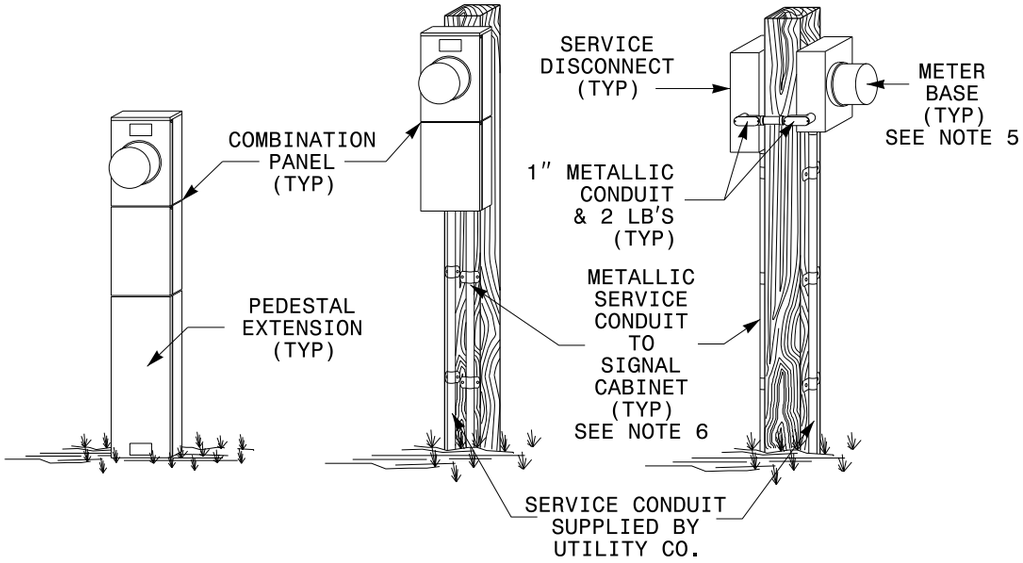
GROUND MOUNTED SERVICE EQUIPMENT OPTIONS FOR UNDERGROUND ELECTRICAL SERVICE



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.

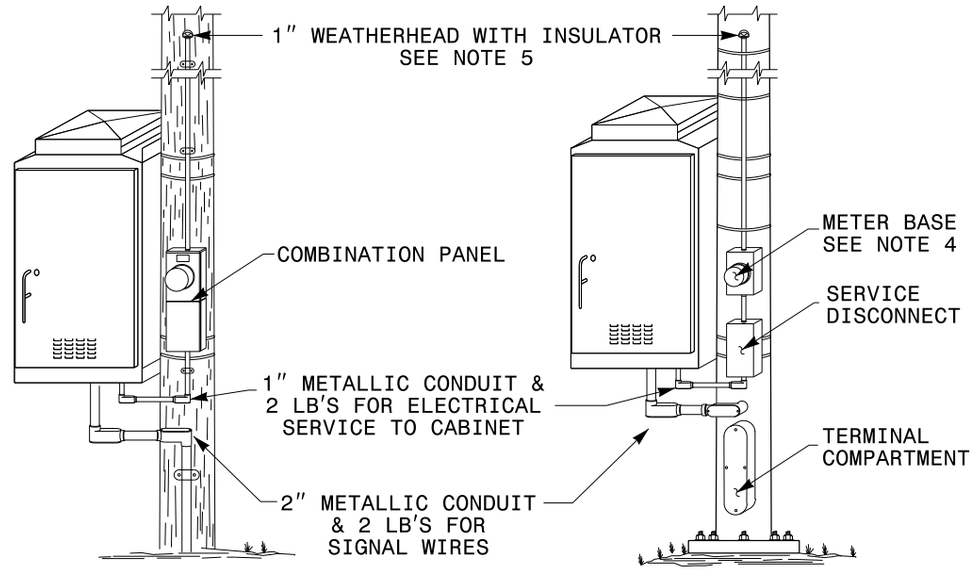
3. INSTALL ALL METER BASES MOUNTED IN PEDESTALS AT A HEIGHT NOT TO EXCEED 5 FEET AS MEASURED FROM THE CENTER OF THE METER. INSTALL ALL OTHER METER BASES AT A HEIGHT BETWEEN 4 FEET AND 5 FEET AS MEASURED FROM THE CENTER OF THE METER. SEAL ANY UNUSED MOUNTING HOLES ON COMBINATION PANELS, METER BASES AND 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.

6. THE ABOVE GROUND PORTION OF ELECTRICAL SERVICE CONDUIT TO THE SIGNAL CABINET MUST BE METALLIC. THE BELOW GROUND PORTION MAY BE METALLIC OR PVC.

POLE MOUNTED SERVICE EQUIPMENT OPTIONS FOR OVERHEAD ELECTRICAL SERVICE



WOOD POLE

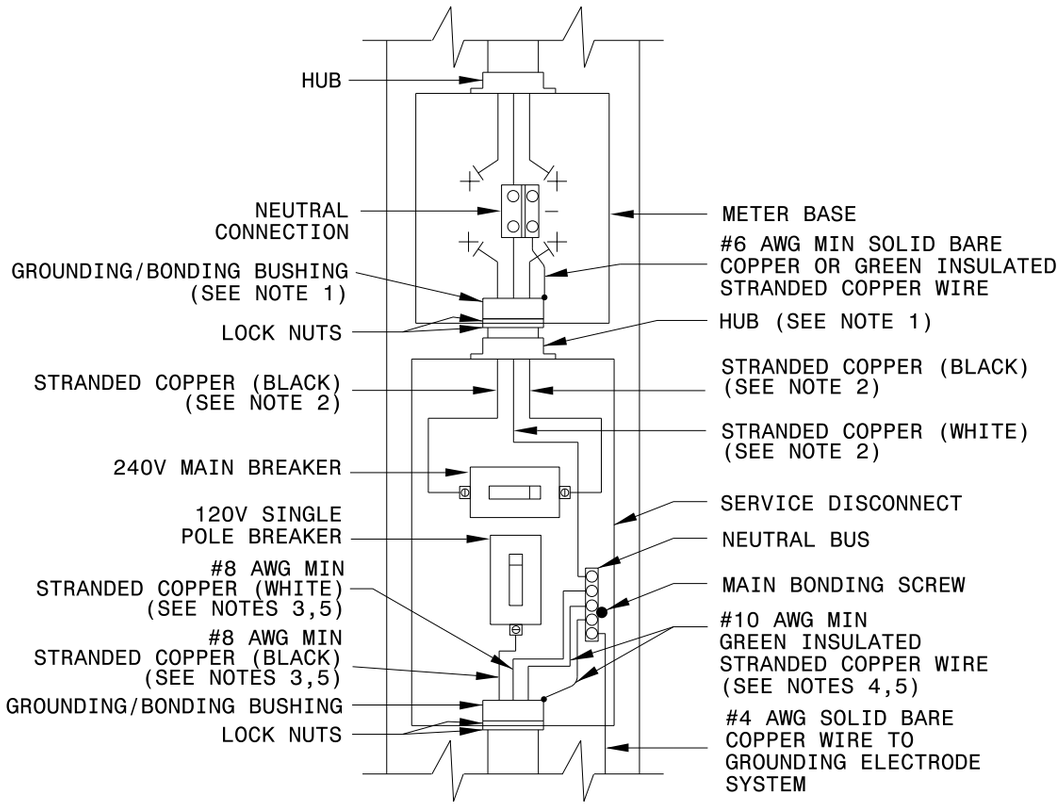
METAL POLE

1-24
STATE OF NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

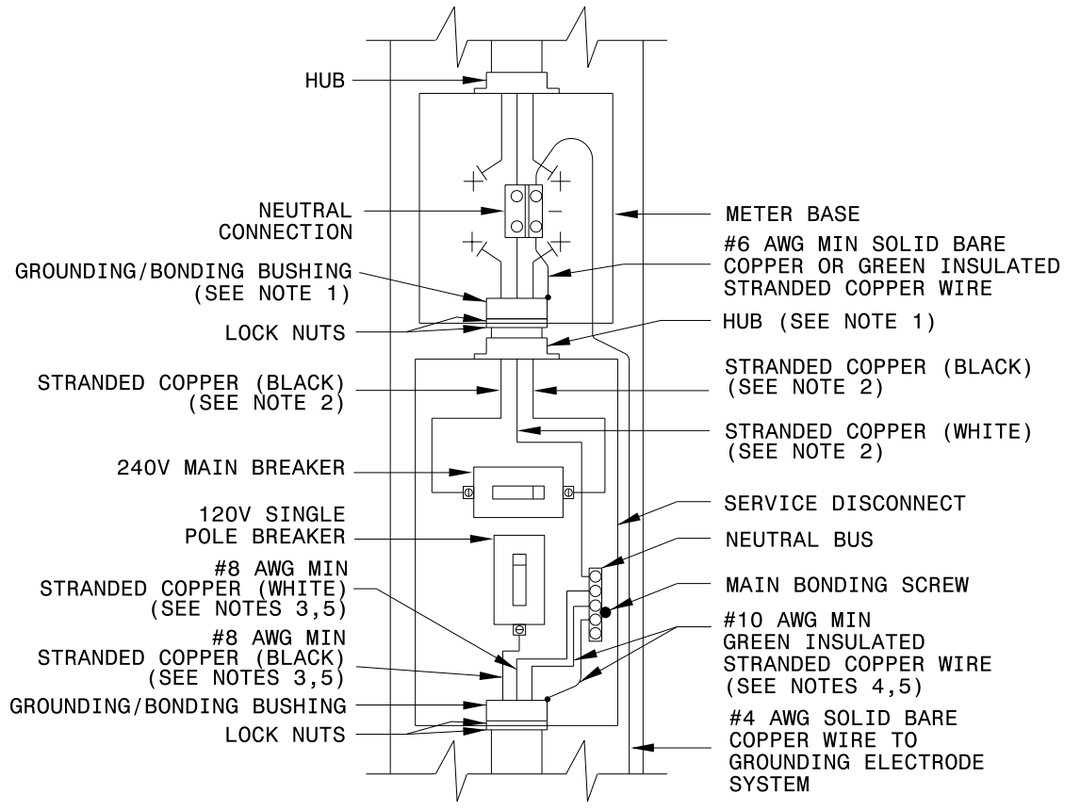
ENGLISH STANDARD DRAWING FOR

ELECTRICAL SERVICE OPTIONS

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



ALTERNATE ELECTRICAL CONNECTION DETAIL FOR OVERHEAD SERVICE INSTALLATION SERVICE DISCONNECT WITH MAIN BREAKER (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.
2. SERVICE-ENTRANCE CONDUCTORS SHALL BE SIZED ACCORDING TO THE NEC.
3. WIRE SIZE FOR THESE CONDUCTORS SHALL BE #8 AWG MINIMUM FOR A 50 AMP CIRCUIT AND #10 AWG MINIMUM FOR A 30 AMP CIRCUIT.
4. FOR TRAFFIC SIGNAL INSTALLATIONS, THIS CONDUCTOR SHALL BE #10 AWG MIN STRANDED COPPER WITH INSULATION THAT IS GREEN WITH ONE OR MORE YELLOW STRIPES.
5. THE AMPACITIES LISTED HERE DO NOT TAKE INTO ACCOUNT ANY VOLTAGE DROP CONSIDERATIONS OR TEMPERATURE COMPATIBILITY WITH THE CONNECTION POINTS.

1-24

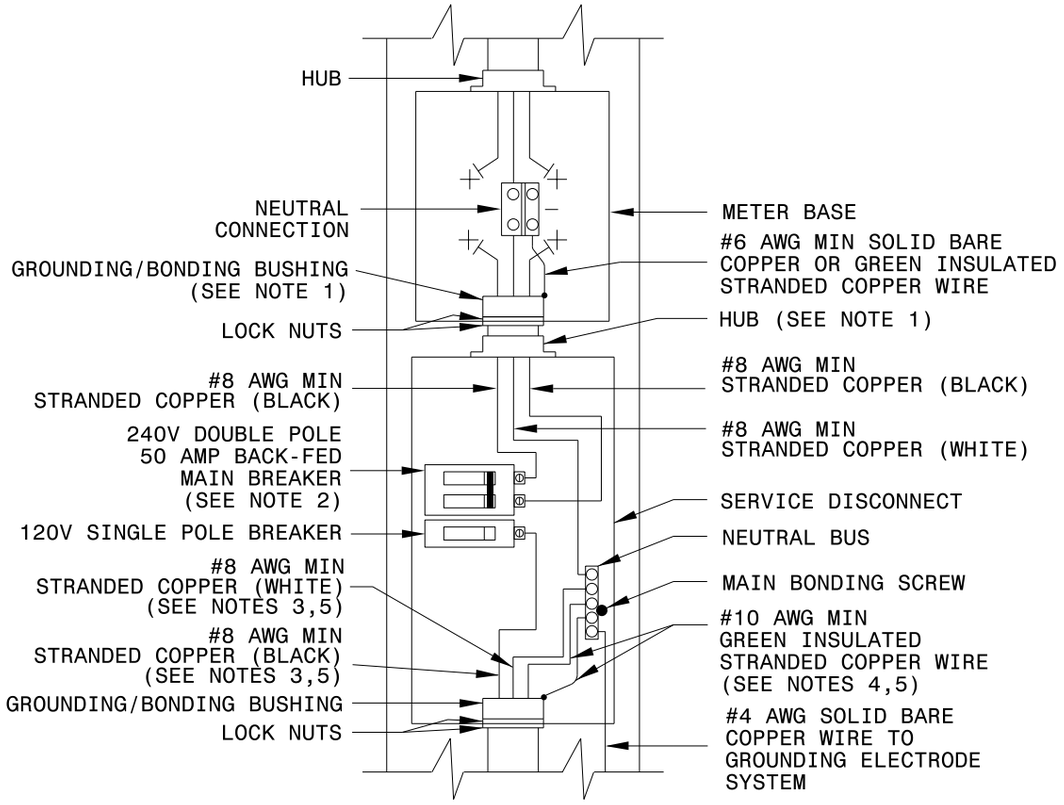
STATE OF NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

ENGLISH STANDARD DRAWING FOR

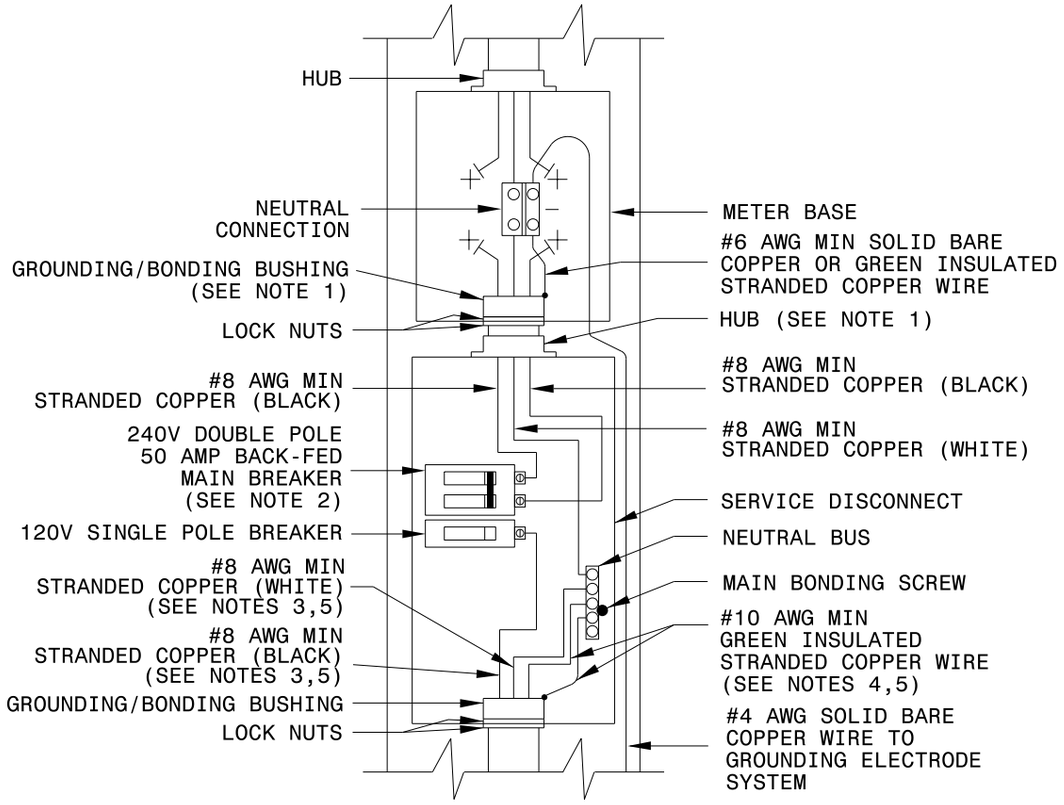
ELECTRICAL SERVICE OPTIONS

SERVICE DISCONNECT WITH MAIN BREAKER

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



ALTERNATE ELECTRICAL CONNECTION DETAIL FOR OVERHEAD SERVICE INSTALLATION SERVICE DISCONNECT WITH BACK-FED MAIN BREAKER (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.
2. BACK-FED MAIN BREAKER MUST BE SECURED BY AN ADDITIONAL FASTENER. BARRIERS SHALL BE INSTALLED TO PREVENT INADVERTENT CONTACT.
3. WIRE SIZE FOR THESE CONDUCTORS SHALL BE #8 AWG MINIMUM FOR A 50 AMP CIRCUIT AND #10 AWG MINIMUM FOR A 30 AMP CIRCUIT.
4. FOR TRAFFIC SIGNAL INSTALLATIONS, THIS CONDUCTOR SHALL BE #10 AWG MIN STRANDED COPPER WITH INSULATION THAT IS GREEN WITH ONE OR MORE YELLOW STRIPES.
5. THE AMPACITIES LISTED HERE DO NOT TAKE INTO ACCOUNT ANY VOLTAGE DROP CONSIDERATIONS OR TEMPERATURE COMPATIBILITY WITH THE CONNECTION POINTS.

1-24

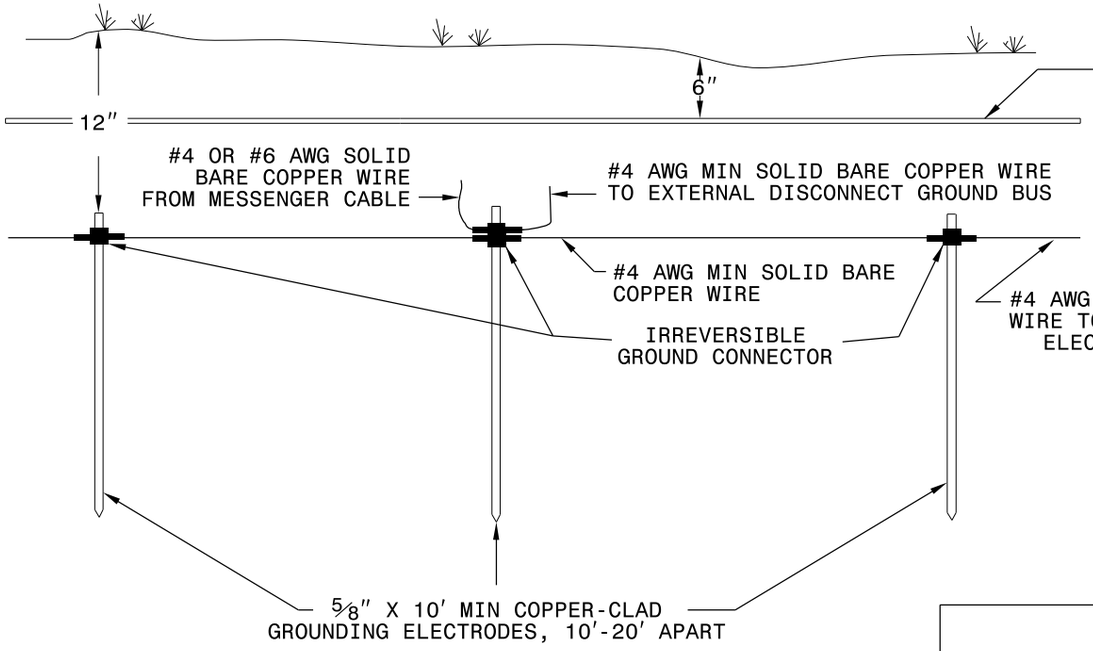
STATE OF NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

ENGLISH STANDARD DRAWING FOR

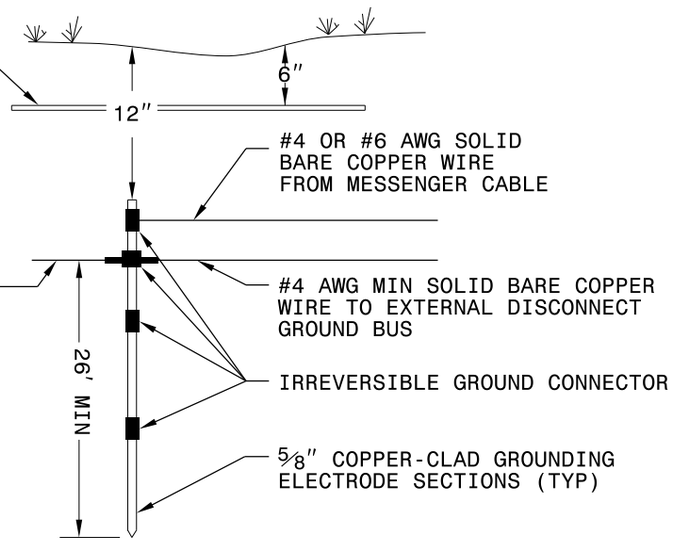
ELECTRICAL SERVICE OPTIONS

SERVICE DISCONNECT WITHOUT MAIN BREAKER

MULTIPLE ELECTRODES



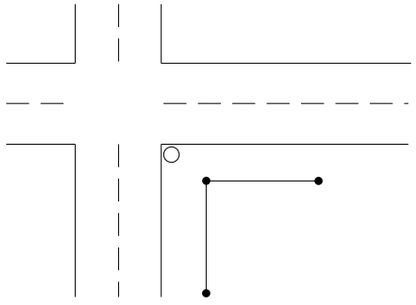
SECTIONAL ELECTRODES



NOTES

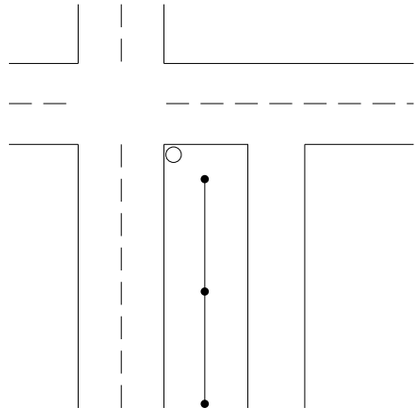
1. FOR GROUND RODS INSTALLED IN AREAS WHERE THE SLOPE IS GREATER THAN 4:1, THE TOP OF THE GROUND RODS SHALL BE A MINIMUM OF 24″ BELOW FINISHED GRADE.

