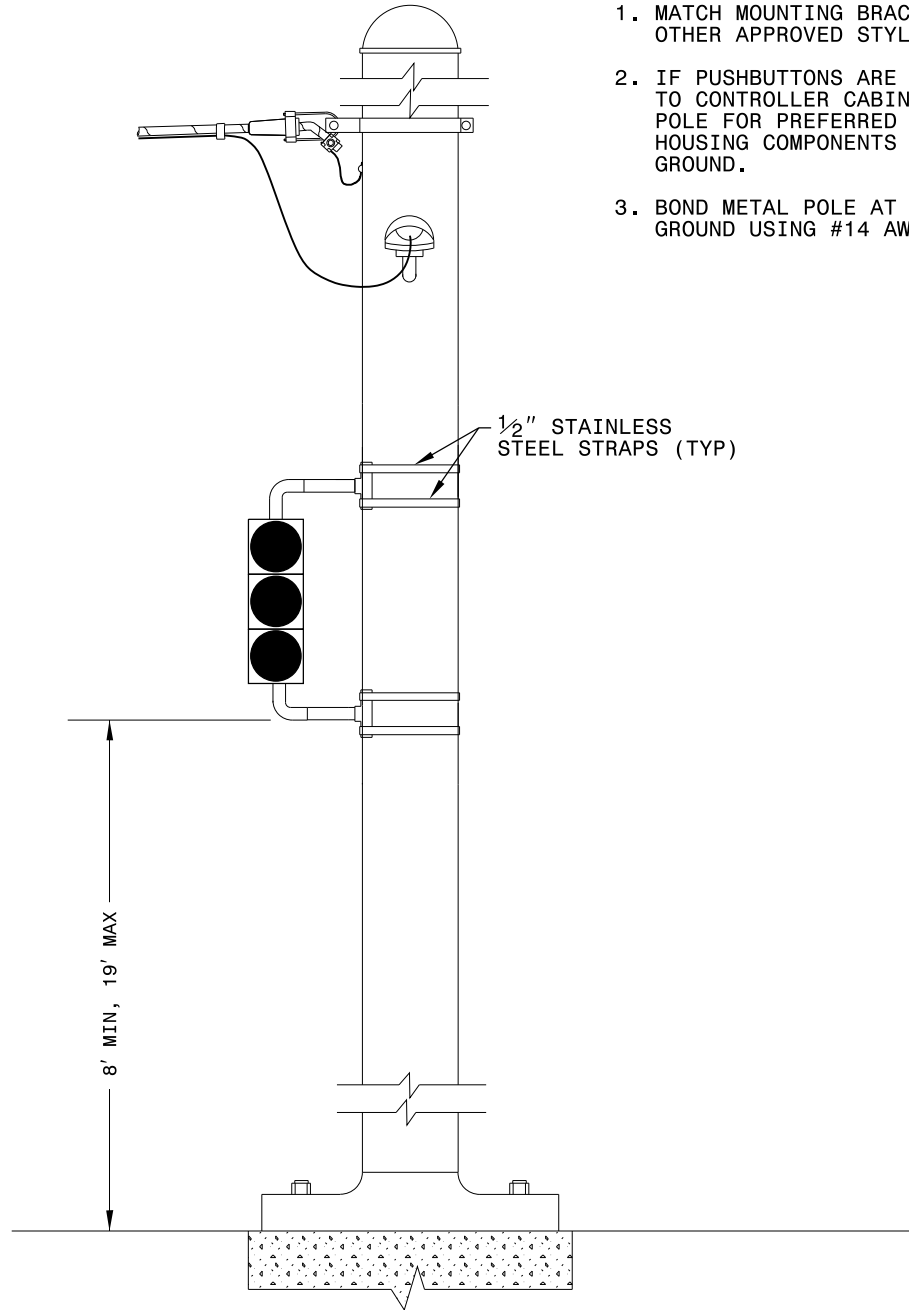


**NOTES**

1. CONNECT PUSHBUTTON TO CONTROLLER CABINET USING LEAD-IN CABLE (INSIDE POLE FOR PREFERRED MOUNTING). BOND PUSHBUTTON HOUSING TO CABINET GROUND USING CABLE GROUND.
2. BOND METAL POLE AT CABINET LOCATION TO CABINET GROUND USING #14 AWG TYPE THWN.
3. MATCH MOUNTING BRACKETS TO MOUNTING REQUIREMENTS. OTHER APPROVED STYLES OF BRACKETS MAY BE USED.



PREFERRED

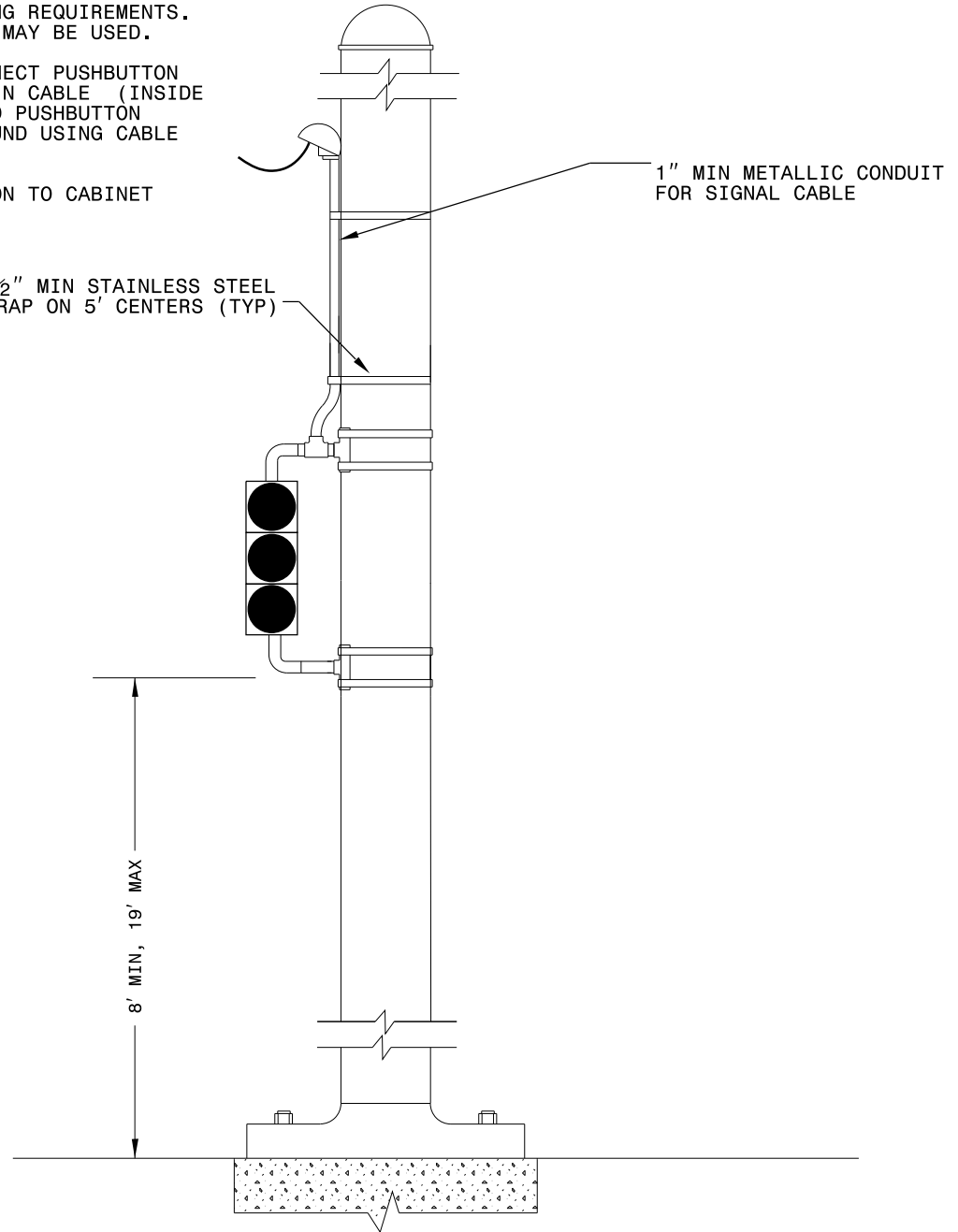


NOTES

1. MATCH MOUNTING BRACKETS TO MOUNTING REQUIREMENTS. OTHER APPROVED STYLES OF BRACKETS MAY BE USED.
2. IF PUSHBUTTONS ARE INSTALLED, CONNECT PUSHBUTTON TO CONTROLLER CABINET USING LEAD-IN CABLE (INSIDE POLE FOR PREFERRED MOUNTING). BOND PUSHBUTTON HOUSING COMPONENTS TO CABINET GROUND USING CABLE GROUND.
3. BOND METAL POLE AT CABINET LOCATION TO CABINET GROUND USING #14 AWG TYPE THWN.

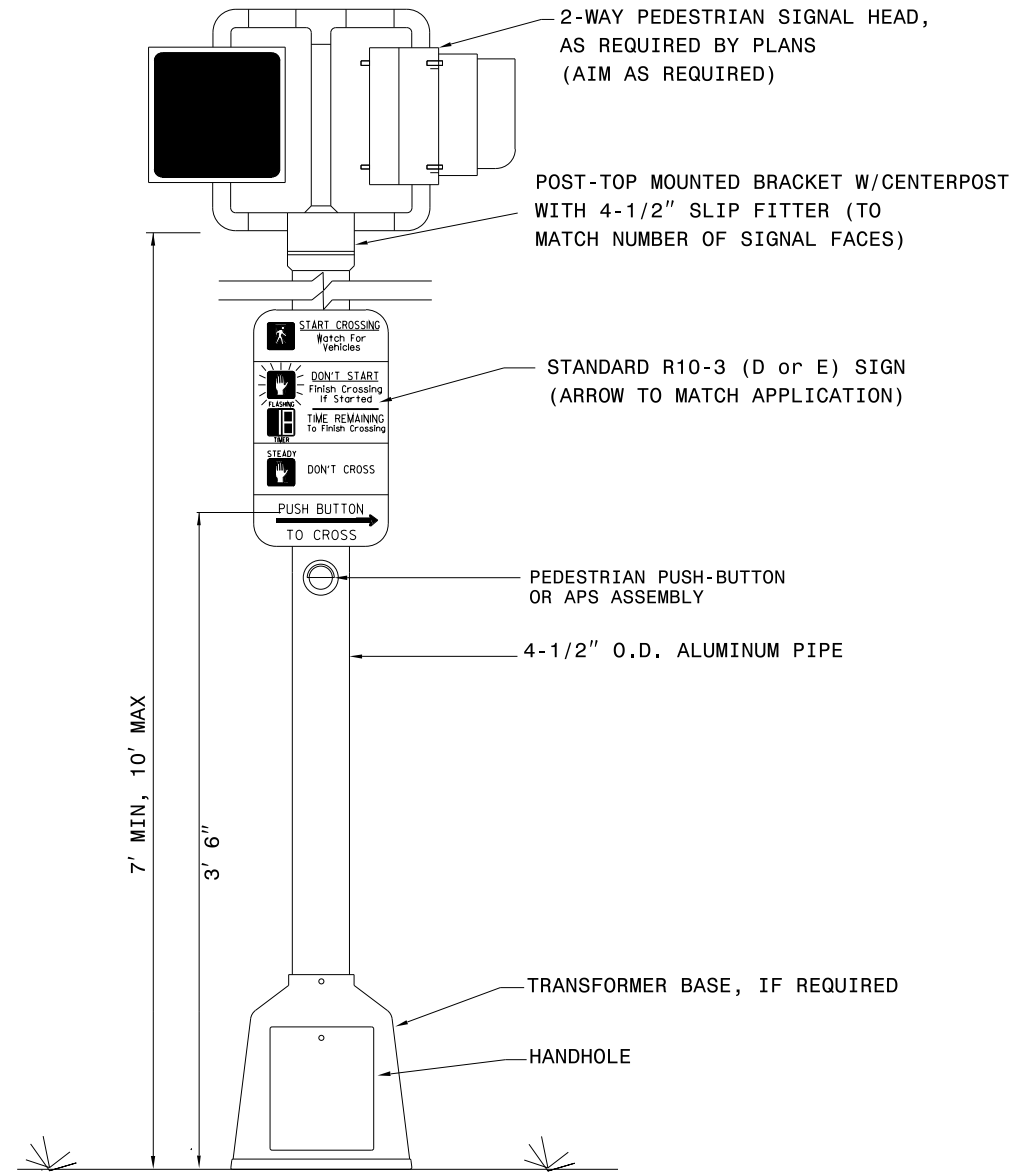
1/2" MIN STAINLESS STEEL STRAP ON 5' CENTERS (TYP)

ALTERNATE



1-12

ENGLISH STANDARD DRAWING FOR  
**SIGNAL HEADS**  
 PEDESTRIAN ASSEMBLIES-PEDESTAL MOUNTING



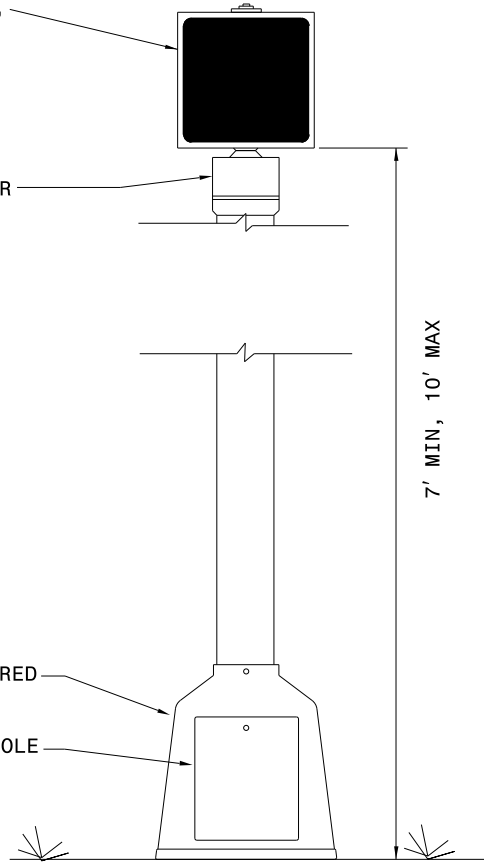
1-WAY PEDESTRIAN SIGNAL HEAD,  
 AS REQUIRED BY PLANS  
 (AIM AS REQUIRED)

POST-TOP 4-1/2" SLIP FITTER

TRANSFORMER BASE, IF REQUIRED

HANDHOLE

7' MIN, 10' MAX



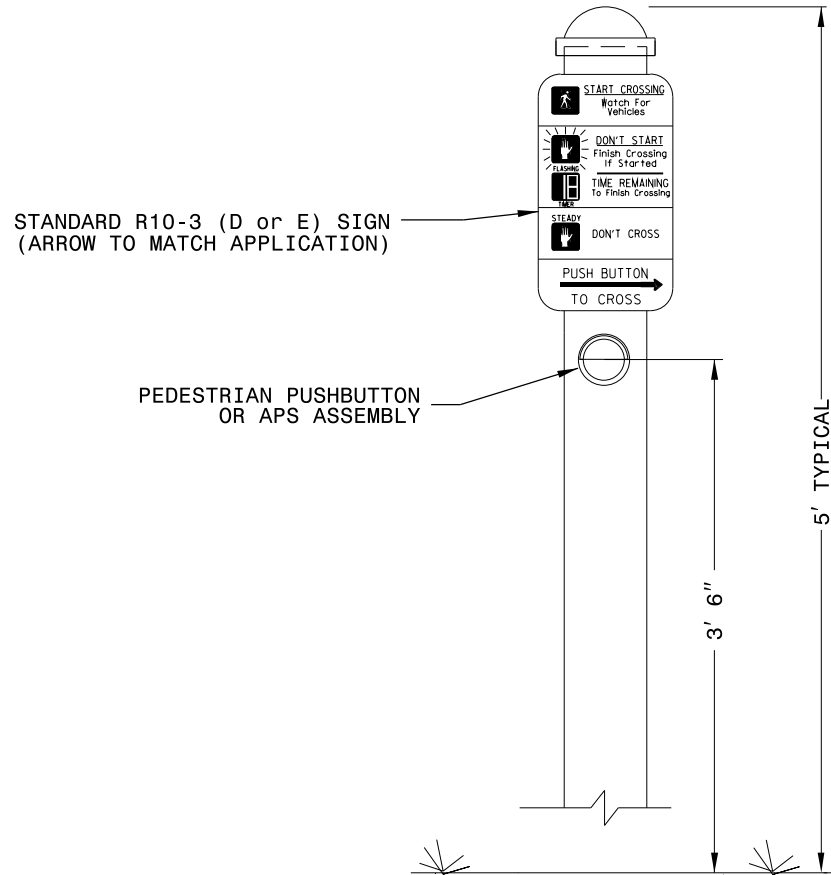
**NOTE**

1. CONNECT PUSHBUTTON TO CONTROLLER CABINET USING LEAD-IN CABLE. BOND PUSHBUTTON HOUSING AND ALL METAL COMPONENTS TO CABINET GROUND USING CABLE GROUND.
2. BOND PEDESTAL ASSEMBLY TO CABINET GROUND WITH #14 AWG TYPE THWN.
3. REFER TO ROADWAY STANDARD DRAWING 1743 FOR PEDESTAL INFORMATION.