UNRESTRICTED SHOULDER

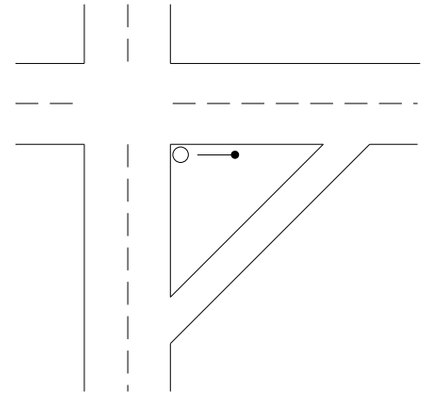


PLACE GROUNDING ELECTRODES AT 90°

LIMITED SHOULDER



RESTRICTED SPACE



PLACE GROUNDING ELECTRODES IN A STRAIGHT LINE

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

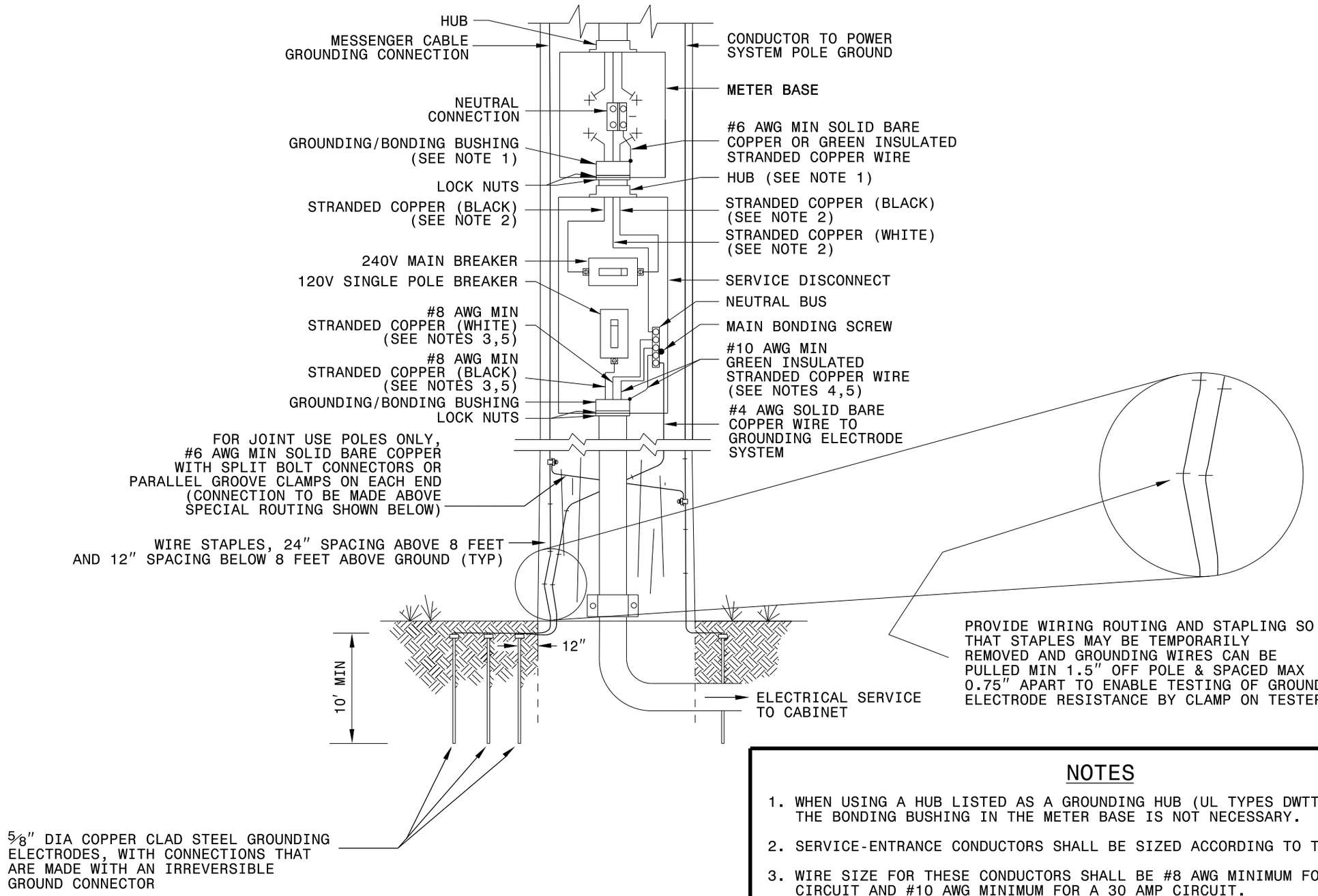
1-24

ENGLISH STANDARD DRAWING FOR

ELECTRICAL SERVICE GROUNDING

MULTIPLE AND SECTIONAL ELECTRODES

1700.02



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.
2. SERVICE-ENTRANCE CONDUCTORS SHALL BE SIZED ACCORDING TO THE NEC.
3. WIRE SIZE FOR THESE CONDUCTORS SHALL BE #8 AWG MINIMUM FOR A 50 AMP CIRCUIT AND #10 AWG MINIMUM FOR A 30 AMP CIRCUIT.
4. FOR TRAFFIC SIGNAL INSTALLATIONS, THIS CONDUCTOR SHALL BE #10 AWG MIN STRANDED COPPER WITH INSULATION THAT IS GREEN WITH ONE OR MORE YELLOW STRIPES.
5. THE AMPACITIES LISTED HERE DO NOT TAKE INTO ACCOUNT ANY VOLTAGE DROP CONSIDERATIONS OR TEMPERATURE COMPATIBILITY WITH THE CONNECTION POINTS.

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

1-24

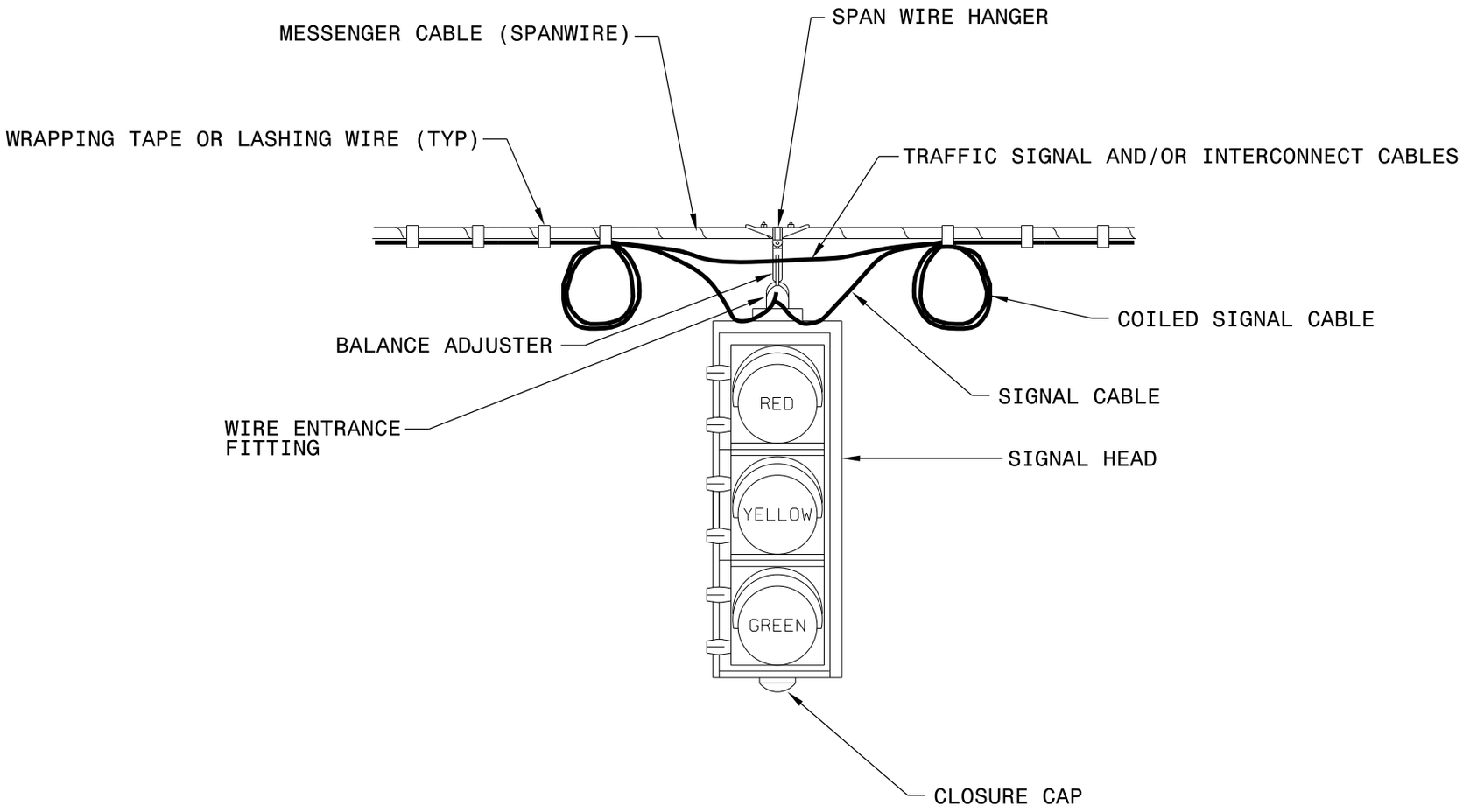
ENGLISH STANDARD DRAWING FOR

ELECTRICAL SERVICE GROUNDING

GROUNDING AND BONDING - WOOD POLES

SHEET 2 OF 2

1700.02



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

1-24

ROADWAY STANDARD DRAWING FOR

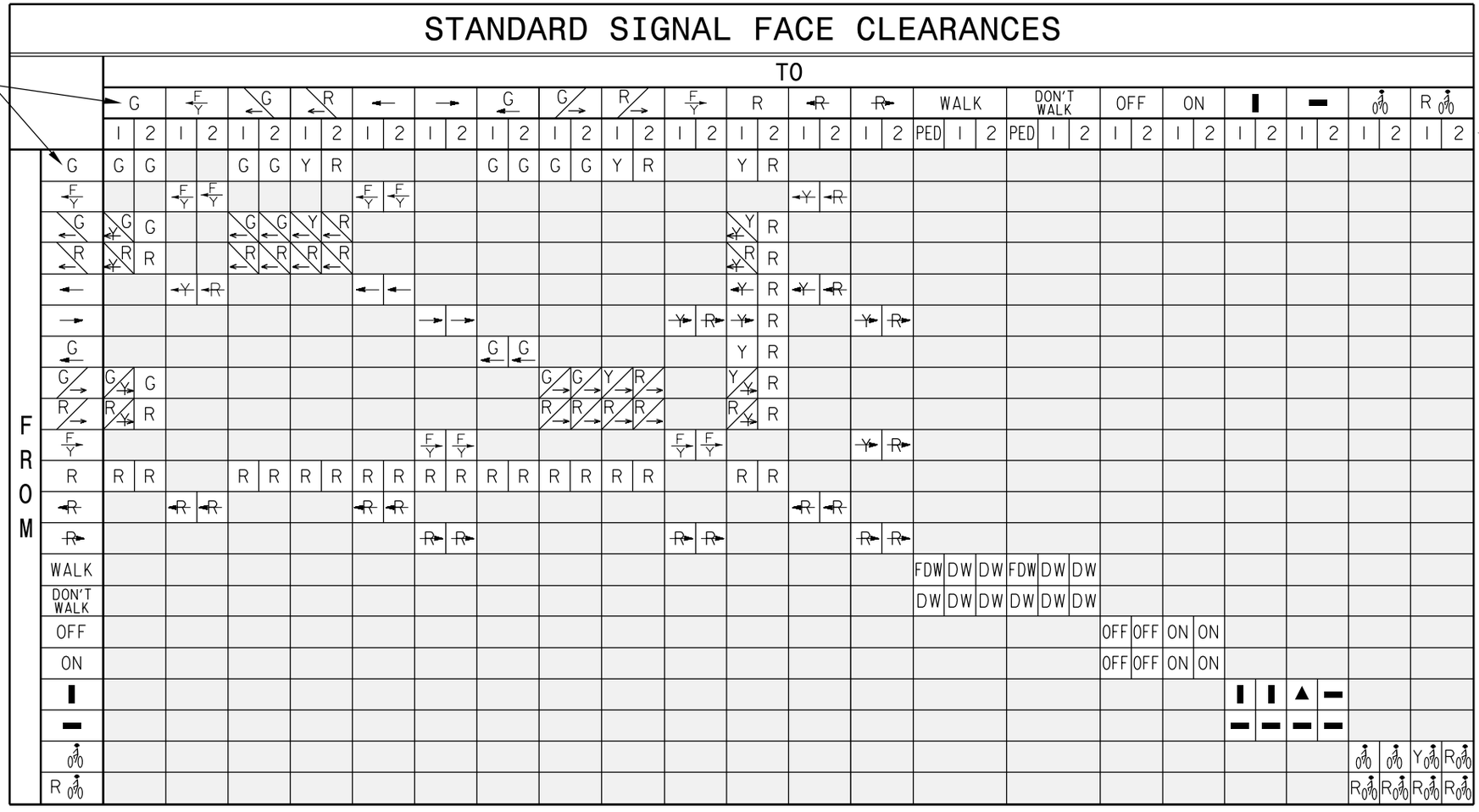
SIGNAL HEADS

VEHICULAR SIGNAL HEADS

SHEET 1 OF 2

1705.01

STANDARD SIGNAL FACE CLEARANCES



G - GREEN
Y - YELLOW
R - RED
W - WALK
FDW - FLASHING DON'T WALK
DW - DON'T WALK
← - ARROW
F Y - FLASHING YELLOW ARROW
▬ - GO
▲ - PREPARE TO STOP
▮ - STOP
🚲 - BICYCLE DISPLAY

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

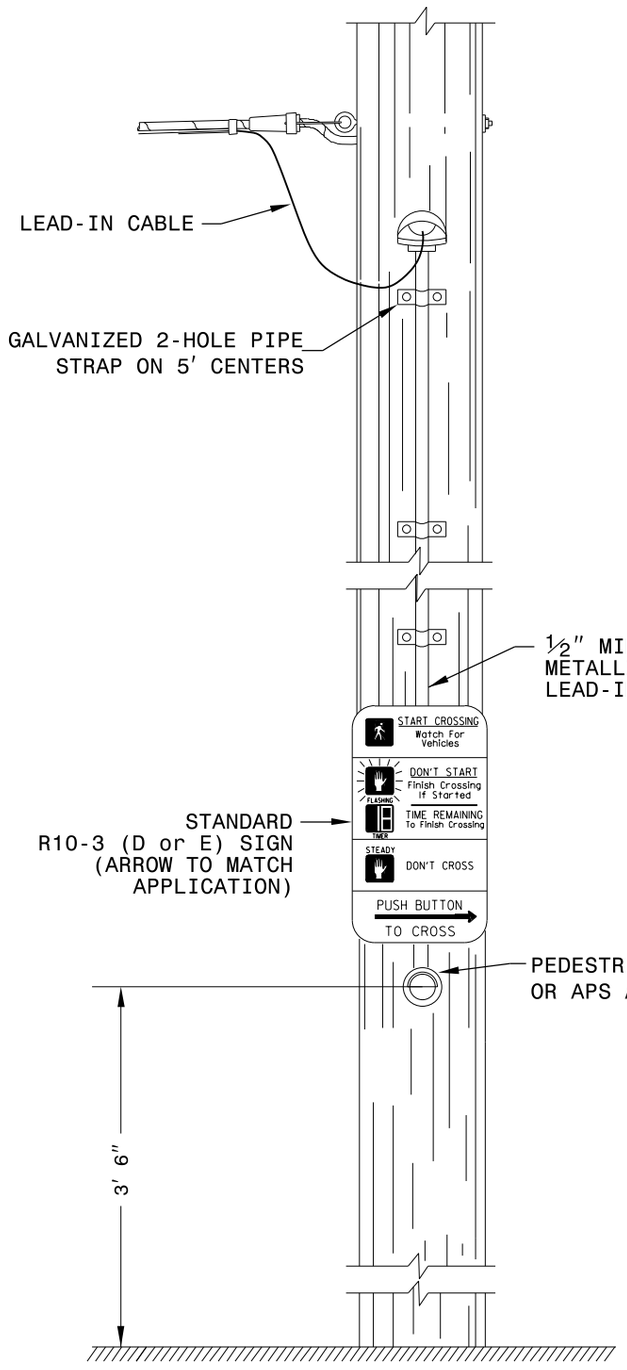
1-24

ROADWAY STANDARD DRAWING FOR

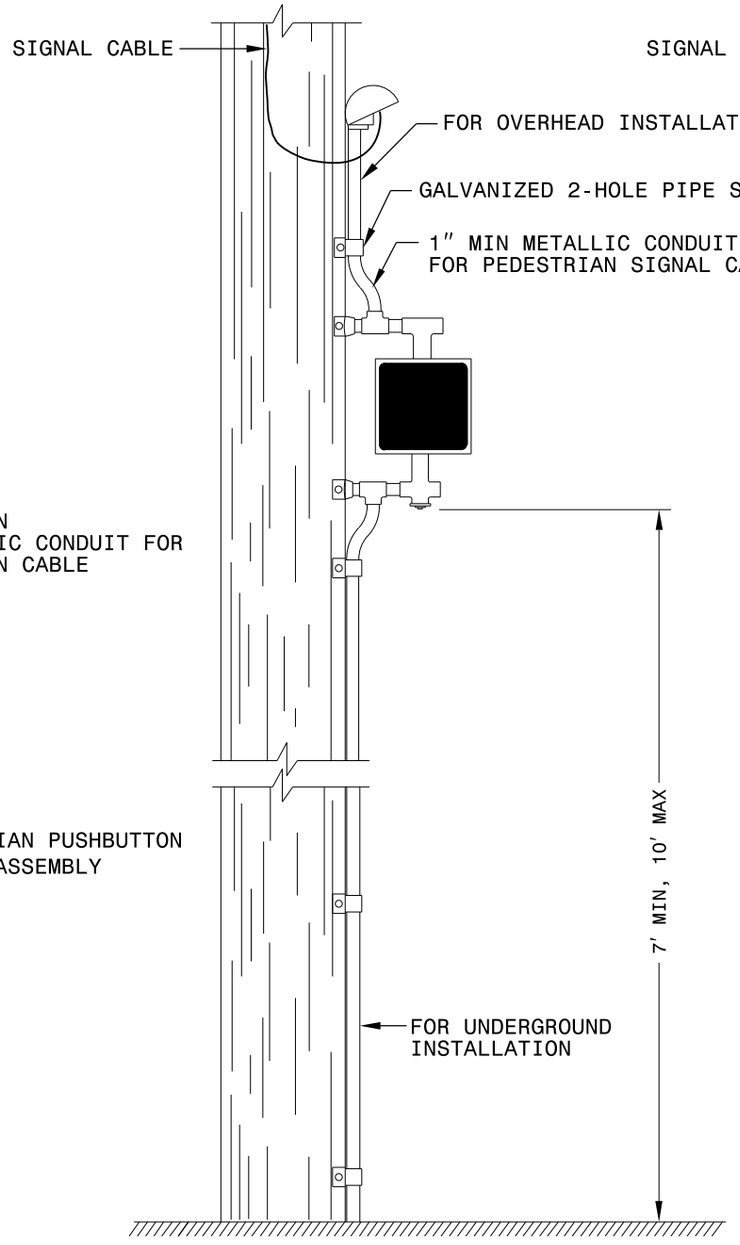
SIGNAL HEADS

STANDARD SIGNAL FACE CLEARANCES

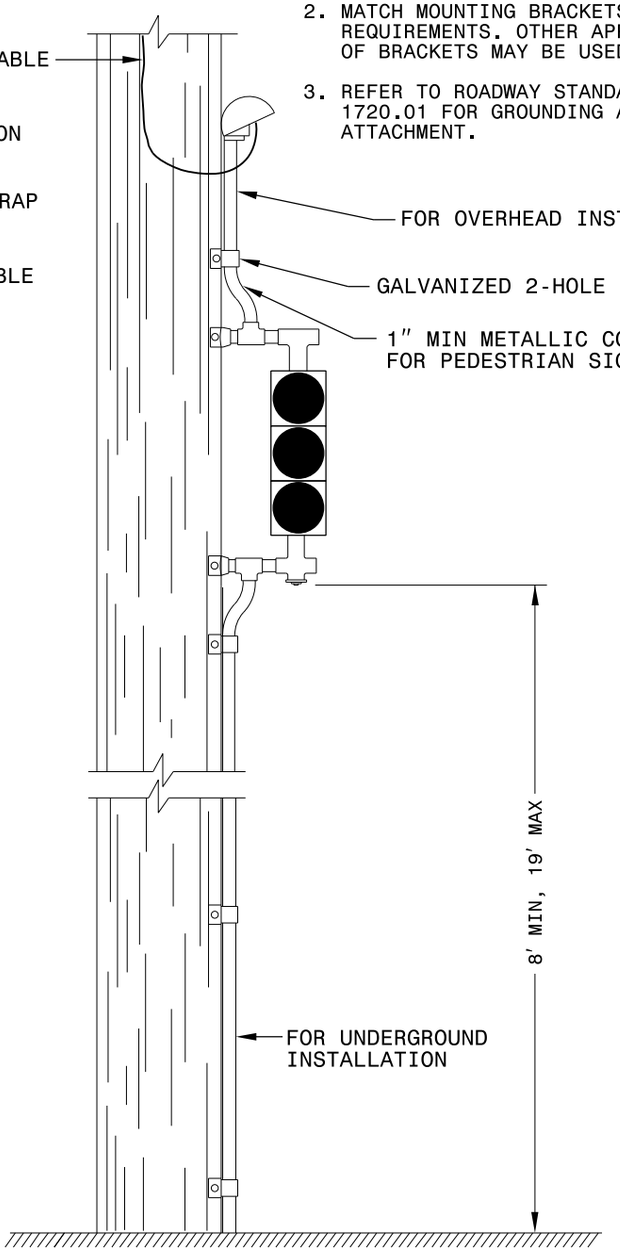
FRONT VIEW



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.

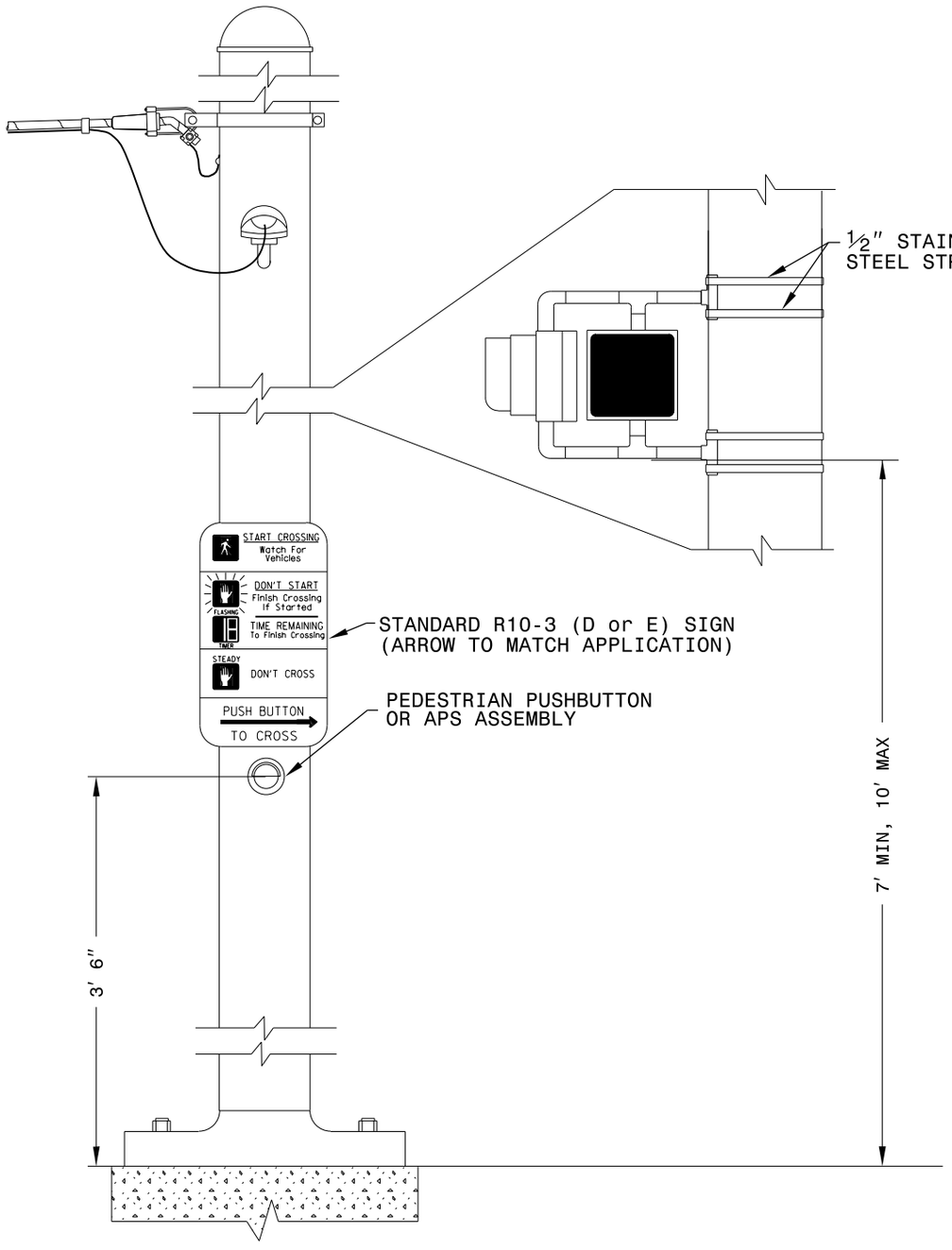
1-24

ROADWAY STANDARD DRAWING FOR

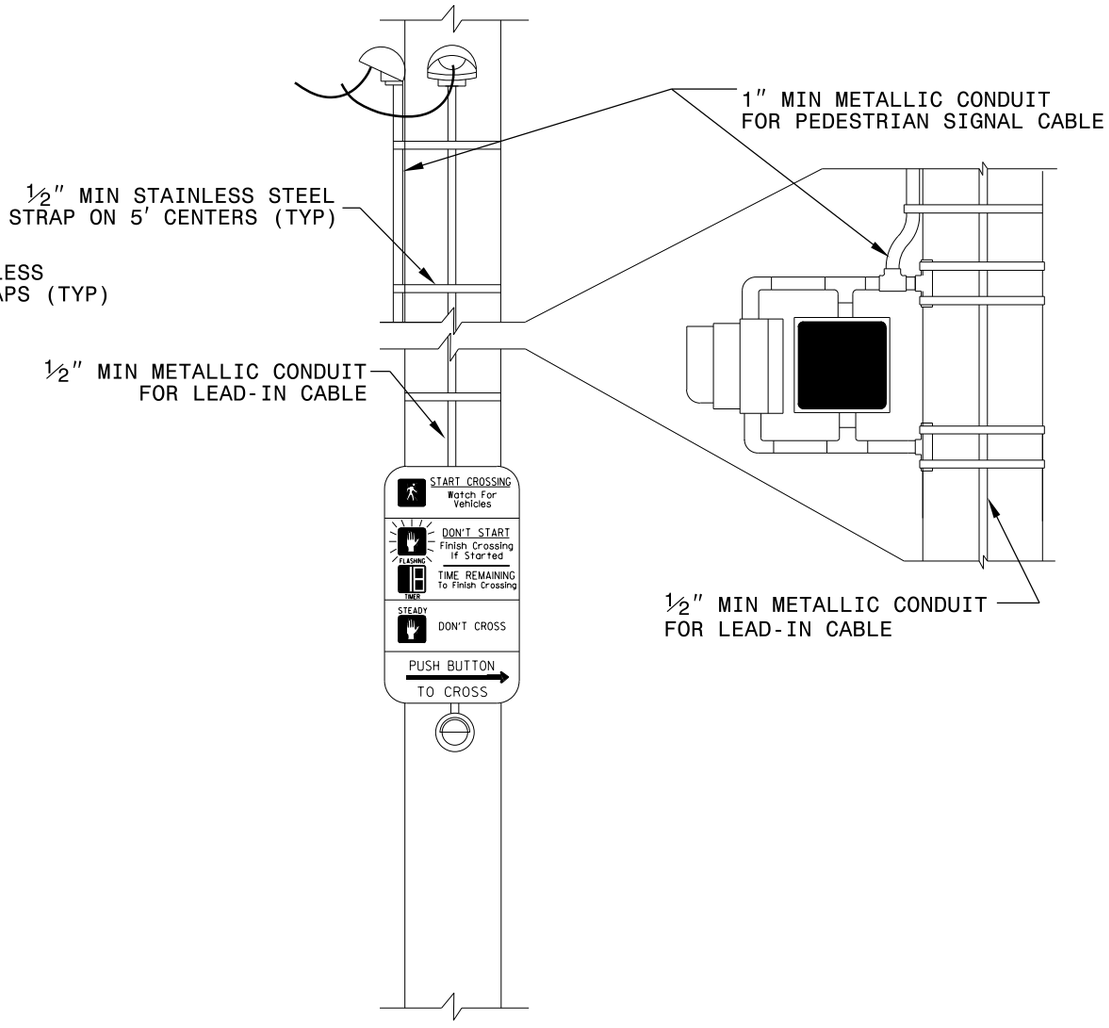
SIGNAL HEADS

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.

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

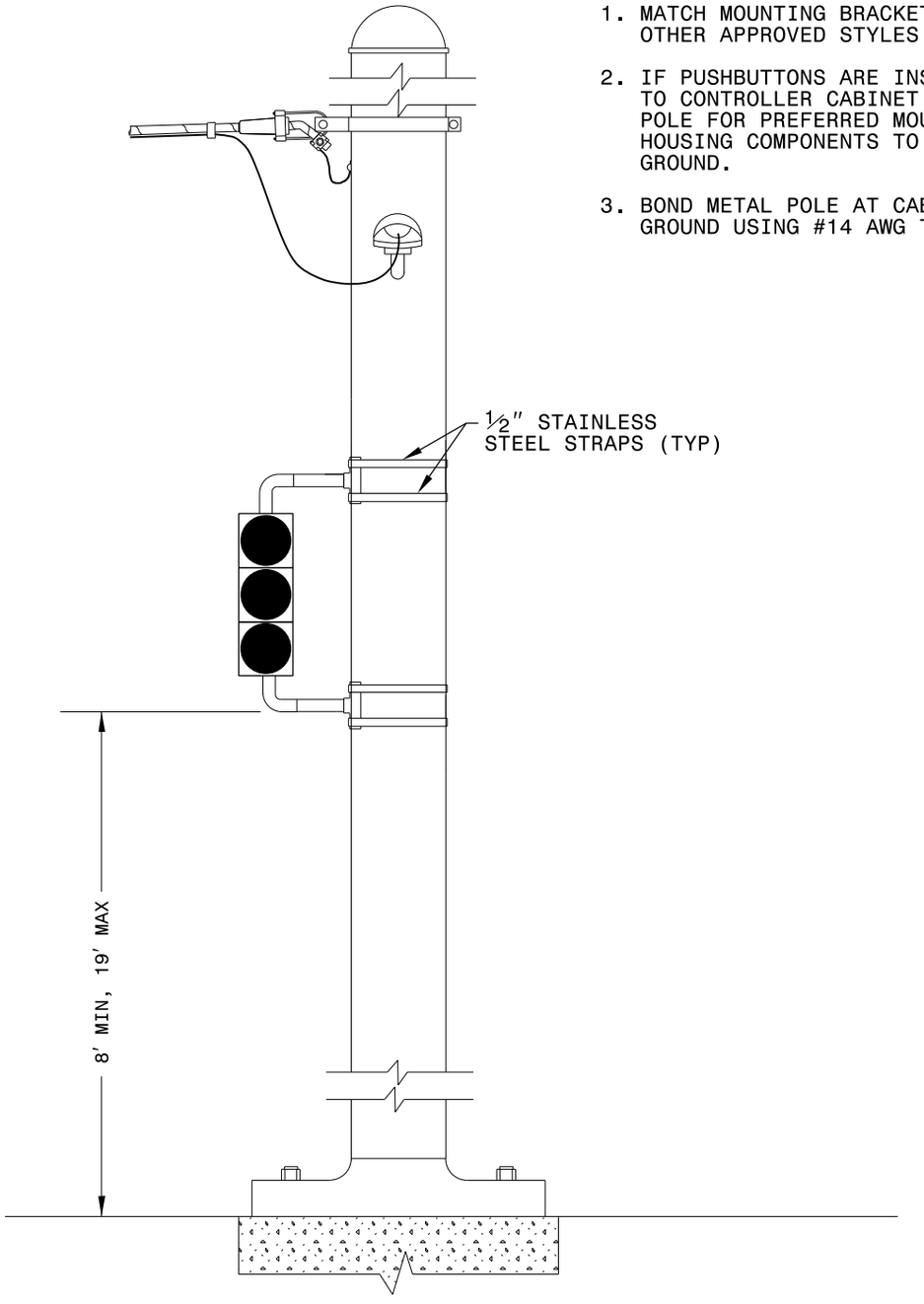
1-24

ROADWAY STANDARD DRAWING FOR

SIGNAL HEADS

PEDESTRIAN ASSEMBLIES - STEEL POLE MOUNTING

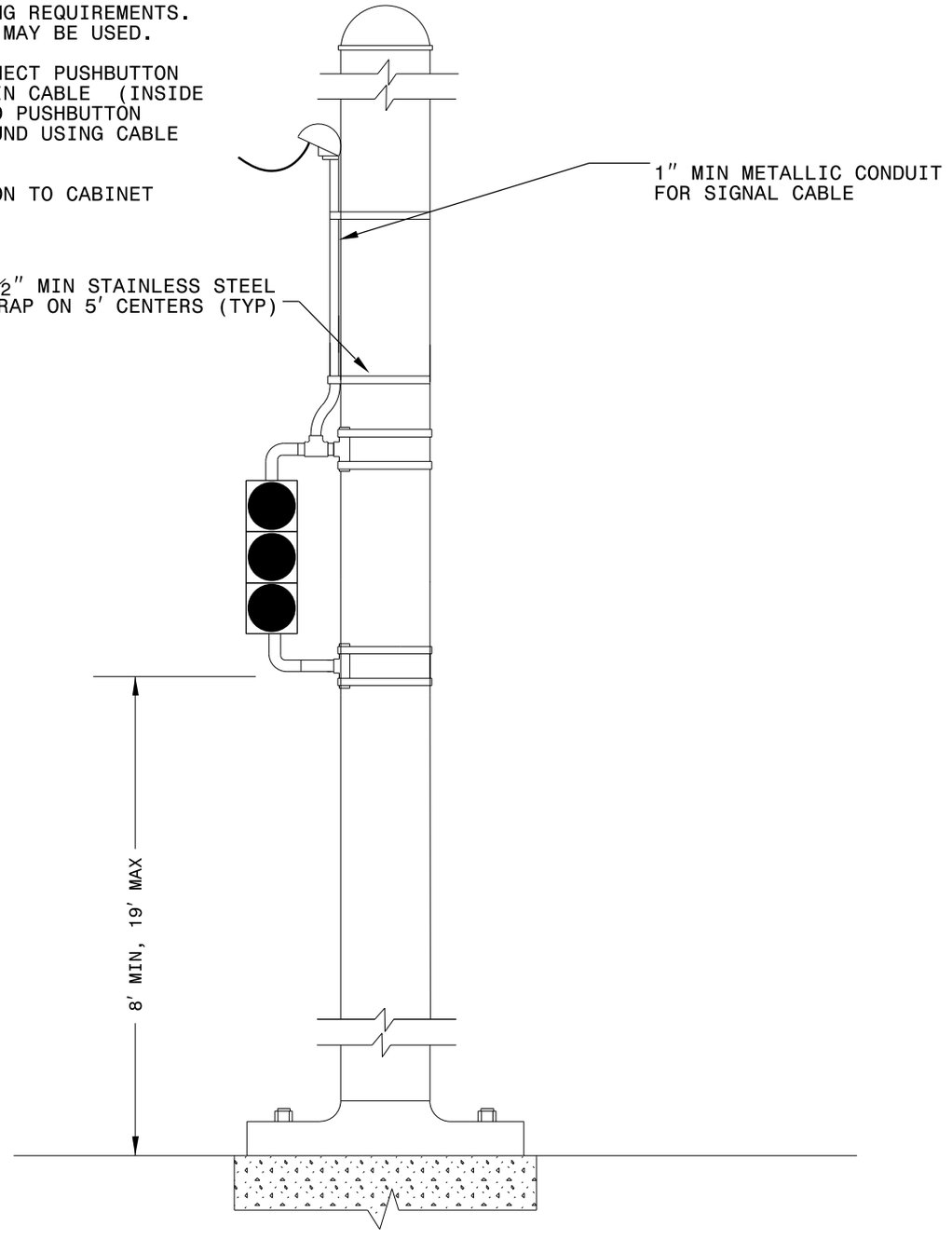
PREFERRED



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.

ALTERNATE



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

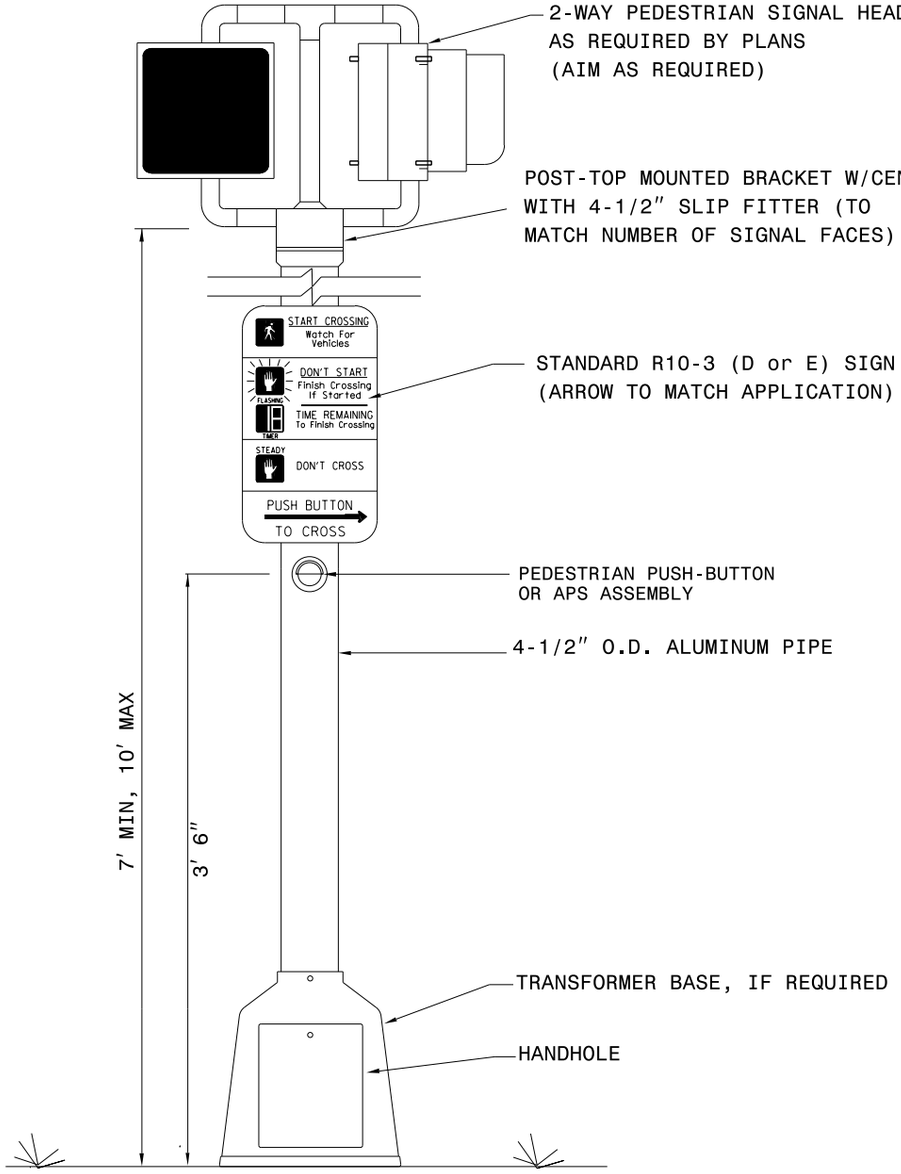
1-24

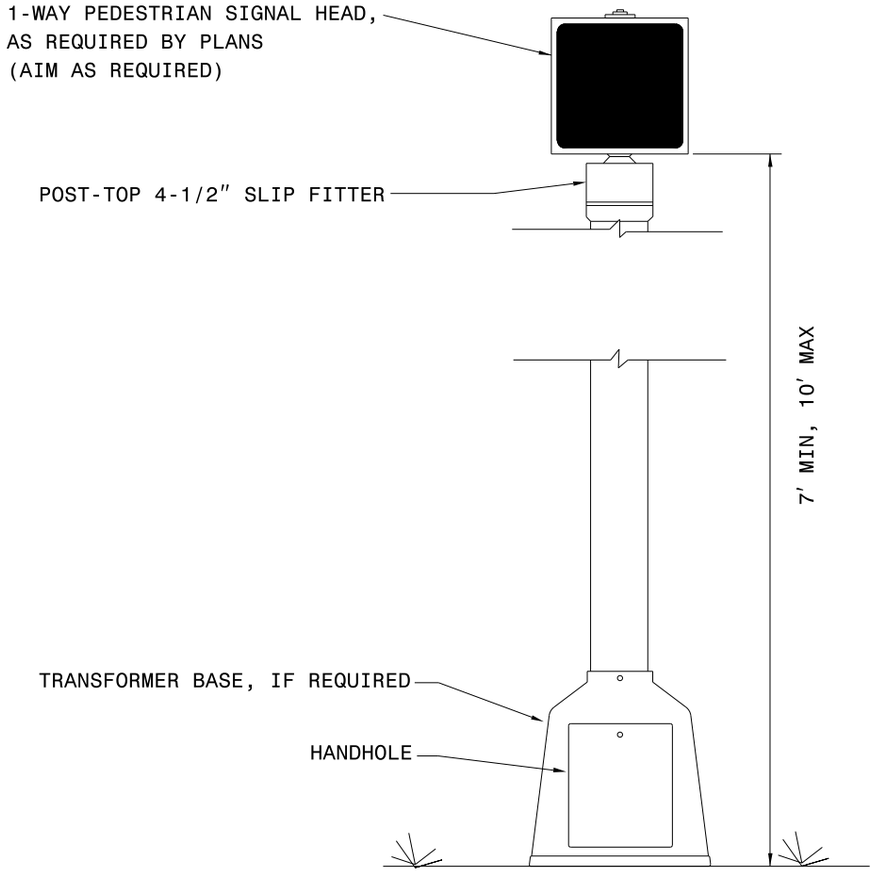
ROADWAY STANDARD DRAWING FOR

SIGNAL HEADS

VEHICLE ASSEMBLIES - STEEL POLE MOUNTING

1705.02





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.

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

1-24

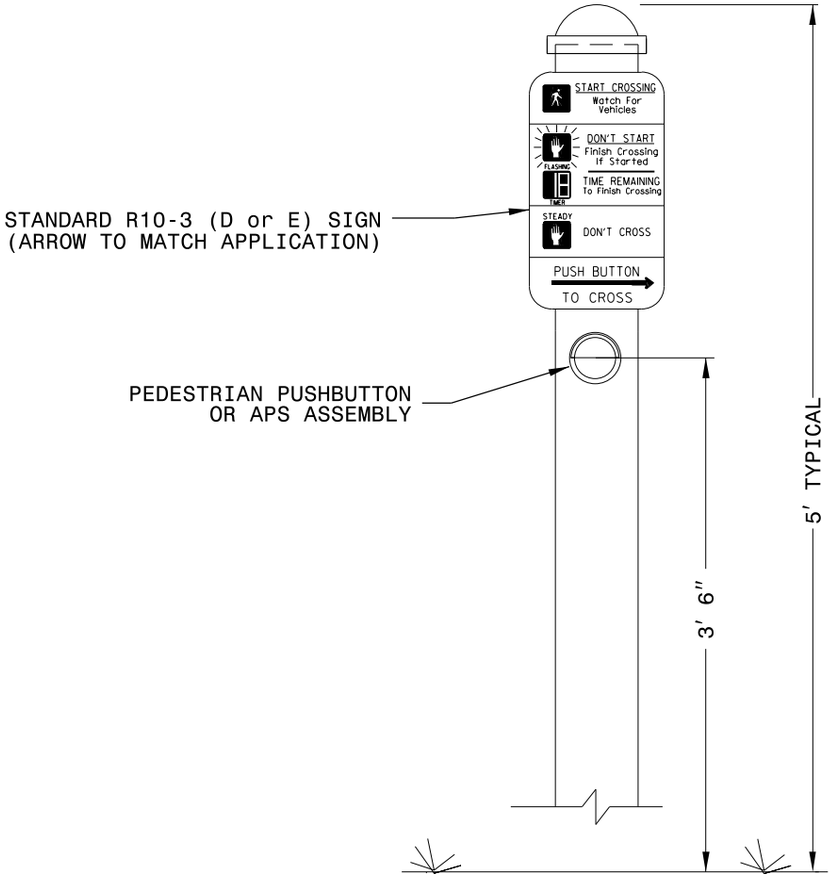
ROADWAY STANDARD DRAWING FOR

SIGNAL HEADS

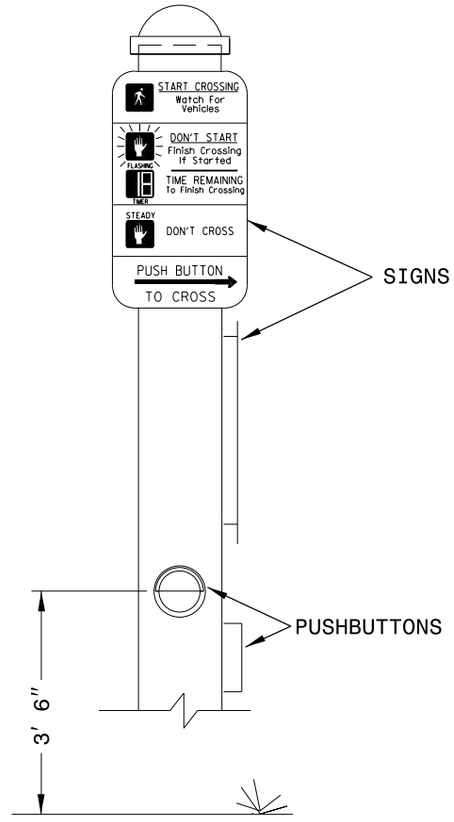
PEDESTRIAN ASSEMBLIES-PEDESTAL MOUNTING

1705.02

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.

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

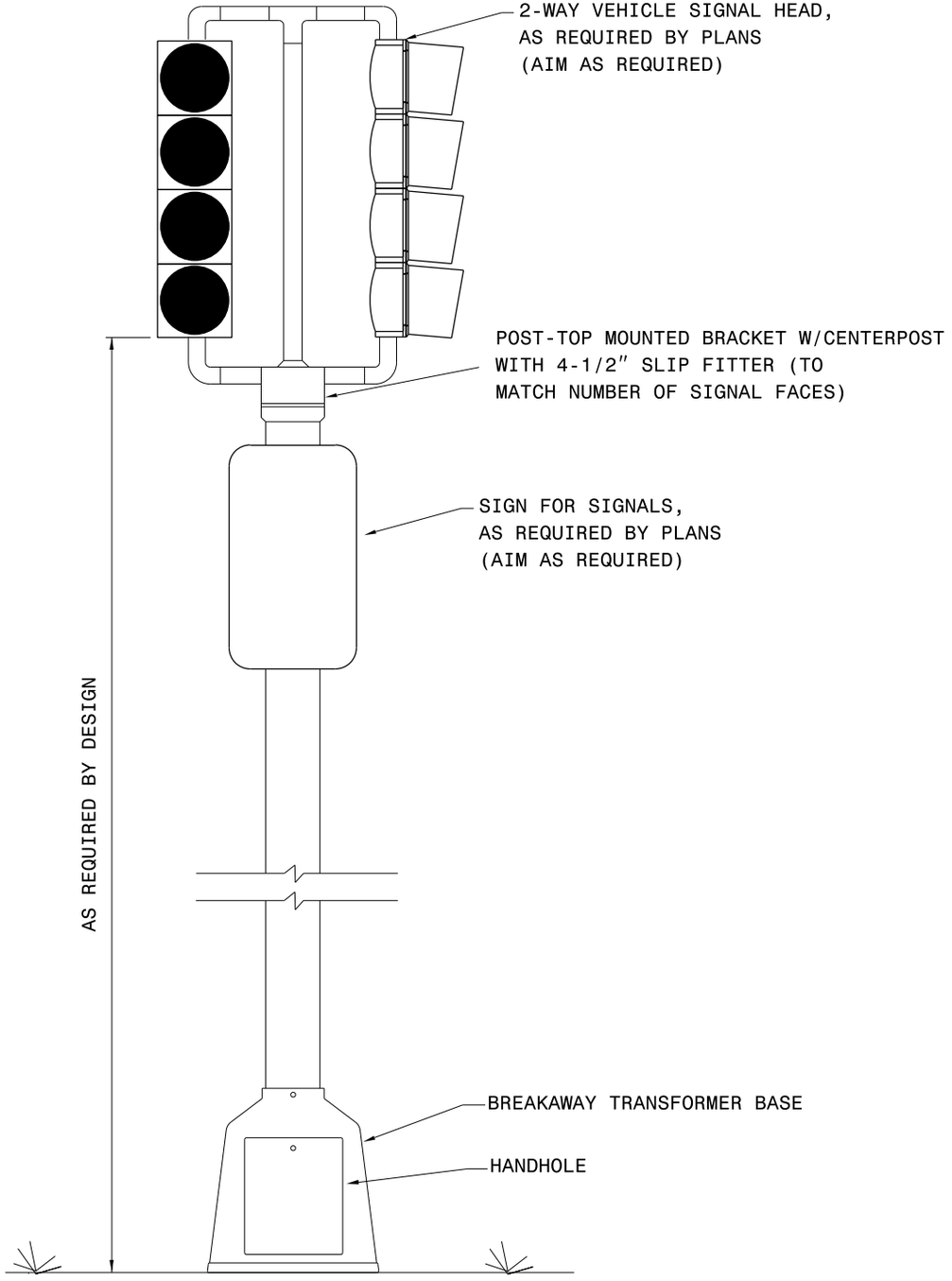
1-24

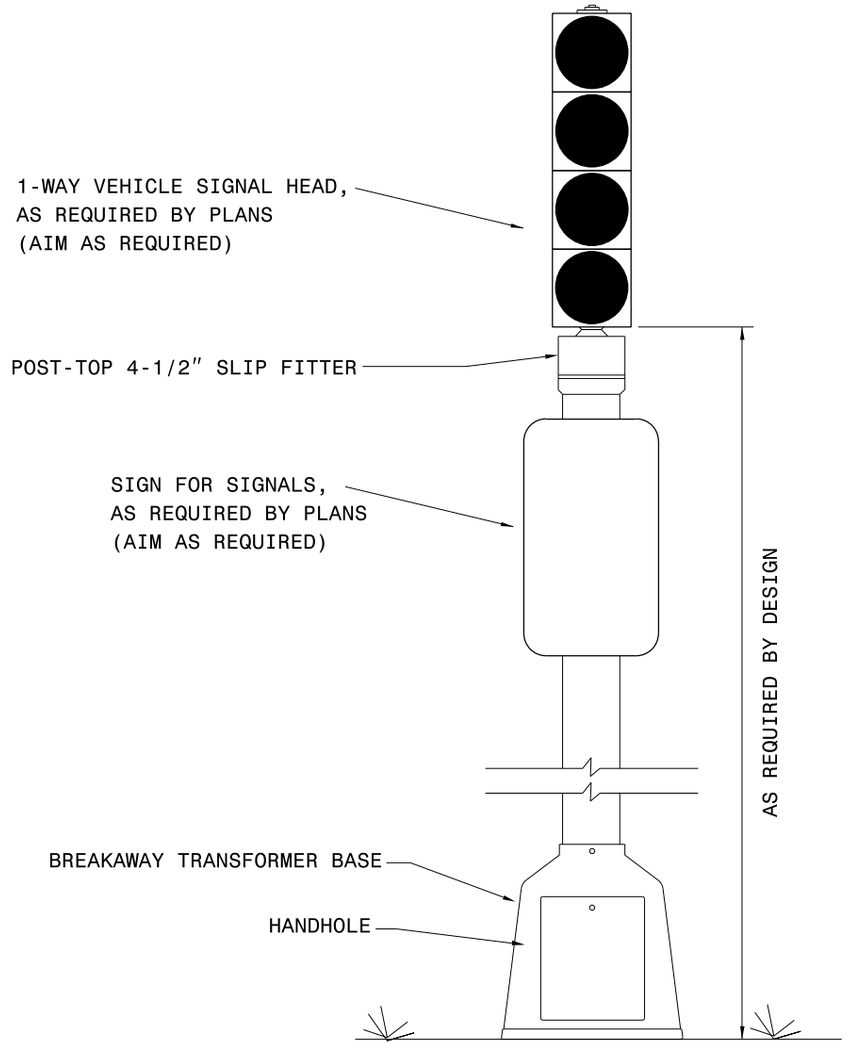
ROADWAY STANDARD DRAWING FOR

SIGNAL HEADS

PEDESTRIAN ASSEMBLIES - PUSHBUTTON POST MOUNTING

1705.02





NOTES

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. SIGNAL HEAD MOUNTING OPTIONS SHOWN ARE GRAPHICAL DEPICTIONS ONLY AND DO NOT REFLECT THE TYPE OF PEDESTAL THAT MAY BE REQUIRED FOR A SPECIFIC LOAD APPLICATION. REFER TO ROADWAY STANDARD DRAWING 1743.02 FOR PEDESTAL INFORMATION AND LOAD LIMITATIONS.