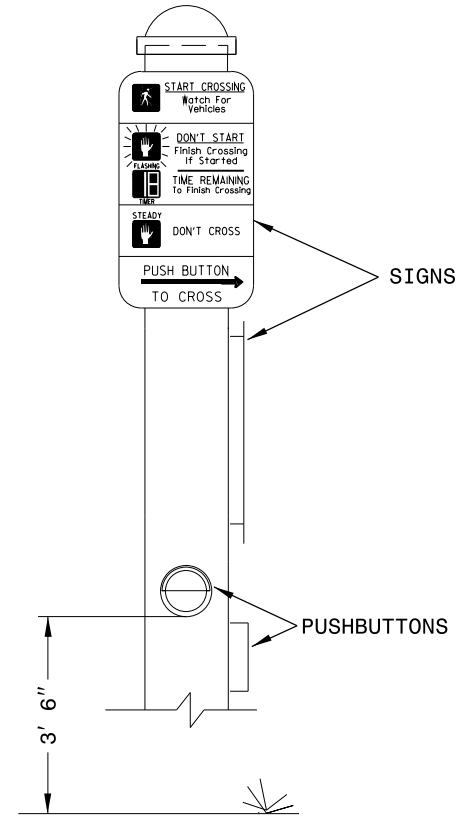
1-12

ENGLISH STANDARD DRAWING FOR  
**SIGNAL HEADS**  
 PEDESTRIAN ASSEMBLIES-PEDESTAL MOUNTING

**SINGLE PUSHBUTTON**



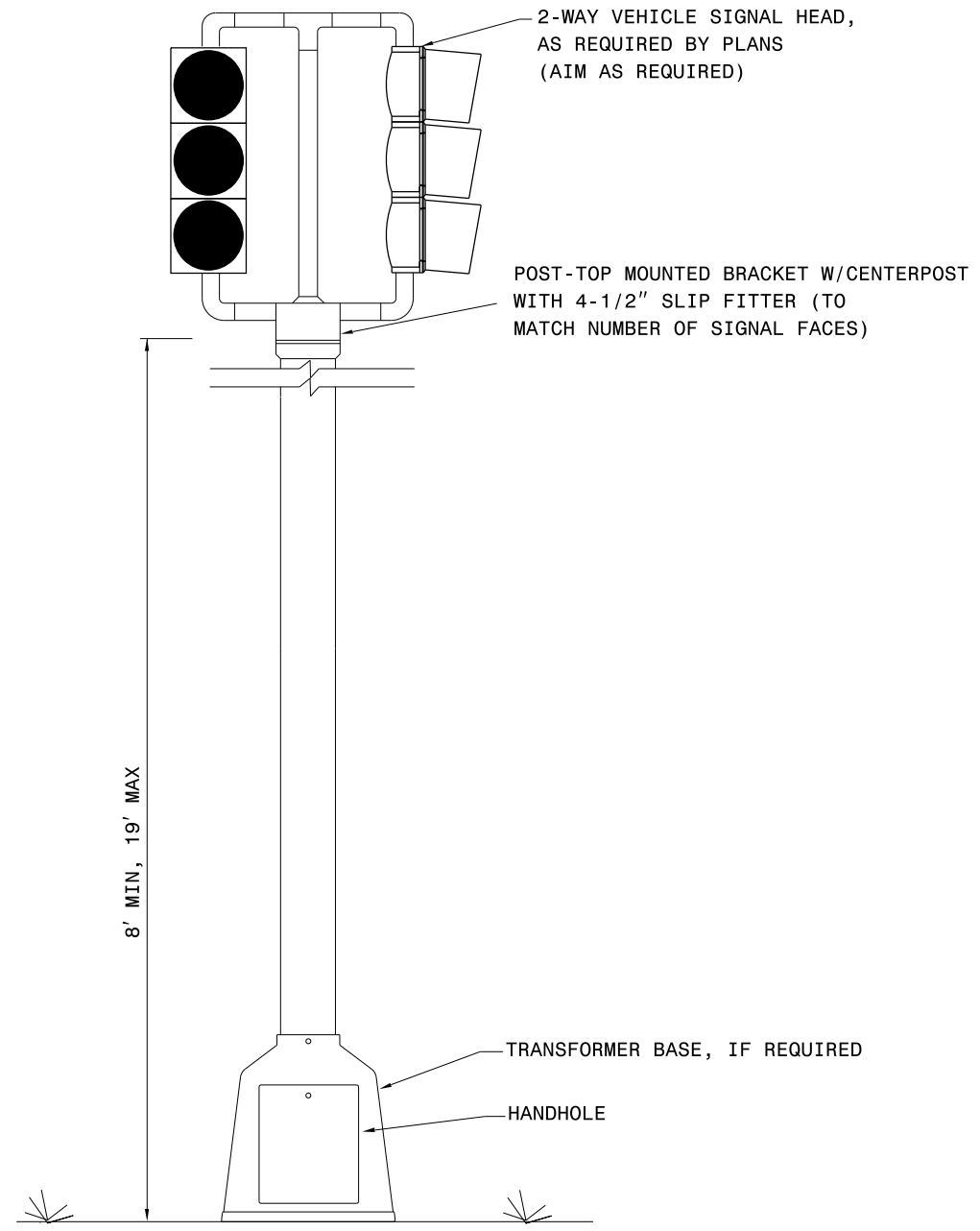
**DUAL PUSHBUTTON**



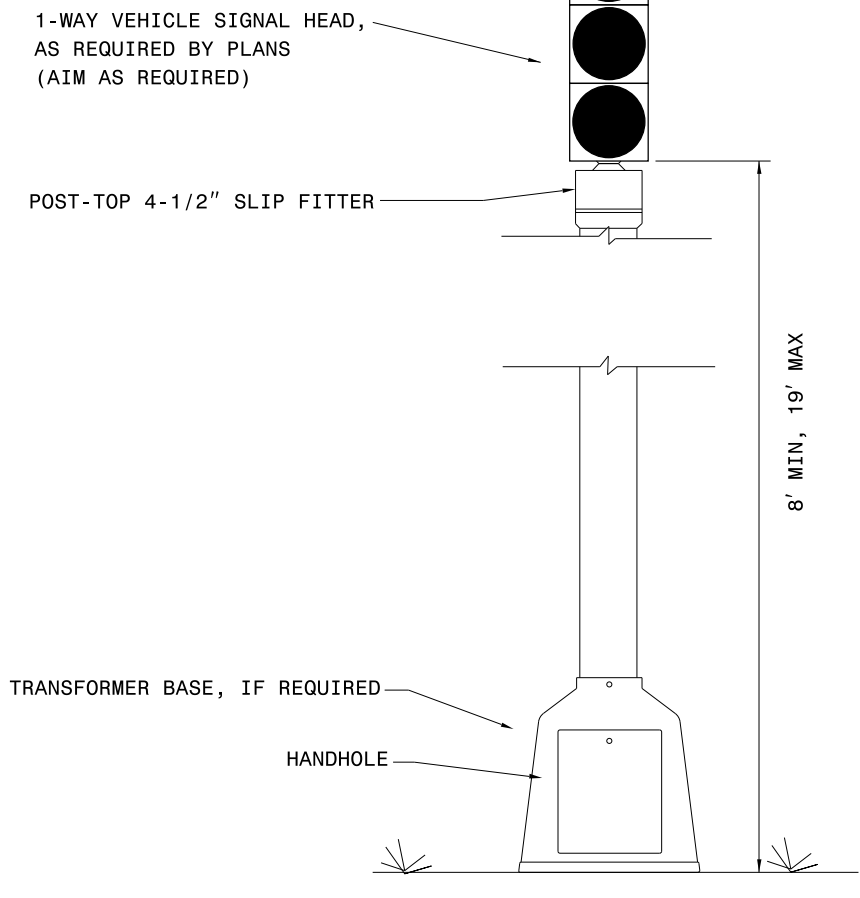
**NOTES**

1. CONNECT PUSHBUTTON TO CONTROLLER CABINET USING LEAD-IN CABLE. BOND PUSHBUTTON HOUSING AND ALL METAL COMPONENTS TO CABINET GROUND USING CABLE GROUND.
2. REFER TO ROADWAY STANDARD DRAWING 1743 FOR PEDESTAL INFORMATION.

1-12


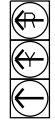


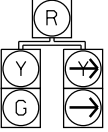
















1-12



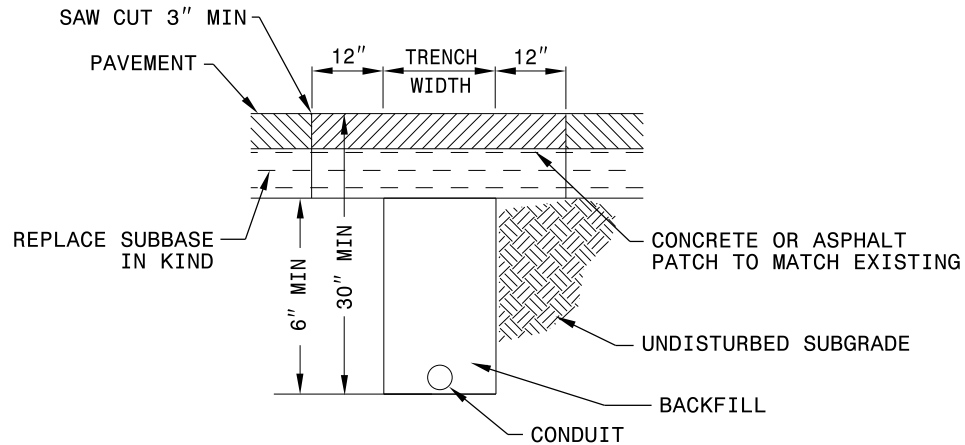
**NOTE**

1. IF PUSHBUTTONS ARE INSTALLED, CONNECT PUSHBUTTON TO CONTROLLER CABINET USING LEAD-IN CABLE. BOND PUSHBUTTON HOUSING TO CABINET GROUND USING CABLE GROUND.
2. BOND PEDESTAL ASSEMBLY TO CABINET GROUND WITH #14 AWG TYPE THWN.
3. REFER TO ROADWAY STANDARD DRAWING 1743 FOR PEDESTAL INFORMATION.

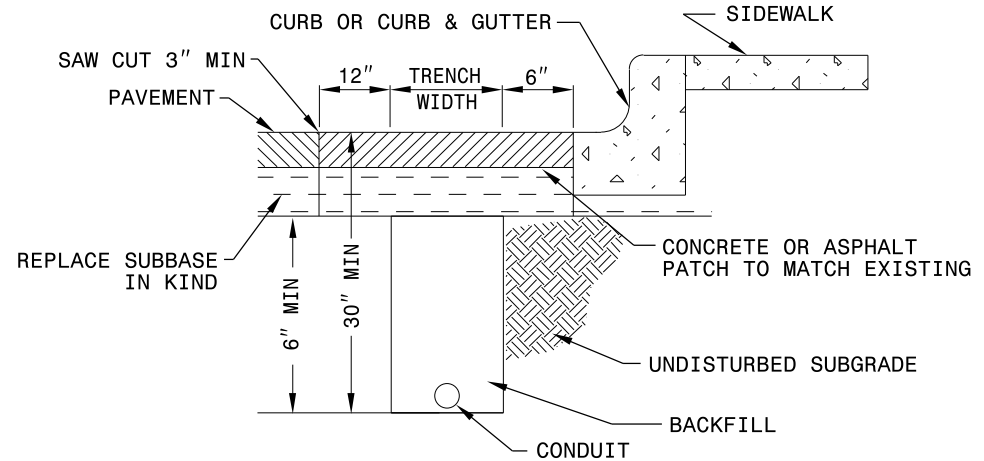
INDICATION TYPE/COLOR						
WIRE COLOR	 3-SECTION CIRCULAR	 3-SECTION ARROW	 3-SECTION FYA	 4-SECTION FYA	 5-SECTION	PEDESTRIAN
RED	R				R	 - DON'T WALK
YELLOW	Y				Y	
GREEN	G				G	 - WALK
RED-BLACK STRIPE						
YELLOW-BLACK STRIPE						
GREEN-BLACK STRIPE						
WHITE	NEUTRAL					

SOLID OR STRIPED COLORS MAY BE USED ON HEADS WITH MIXED INDICATION TYPES. WHERE PRACTICAL, COORDINATE WIRE COLOR WITH INDICATION COLOR. WHERE INSULATION COLOR DOES NOT MATCH THE INDICATION COLOR OF VEHICULAR DISPLAYS, WRAP APPROPRIATELY COLORED TAPE OVER INSULATION NEAR TERMINATION POINTS.

**IN EXISTING PAVEMENT  
(NOT AT GUTTER)**

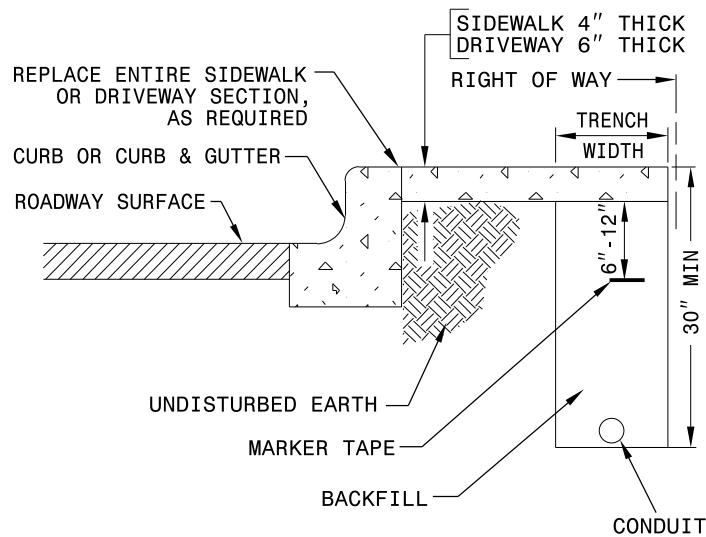


**IN EXISTING PAVEMENT  
(AT GUTTER)**

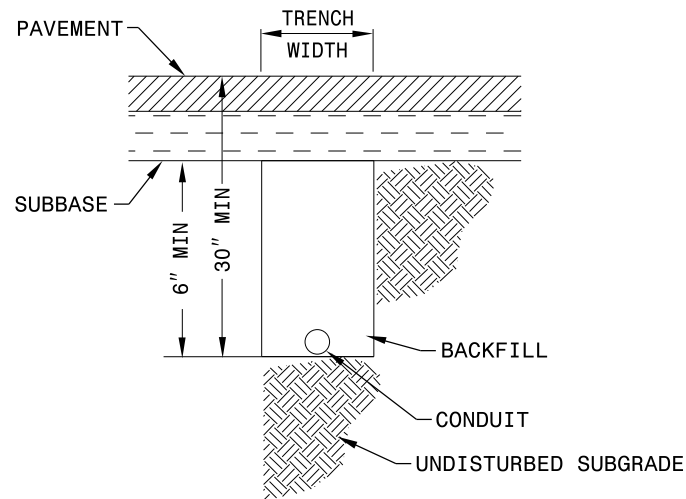


THE REMOVAL OF PAVEMENT BEYOND THE EDGES OF THE TRENCH, AS SHOWN, WILL NOT BE REQUIRED IF SAID EDGES ARE SAW CUT AND MAINTAINED NEATLY WITH NO SHATTER.

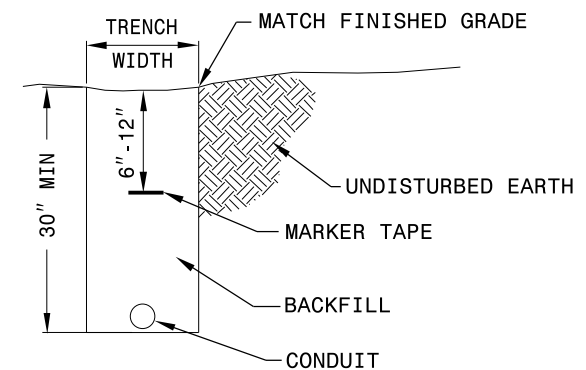
**IN SIDEWALK OR DRIVEWAY**



**IN NEW PAVEMENT**



**IN EARTH**



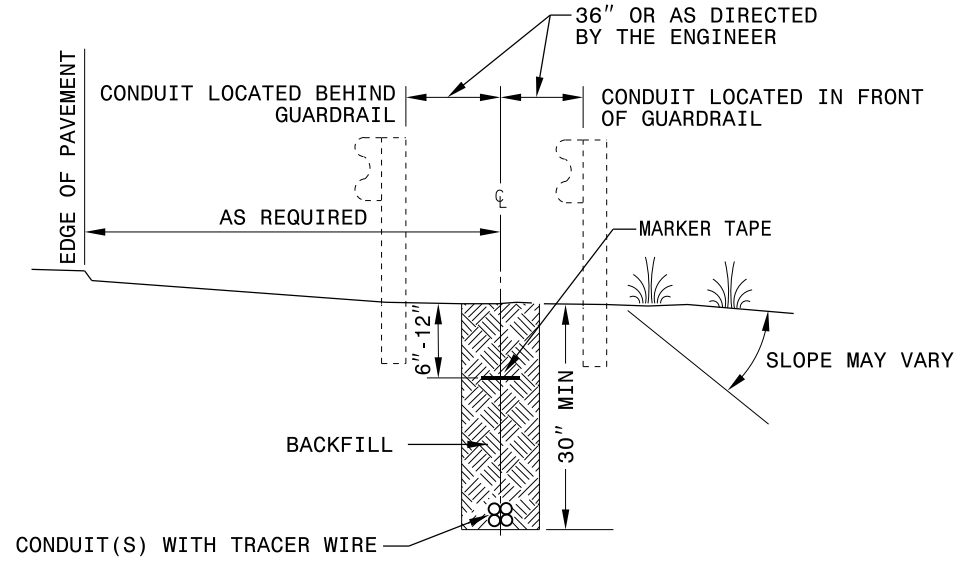
**NOTE**

DIG TRENCH WIDE ENOUGH TO ACCEPT THE REQUIRED CONDUITS AND TO PERMIT PROPER COMPACTION.

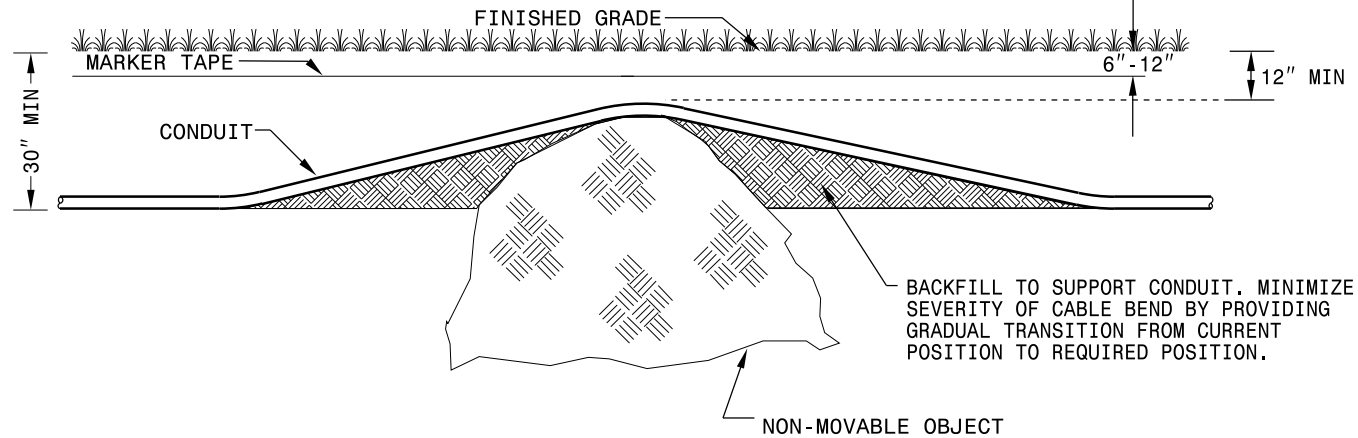
**NOTE**

THE CONTRACTOR, WITH APPROVAL FROM THE ENGINEER, MAY ADJUST FINAL BURIAL DEPTH OF CONDUIT(S) IN ORDER TO TRAVERSE NON-MOVABLE OBJECTS.