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

1-24

ROADWAY STANDARD DRAWING FOR

SIGNAL HEADS

VEHICLE ASSEMBLIES-PEDESTAL MOUNTING

INDICATION TYPE/COLOR									
WIRE COLOR	3-SECTION CIRCULAR	3-SECTION ARROW	3-SECTION FYA	4-SECTION FYA	5-SECTION	HYBRID BEACON	TRANSIT SIGNAL	BICYCLE SIGNAL	PEDESTRIAN
RED	R				R	R (LEFT)	STOP	R	DON'T WALK
YELLOW	Y		F Y	F Y	Y	Y	PREPARE TO STOP	Y	
GREEN	G				G	R (RIGHT)	GO		WALK
RED-BLACK STRIPE		R	R	R					
YELLOW-BLACK STRIPE		Y	Y	Y	Y				
GREEN-BLACK STRIPE		←		←	→				
WHITE	NEUTRAL								

1) 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.

2) THE SPARE GREEN WIRE IN THE 4-CONDUCTOR SIGNAL CABLE BUNDLE MAY BE USED FOR THE SECOND RED INDICATION IN THE HYBRID BEACON. WRAP APPROPRIATELY COLORED TAPE OVER INSULATION NEAR TERMINATION POINTS.

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

1-24

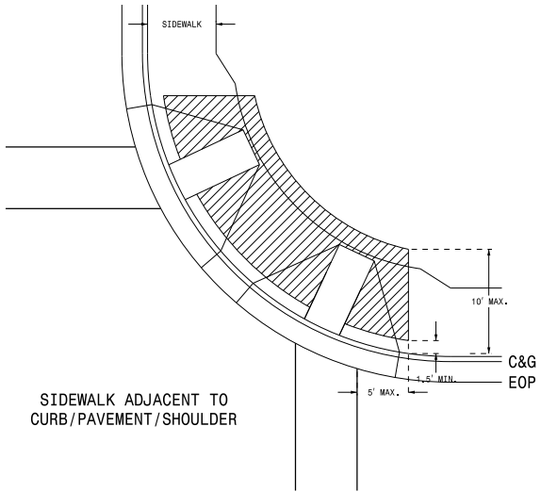
ENGLISH STANDARD DRAWING FOR

SIGNAL HEADS

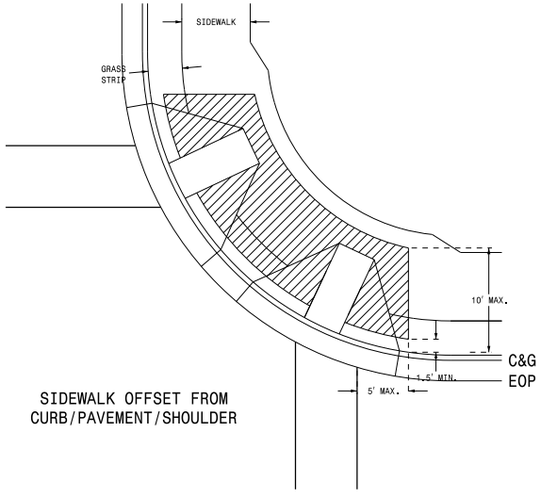
WIRE COLOR CONVENTIONS

PUSHBUTTON PLACEMENT

SEPARATE CURB RAMPS



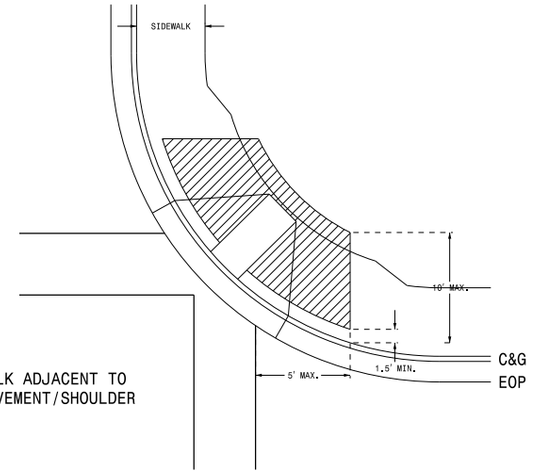
SIDEWALK ADJACENT TO
CURB/PAVEMENT/SHOULDER



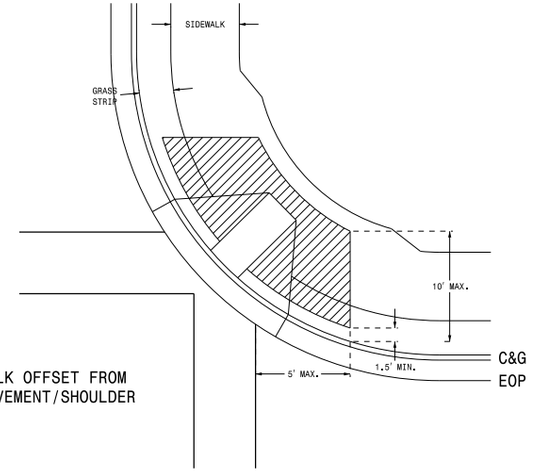
SIDEWALK OFFSET FROM
CURB/PAVEMENT/SHOULDER

PUSHBUTTON PLACEMENT

SHARED CURB RAMP



SIDEWALK ADJACENT TO
CURB/PAVEMENT/SHOULDER



SIDEWALK OFFSET FROM
CURB/PAVEMENT/SHOULDER

NOTES

1. Pushbutton pedestals should not be located further than 10 feet from the edge of curb, shoulder, or pavement.
2. The face of the pushbutton should be parallel to the applicable crosswalk.
3. Separate pushbuttons used on the same corner should be separated by a distance of at least 10 feet.
4. Pushbuttons shall be installed adjacent to a level surface with a maximum reach distance of 10 inches.
5. Maintain 4 feet of clearance around pedestal if located in sidewalk.
6. Refer to section 1705 of the 2018 NCDOT Roadway Standard Drawings for Pushbutton Assembly details.
7. Refer to section 1743 of the 2018 NCDOT Roadway Standard Drawings for Pedestal details.
8. Contact Division Traffic Engineer for pushbutton location approval prior to installation.
9. Curb ramps are for symbolic use only and may not reflect actual design or field conditions.

LEGEND

PROPOSED

- Signal Pole
- Type I Pushbutton Post
- Type II Signal Pedestal
- Pushbutton & Sign
- Pedestrian Signal Head
- Curb Ramp
- Pushbutton Location Area

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

1-24

ROADWAY STANDARD DRAWING FOR

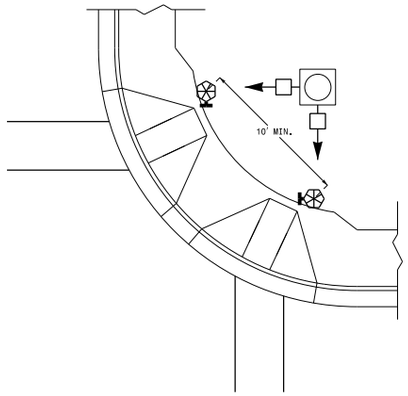
SIGNAL HEADS

PEDESTRIAN PUSHBUTTON PLACEMENT

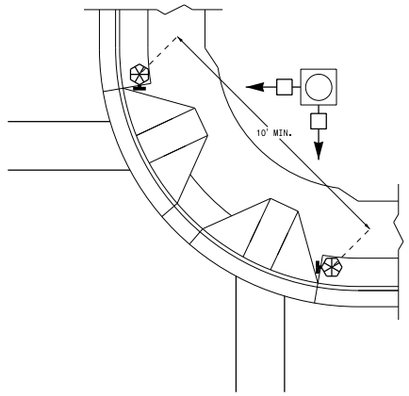
1705.04

TYPICAL PUSHBUTTON LOCATIONS (CASE I)

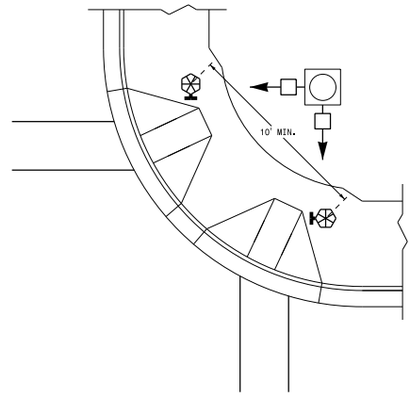
SEPARATE CURB RAMPS W/ TYPE I PEDESTALS



BACK OF SIDEWALK IS WITHIN 10'
OF CURB OR PAVEMENT/SHOULDER



GRASS STRIP PLACEMENT IF BACK
OF SIDEWALK EXCEEDS 10' FROM
CURB OR PAVEMENT/SHOULDER



PUSHBUTTON PLACEMENT
IN WIDE SIDEWALK

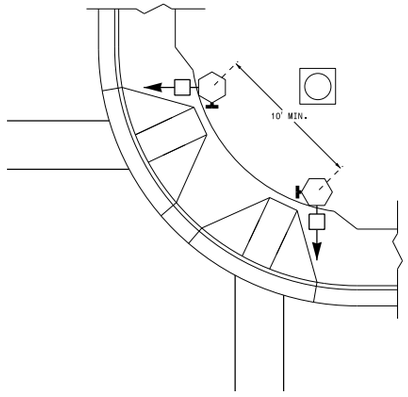
PROPOSED

LEGEND

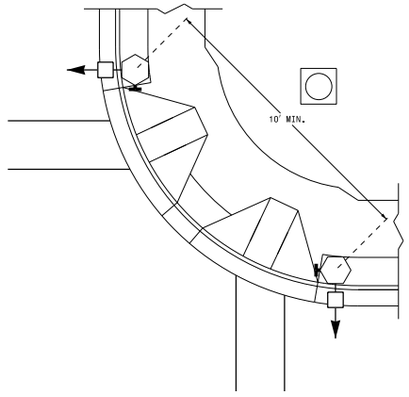
- Signal Pole
- Type I Pushbutton Post
- Type II Signal Pedestal
- Pushbutton & Sign
- Pedestrian Signal Head
- Curb Ramp
- Pushbutton Location Area

TYPICAL PUSHBUTTON LOCATIONS (CASE II)

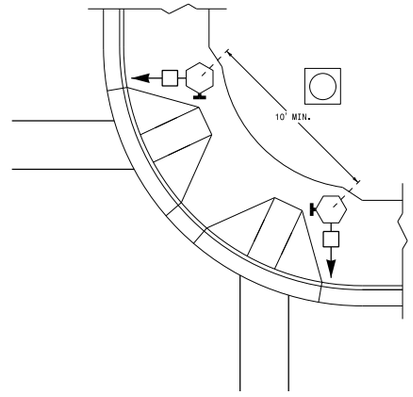
SEPARATE CURB RAMPS W/ TYPE II PEDESTALS



BACK OF SIDEWALK IS WITHIN 10'
OF CURB OR PAVEMENT/SHOULDER



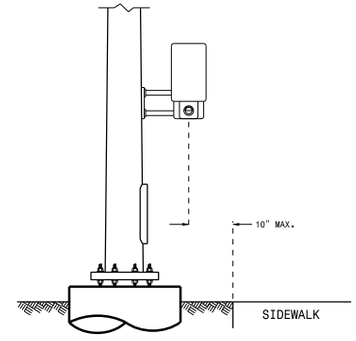
GRASS STRIP PLACEMENT IF BACK
OF SIDEWALK EXCEEDS 10' FROM
CURB OR PAVEMENT/SHOULDER



PUSHBUTTON PLACEMENT
IN WIDE SIDEWALK

OPTIONAL PUSHBUTTON EXTENSION

FACE OF PUSHBUTTON PARALLEL TO
APPLICABLE CROSSWALK



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

1-24

ROADWAY STANDARD DRAWING FOR

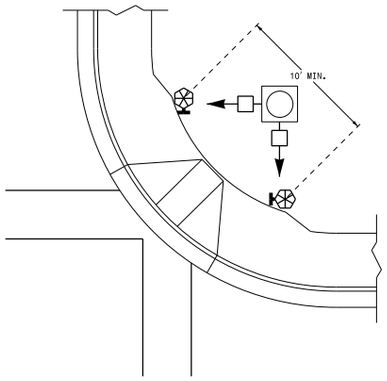
SIGNAL HEADS

PEDESTRIAN PUSHBUTTON PLACEMENT

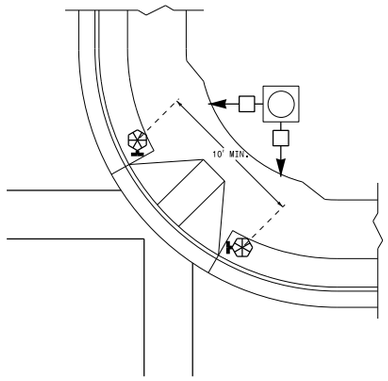
1705.04

TYPICAL PUSHBUTTON LOCATIONS (CASE III)

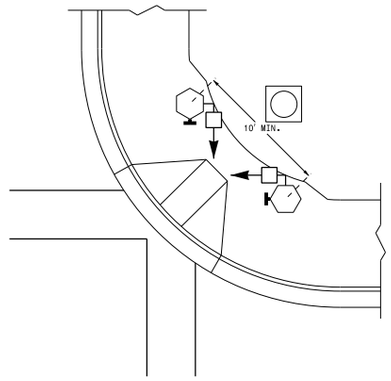
SHARED CURB RAMPS



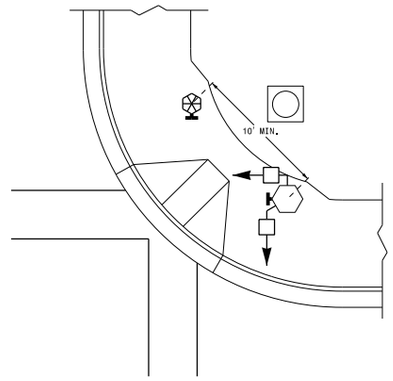
BACK OF SIDEWALK IS WITHIN 10'
OF CURB OR PAVEMENT/SHOULDER



GRASS STRIP PLACEMENT IF BACK
OF SIDEWALK EXCEEDS 10' FROM
CURB OR PAVEMENT/SHOULDER

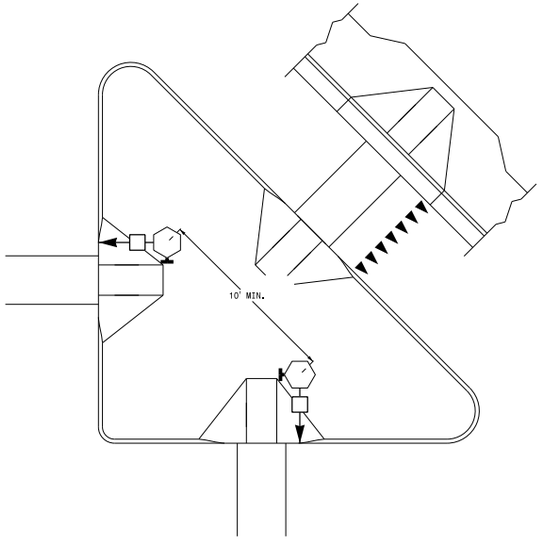


PUSHBUTTON PLACEMENT IN WIDE SIDEWALK
(CORRESPONDING PUSHBUTTONS AND SIGNAL
HEADS ON DIFFERENT PEDESTALS)

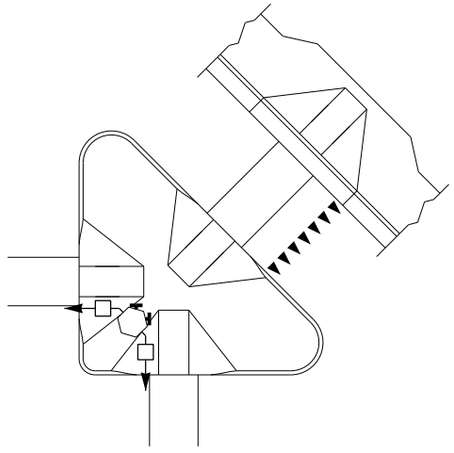


PUSHBUTTON PLACEMENT WITH SHARED
TYPE II SIGNAL PEDESTAL AND TYPE I
PUSHBUTTON POST

TRAFFIC ISLAND PUSHBUTTON LOCATIONS

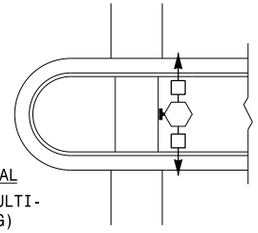


PUSHBUTTON PLACEMENT IN LARGE "PORK
CHOP ISLAND" WITH SEPARATE PEDESTALS



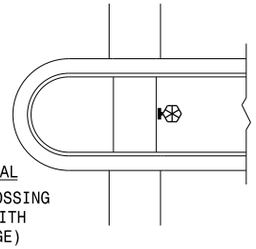
PUSHBUTTON PLACEMENT IN SMALL "PORK
CHOP ISLAND" WITH SHARED PEDESTAL

PUSHBUTTON PLACEMENT IN MEDIAN



TYPE II PEDESTAL

(FOR STAGED OR MULTI-
PHASE CROSSING)



TYPE I PEDESTAL

(FOR COMPLETE CROSSING
CURB TO CURB WITH
OPTIONAL REFUGE)

LEGEND

PROPOSED

- Signal Pole
- Type I Pushbutton Post
- Type II Signal Pedestal
- T Pushbutton & Sign
- Pedestrian Signal Head
- Curb Ramp
- Pushbutton Location Area

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

1-24

ROADWAY STANDARD DRAWING FOR

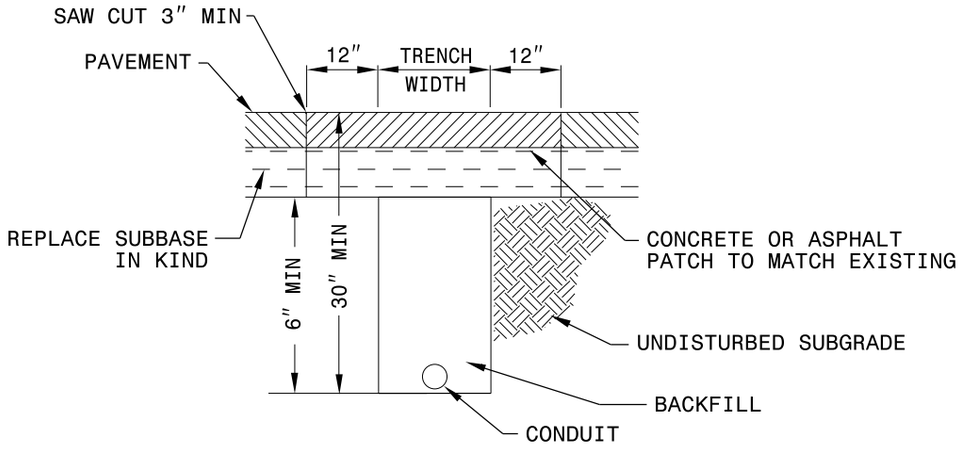
SIGNAL HEADS

PEDESTRIAN PUSHBUTTON PLACEMENT

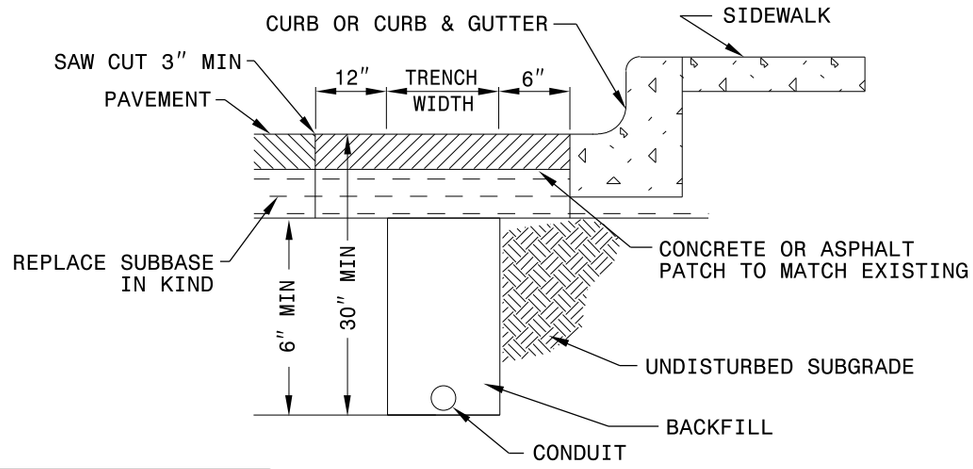
SHEET 3 OF 3

1705.04

IN EXISTING PAVEMENT (NOT AT GUTTER)

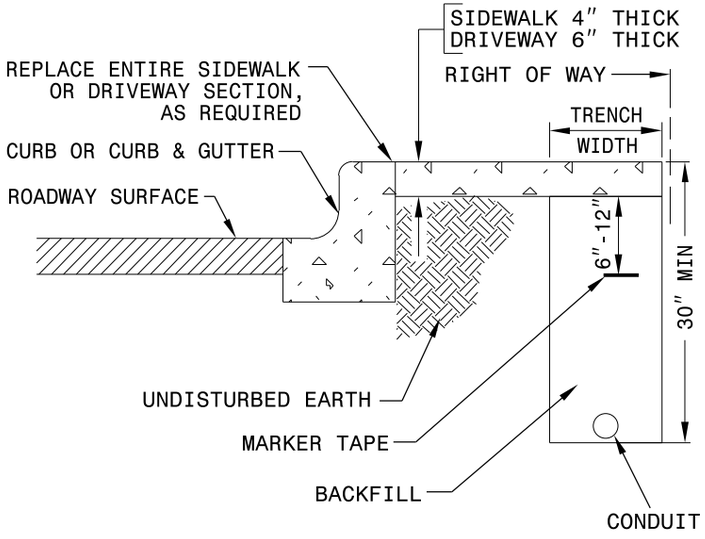


IN EXISTING PAVEMENT (AT GUTTER)

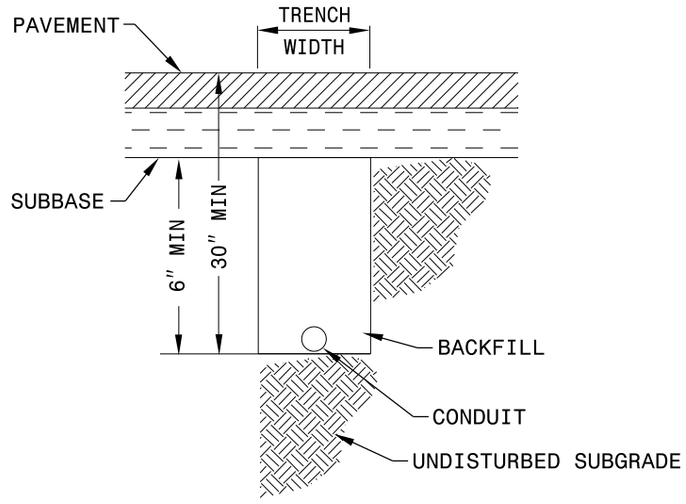


THE REMOVAL OF PAVEMENT BEYOND THE EDGES OF THE TRENCH, AS SHOWN, WILL NOT BE REQUIRED IF SAID EDGES ARE SAW CUT AND MAINTAINED NEATLY WITH NO SHATTER.

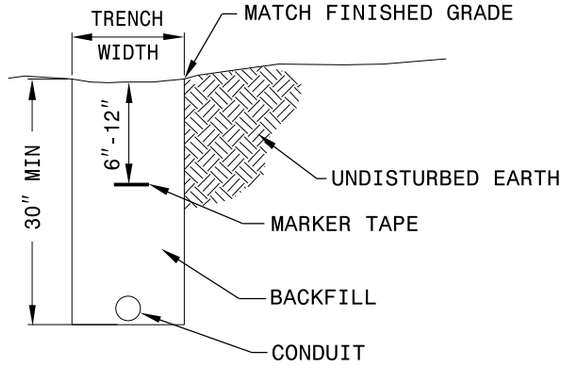
IN SIDEWALK OR DRIVEWAY



IN NEW PAVEMENT



IN EARTH



NOTE

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

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

1-24

ROADWAY STANDARD DRAWING FOR

UNDERGROUND CONDUIT-TRENCHING

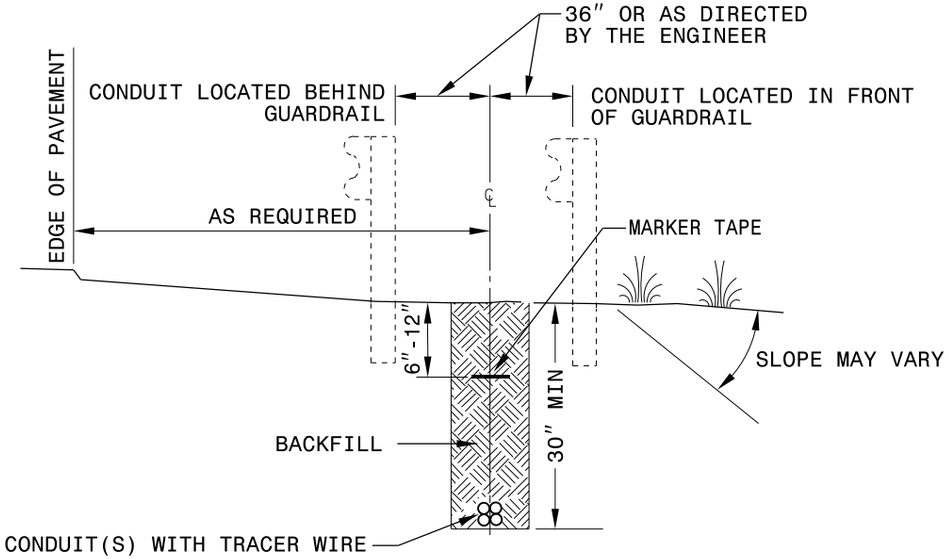
SHEET 1 OF 2

1715.01

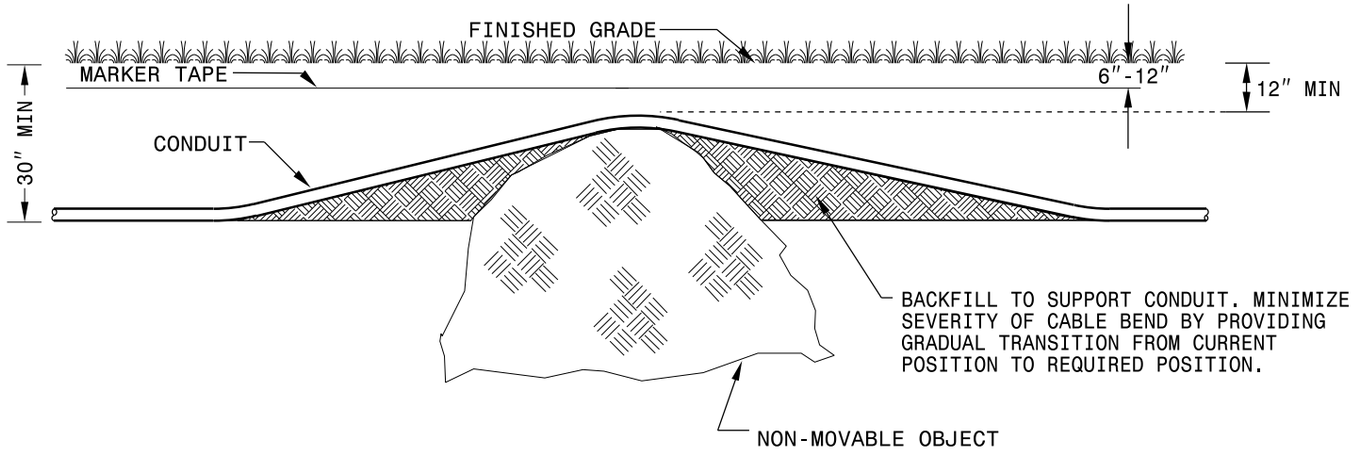
NOTE

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



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

1-24

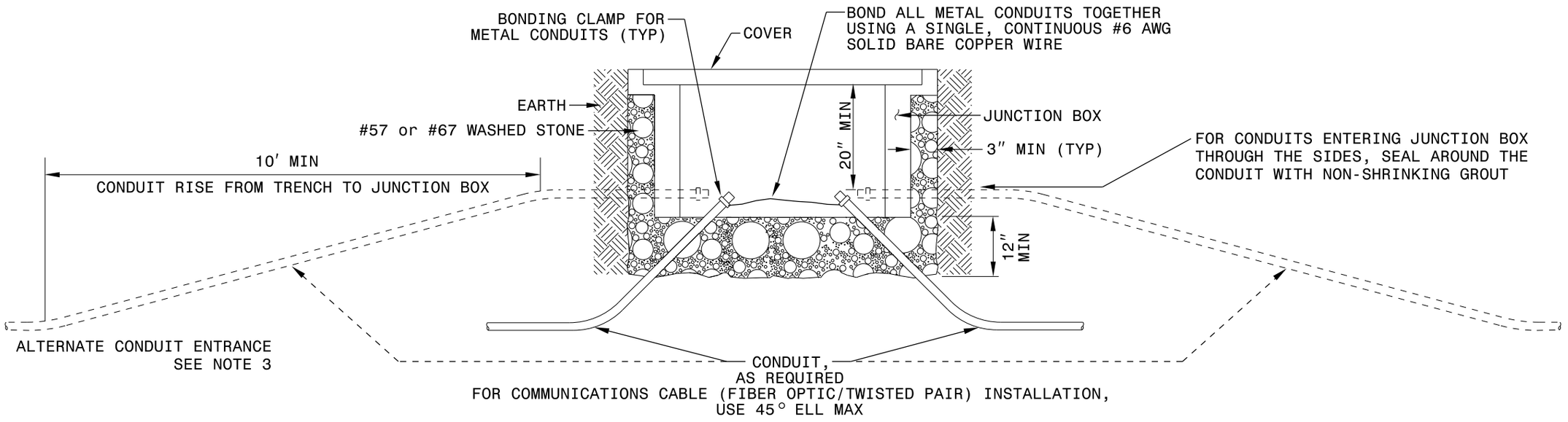
ROADWAY STANDARD DRAWING FOR

UNDERGROUND CONDUIT-TRENCHING

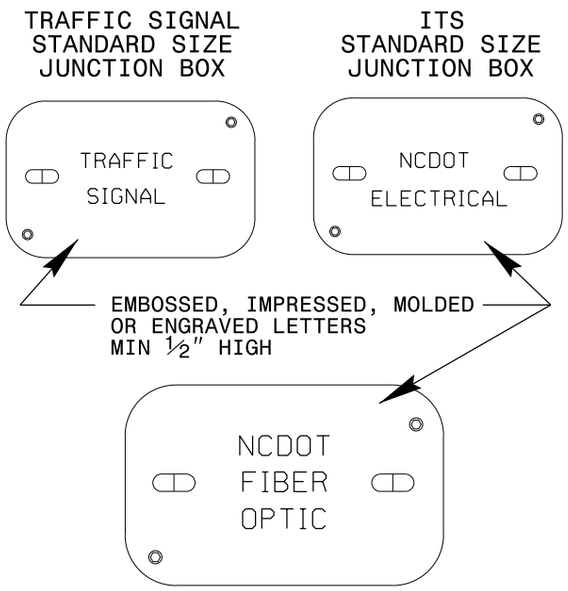
1715.01

INSTALLATION CROSS-SECTION

JUNCTION BOX
OVER-SIZED AND SPECIAL OVER-SIZED



TOP VIEW OF COVER

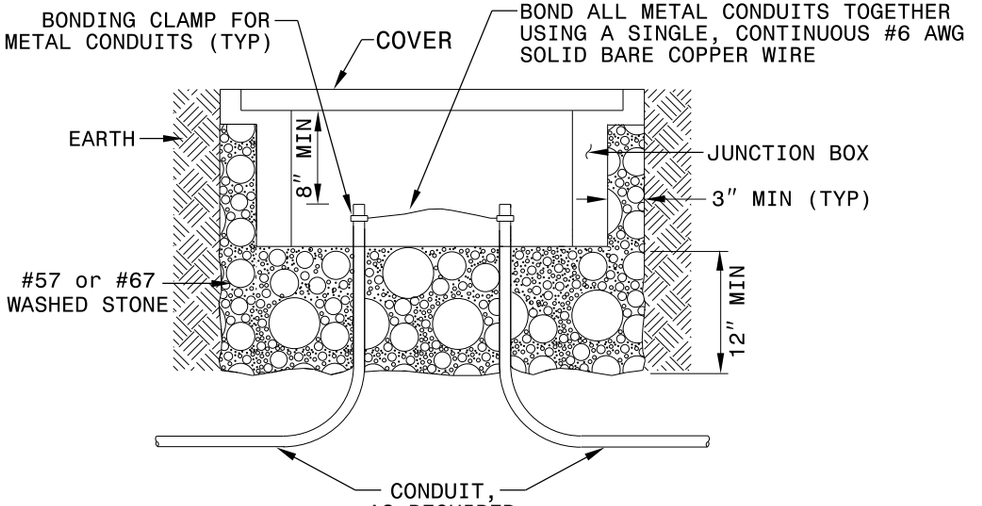


OVER-SIZED AND SPECIAL OVER-SIZED JUNCTION BOX

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 ACCORDING TO THE PLANS OR WITH ENGINEER'S APPROVAL.
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.
6. INSTALL ALL JUNCTION BOXES A MINIMUM OF 4′ FROM THE CENTERLINE OF ANY DITCH.

JUNCTION BOX
STANDARD SIZE



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

1-24

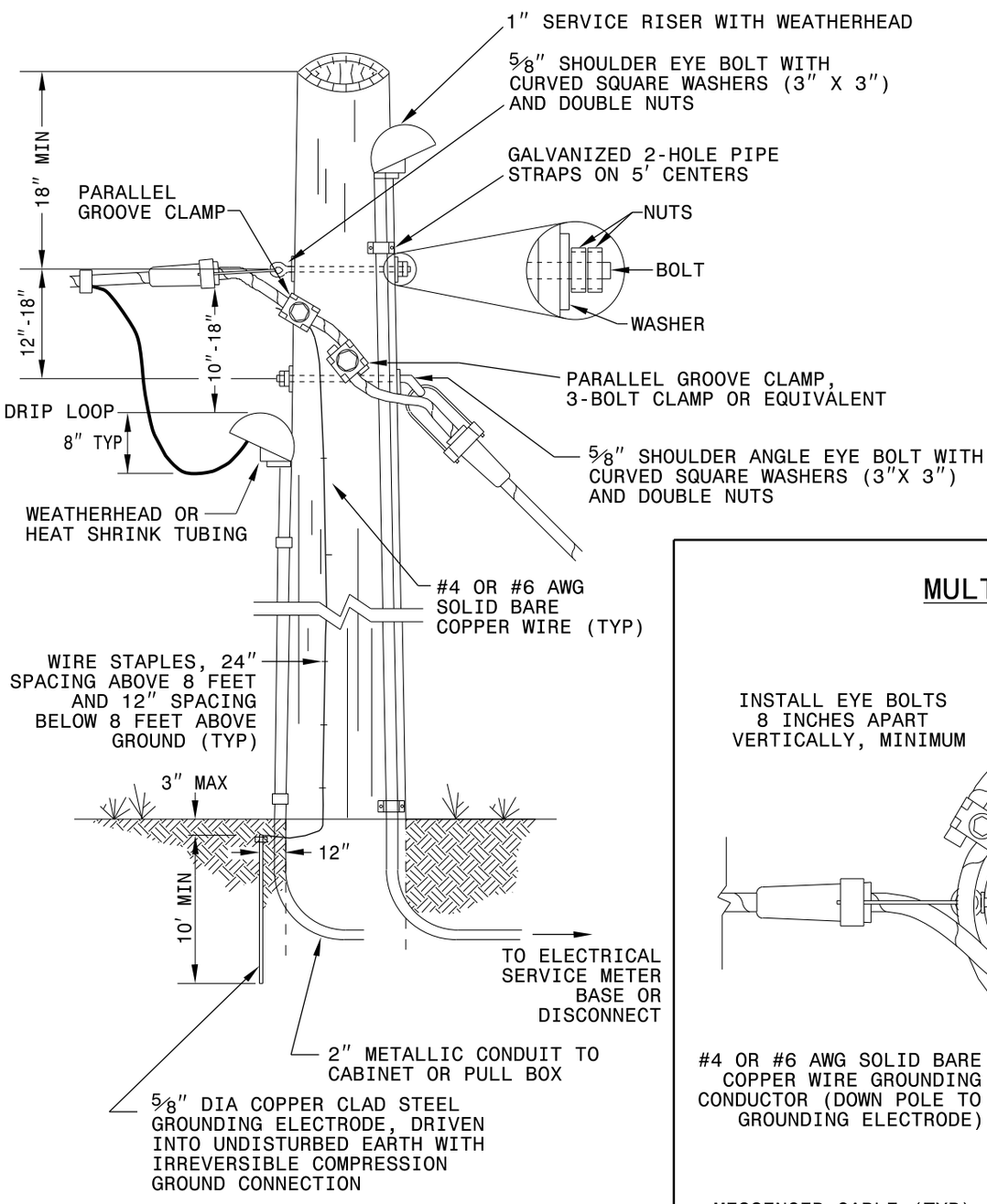
ROADWAY STANDARD DRAWING FOR

JUNCTION BOXES

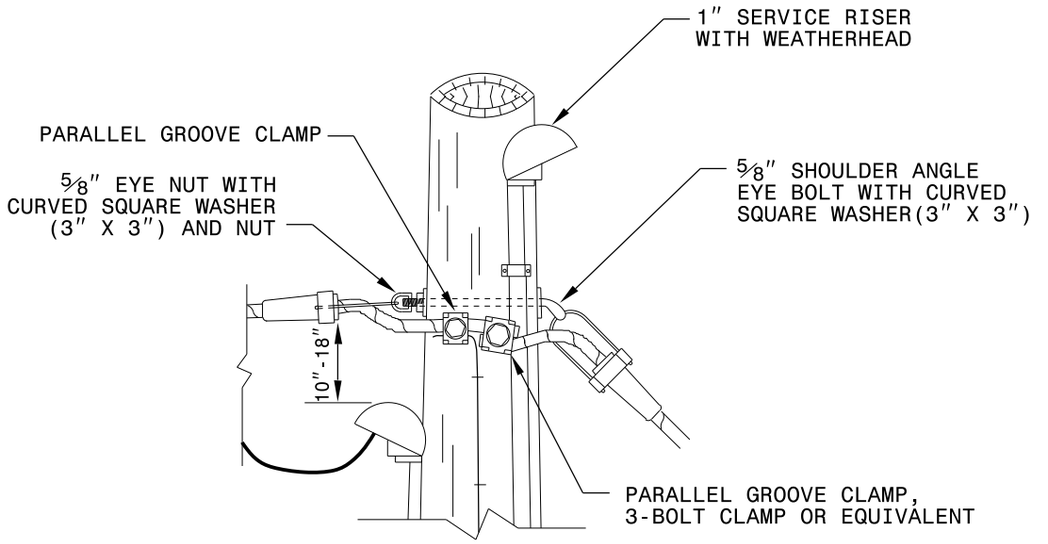
SHEET 1 OF 1

1716.01

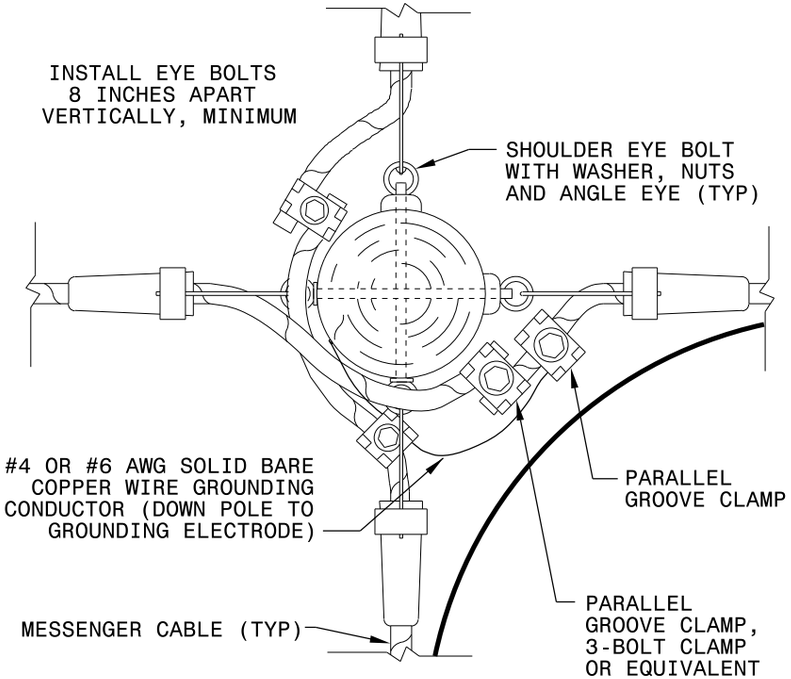
TWO-BOLT METHOD (PREFERRED)



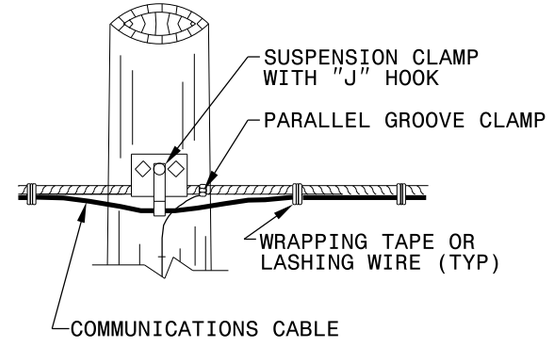
ONE-BOLT METHOD



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.

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

1-24

ROADWAY STANDARD DRAWING FOR

WOOD POLES

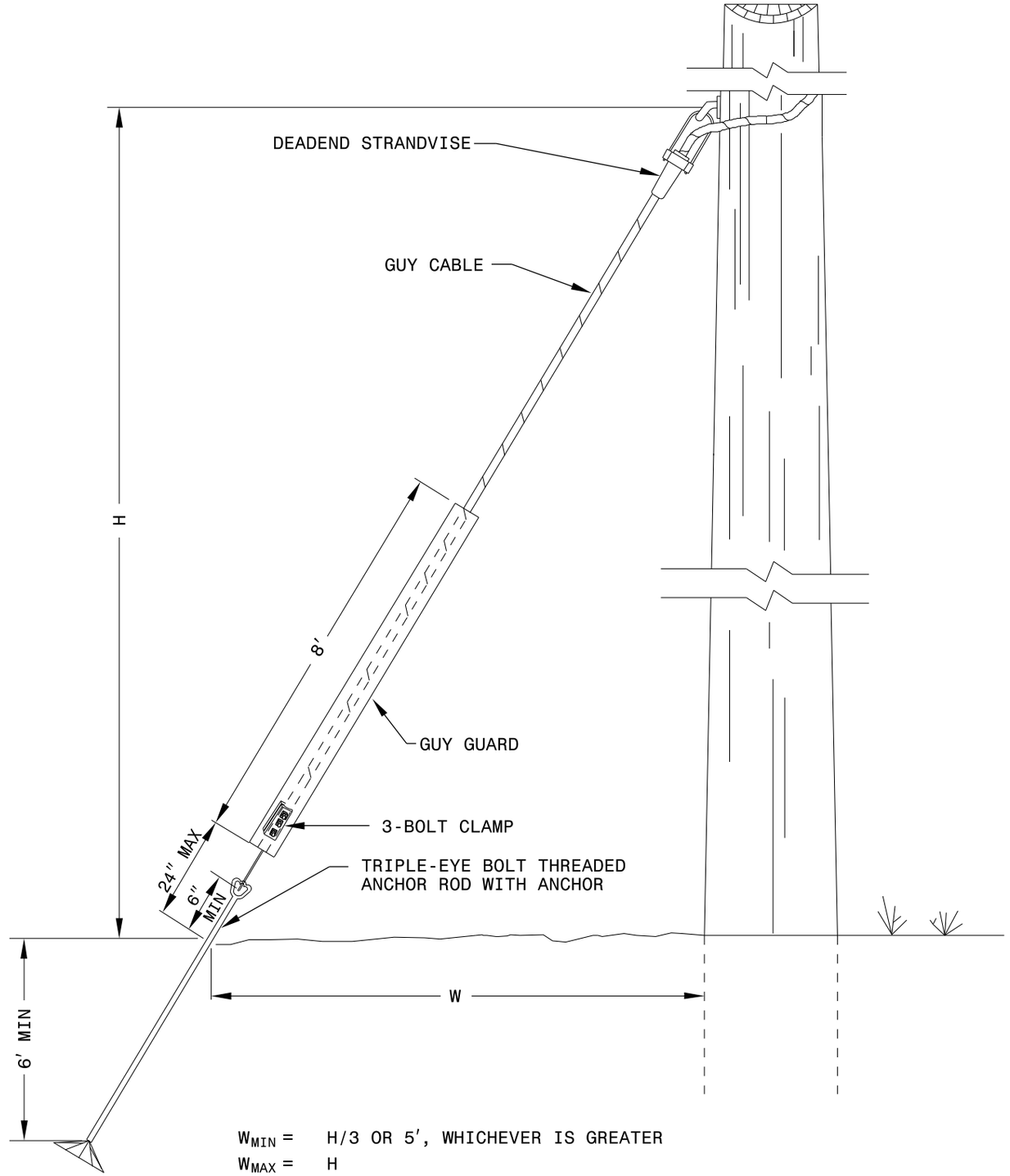
METHODS OF ATTACHMENT AND GROUNDING

SHEET 1 OF 1

1720.01

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 OR 5′, WHICHEVER IS GREATER