**CONDUIT TRENCHING**



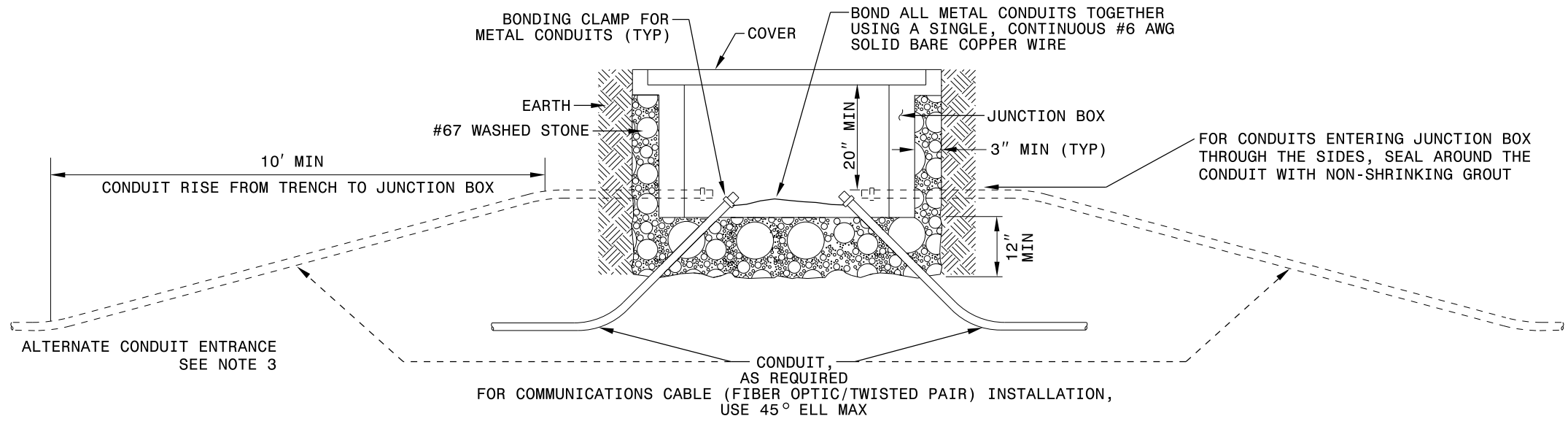
**CONDUIT TRENCHING AROUND NON-MOVABLE OBJECT**



1-12

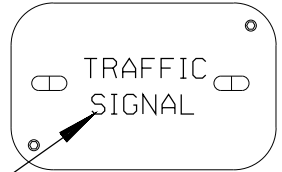
**INSTALLATION CROSS-SECTION**

**JUNCTION BOX OVER-SIZED**

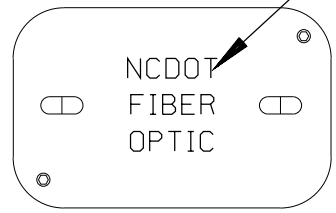


**TOP VIEW OF COVER**

STANDARD SIZE JUNCTION BOX



EMBOSS, IMPRESSED, MOLDED OR ENGRAVED LETTERS MIN 1/2" HIGH

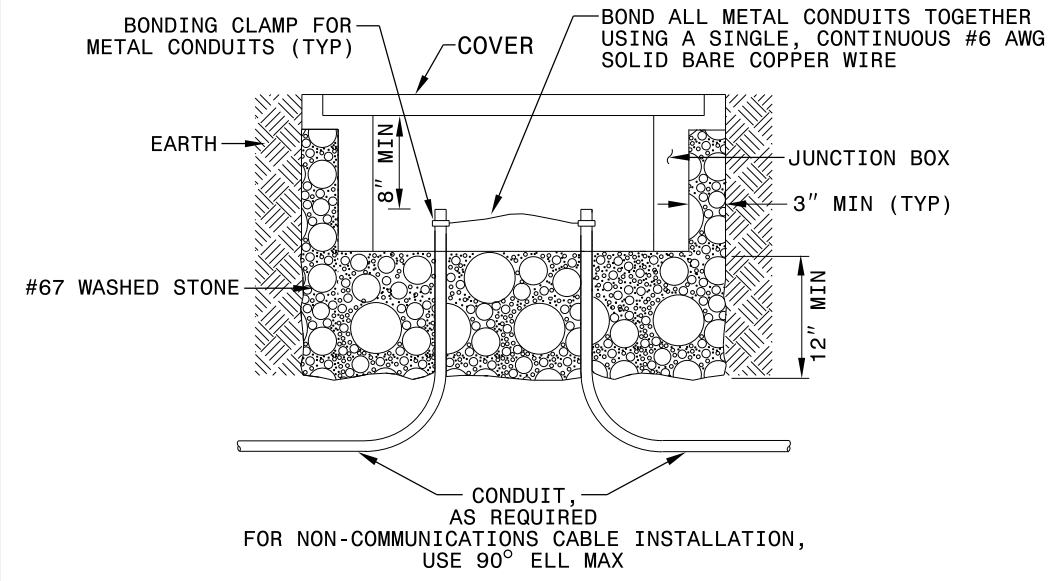


OVER-SIZED JUNCTION BOX

**NOTES**

1. OTHER STYLES OF JUNCTION BOXES WILL BE ACCEPTABLE PROVIDED THEY SATISFY REQUIREMENTS OF SECTION 1716 OF THE NCDOT STANDARD SPECIFICATIONS FOR ROADS AND STRUCTURES.
2. SECURE COVER WITH TWO HEX BOLTS.
3. INSTALL CONDUIT THROUGH BOTTOM OF JUNCTION BOX. AS AN ALTERNATIVE, CONDUIT MAY ENTER THROUGH "MOUSE HOLE" INTO SIDE OF JUNCTION BOX.
4. FOR CURB AND GUTTER SECTIONS, LOCATE JUNCTION BOXES A MINIMUM OF 6" BEHIND BACK OF CURB AND FOR PAVEMENT SECTIONS A MINIMUM OF 2' FROM PAVEMENT EDGE OR WITHIN RIGHT OF WAY.
5. COIL AND STORE 10' OF TRACER WIRE IN ALL JUNCTION BOXES WITH FIBER OPTIC CABLE.

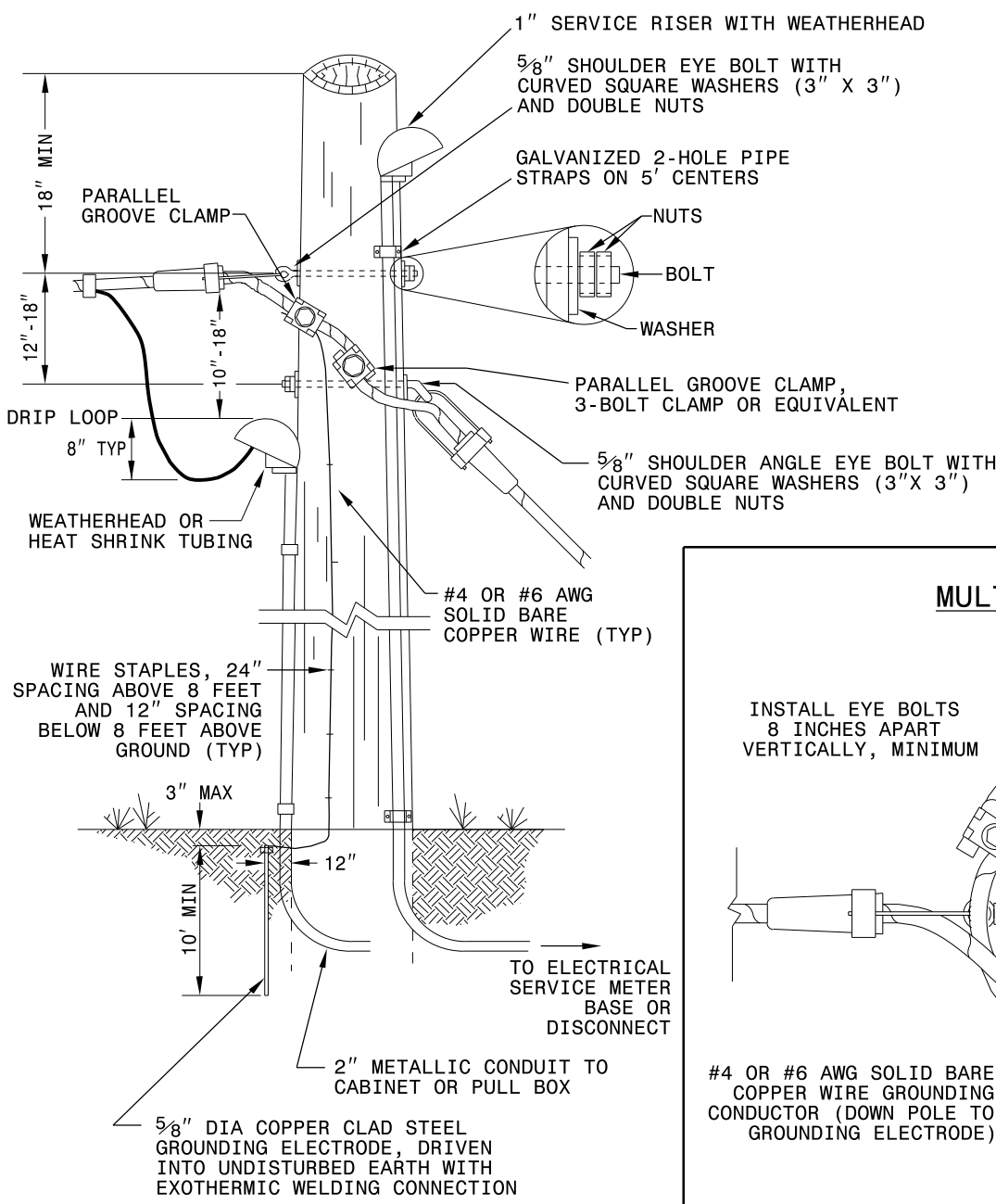
**JUNCTION BOX STANDARD SIZE**



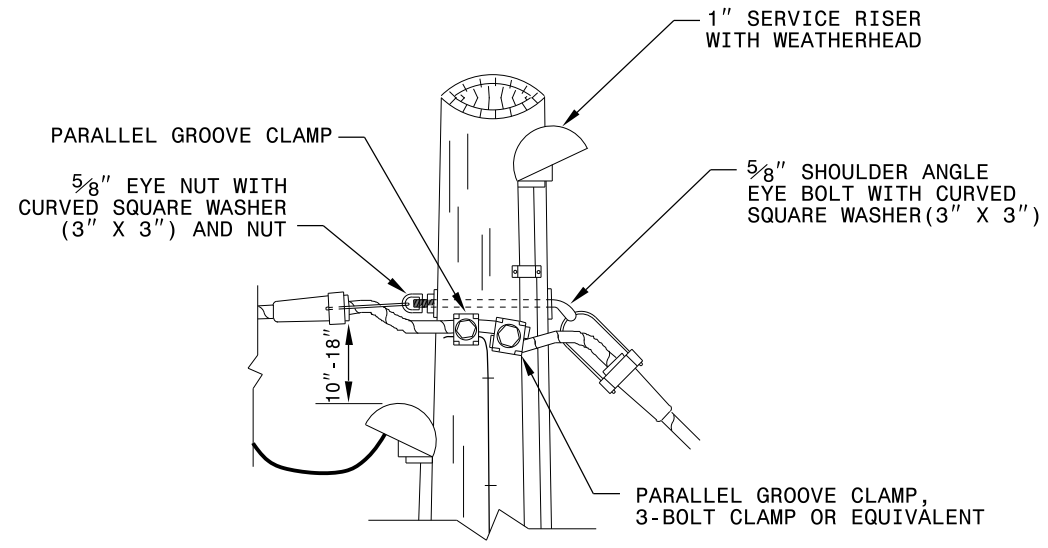
1-12



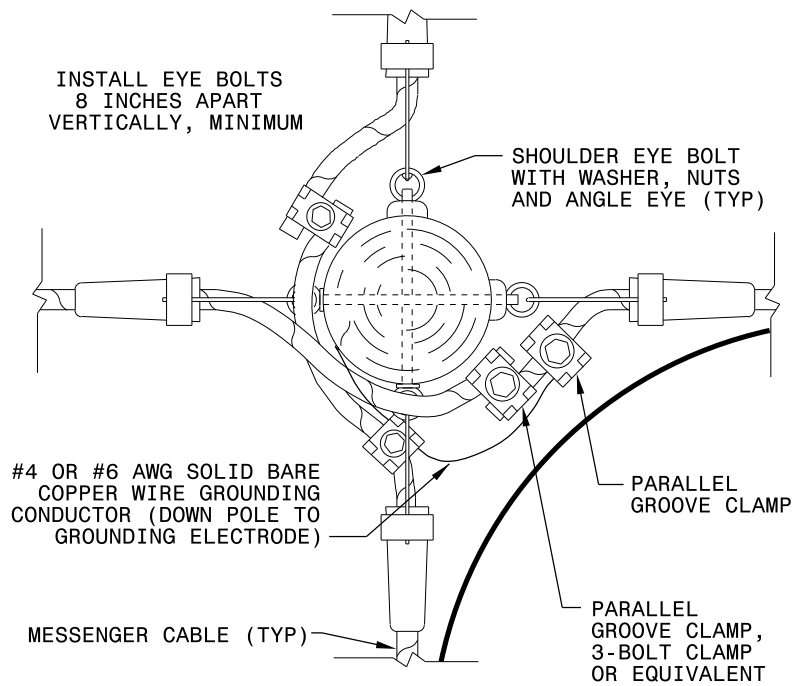
**TWO-BOLT METHOD (PREFERRED)**



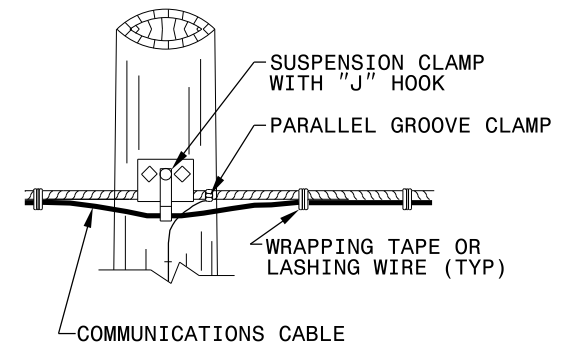
**ONE-BOLT METHOD**



**MULTIPLE SPANS**



**COMMUNICATIONS CABLE AT INTERMEDIATE POLE**

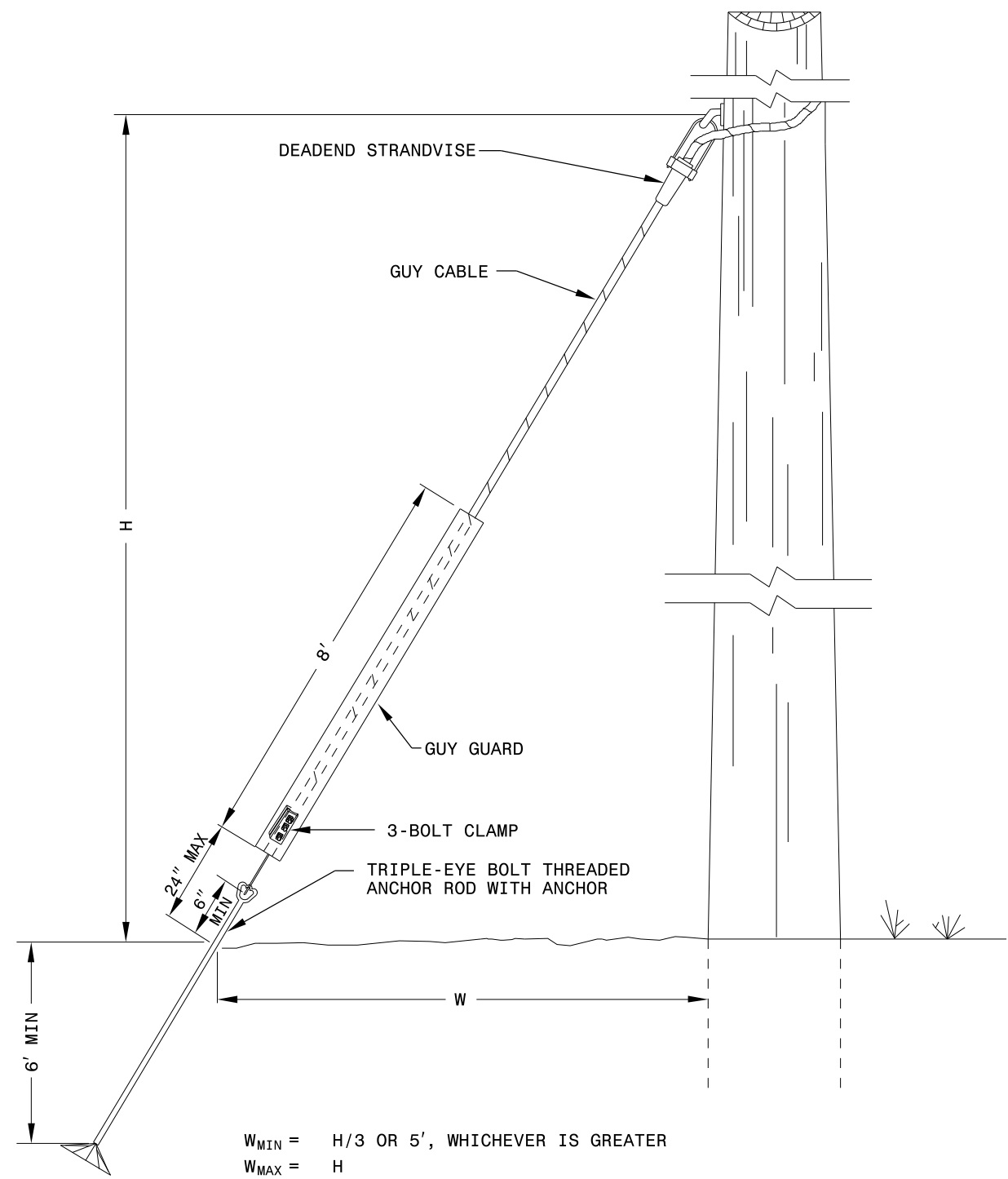


**NOTE**

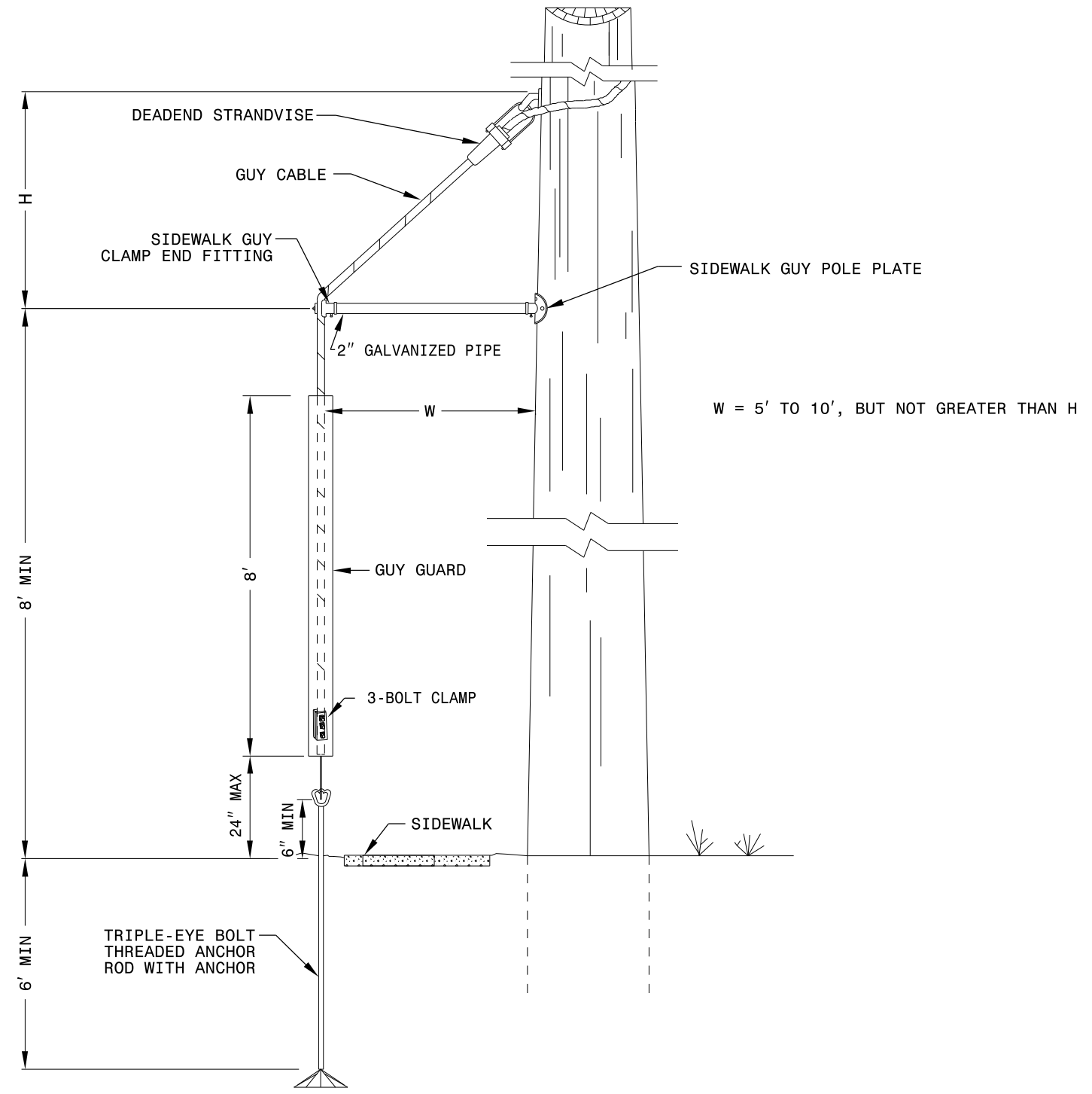
FOR CONNECTING MESSENGER TO MESSENGER, USE PARALLEL GROOVE CLAMP, 3-BOLT CLAMP OR EQUIVALENT. FOR CONNECTING COPPER WIRE TO MESSENGER, USE PARALLEL GROOVE CLAMP.

**GENERAL NOTES**

1. GUY EACH SPAN SEPARATELY.
2. USE EYE HARDWARE (EYE BOLTS, EYE NUTS, ANGLE EYES, EYES, TRIPLE-EYE BOLT ANCHOR RODS) WITH ROUNDED GROOVES IN THE EYES. PROVIDE A SEPARATE GROOVE FOR EACH CABLE TO BE TERMINATED.
3. SEE ROADWAY STANDARD DRAWING 1720 FOR METHODS OF ATTACHMENT AND GROUNDING.



$W_{MIN} = H/3 \text{ OR } 5', \text{ WHICHEVER IS GREATER}$   
 $W_{MAX} = H$



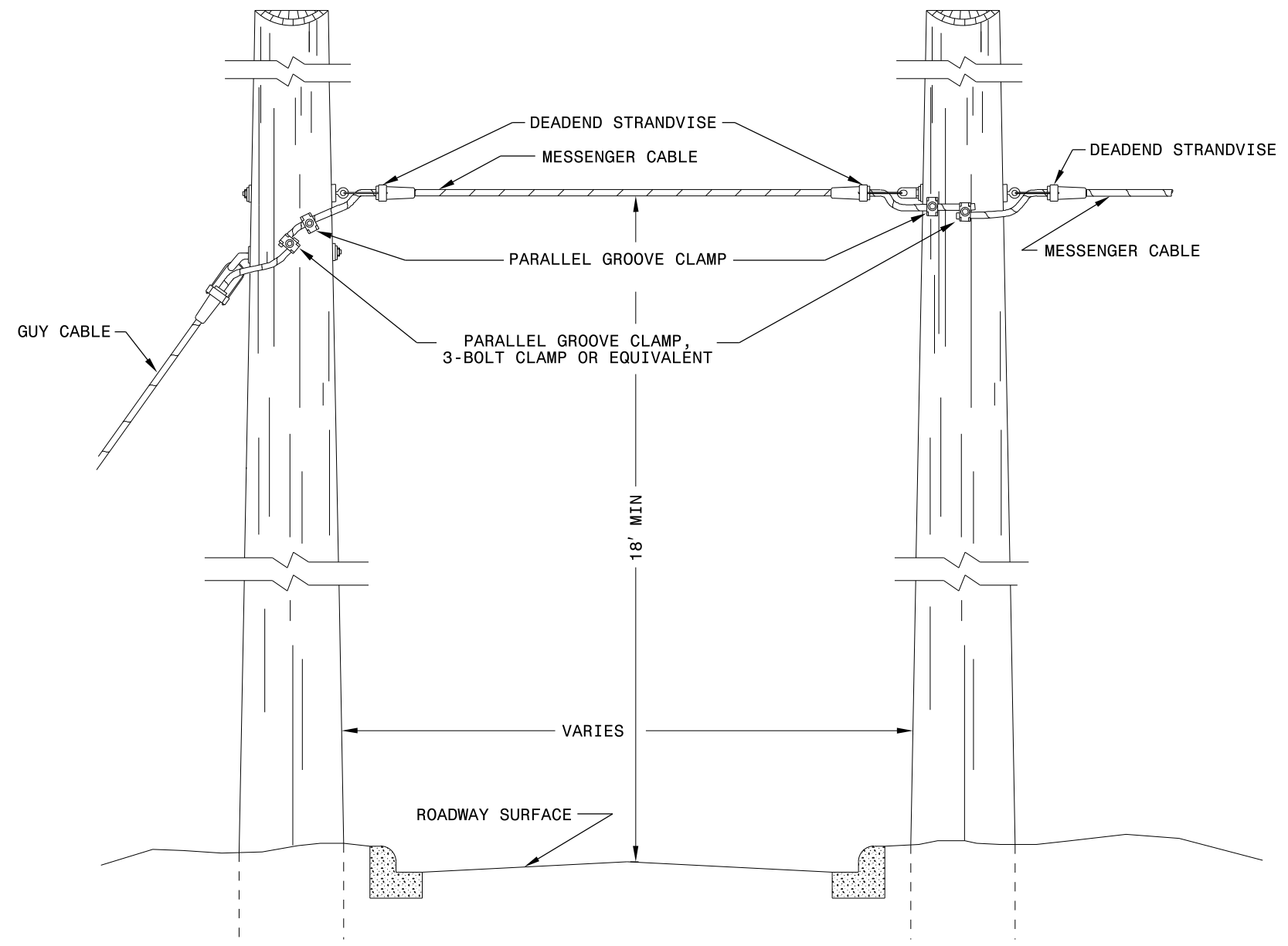
STATE OF NORTH CAROLINA  
DEPT. OF TRANSPORTATION  
DIVISION OF HIGHWAYS  
RALEIGH, N.C.

1-12

ENGLISH STANDARD DRAWING FOR  
**GUY ASSEMBLIES**  
AERIAL (BACK) GUYS

SHEET 3 OF 3

1721.01



STATE OF NORTH CAROLINA  
DEPT. OF TRANSPORTATION  
DIVISION OF HIGHWAYS  
RALEIGH, N.C.

1-12

ENGLISH STANDARD DRAWING FOR  
**GUY ASSEMBLIES**  
AERIAL (BACK) GUYS

SHEET 3 OF 3

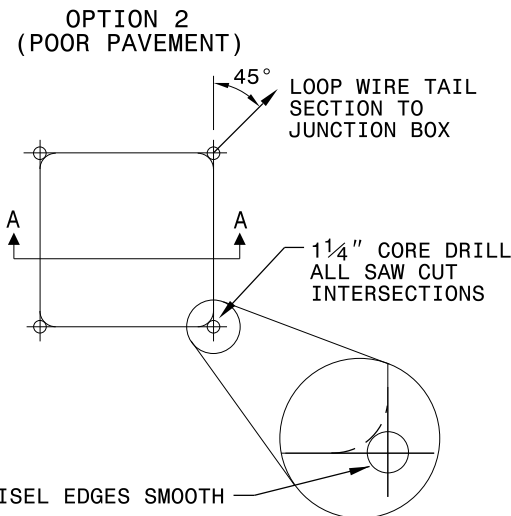
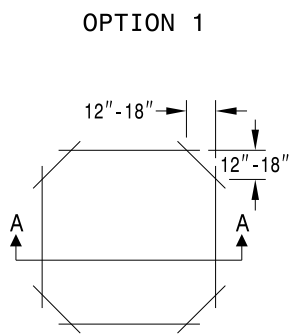
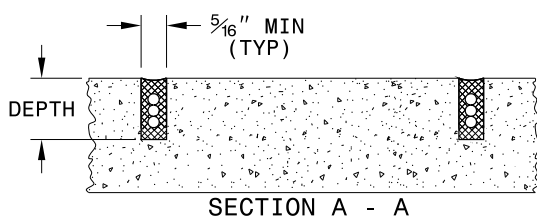
1721.01

**CONVENTIONAL 4-SIDED LOOP**

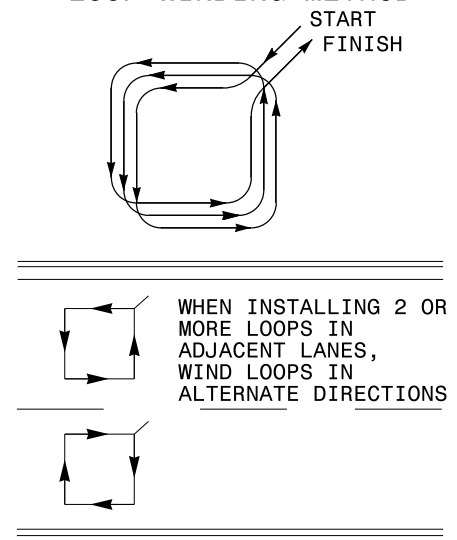
**SAW CUT OPTIONS**

**SAW SLOT DEPTH CHART**

DEPTH (IN)	NO. OF WIRE TURNS				
	2	3	4	5	6
CONCRETE	2.0	2.0	2.5	2.5	3.0
ASPHALT	2.0	2.5	3.0	3.0	3.0



**LOOP WINDING METHOD**



**LOOP WIRE TWISTING METHOD**

INCORRECT WAY TO TWIST WIRE



CORRECT WAY TO TWIST WIRE

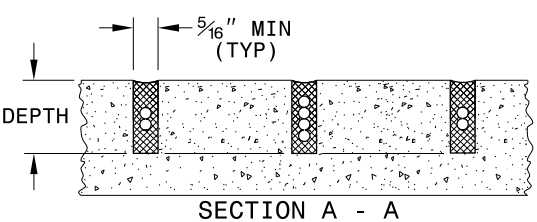
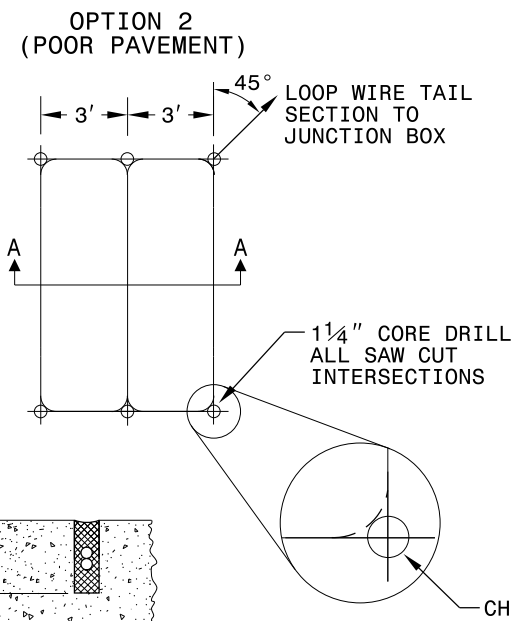
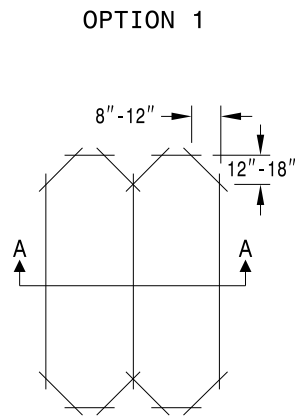


**NOTES**

1. OVERLAP SAW CUTS AT CORNERS AND INTERSECTION POINTS TO ENSURE UNIFORM SAW SLOT DEPTH.
2. MAINTAIN 12" SPACING BETWEEN LOOP WIRE TAIL SECTIONS.
3. WIRE LOOPS CONNECTED TO THE SAME DETECTOR CHANNEL IN SERIES.
4. LOCATE LOOPS IN CENTER OF LANES UNLESS OTHERWISE SHOWN ON PLANS OR APPROVED BY ENGINEER.

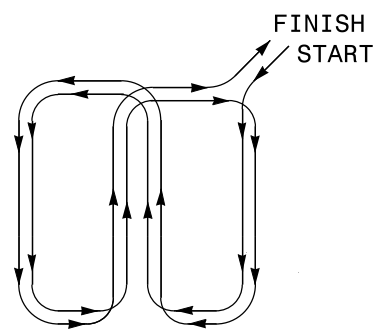
**QUADRUPOLE LOOP**

**SAW CUT OPTIONS**



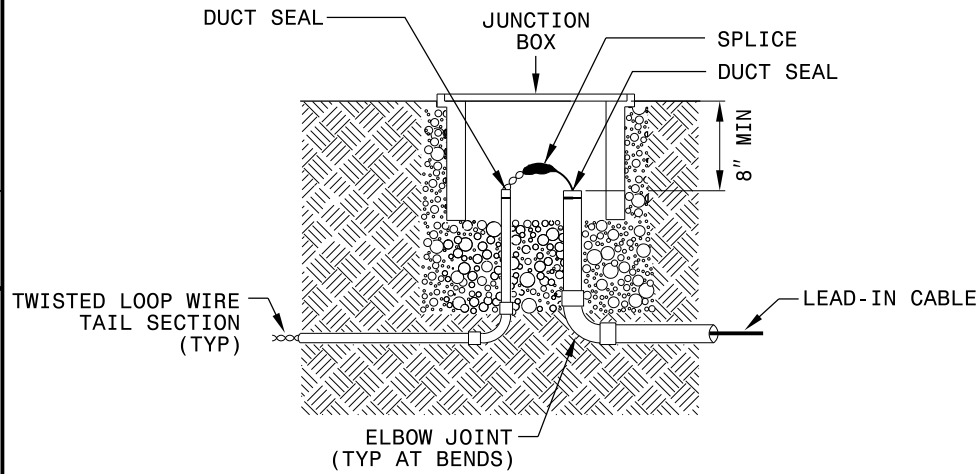
DEPTH IS 2.5" FOR CONCRETE AND 3.0" FOR ASPHALT

**LOOP WINDING METHOD**

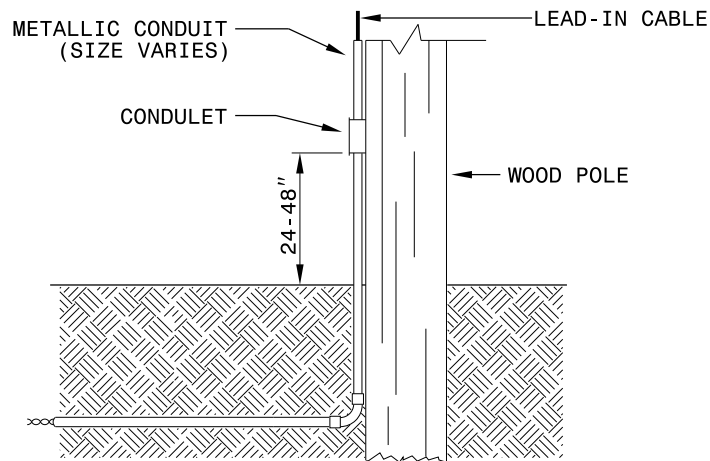


LOOP WIRE SPLICE POINT DETAILS

LOOP WIRE AT JUNCTION BOX



LOOP WIRE AT POLE

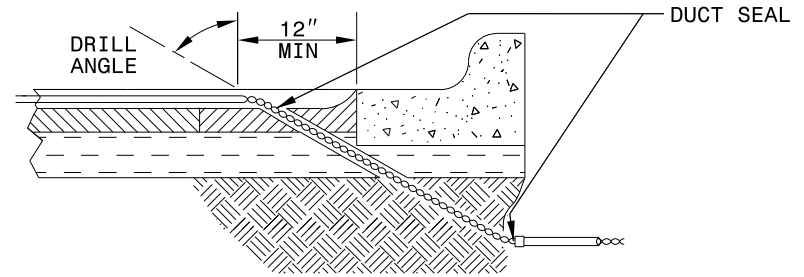


NOTE

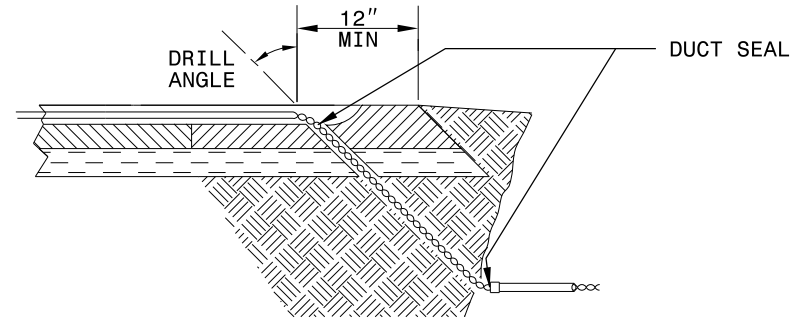
SPLICE ALL LOOP WIRE TAIL SECTIONS/LEAD-IN CABLE IN JUNCTION BOXES OR APPROVED CONDULETS.