W_{MAX} = H

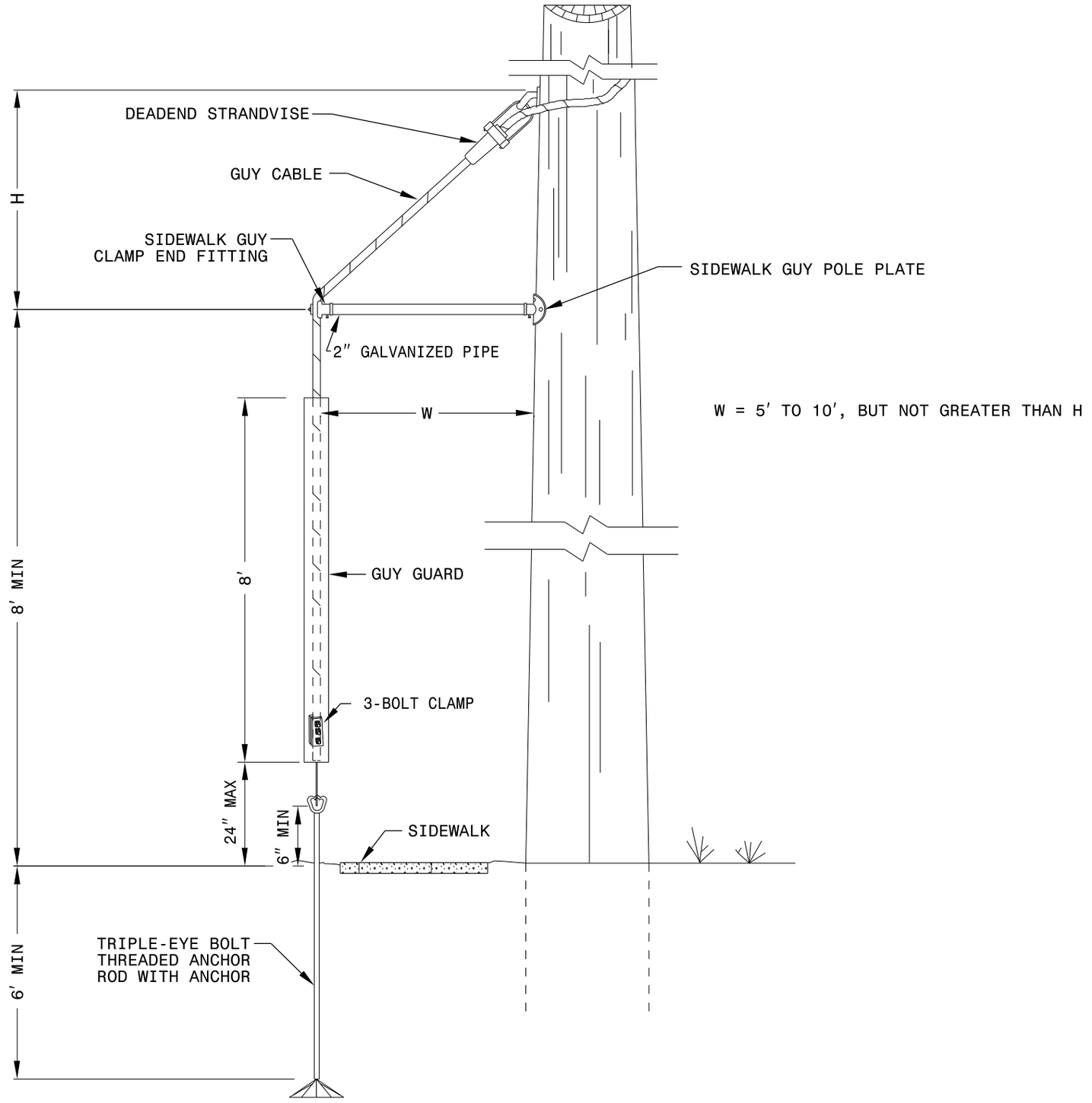
STATE OF NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

1-24

ROADWAY STANDARD DRAWING FOR

GUY ASSEMBLIES

DIRECT DOWN GUY



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

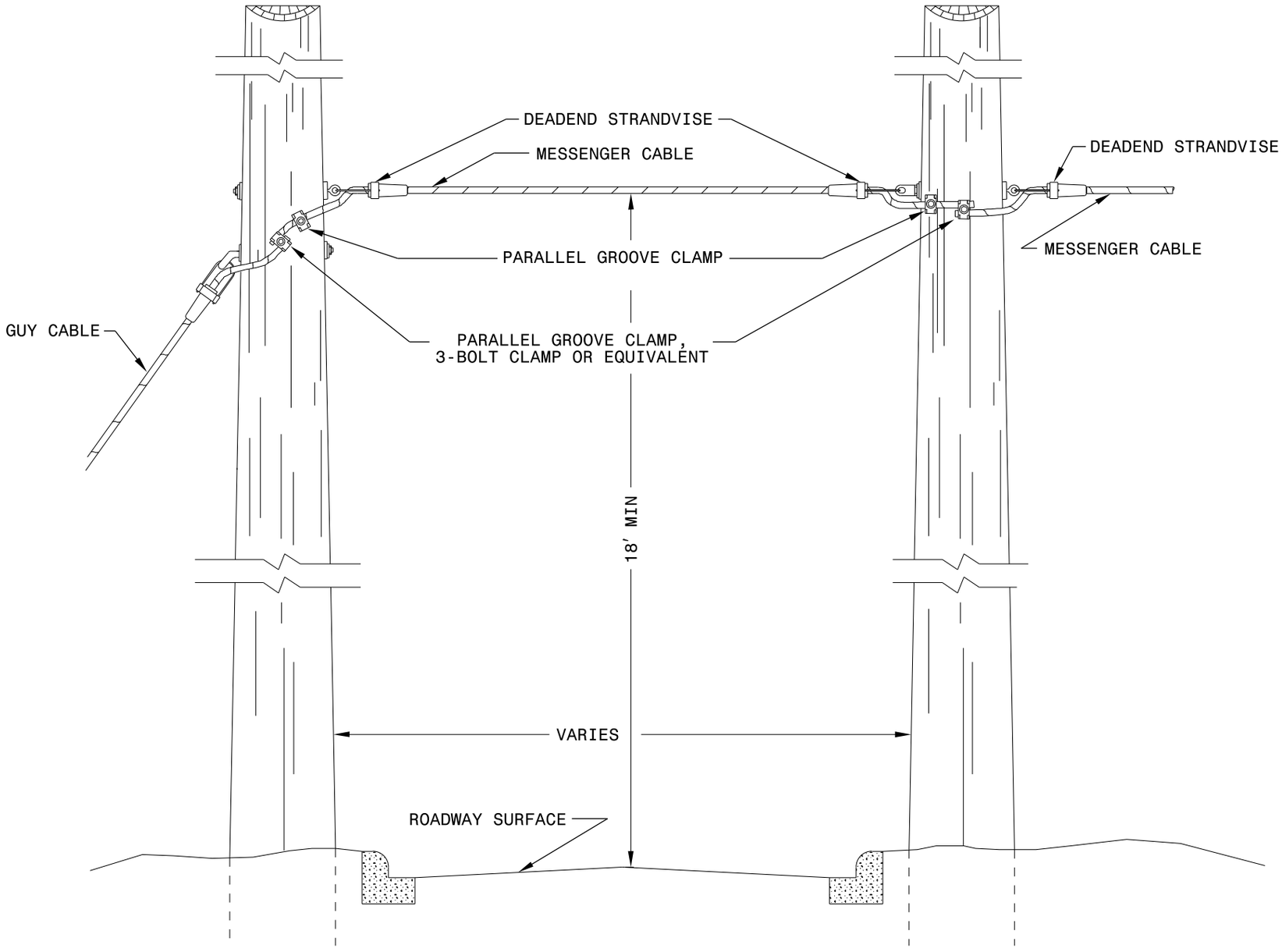
1-24

ROADWAY STANDARD DRAWING FOR

GUY ASSEMBLIES

SIDEWALK DOWN GUY

1721.01



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

1-24

ROADWAY STANDARD DRAWING FOR

GUY ASSEMBLIES

AERIAL (BACK) GUYS

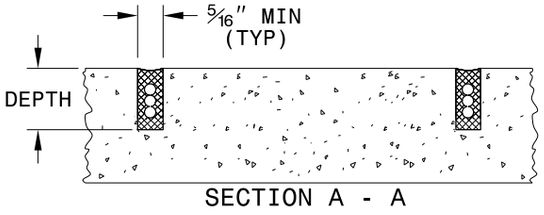
SHEET 3 OF 3

1721.01

CONVENTIONAL 4-SIDED LOOP

SAW SLOT DEPTH CHART

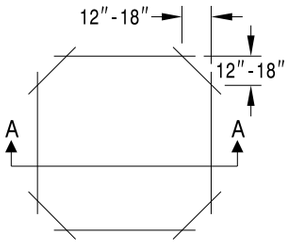
DEPTH (IN)	NO. OF WIRE TURNS				
	2	3	4	5	6
CONCRETE	2.0	2.0	2.5	2.5	3.0
ASPHALT	2.0	2.5	3.0	3.0	3.0



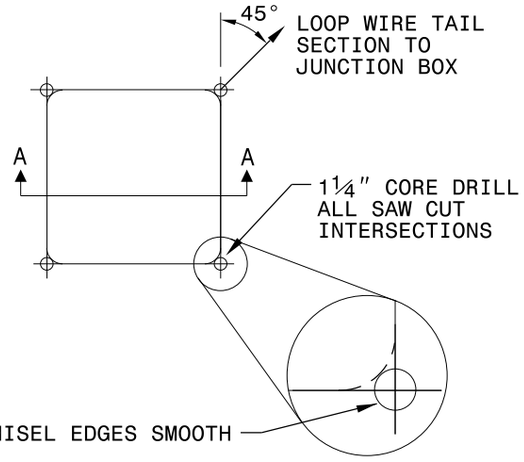
SECTION A - A

SAW CUT OPTIONS

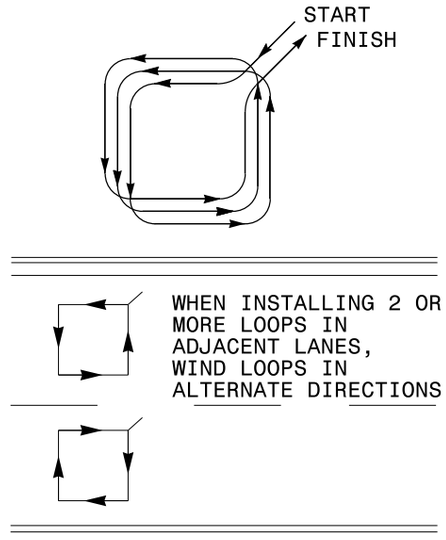
OPTION 1



OPTION 2
(POOR PAVEMENT)



LOOP WINDING METHOD



LOOP WIRE TWISTING METHOD

INCORRECT WAY TO TWIST WIRE

CORRECT WAY TO TWIST WIRE

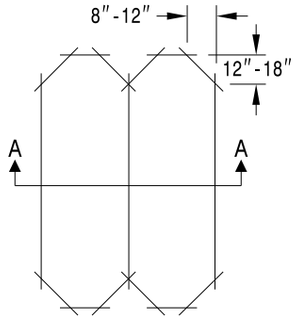
NOTES

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.

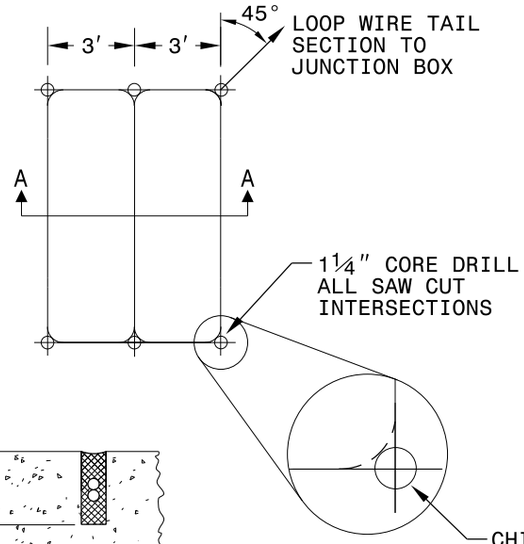
QUADRUPOLE LOOP

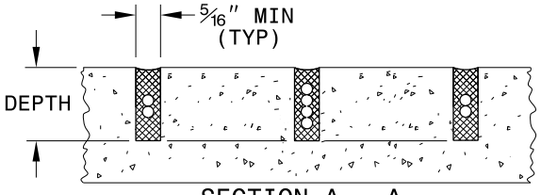
SAW CUT OPTIONS

OPTION 1



OPTION 2
(POOR PAVEMENT)

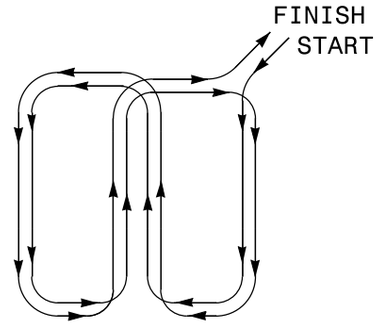




SECTION A - A

DEPTH IS 2.5" FOR CONCRETE AND 3.0" FOR ASPHALT

LOOP WINDING METHOD



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

1-24

ROADWAY STANDARD DRAWING FOR

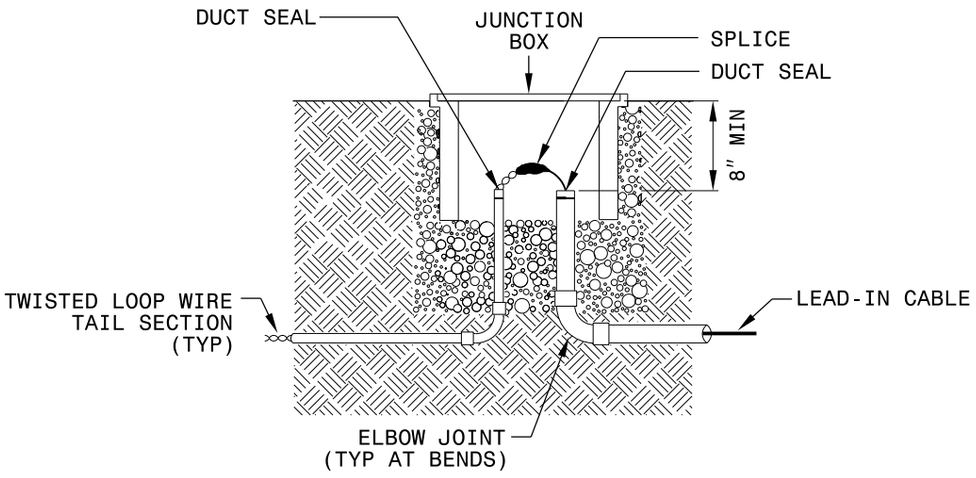
INDUCTIVE DETECTION LOOPS

SHEET 1 OF 3

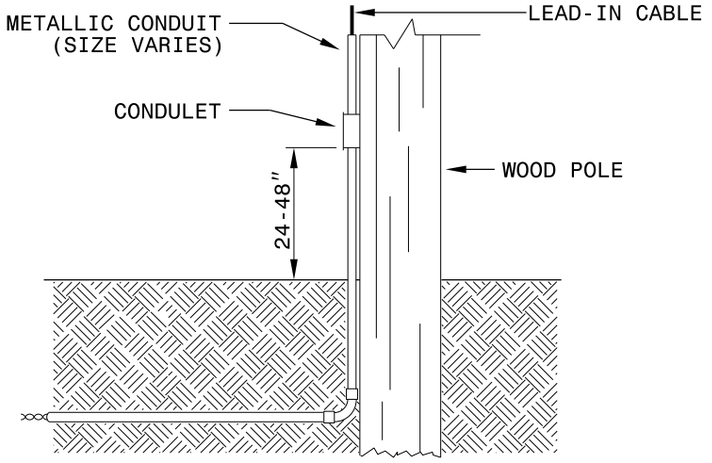
1725.01

LOOP WIRE SPLICE POINT DETAILS

LOOP WIRE AT JUNCTION BOX



LOOP WIRE AT POLE

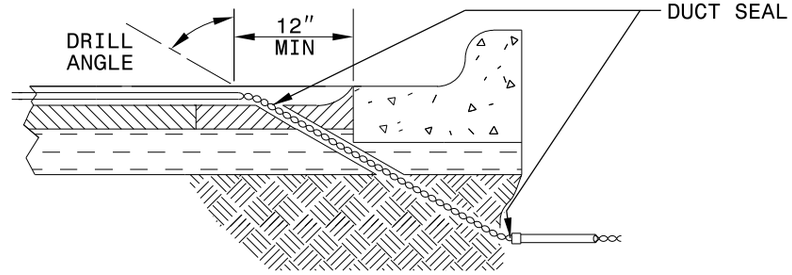


NOTE

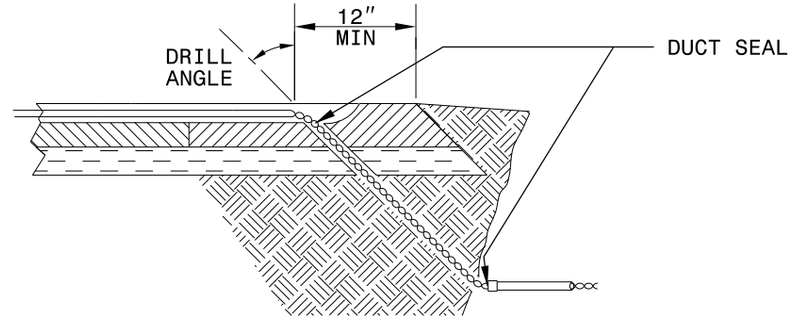
SPLICE ALL LOOP WIRE TAIL SECTIONS/LEAD-IN CABLE IN JUNCTION BOXES OR APPROVED CONDULETS.

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.

1-24

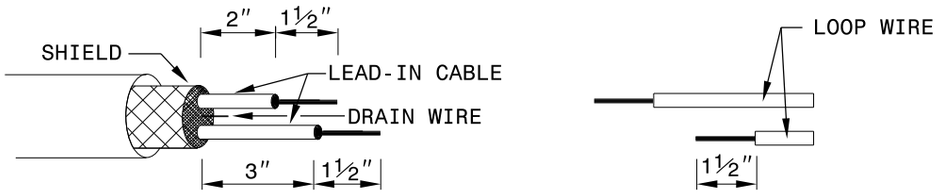
STATE OF NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

ROADWAY STANDARD DRAWING FOR

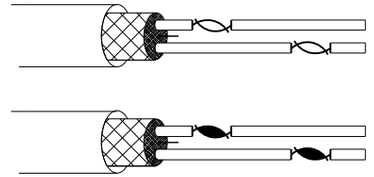
INDUCTIVE DETECTION LOOPS

LOOP WIRE DETAILS

STEP 1. STRIP LOOP WIRE AND LEAD-IN CABLE

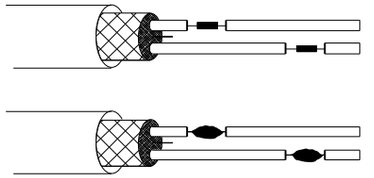


STEP 2. CONNECT AND SOLDER



TWIST BARE CONDUCTORS TOGETHER AND SOLDER WITH RESIN CORE SOLDER

OR

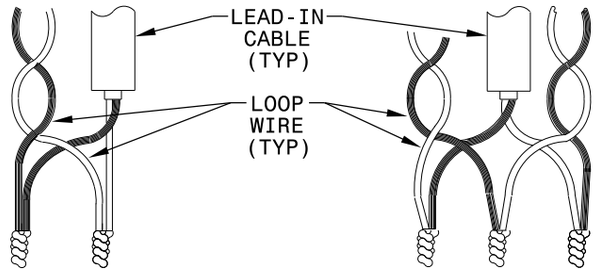


CRIMP BARE CONDUCTORS TOGETHER WITH AN UNINSULATED BUTT CONNECTOR AND SOLDER WITH RESIN CORE SOLDER

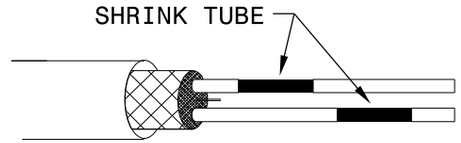
BOND SHIELD DRAIN WIRE AT SPLICE SECTIONS (DO NOT GROUND)

LOOP WIRE AND LEAD-IN CABLE CONNECTION DETAILS

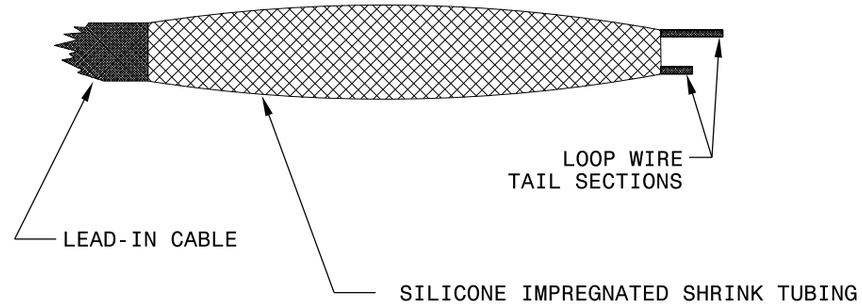
SINGLE CONNECTION SERIES CONNECTION



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.

1-24

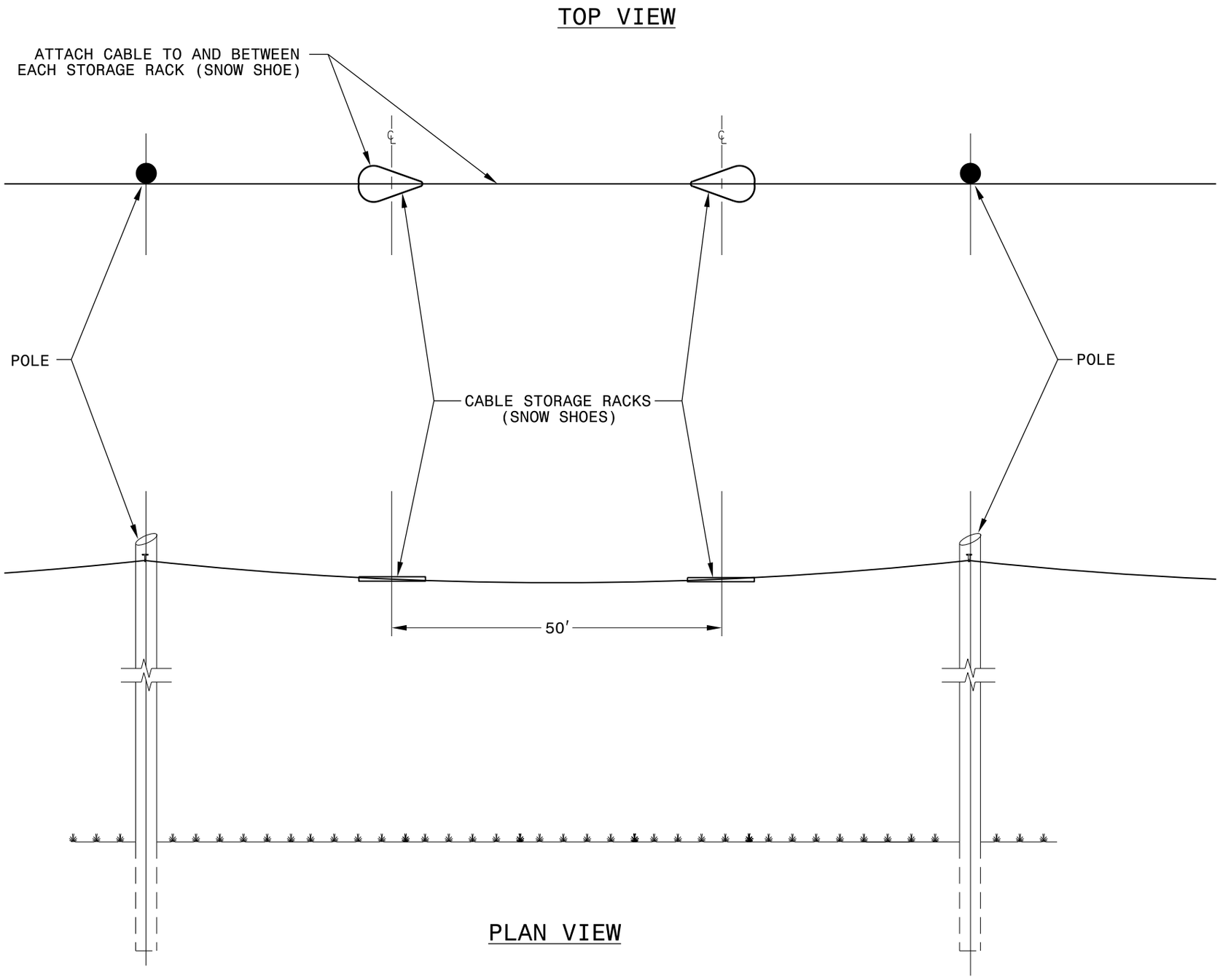
ROADWAY STANDARD DRAWING FOR

INDUCTIVE DETECTION LOOPS

SPLICING FOR LEAD-IN CABLE AND LOOP WIRE

SHEET 3 OF 3

1725.01



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

1-24

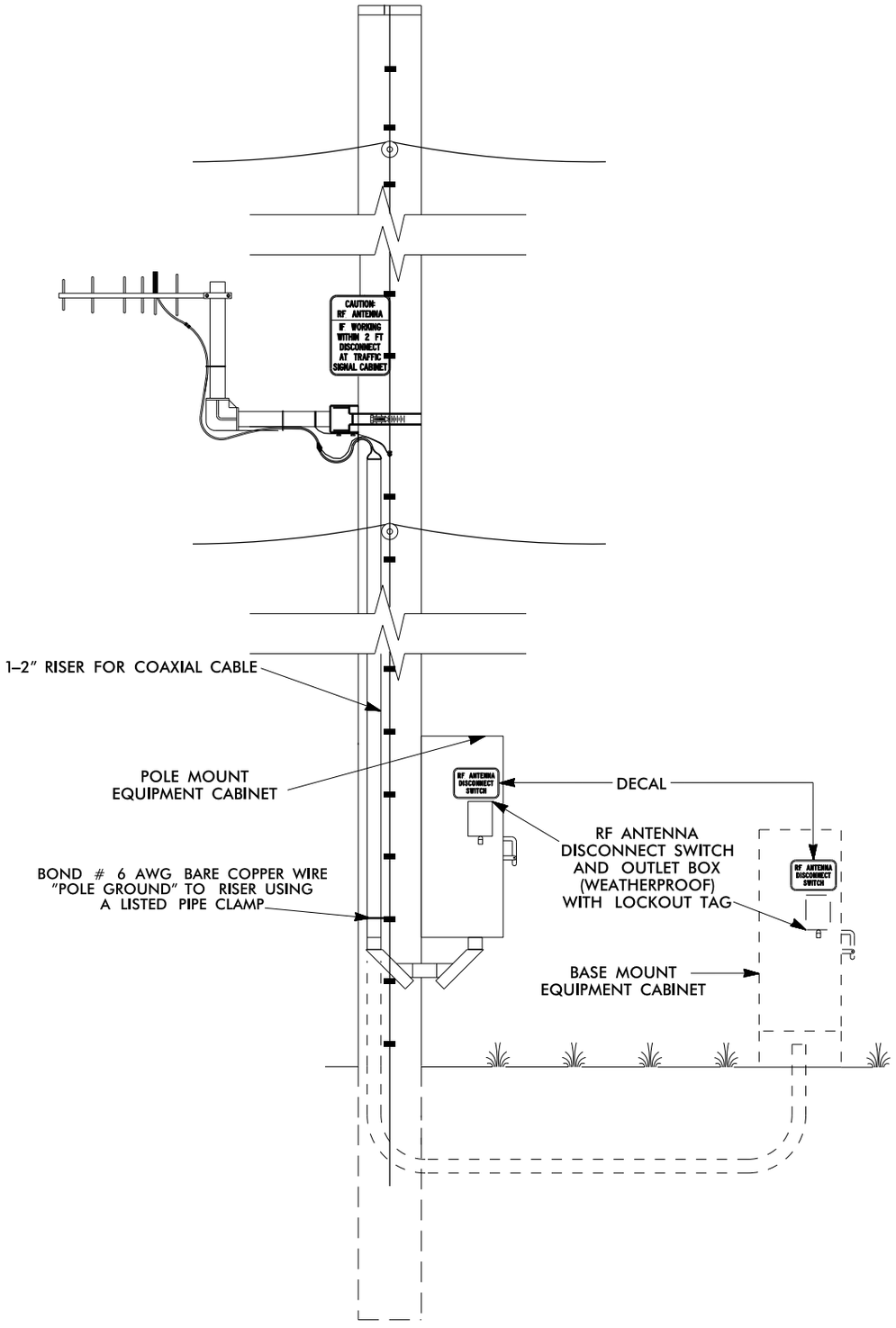
ROADWAY STANDARD DRAWING FOR

FIBER-OPTIC CABLE

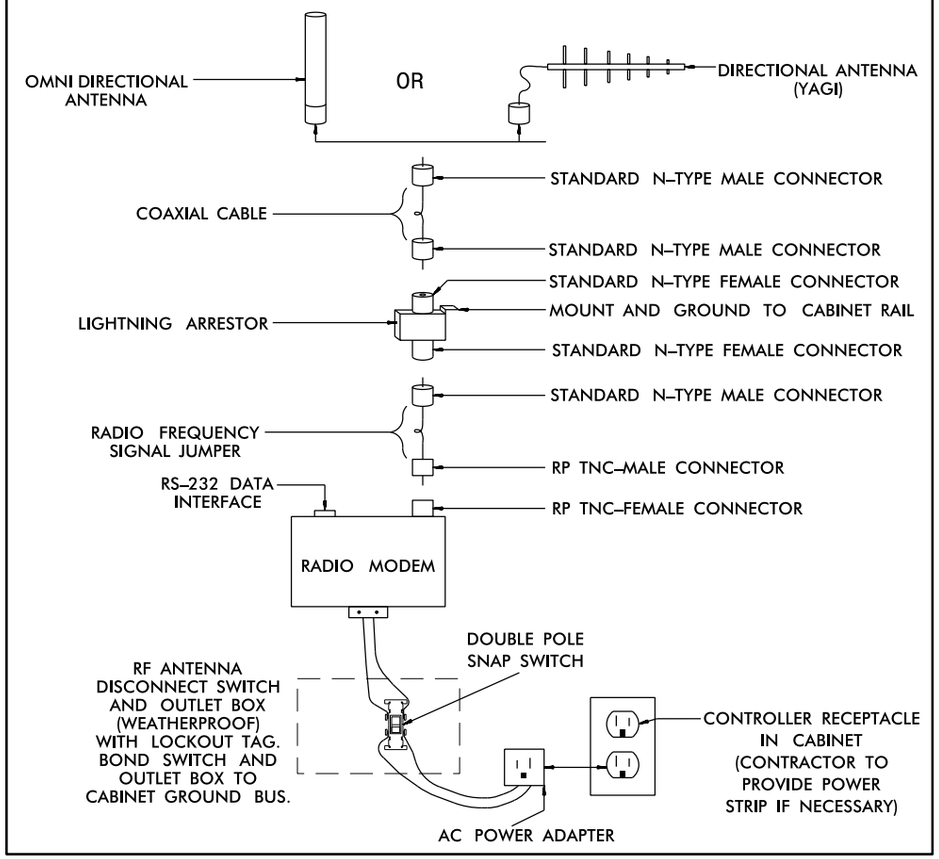
SPARE CABLE STORAGE

SHEET 1 OF 1

1730.01



ANTENNA AND COAXIAL CABLE CONNECTION SCHEMATIC



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

1-24

ROADWAY STANDARD DRAWING FOR

SPREAD SPECTRUM RADIO

RADIO SYSTEM INSTALLATION

1736.01

NOTES

1. 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.

2. YAGI ANTENNA SHOWN IN VERTICAL POLARIZATION POSITION FOR CLARIFICATION. TYPICALLY INSTALL ANTENNA IN HORIZONTAL POLARIZATION POSITION.

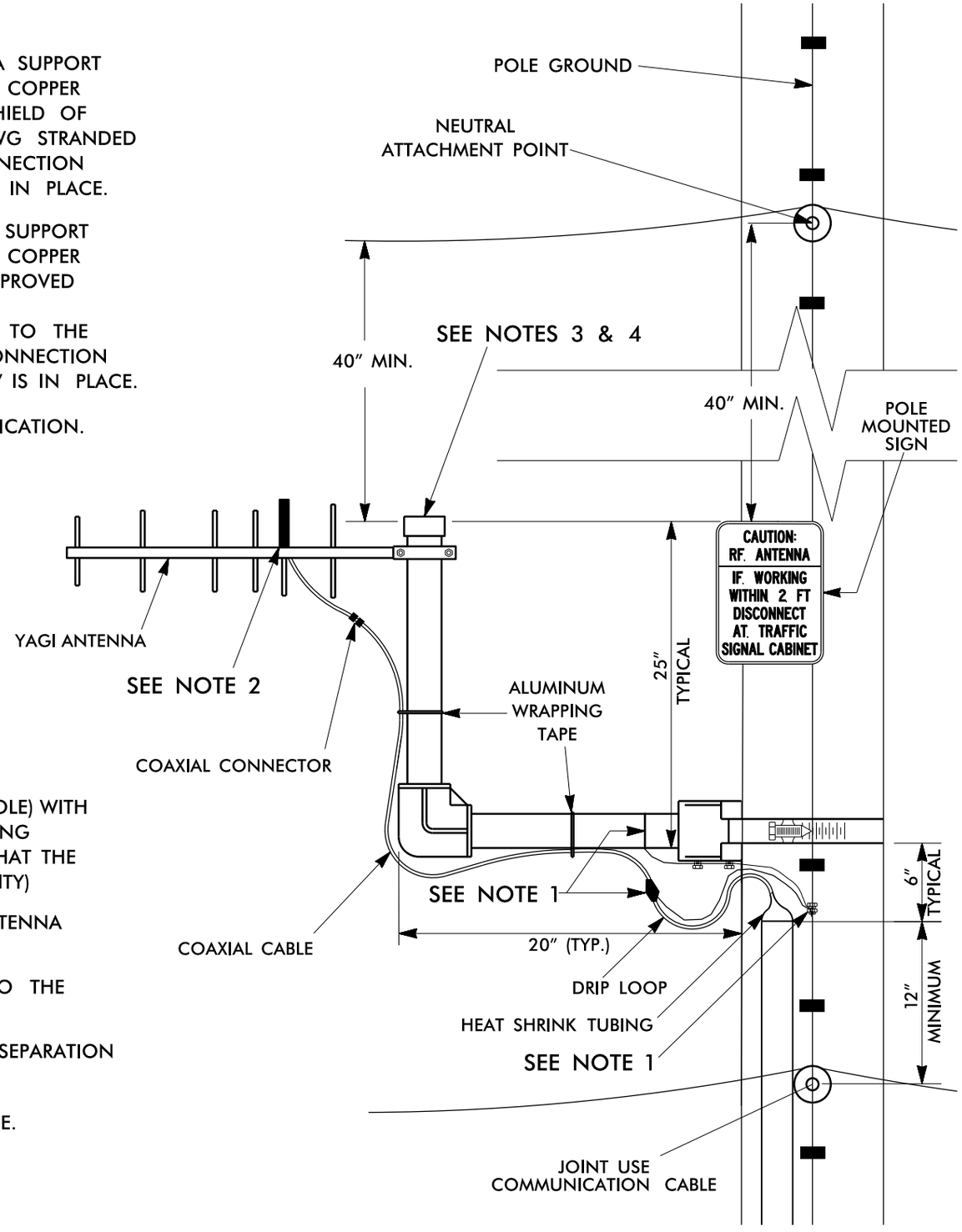
3. TO CONSERVE VERTICAL SPACING ON THE POLE (JOINT–USE OR SIGNAL POLE) WITH REGARDS TO THE SURROUNDING UTILITIES, INSTALL THE ANTENNA MOUNTING HARDWARE USING ONE OF THE TWO METHODS LISTED BELOW: (ENSURE THAT THE MOUNTING METHOD DOES NOT DEGRADE THE ANTENNA'S SIGNAL INTEGRITY)

   A) ROTATE THE VERTICAL SUPPORT ARM 90 DEGREES SUCH THAT THE ANTENNA IS AT THE SAME HEIGHT AS THE HORIZONTAL SUPPORT ARM.

   B) ELIMINATE THE VERTICAL SUPPORT ARM AND MOUNT THE ANTENNA TO THE HORIZONTAL SUPPORT ARM.

   C) ANTENNA, ANTENNA SUPPORT ARM, AND SIGN TO MAINTAIN A 40" SEPARATION FROM NEUTRAL /POWER AND 12" FROM OTHER UTILITIES.

4. 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.

1-24

ROADWAY STANDARD DRAWING FOR

SPREAD SPECTRUM RADIO

ANTENNA AND COAXIAL CABLE

1736.01

DECAL

SIGN NUMBER: SP05224
TYPE: DECAL
QUANTITY:

SIGN WIDTH: 0′-9″
HEIGHT: 0′-6″
TOTAL AREA: 0.4 Sq.Ft.

BORDER TYPE: FLUSH
RECESS: 0″
WIDTH: 0.25″
RADII: 1″

NO. Z BARS:
LENGTH:

BACKG COLOR: Yellow
COPY COLOR: Black

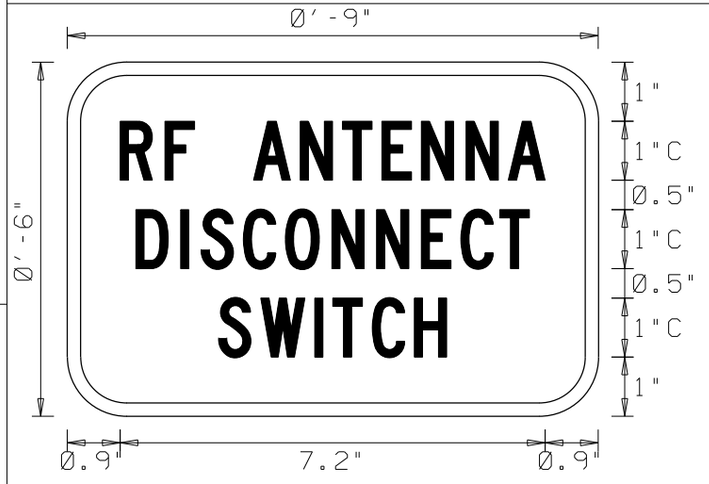
SYMBOL	X	Y	WID	HT

MAT′L: 0.063″ (1.6 mm) ALUMINUM

USE NOTES:

1. Legend and border shall be direct applied non-reflective sheeting.
2. Background shall be Grade C reflective sheeting.

DESIGN BY: S PIOTROWSKI DATE: Revised M.Manriquez 5/23/2017 CHECKED BY: SUSAN B. KUNZ
PROJECT ID: ID DIV: INTELLIGENT TRANSPORTATION SYSTEM



NOTE: THIS SIGN SHALL BE PRODUCED AS A DECAL

LETTER POSITIONS

Letter spacings are to start of next letter

																										Series/Size Text Length
	R	F		A	N	T	E	N	N	A																C1
0.9	0.8	0.5	1	0.8	0.7	0.7	0.7	0.8	0.7	0.6	0.9															7.2
	D	I	S	C	O	N	N	E	C	T																C1
1.2	0.8	0.3	0.7	0.7	0.8	0.8	0.8	0.7	0.7	0.5	1.2															6.7
	S	W	I	T	C	H																				C1
2.6	0.7	0.9	0.3	0.7	0.7	0.5	2.6																			3.9

Spacing Factor is 1 unless specified otherwise

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

1-24

ROADWAY STANDARD DRAWING FOR
SPREAD SPECTRUM RADIO
RF ANTENNA DISCONNECT DECAL

1736.01

POLE MOUNTED SIGN

SIGN NUMBER: SP05223
TYPE: D
QUANTITY:

SIGN WIDTH: 0′-9″
HEIGHT: 1′-0″
TOTAL AREA: 0.8 Sq.Ft.

BORDER TYPE: FLUSH
RECESS: 0″
WIDTH: 0.2″
RADII: 1″

NO. Z BARS:
LENGTH:

BACKG COLOR: Yellow
COPY COLOR: Black

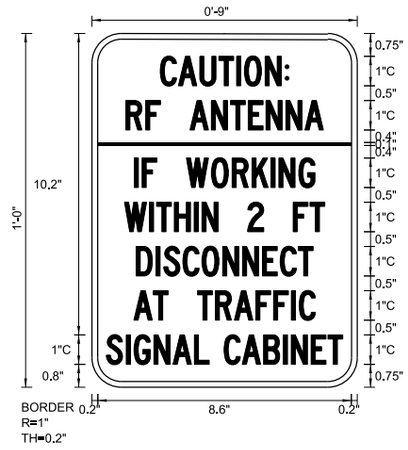
SYMBOL	X	Y	WID	HT
BAR	0.2	8.2	8.6	1.0

MAT′L: 0.063″ (1.6 mm) ALUMINUM

DESIGN BY: M. TRACEY DATE: Revised M.Manriquez 5/23/2017 CHECKED BY: SUSAN KUNZ
PROJECT ID: DIV: INTELLIGNET TRANSPORTATION SYSTEMS

USE NOTES:

1. Legend and border shall be direct applied non-reflective sheeting.
2. Background shall be Grade C reflective sheeting.



0.60 SPACING FACTOR

LETTER POSITIONS

Letter spacings are to start of next letter

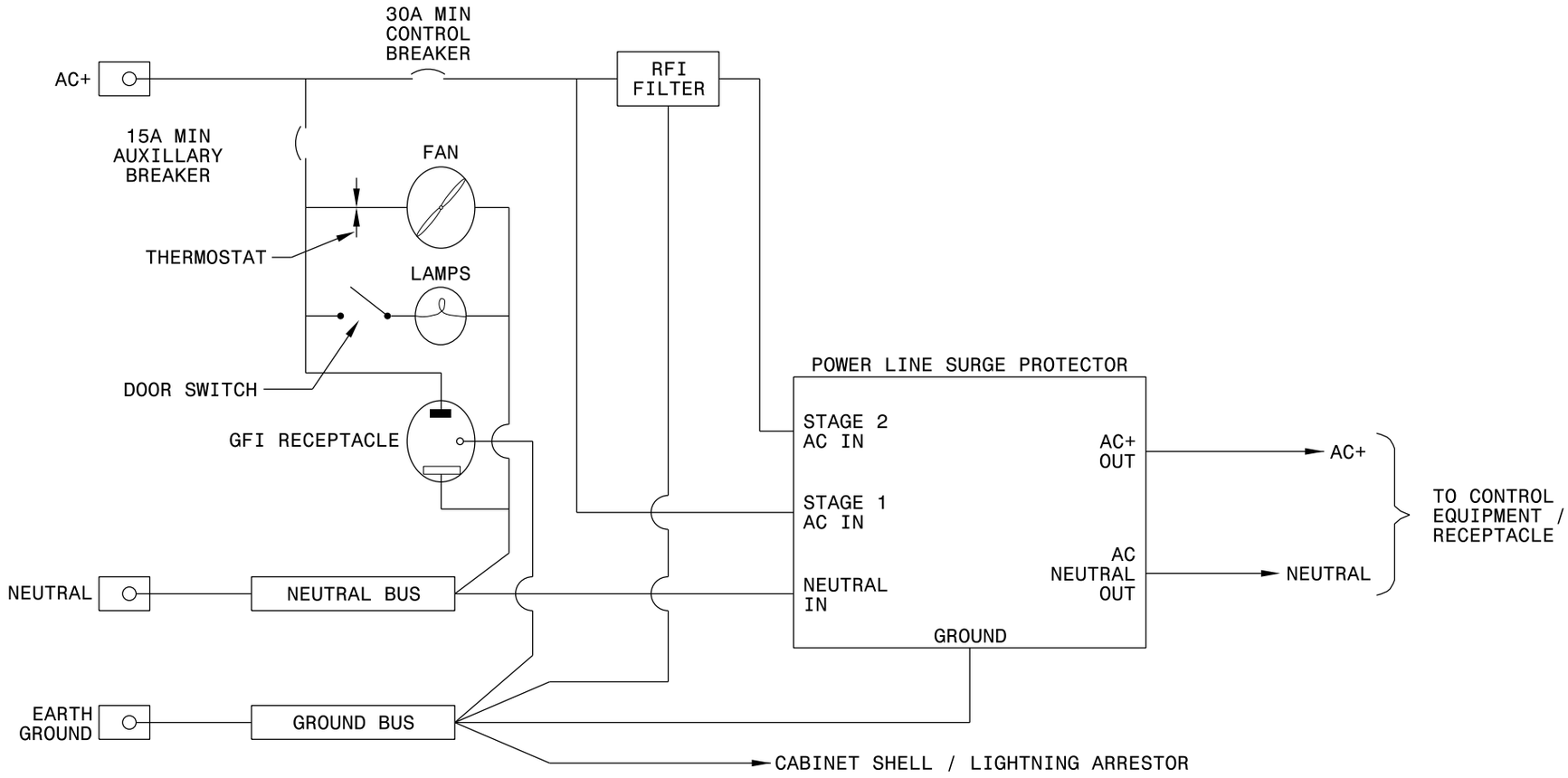
																										Series/Size Text Length
		C	A	U	T	I	O	N	:																	C
	2.3	0.6	0.7	0.6	0.6	0.3	0.7	0.7	0.1	2.3																4.4
		R	F		A	N	T	E	N	N	A																C
	1.1	0.7	0.5	1	0.7	0.6	0.6	0.6	0.7	0.6	0.6	1.1														6.7
		I	F		W	O	R	K	I	N	G																C
	1.4	0.3	0.5	1	0.8	0.7	0.7	0.6	0.3	0.7	0.5	1.4														6.1
		W	I	T	H	I	N		2		F	T														C
	1.1	0.9	0.2	0.6	0.7	0.3	0.5	1	0.5	1	0.6	0.5	1.1													6.8
		D	I	S	C	O	N	N	E	C	T															C
	1.5	0.7	0.3	0.6	0.6	0.7	0.7	0.7	0.6	0.6	0.5	1.5														6
		A	T		T	R	A	F	F	I	C																C
	1.4	0.7	0.5	1	0.6	0.6	0.7	0.6	0.6	0.3	0.6	1.4														6.2
		S	I	G	N	A	L		C	A	B	I	N	E	T											C
	0.5	0.7	0.3	0.7	0.6	0.7	0.5	0.4	0.6	0.7	0.7	0.3	0.7	0.6	0.5	0.5										7.9