LOOP WIRE PAVEMENT EDGE DETAILS

LOOP WIRE AT CURB & GUTTER SECTION



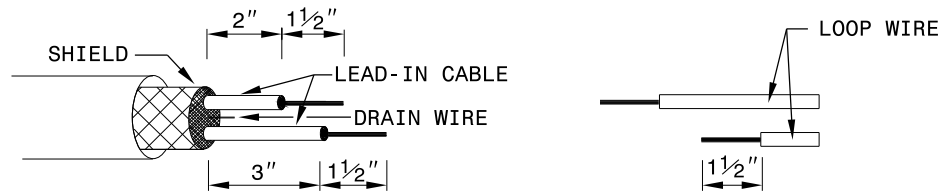
LOOP WIRE AT PAVEMENT SECTION



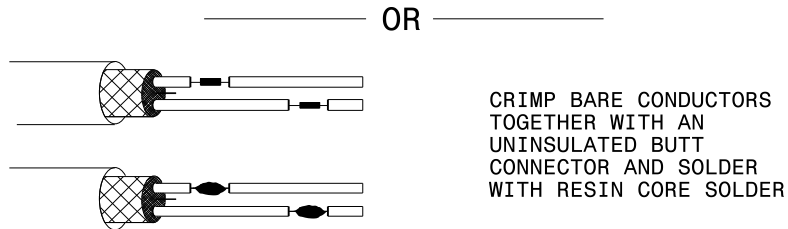
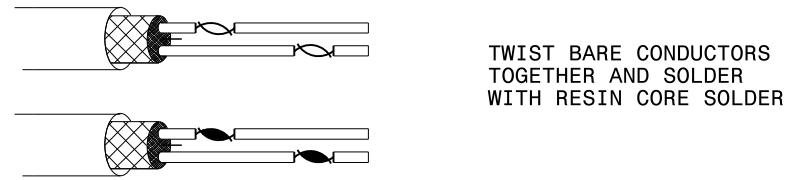
NOTES

1. DO NOT EXCAVATE UNDER CURB AND GUTTER SECTIONS FOR CONDUIT INSTALLATION.
2. TWIST LOOP WIRE TAIL SECTIONS FROM WHERE LOOP WIRE TAIL LEAVES SAW CUT TO JUNCTION BOX, INCLUDING THROUGH CONDUIT.
3. BEFORE SEALING LOOPS, INSTALL DUCT SEAL WHERE LOOP WIRE TAIL SECTION LEAVES SAW CUT IN PAVEMENT AND AT ENTRANCE OF CONDUIT TO JUNCTION BOX.

STEP 1. STRIP LOOP WIRE AND LEAD-IN CABLE



STEP 2. CONNECT AND SOLDER

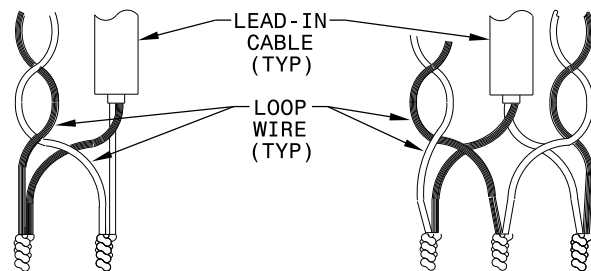


BOND SHIELD DRAIN WIRE AT SPLICE SECTIONS (DO NOT GROUND)

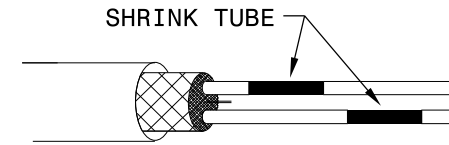
LOOP WIRE AND LEAD-IN CABLE CONNECTION DETAILS

SINGLE CONNECTION

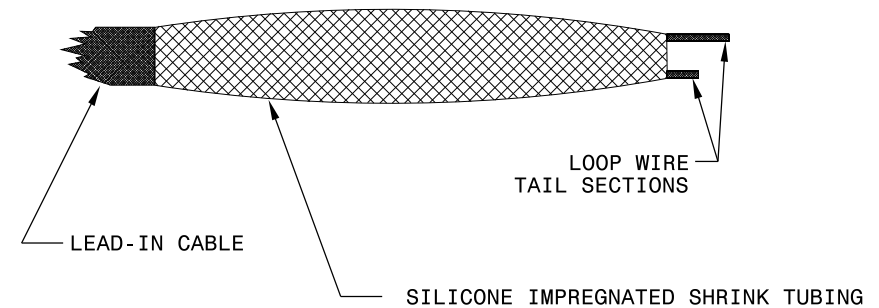
SERIES CONNECTION



STEP 3. INSULATE EACH SOLDER JOINT SEPARATELY



STEP 4. ENVIRONMENTALLY PROTECT SPLICE

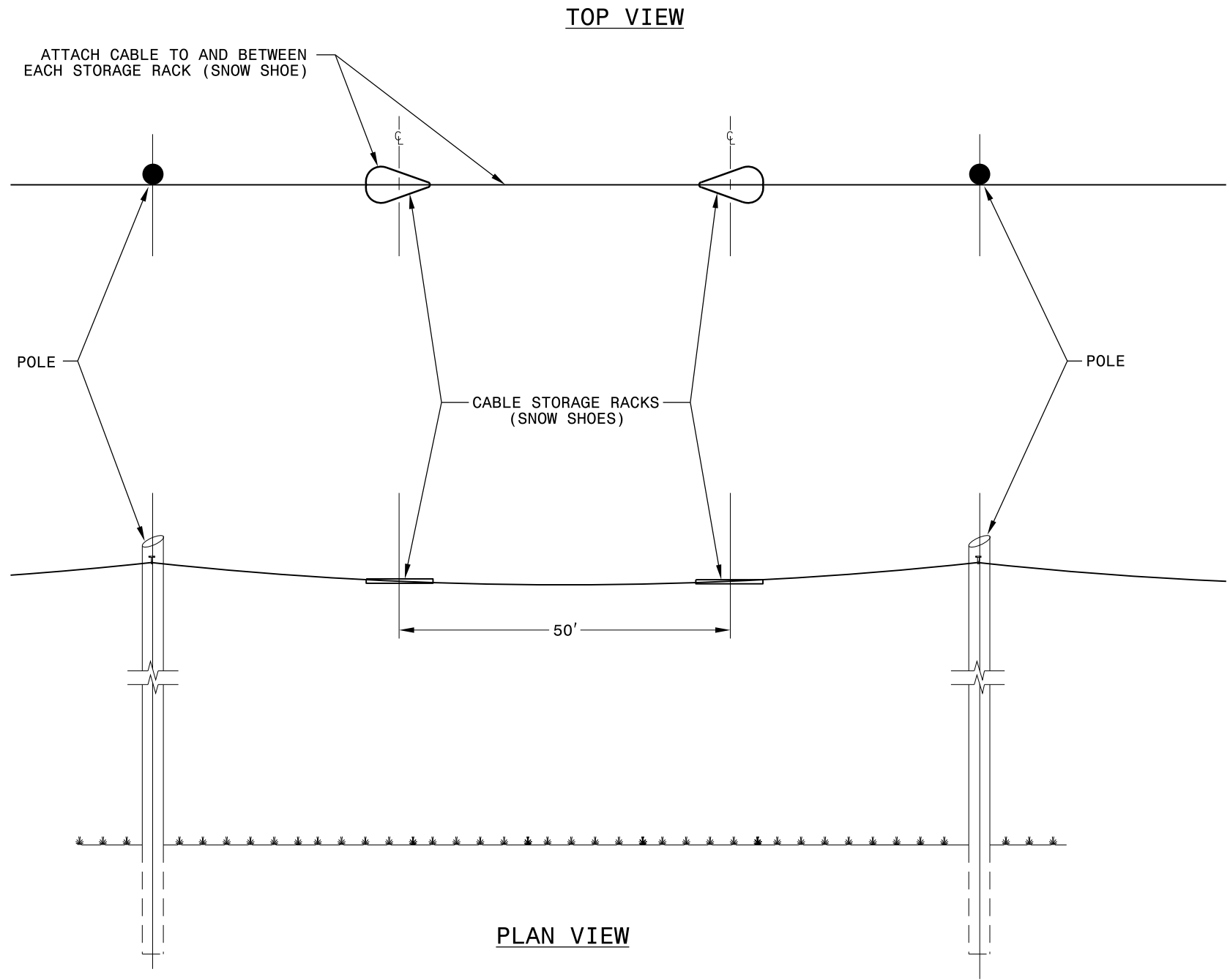


STATE OF NORTH CAROLINA  
DEPT. OF TRANSPORTATION  
DIVISION OF HIGHWAYS  
RALEIGH, N.C.

1-12

ENGLISH STANDARD DRAWING FOR  
**FIBER-OPTIC CABLE**  
SPARE CABLE STORAGE

SHEET 1 OF 1  
**1730.01**



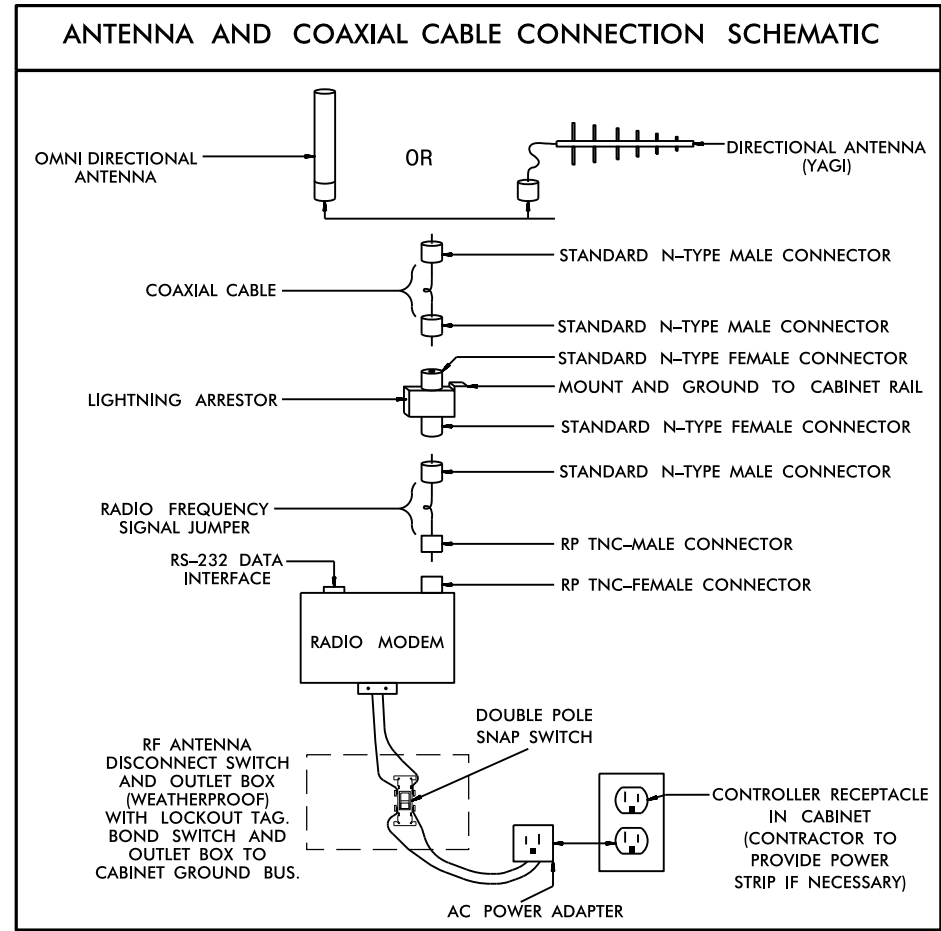
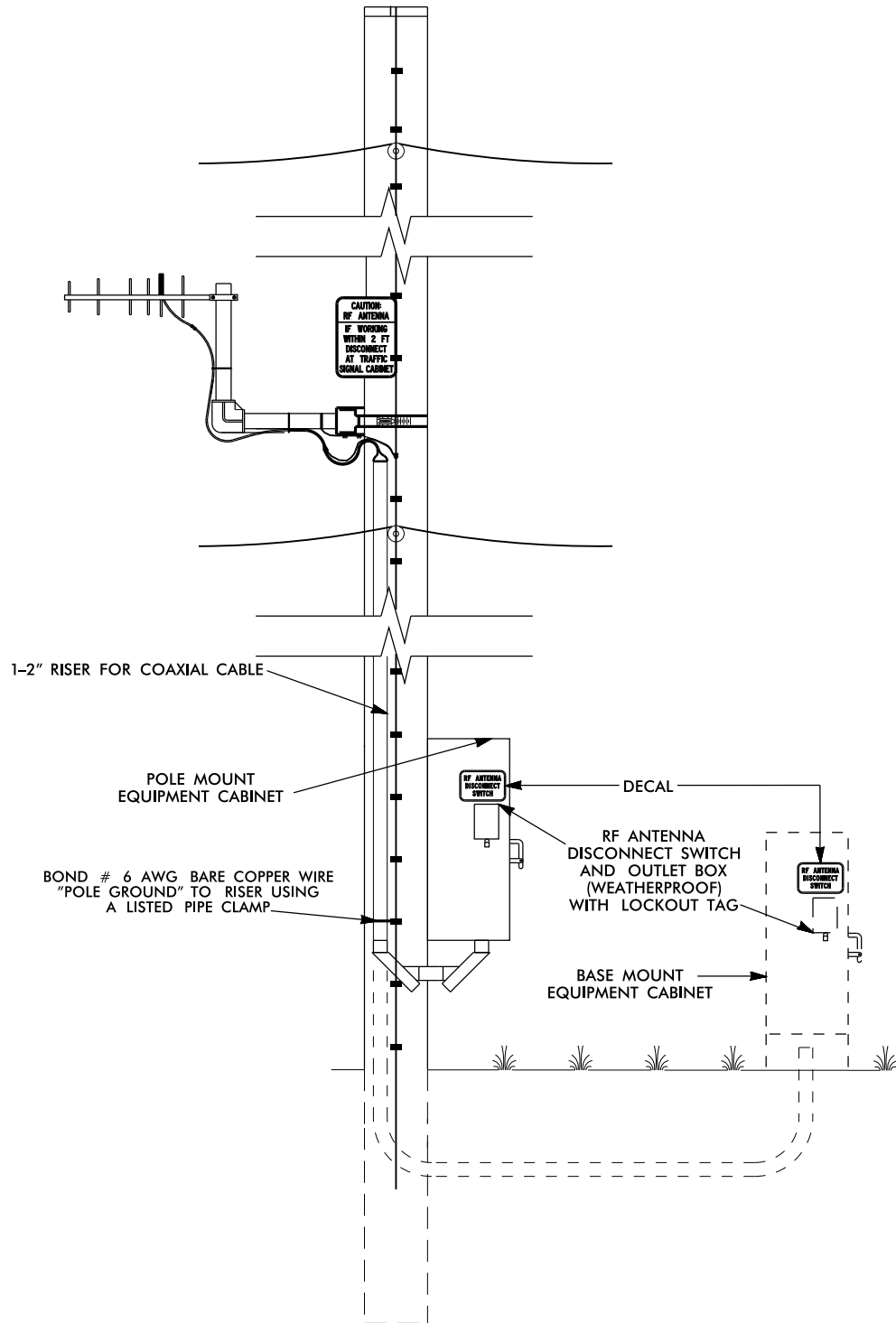
STATE OF NORTH CAROLINA  
DEPT. OF TRANSPORTATION  
DIVISION OF HIGHWAYS  
RALEIGH, N.C.

1-12

ENGLISH STANDARD DRAWING FOR  
**FIBER-OPTIC CABLE**  
SPARE CABLE STORAGE

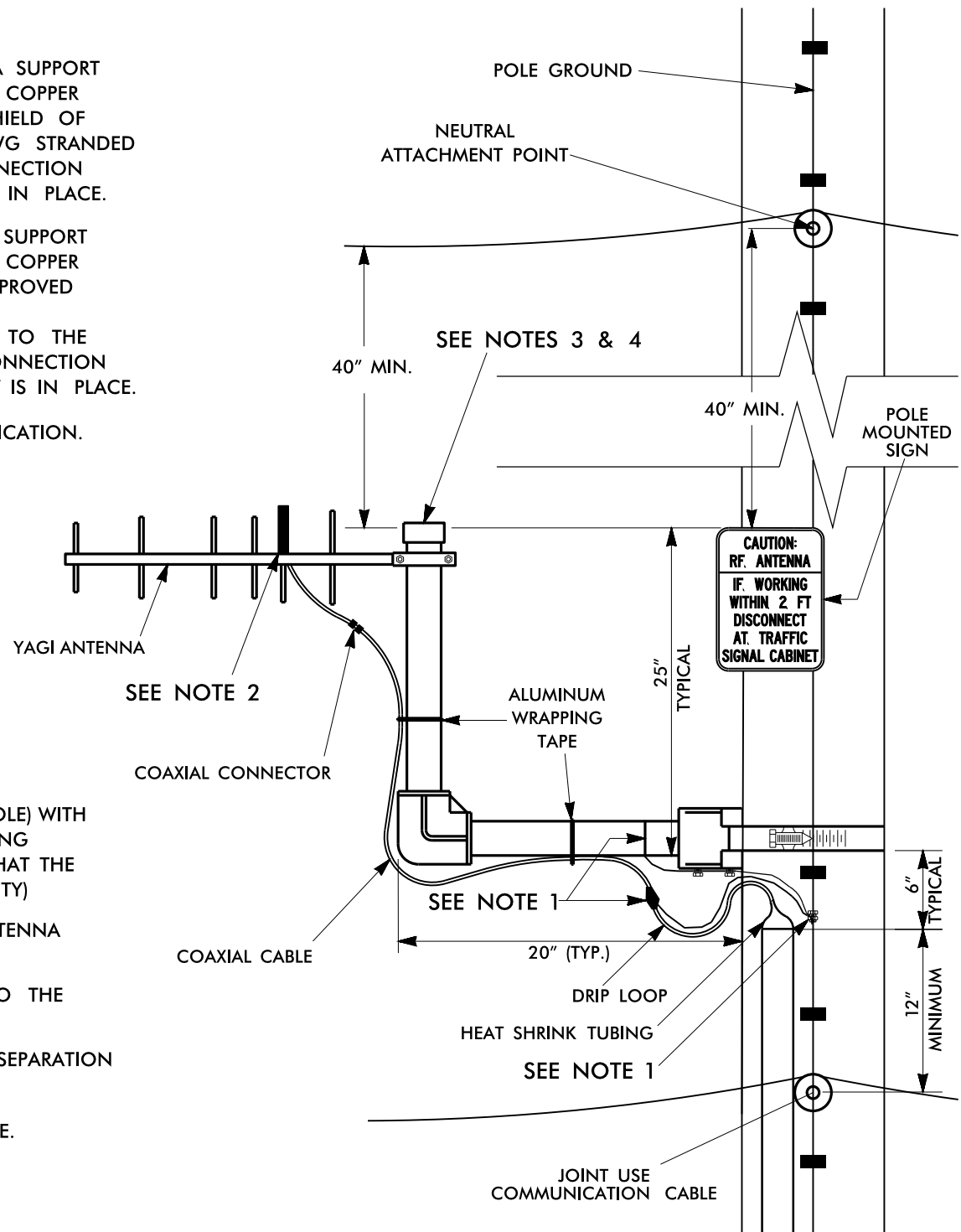
SHEET 1 OF 1  
**1730.01**





**NOTES**

- WOOD POLE — BOND # 6 AWG SOLID BARE COPPER WIRE TO ANTENNA SUPPORT USING LISTED PIPE CLAMP. BOND OTHER END OF # 6 AWG SOLID BARE COPPER WIRE TO THE POLE GROUND USING A SPLIT BOLT CONNECTOR. BOND SHIELD OF COAXIAL CABLE WITH AN APPROVED GROUNDING SYSTEM (USING #6 AWG STRANDED COPPER WIRE) BONDED TO THE POLE GROUND. WEATHERPROOF THE CONNECTION ONCE THE GROUNDING SYSTEM IS INSTALLED. ENSURE "POLE GROUND" IS IN PLACE.  
  
METAL POLE — BOND # 6 AWG SOLID BARE COPPER WIRE TO ANTENNA SUPPORT USING LISTED PIPE CLAMP. BOND OTHER END OF # 6 AWG SOLID BARE COPPER WIRE TO THE POLE OR EXISTING SYSTEM GROUND USING A METHOD APPROVED BY THE ENGINEER. BOND SHIELD OF COAXIAL CABLE WITH AN APPROVED GROUNDING SYSTEM (USING #6 AWG STRANDED COPPER WIRE) BONDED TO THE POLE BY A METHOD APPROVED BY THE ENGINEER. WEATHERPROOF THE CONNECTION ONCE THE GROUNDING SYSTEM IS INSTALLED. ENSURE "SYSTEM GROUND" IS IN PLACE.
- YAGI ANTENNA SHOWN IN VERTICAL POLARIZATION POSITION FOR CLARIFICATION. TYPICALLY INSTALL ANTENNA IN HORIZONTAL POLARIZATION POSITION.
- TO CONSERVE VERTICAL SPACING ON THE POLE (JOINT-USE OR SIGNAL POLE) WITH REGARDS TO THE SURROUNDING UTILITIES, INSTALL THE ANTENNA MOUNTING HARDWARE USING ONE OF THE TWO METHODS LISTED BELOW: (ENSURE THAT THE MOUNTING METHOD DOES NOT DEGRADE THE ANTENNA'S SIGNAL INTEGRITY)
  - ROTATE THE VERTICAL SUPPORT ARM 90 DEGREES SUCH THAT THE ANTENNA IS AT THE SAME HEIGHT AS THE HORIZONTAL SUPPORT ARM.
  - ELIMINATE THE VERTICAL SUPPORT ARM AND MOUNT THE ANTENNA TO THE HORIZONTAL SUPPORT ARM.
  - ANTENNA, ANTENNA SUPPORT ARM, AND SIGN TO MAINTAIN A 40" SEPARATION FROM NEUTRAL /POWER AND 12" FROM OTHER UTILITIES.
- INSTALL AN END CAP TO SEAL THE EXPOSED END OF THE MOUNTING PIPE.



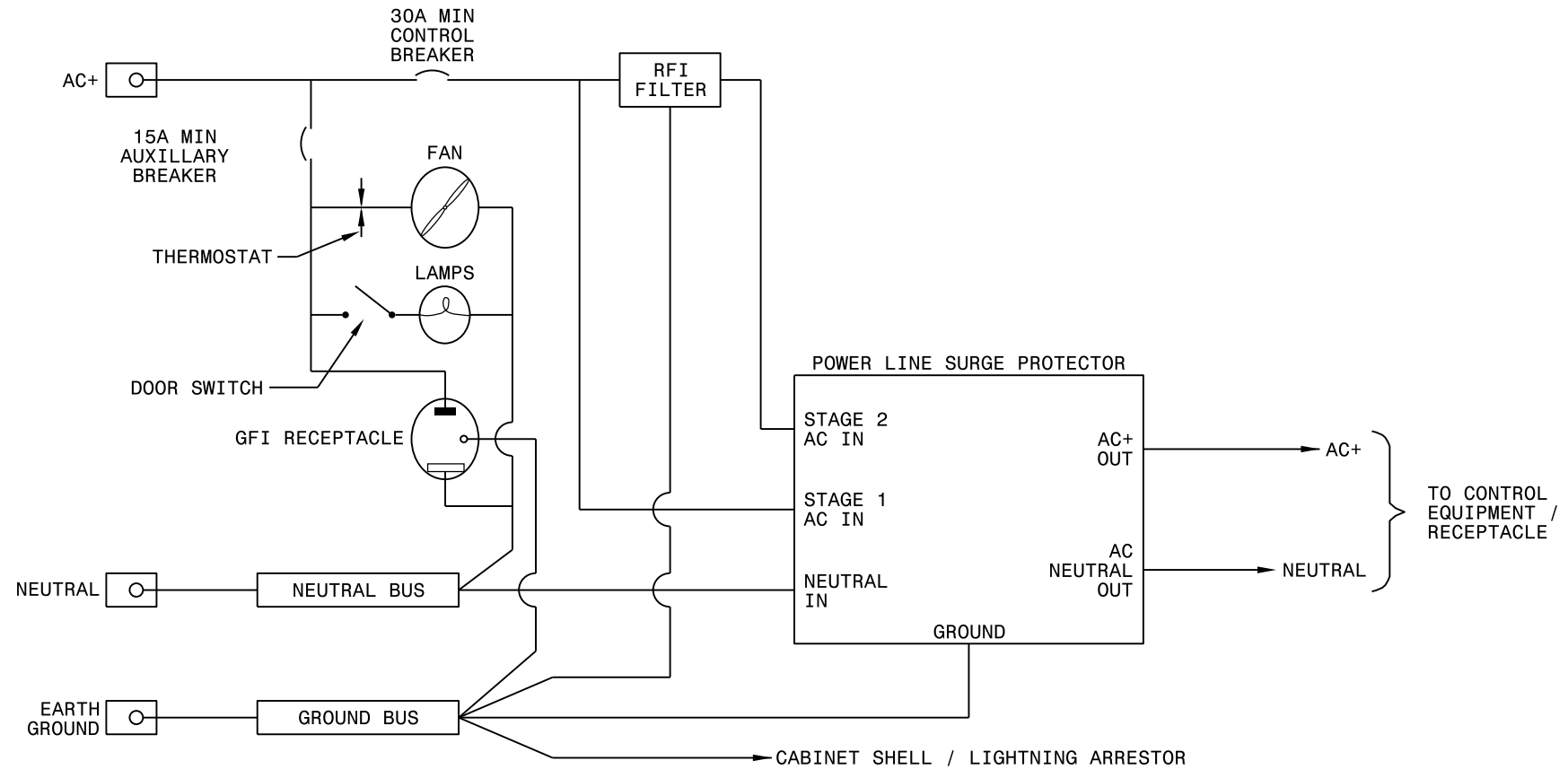




STATE OF NORTH CAROLINA  
 DEPT. OF TRANSPORTATION  
 DIVISION OF HIGHWAYS  
 RALEIGH, N.C.

ENGLISH STANDARD DRAWING FOR  
**SPREAD SPECTRUM RADIO**  
 POWER, GROUND AND AUXILIARY POWER SYSTEMS  
 FOR STANDALONE REPEATER CABINET

SHEET 5 OF 5  
**1736.01**

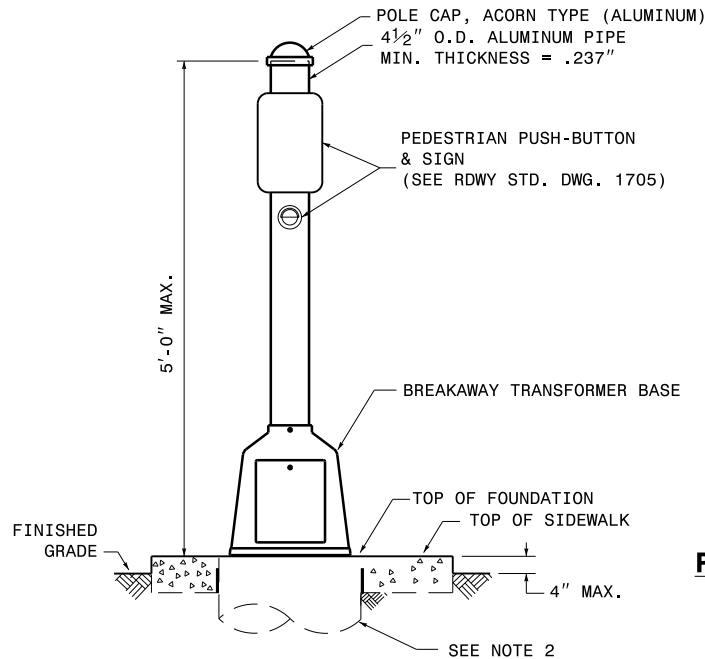


TO CONTROL  
 EQUIPMENT /  
 RECEPTACLE

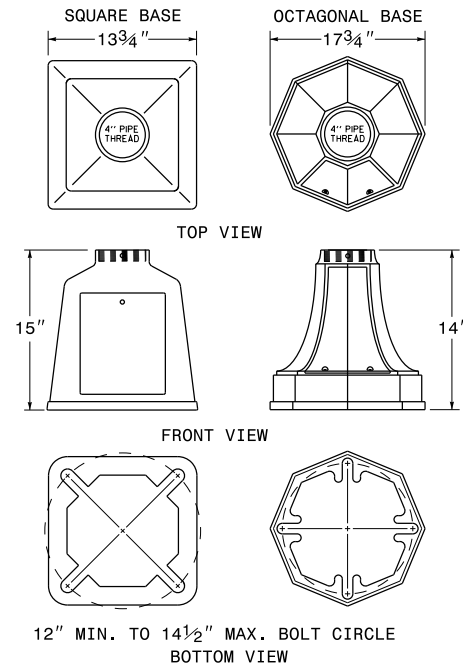
STATE OF NORTH CAROLINA  
 DEPT. OF TRANSPORTATION  
 DIVISION OF HIGHWAYS  
 RALEIGH, N.C.

ENGLISH STANDARD DRAWING FOR  
**SPREAD SPECTRUM RADIO**  
 POWER, GROUND AND AUXILIARY POWER SYSTEMS  
 FOR STANDALONE REPEATER CABINET

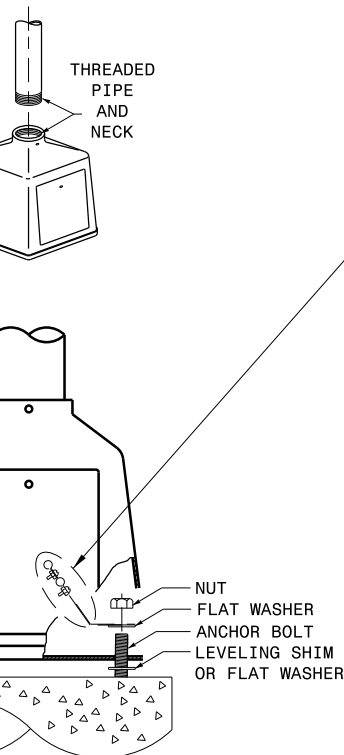
SHEET 5 OF 5  
**1736.01**



**PUSHBUTTON PEDESTAL ON BREAKAWAY TRANSFORMER BASE**

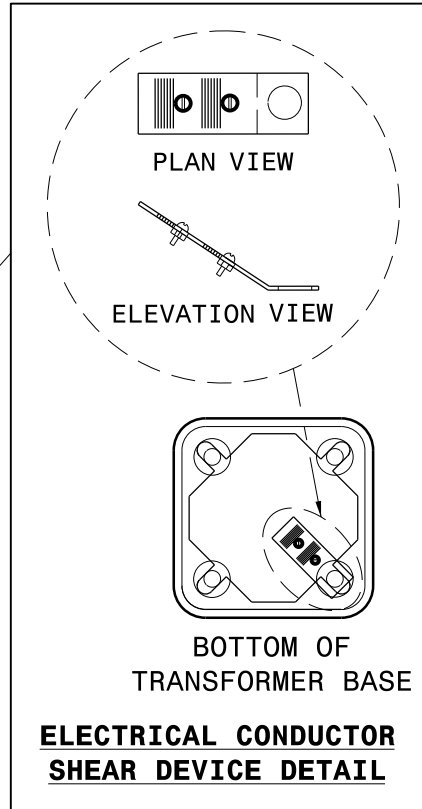
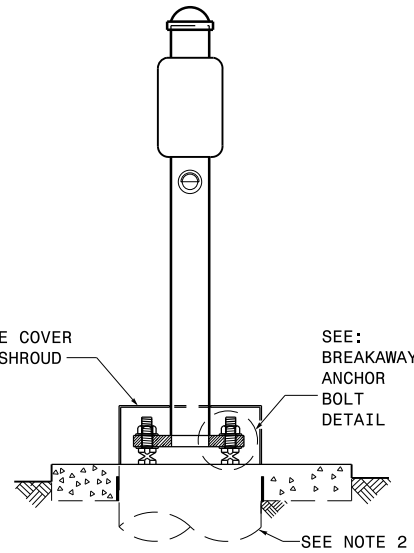


**NORMAL DUTY TRANSFORMER BASE STYLES**



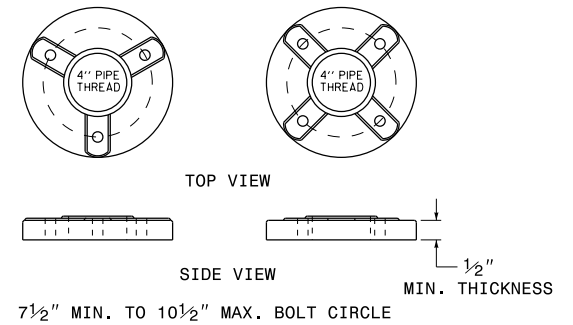
**TRANSFORMER BASE ANCHORING DETAIL**

**PUSHBUTTON PEDESTAL ON FLANGE BASE WITH BREAKAWAY ANCHOR BOLTS**

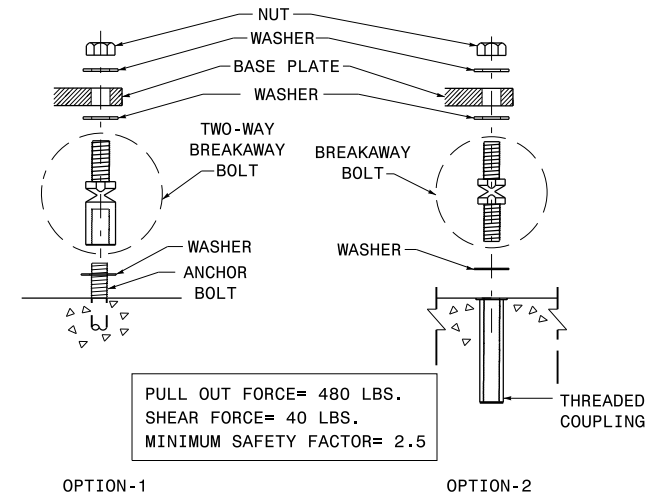


**NOTES:**

1. CONSTRUCT PEDESTALS ON FHWA APPROVED BREAKAWAY BASES OR ANCHORS.
2. CONSTRUCT PEDESTAL FOUNDATIONS IN ACCORDANCE WITH STANDARD DRAWING 1743.04.
3. PUSHBUTTON PEDESTALS ARE DESIGNED FOR USE IN ALL WIND ZONE REGIONS. PEDESTAL BASE REACTIONS USING 4 1/2 inch OD SCHEDULE 40 ALUMINUM PIPE ARE:  
AXIAL LOAD: 60 LBS  
SHEAR LOAD: 120 LBS  
MOMENT LOAD: 435 FT-LBS
4. BASE REACTIONS ARE BASED ON A DESIGN LOADING FOR 2 PUSHBUTTONS AND 2 PEDESTRIAN SIGNS. DO NOT EXCEED THE DESIGN LOADING WITHOUT APPROVAL.
5. ALL ELECTRICAL CONDUCTORS INSIDE OF BREAKAWAY SUPPORTS SHOULD SHEAR OR BECOME DISCONNECTED AS CLOSE TO THE FOUNDATION BASE AS POSSIBLE DURING A KNOCKDOWN. REFER TO ELECTRICAL CONDUCTOR SHEAR DEVICE DETAIL.

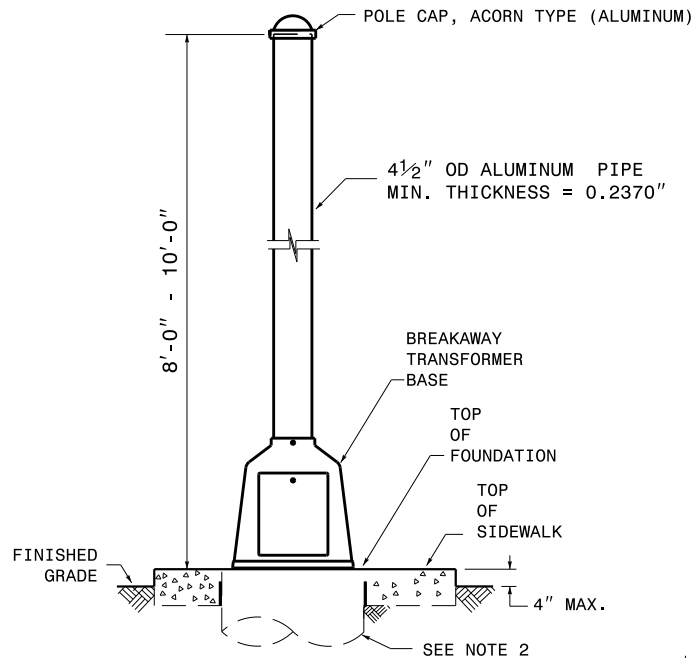


**THREADED FLANGE BASE STYLES**  
TO BE USED WITH BREAKAWAY ANCHORS ONLY

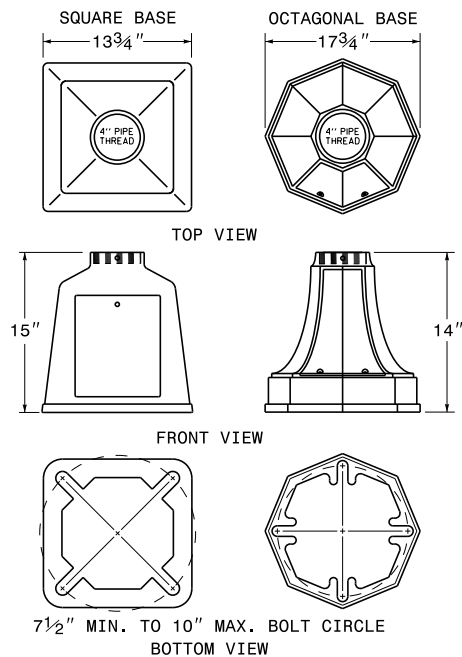


**BREAKAWAY ANCHOR BOLT DETAIL**  
TO BE USED WITH THREADED FLANGE BASES ONLY

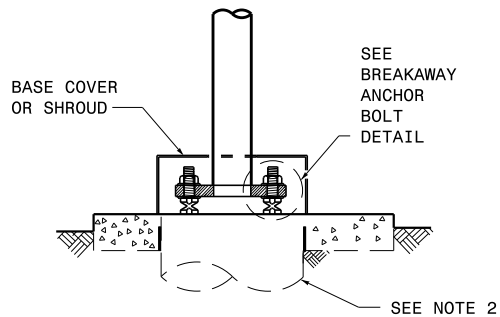
PULL OUT FORCE= 480 LBS.  
SHEAR FORCE= 40 LBS.  
MINIMUM SAFETY FACTOR= 2.5



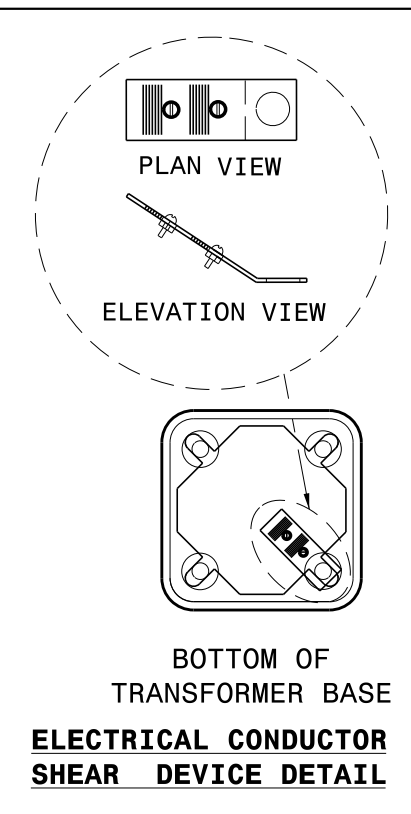
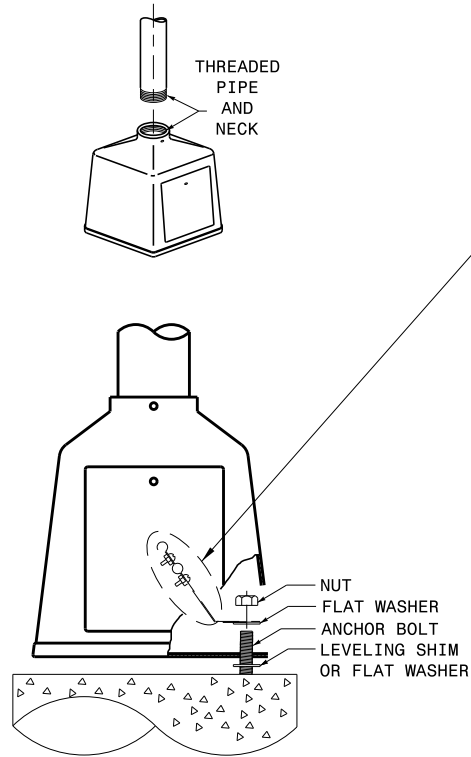
**NORMAL DUTY PEDESTAL ON  
BREAKAWAY TRANSFORMER BASE**



**NORMAL DUTY  
TRANSFORMER BASE STYLES**

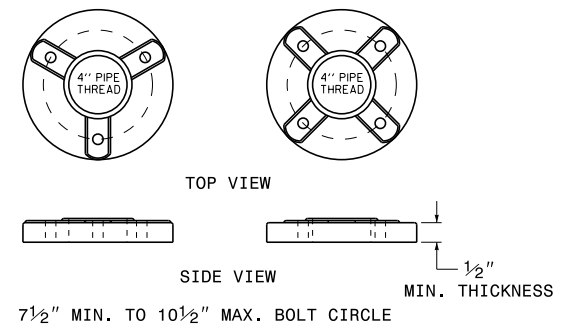


**NORMAL DUTY PEDESTAL ON  
FLANGE BASE WITH  
BREAKAWAY ANCHOR BOLTS**

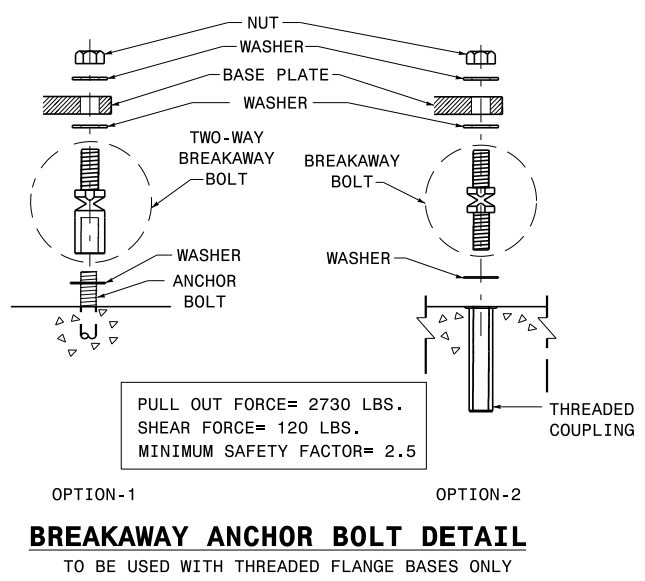


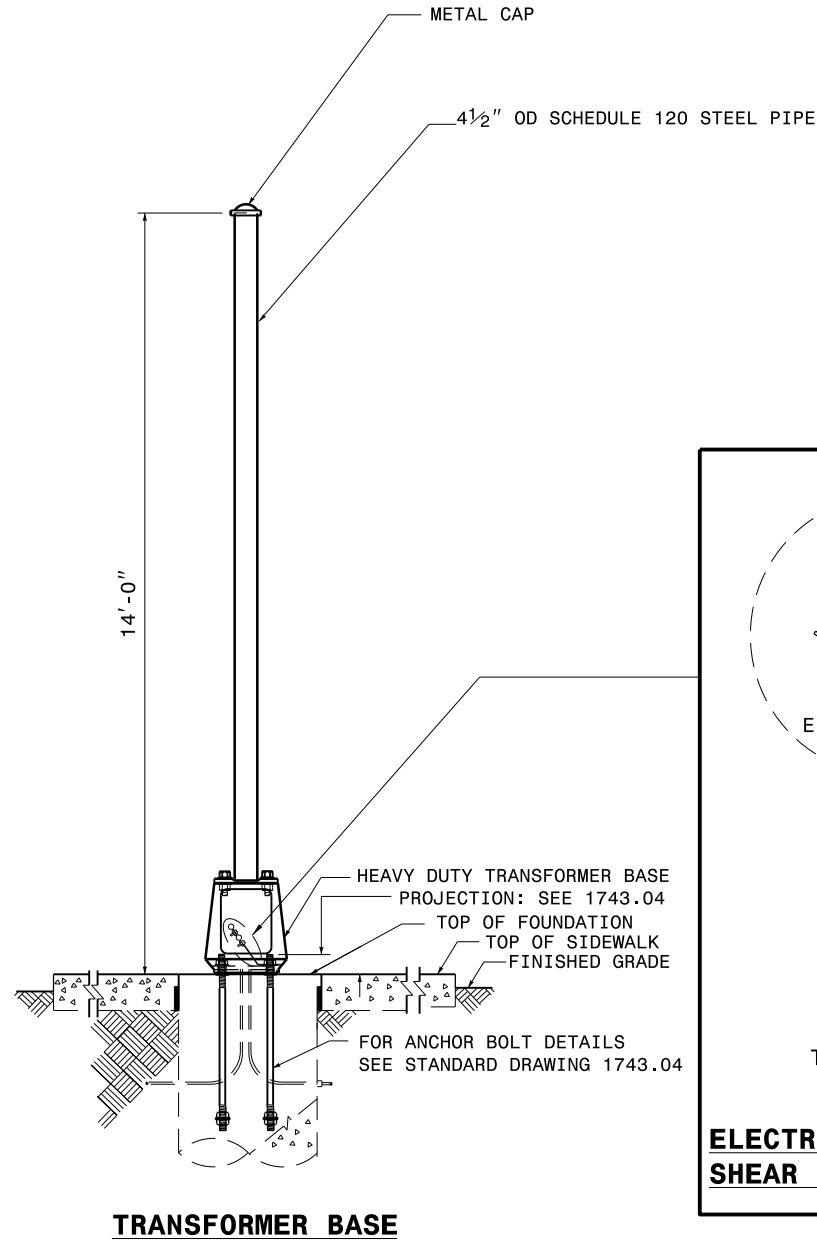
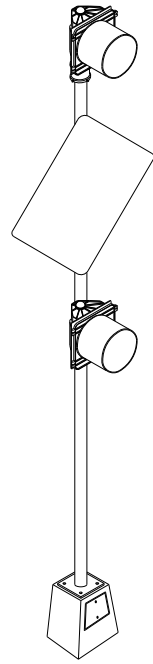
**NOTES:**

1. CONSTRUCT PEDESTALS ON FHWA APPROVED BREAKAWAY BASES OR ANCHORS.
2. CONSTRUCT PEDESTAL FOUNDATIONS IN ACCORDANCE WITH STANDARD DRAWING 1743.04.
3. NORMAL DUTY PEDESTALS ARE DESIGNED FOR USE IN ALL WIND ZONE REGIONS. PEDESTAL BASE REACTIONS USING 4 1/2" OD SCHEDULE 40 ALUMINUM PIPE ARE:  
AXIAL LOAD: 270 LBS  
SHEAR LOAD: 370 LBS  
MOMENT LOAD: 2,580 FT-LBS
4. BASE REACTIONS ARE BASED ON A DESIGN LOADING FOR 2 - 3 SECTION SIGNAL HEADS, 2 - PEDESTRIAN SIGNALS, 2 PUSHBUTTONS AND 2 PEDESTRIAN SIGNS. DO NOT EXCEED DESIGN LOADING WITHOUT APPROVAL.
5. ALL ELECTRICAL CONDUCTORS INSIDE OF BREAKAWAY SUPPORTS SHOULD SHEAR OR BECOME DISCONNECTED AS CLOSE TO THE FOUNDATION BASE AS POSSIBLE DURING A KNOCKDOWN. REFER TO ELECTRICAL CONDUCTOR SHEAR DEVICE DETAIL.



**THREADED FLANGE BASE STYLES**  
TO BE USED WITH BREAKAWAY ANCHORS ONLY

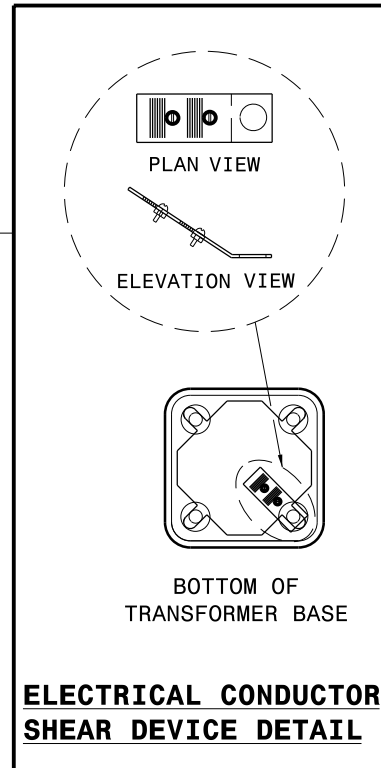




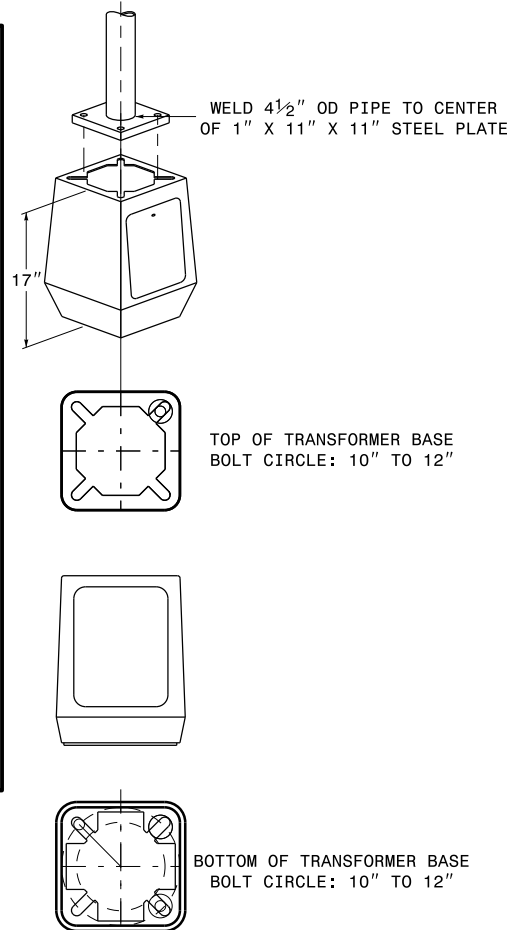
**TRANSFORMER BASE**

**NOTES:**

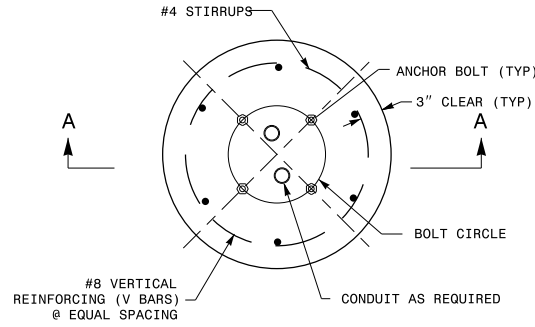
1. CONSTRUCT PEDESTALS ON FHWA APPROVED BREAKAWAY BASES OR ANCHORS.
2. CONSTRUCT PEDESTAL FOUNDATIONS IN ACCORDANCE WITH STANDARD DRAWING 1743.04.
3. PUSHBUTTON PEDESTALS ARE DESIGNED FOR USE IN ALL WIND ZONE REGIONS.  
PEDESTAL BASE REACTIONS USING 4 1/2" OD SCHEDULE 120 GALVANIZED STEEL PIPE ARE:  
AXIAL LOAD: 600 LBS  
SHEAR LOAD: 1,500 LBS  
MOMENT LOAD: 14,500 FT-LBS
4. BASE REACTIONS ARE BASED ON A DESIGN LOADING FOR 2 - 12" SIGNALS AND A 48" X 48" SIGN. DO NOT EXCEED DESIGN LOADING WITHOUT APPROVAL.
5. ALL ELECTRICAL CONDUCTORS INSIDE OF BREAKAWAY SUPPORTS SHOULD SHEAR OR BECOME DISCONNECTED AS CLOSE TO THE FOUNDATION BASE AS POSSIBLE DURING A KNOCKDOWN. REFER TO ELECTRICAL CONDUCTOR SHEAR DEVICE DETAIL.
6. DO NOT USE BREAKAWAY ANCHOR BOLTS WITH THIS TYPE OF PEDESTAL.



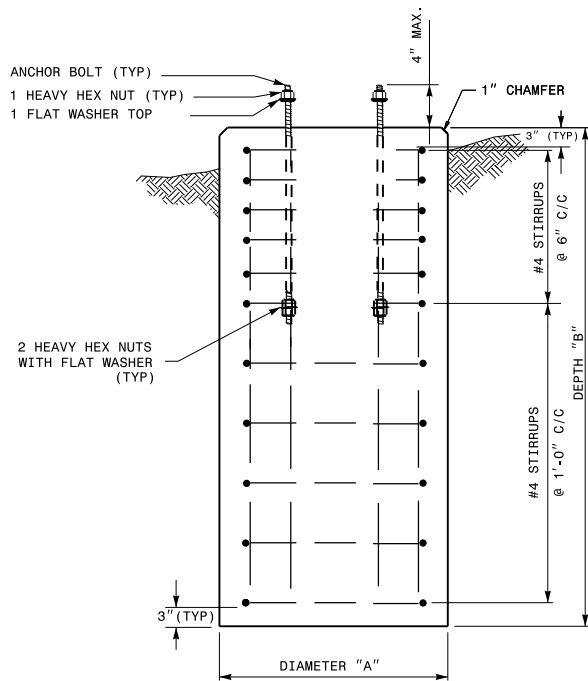
**ELECTRICAL CONDUCTOR SHEAR DEVICE DETAIL**



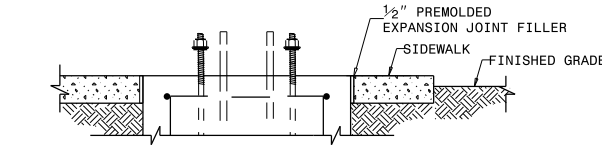




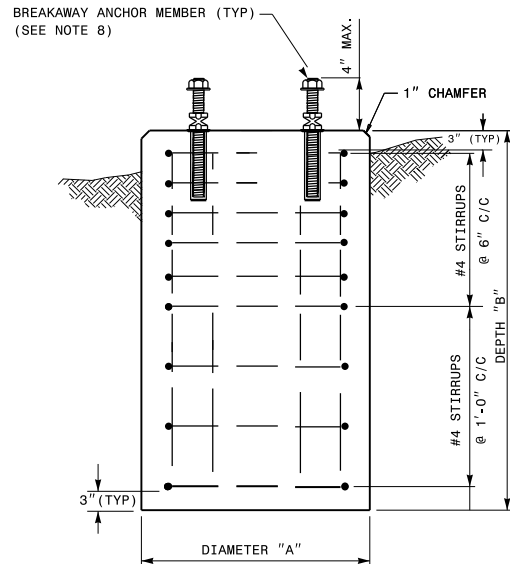
**PEDESTAL FOUNDATION - PLAN VIEW**



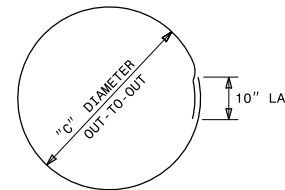
TYPES I, II & III  
**SECTION A-A**



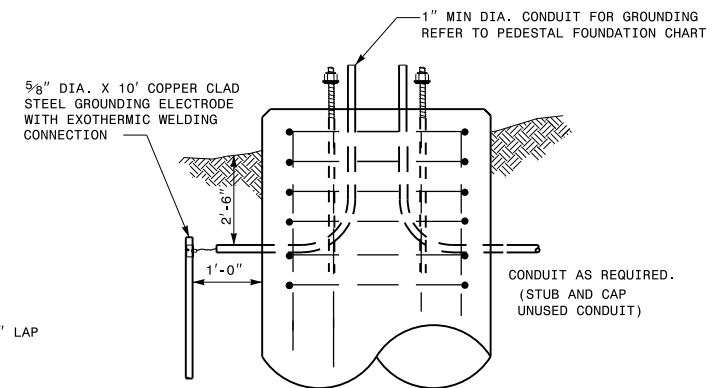
**PEDESTAL FOUNDATION DETAILS FOR SIDEWALK**



TYPES I & II ONLY  
**SECTION A-A**



**CLOSED HOOPS**



**GROUNDING & CONDUIT DETAIL**

**NOTES:**

1. CAST FOUNDATION AGAINST UNDISTURBED SOIL WHEREVER CONDITIONS PERMIT. IN UNSTABLE SOIL, CAST-IN-PLACE TUBE FORMS ARE ALLOWED WITH APPROVAL.
2. COMPLY WITH APPLICABLE PROVISIONS OF SECTION 825 FOR CONCRETE CONSTRUCTION.
3. USE CLASS "A" CONCRETE THAT MEETS THE REQUIREMENTS OF SECTION 1000 WITH A COMPRESSION STRENGTH AT 28 DAYS OF F'c= 3000 PSI (MIN.).
4. USE ASTM GRADE 60 DEFORMED BARS FOR ALL REINFORCING STEEL.
5. GRADE IS ASSUMED TO BE (8H:1V) OR FLATTER. FOUNDATION SIZE AND DEPTHS ARE BASED ON THE FOLLOWING SOIL DESIGN PARAMETERS:
  - A. SANDY TYPE SOIL
  - B. NO GROUND WATER WITHIN 5'-0" OF SURFACE ELEVATION
  - C. WIND SPEED NOT TO EXCEED 140 MPH
 IF ACTUAL CONDITIONS VARY SUBSTANTIALLY FROM THOSE ASSUMED, THE FOUNDATION DEPTH MAY BE ADJUSTED. IN THIS CASE, CONTACT THE ENGINEER.
6. MAINTAIN AT LEAST 3" COVER ON ALL REINFORCEMENT.
7. ORIENT CONDUIT AS REQUIRED BY THE DESIGN OR AS DICTATED BY FIELD CONDITIONS.
8. USE ADHESIVE ANCHOR FOR THREADED COUPLING INSERT. FOR TYPE I MINIMUM DEPTH NECESSARY IS 0'-4 1/2" AND FOR TYPE II MINIMUM DEPTH NECESSARY IS 0'-6 5/8". FOLLOW MANUFACTURER'S INSTALLATION INSTRUCTIONS.

PEDESTAL FOUNDATION TYPE AND SIZE							
TYPE	PEDESTAL DESCRIPTION	SIZE			ANCHOR BOLT		INSTALL GROUNDING SYSTEM (YES/NO)
		DIAMETER "A" FT	DEPTH "B" FT	CONCRETE VOLUME CY	DIAMETER (MIN.) IN	LENGTH FT-IN	
I	PEDESTRIAN PUSHBUTTON	2'-0"	3'-6"	.41	1/2	1'-6"	NO
II	NORMAL-DUTY	2'-0"	5'-0"	.58	3/4	2'-0"	YES
III	HEAVY-DUTY	2'-6"	7'-0"	1.27	1	4'-0"	YES

REINFORCING STEEL SCHEDULE													
TYPE	V-BAR				STIRRUP								
	SIZE #	QTY	LENGTH	WEIGHT LBS	QUANTITY			LENGTH	DIAMETER "C" FT	OVERLAP MIN.	WEIGHT LBS	TOTAL STEEL WEIGHT LBS	
					VERTICAL ON 6" CENTERS	SPACING ON 12" CENTERS	TOTAL						
I	8	6	3'-0"	56	4	0	4	4	5'-7"	1'-6"	0'-10"	15	71
II	8	6	4'-6"	86	4	5	3	8	5'-7"	1'-6"	0'-10"	30	116
III	8	6	6'-6"	122	4	7	4	11	7'-2"	2'-0"	0'-10"	53	175

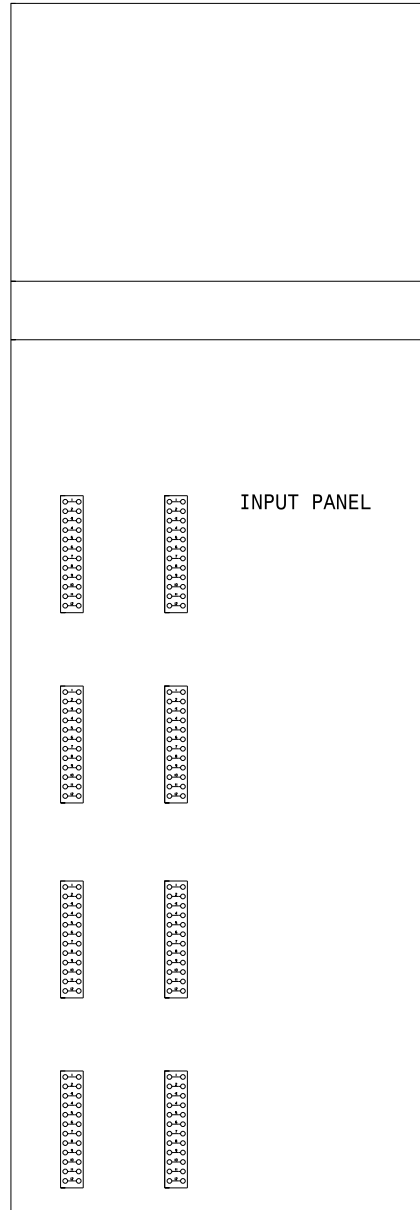
STATE OF NORTH CAROLINA  
 DEPT. OF TRANSPORTATION  
 DIVISION OF HIGHWAYS  
 RALEIGH, N.C.

1-12

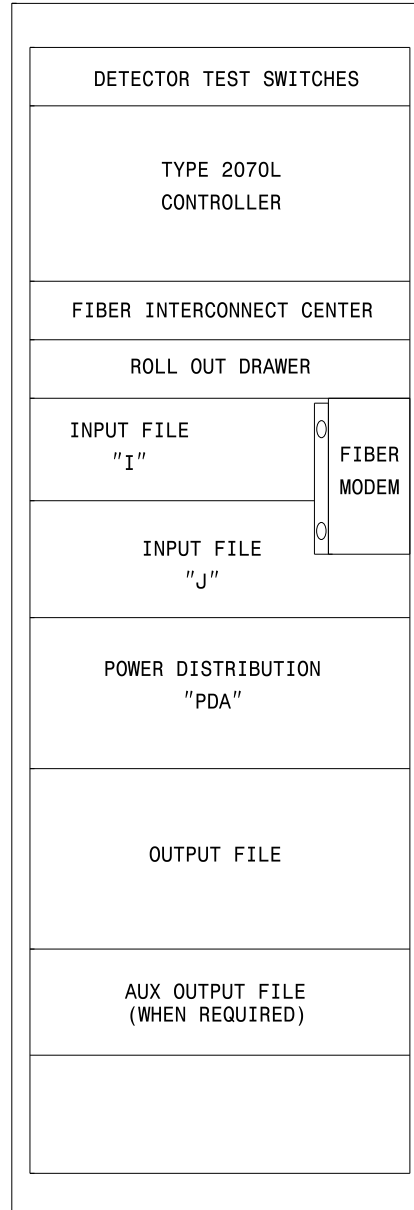
ENGLISH STANDARD DRAWING FOR  
**CONTROLLER AND CABINETS**  
 CABINET COMPONENT LAYOUT (BASEMOUNT)  
 170 CABINET MODEL 332 WITH 2070L CONTROLLER

SHEET 1 OF 2

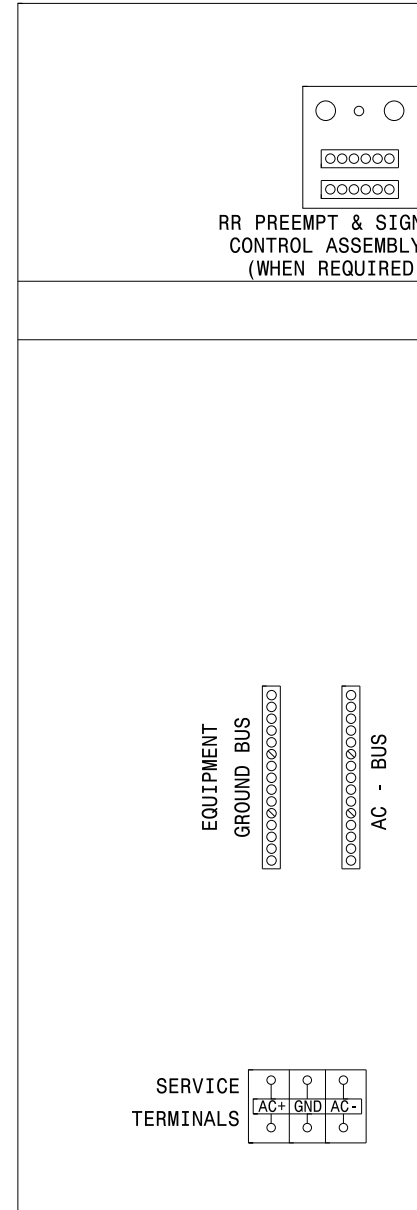
1751.01



332 CABINET  
 LEFT SIDE  
 REAR VIEW



332 CABINET  
 REAR VIEW



332 CABINET  
 RIGHT SIDE  
 REAR VIEW

**NOTE**

PROVIDE 2" SPACE BETWEEN CONTROLLER AND ROLL OUT DRAWER TO ACCOMMODATE FIBER INTERCONNECT CENTER.

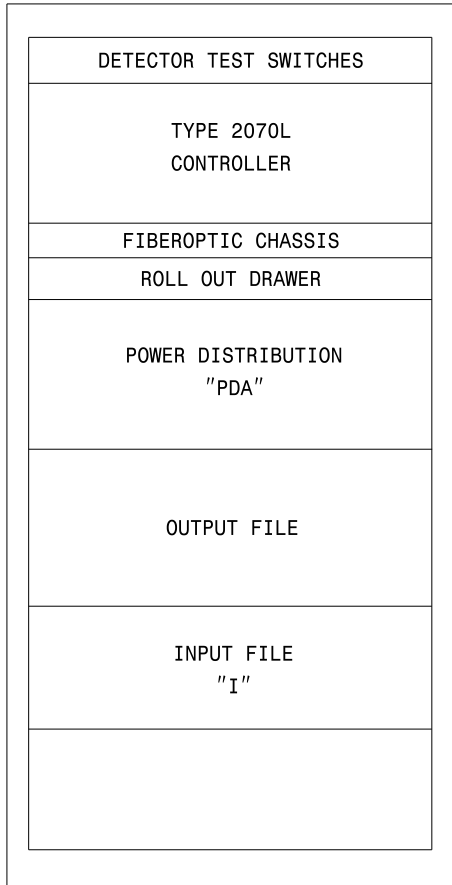
STATE OF NORTH CAROLINA  
 DEPT. OF TRANSPORTATION  
 DIVISION OF HIGHWAYS  
 RALEIGH, N.C.

1-12

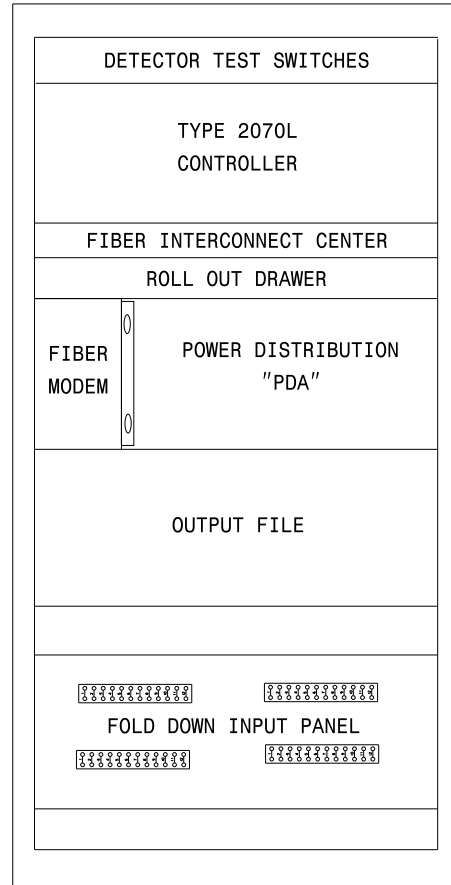
ENGLISH STANDARD DRAWING FOR  
**CONTROLLER AND CABINETS**  
 CABINET COMPONENT LAYOUT (BASEMOUNT)  
 170 CABINET MODEL 332 WITH 2070L CONTROLLER

SHEET 1 OF 2

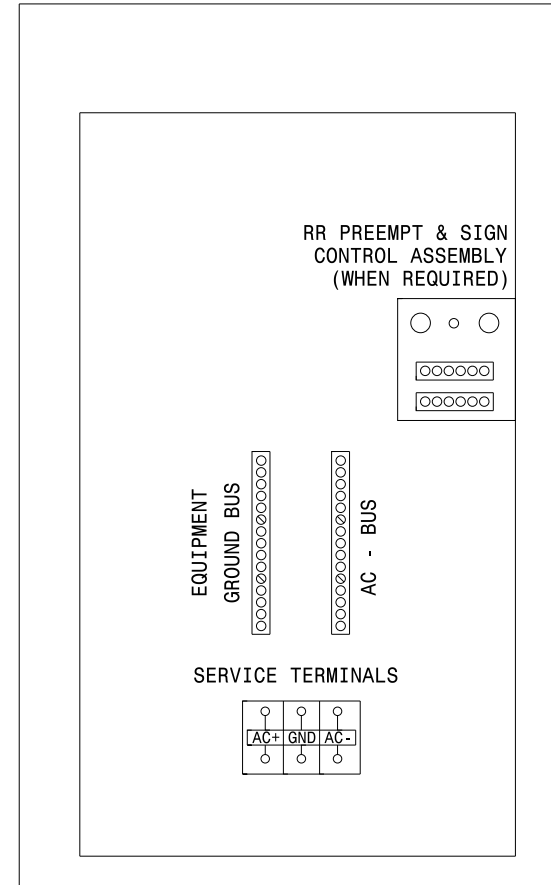
1751.01



336S CABINET  
FRONT VIEW



336S CABINET  
REAR VIEW



336S CABINET  
RIGHT SIDE  
REAR VIEW

**NOTE**

PROVIDE 2" SPACE BETWEEN CONTROLLER AND ROLL OUT DRAWER TO ACCOMMODATE FIBER INTERCONNECT CENTER.

STATE OF NORTH CAROLINA  
DEPT. OF TRANSPORTATION  
DIVISION OF HIGHWAYS  
RALEIGH, N.C.

1-12

ENGLISH STANDARD DRAWING FOR  
**CONTROLLERS AND CABINETS**  
CABINET COMPONENT LAYOUT (POLE MOUNT)  
170 CABINET MODEL 336S WITH 2070L CONTROLLER

1-12

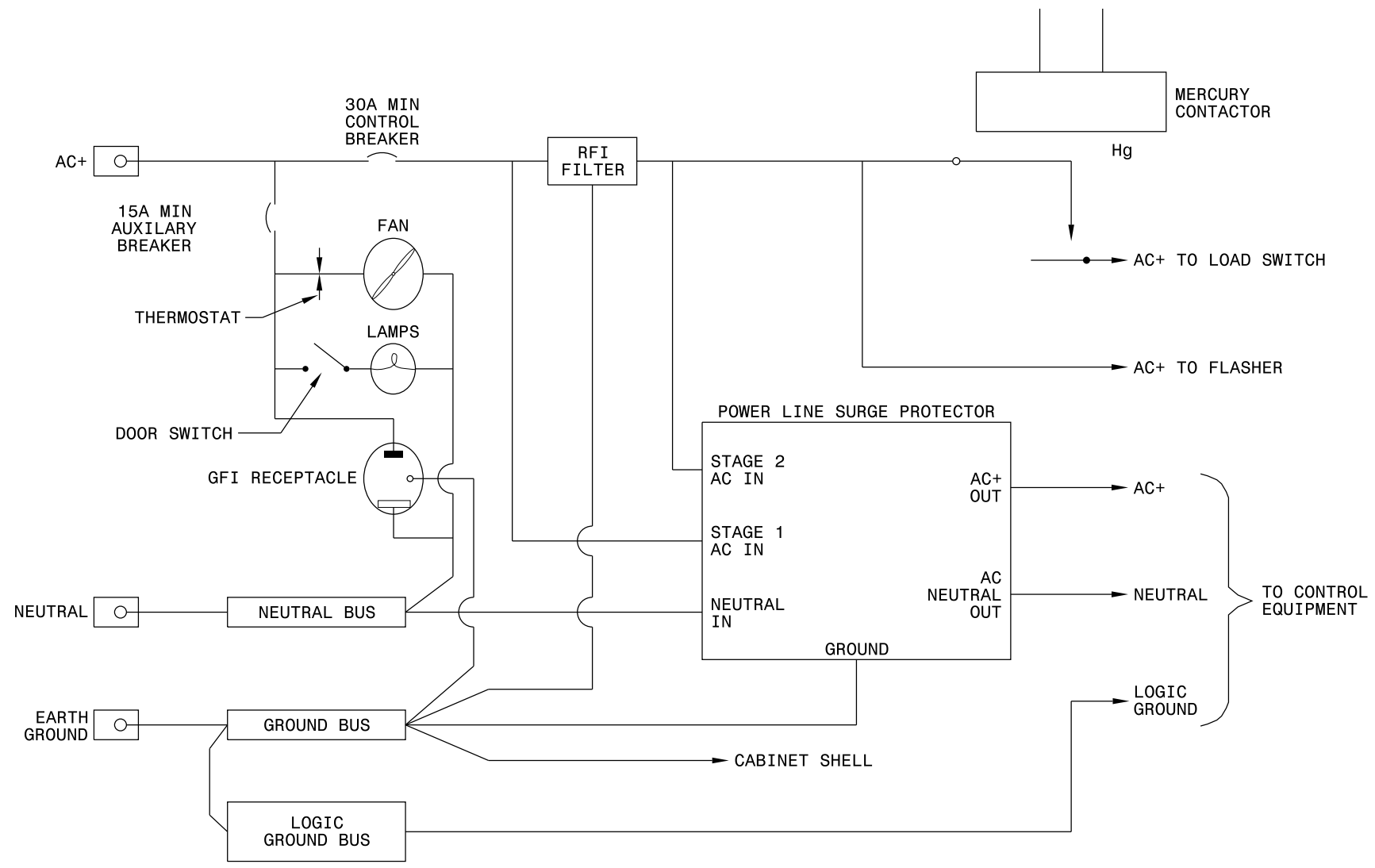
STATE OF NORTH CAROLINA  
DEPT. OF TRANSPORTATION  
DIVISION OF HIGHWAYS  
RALEIGH, N.C.

ENGLISH STANDARD DRAWING FOR  
**CONTROLLERS AND CABINETS**  
CABINET COMPONENT LAYOUT (POLE MOUNT)  
170 CABINET MODEL 336S WITH 2070L CONTROLLER

STATE OF NORTH CAROLINA  
 DEPT. OF TRANSPORTATION  
 DIVISION OF HIGHWAYS  
 RALEIGH, N.C.

1-12  
 ENGLISH STANDARD DRAWING FOR  
**CONTROLLER AND CABINETS**  
 POWER, GROUND, AND AUXILIARY POWER SYSTEMS  
 NEMA TS-2

SHEET 1 OF 1  
**1751.02**



1-12  
 STATE OF NORTH CAROLINA  
 DEPT. OF TRANSPORTATION  
 DIVISION OF HIGHWAYS  
 RALEIGH, N.C.

ENGLISH STANDARD DRAWING FOR  
**CONTROLLERS AND CABINETS**  
 POWER, GROUND, AND AUXILIARY POWER SYSTEMS  
 NEMA TS-2

SHEET 1 OF 1  
**1751.02**