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

1-24

ROADWAY STANDARD DRAWING FOR
SPREAD SPECTRUM RADIO
RF ANTENNA WARNING SIGN

1736.01



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

1-24

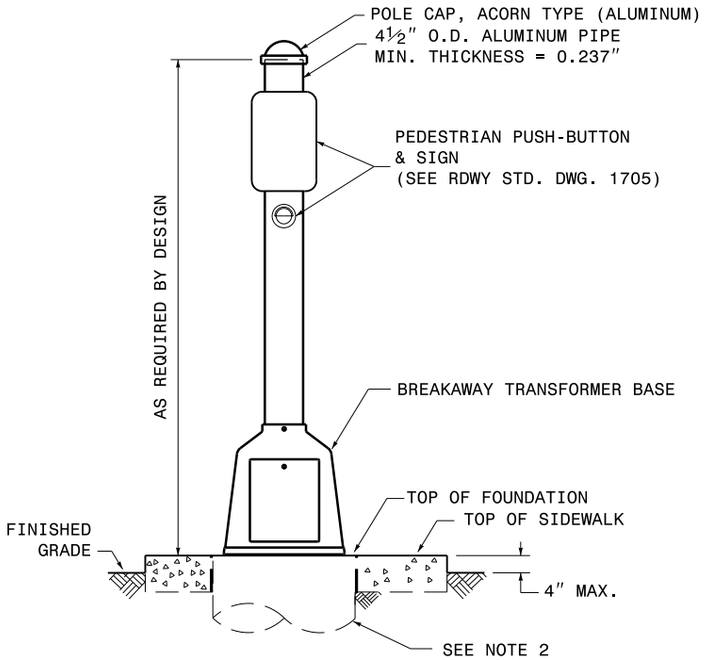
ROADWAY STANDARD DRAWING FOR

SPREAD SPECTRUM RADIO

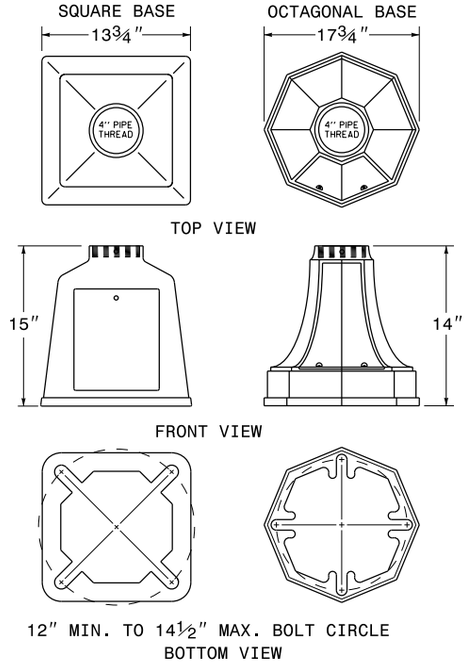
POWER, GROUND AND AUXILIARY POWER SYSTEMS
FOR STANDALONE REPEATER CABINET

SHEET 5 OF 5

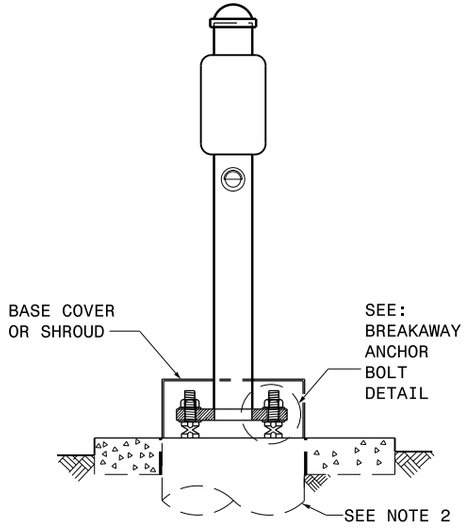
1736.01



PUSHBUTTON POST ON BREAKAWAY TRANSFORMER BASE



NORMAL DUTY TRANSFORMER BASE STYLES

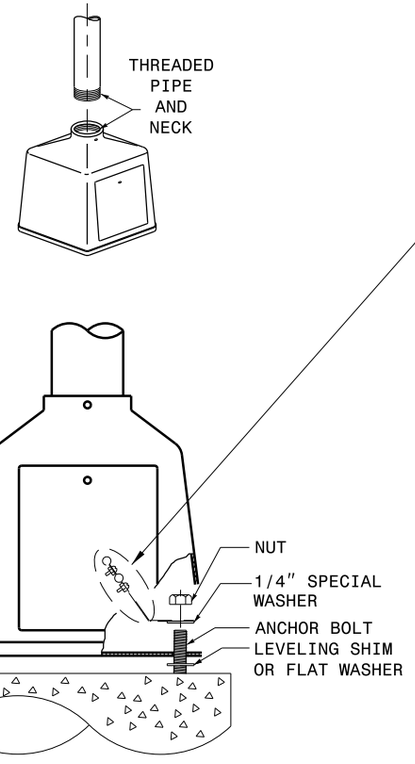


PUSHBUTTON POST ON FLANGE BASE WITH BREAKAWAY ANCHOR BOLTS

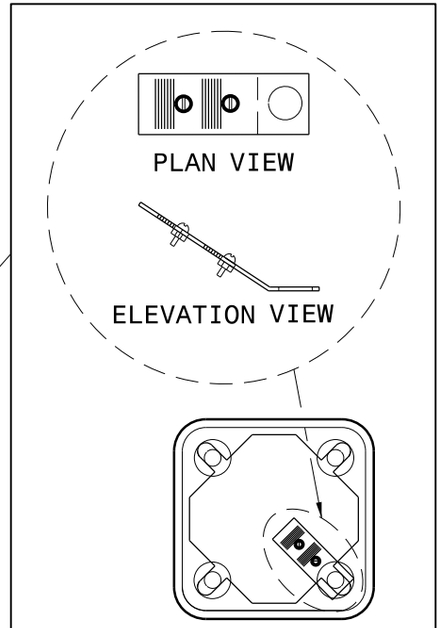
SEE NOTE 4

NOTES:

1. CONSTRUCT POSTS ON FHWA APPROVED BREAKAWAY BASES OR ANCHORS.
2. PUSHBUTTON POSTS ARE DESIGNED FOR USE IN ALL WIND ZONE REGIONS. BASE REACTIONS FOR 2 PUSHBUTTONS AND 2 9"X12" PEDESTRIAN SIGNS ARE:
   AXIAL LOAD: 60 LBS
   SHEAR LOAD: 120 LBS
   MOMENT LOAD: 435 FT LBS
3. BASE REACTIONS ARE BASED ON A DESIGN LOADING FOR 2 PUSHBUTTONS AND 2 PEDESTRIAN SIGNS. DO NOT EXCEED THE DESIGN LOADING WITHOUT APPROVAL.
4. FLANGE BASE WITH BREAKAWAY BOLT OPTION MAY ONLY BE USED FOR TYPE I PEDESTRIAN PUSHBUTTON POSTS.

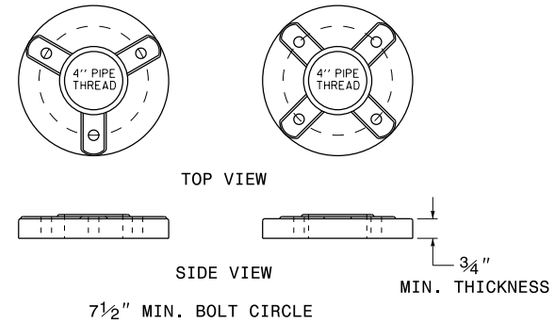


TRANSFORMER BASE ANCHORING DETAIL



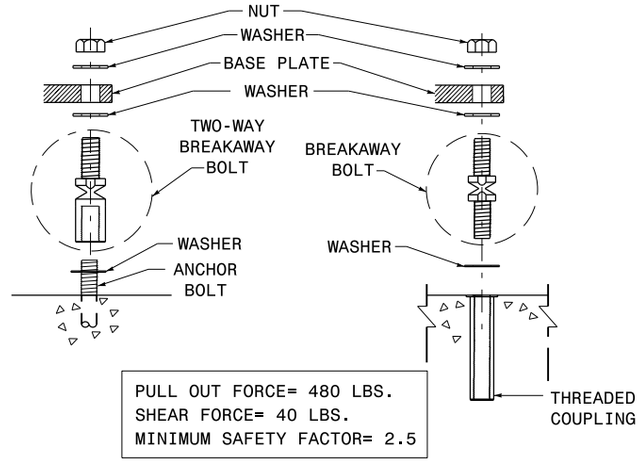
ELECTRICAL CONDUCTOR SHEAR DEVICE DETAIL

SEE NOTE #5



THREADED FLANGE BASE STYLES

TO BE USED WITH BREAKAWAY ANCHORS ONLY



BREAKAWAY ANCHOR BOLT DETAIL

TO BE USED WITH THREADED FLANGE BASES ONLY

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

1-24

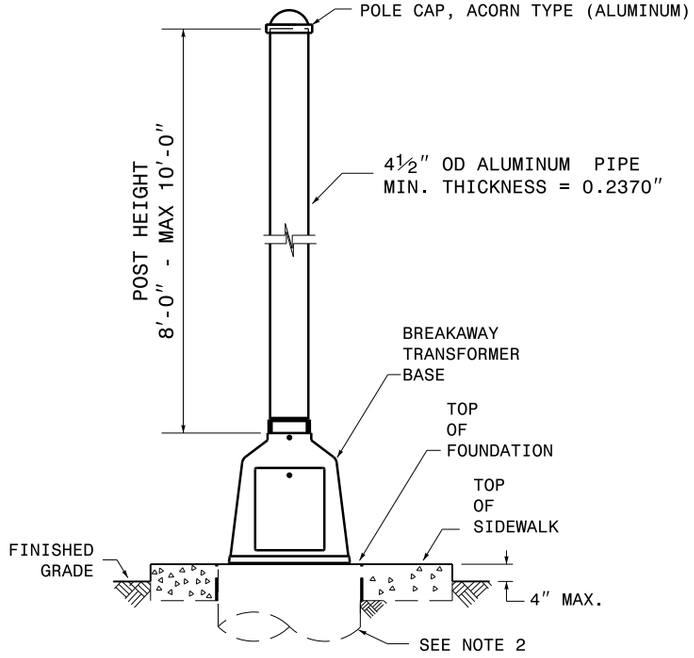
ROADWAY STANDARD DRAWING FOR

PEDESTALS

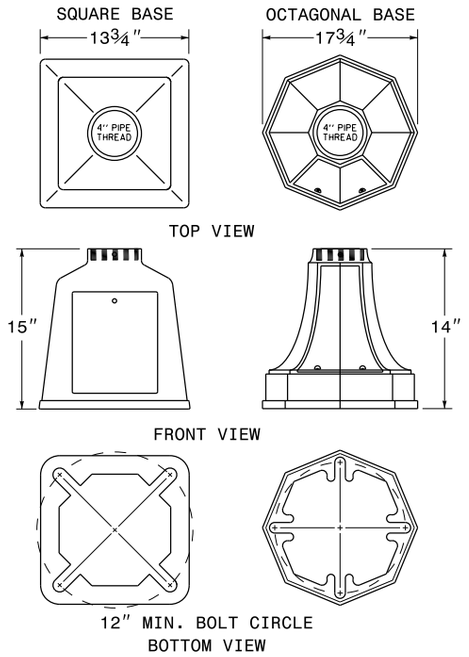
PEDESTRIAN PUSHBUTTON POST (TYPE I)

SHEET 1 OF 1

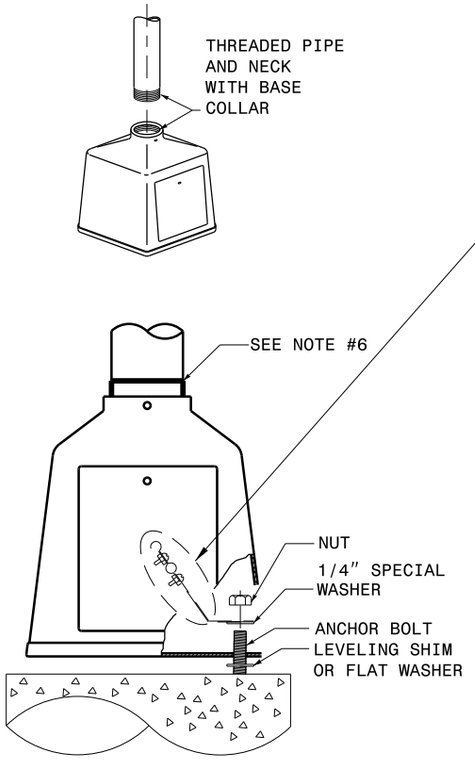
1743.01

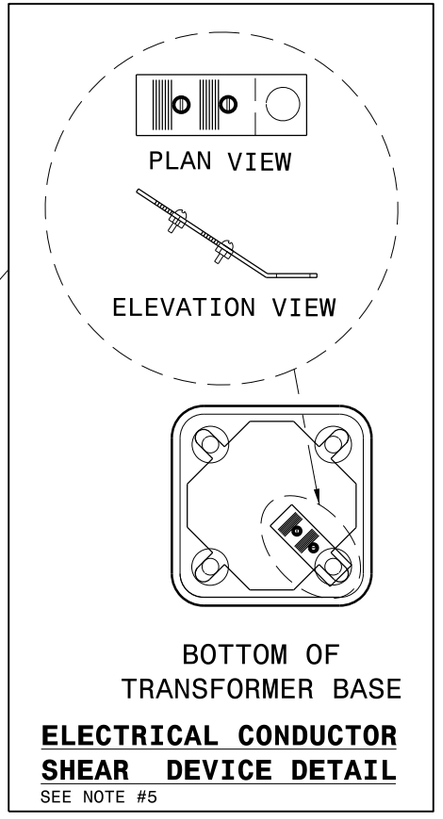


NORMAL DUTY PEDESTAL ON BREAKAWAY TRANSFORMER BASE



NORMAL DUTY TRANSFORMER BASE STYLES





ELECTRICAL CONDUCTOR SHEAR DEVICE DETAIL

SEE NOTE #5

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 A WIDE VARIETY OF TRAFFIC SIGNAL AND PEDESTRIAN SIGNAL APPLICATIONS IN ALL WIND ZONE REGIONS AS LONG AS THE DESIGN CAN BE ACCOMPLISHED USING AN 8' OR 10' ALUMINUM POST AND:
   - WHEN USED EXCLUSIVELY FOR PEDESTRIAN SIGNAL APPLICATIONS WHERE THE DESIGN LOADING DOES NOT EXCEED: 2 PEDESTRIAN SIGNALS, 2 9"X12" PEDESTRIAN SIGNS AND 2 PUSHBUTTONS.
   - WHEN USED EXCLUSIVELY FOR VEHICLE SIGNAL APPLICATIONS WHERE THE DESIGN LOADING DOES NOT EXCEED: 2 3-SECTION 12" POST TOP MOUNTED SIGNAL HEADS.
   - WHEN USED FOR BOTH PEDESTRIAN AND VEHICLE SIGNAL APPLICATIONS WHERE THE DESIGN LOADING DOES NOT EXCEED: 1 3-SECTION 12" POST TOP MOUNTED SIGNAL HEAD, 1 PEDESTRIAN SIGNAL, 1 9"X12" PEDESTRIAN SIGN, AND 1 PUSHBUTTON.

   PROPOSED DESIGN APPLICATIONS THAT EXCEED ANY LOAD COMBINATIONS LISTED ABOVE AND/OR REQUIRE A POST TALLER THAN 10' SHOULD CONSIDER USING A TYPE III PEDESTAL TO MEET THE DESIGN REQUIREMENTS OR HAVE A STRUCTURAL EVALUATION PERFORMED. DO NOT EXCEED DESIGN LOADING WITHOUT APPROVAL.
4. DO NOT USE A FLANGE BASE WITH BREAKAWAY ANCHOR BOLTS ON A TYPE II PEDESTAL.
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. IF ALTERNATIVES ARE AVAILABLE THEY CAN BE USED PER APPROVAL OF THE ENGINEER.
6. PROVIDE POLE AND BASE COLLAR ASSEMBLY.

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

1-24

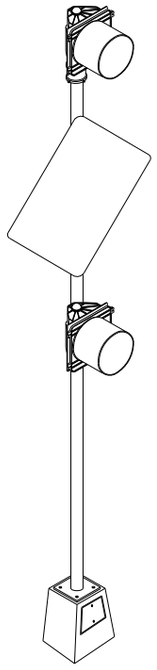
ROADWAY STANDARD DRAWING FOR

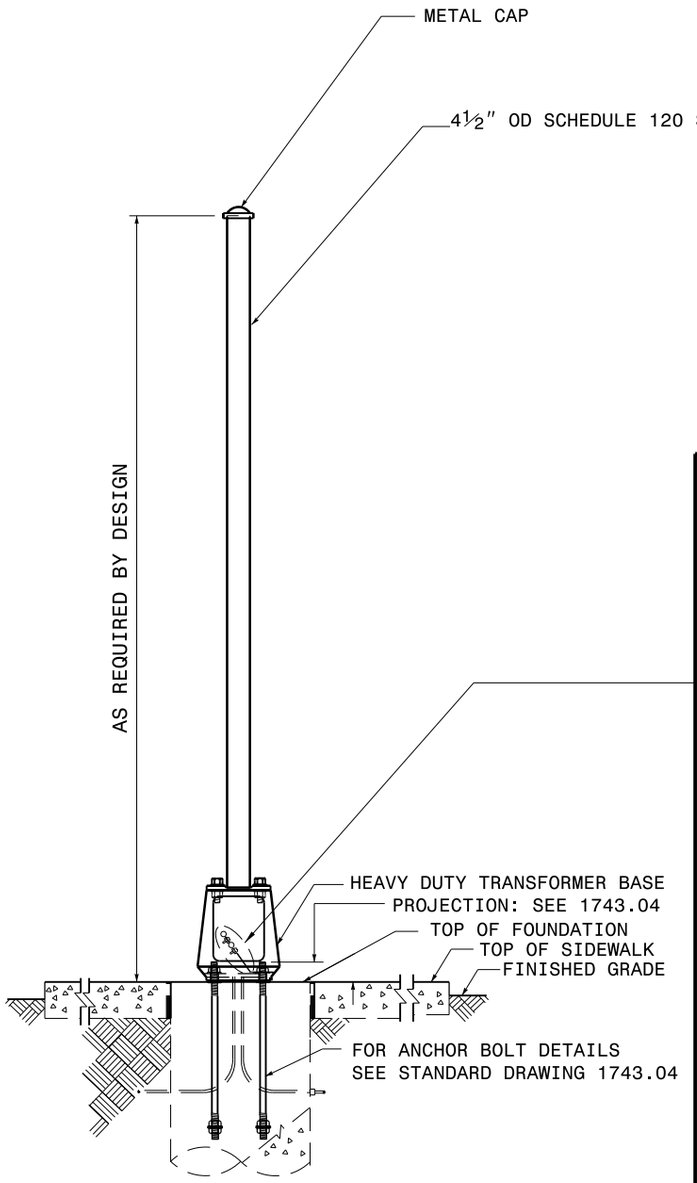
PEDESTALS

NORMAL DUTY (TYPE II)

SHEET 1 OF 1

1743.02

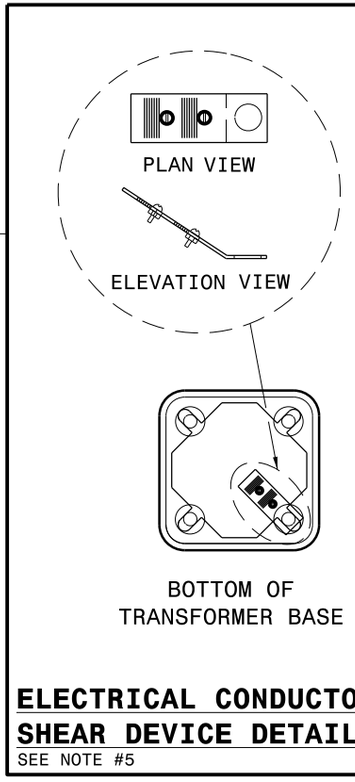




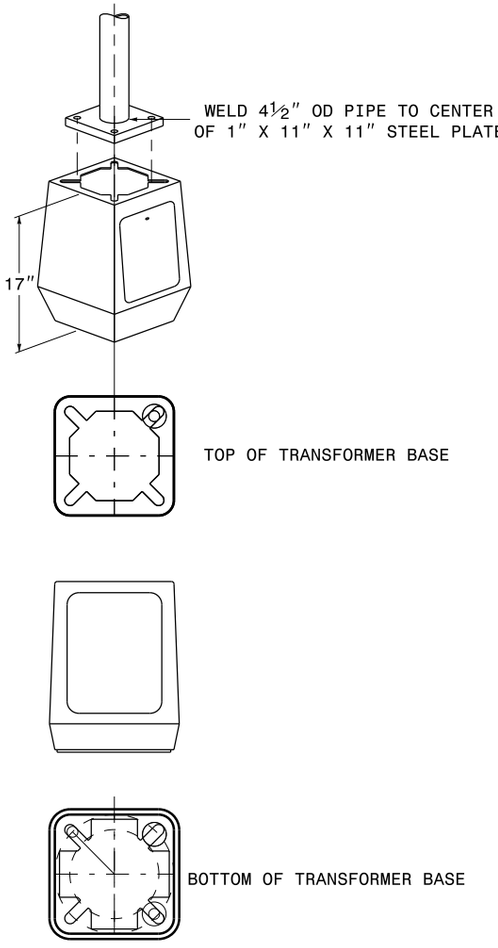
TRANSFORMER BASE

NOTES:

1. CONSTRUCT PEDESTALS ON FHWA APPROVED BREAKAWAY BASES OR ANCHORS.
2. CONSTRUCT PEDESTAL FOUNDATIONS IN ACCORDANCE WITH STANDARD DRAWING 1743.04.
3. HEAVY DUTY PEDESTALS ARE DESIGNED FOR USE IN ALL WIND ZONE REGIONS. PEDESTAL BASE REACTIONS, USING 4½" 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. IF ALTERNATIVES ARE AVAILABLE THEY CAN BE USED PER APPROVAL OF THE ENGINEER.
6. DO NOT USE BREAKAWAY ANCHOR BOLTS WITH THIS TYPE OF PEDESTAL.



ELECTRICAL CONDUCTOR SHEAR DEVICE DETAIL
SEE NOTE #5



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

1-24

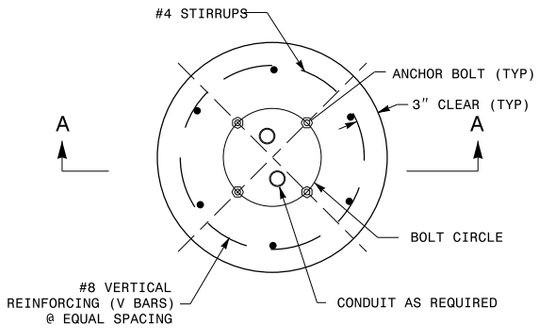
ROADWAY STANDARD DRAWING FOR

PEDESTALS

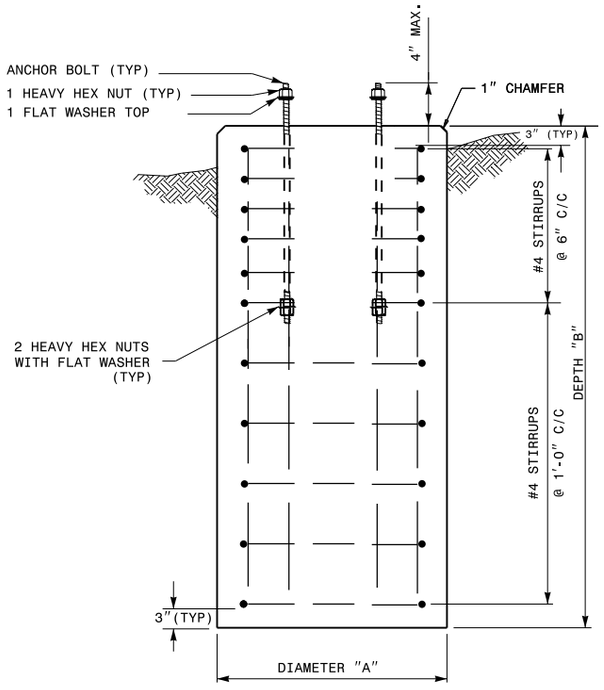
HEAVY DUTY (TYPE III)

SHEET 1 OF 1

1743.03

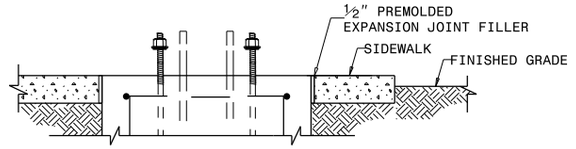


PEDESTAL FOUNDATION - PLAN VIEW

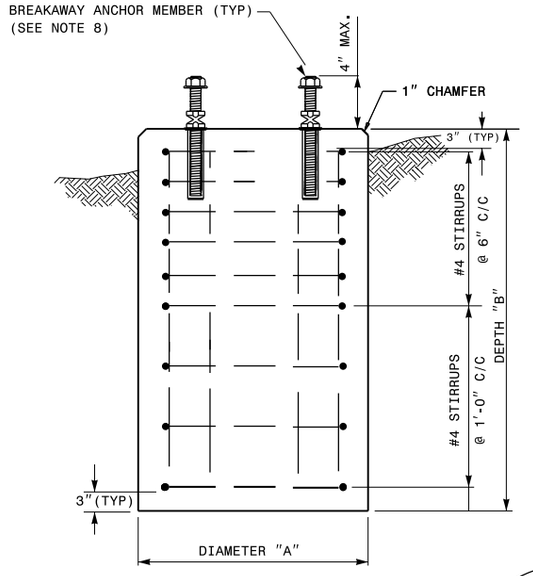


TYPES I, II & III

SECTION A-A

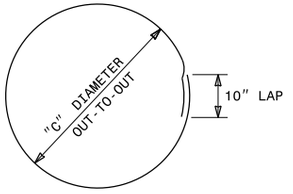


PEDESTAL FOUNDATION DETAILS FOR SIDEWALK



TYPES I & II ONLY

SECTION A-A

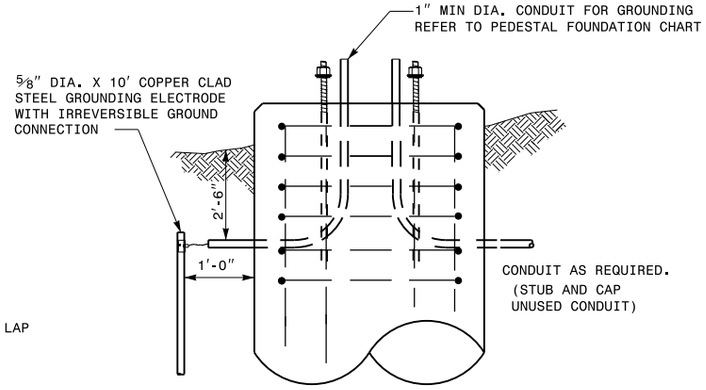


CLOSED HOOPS

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′-4½″ AND FOR TYPE II MINIMUM DEPTH NECESSARY IS 0′-6⅝″. FOLLOW MANUFACTURER'S INSTALLATION INSTRUCTIONS.



GROUNDING & CONDUIT DETAIL

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	½	1′-6″	NO
II	NORMAL-DUTY	2′-0″	5′-0″	.58	¾	2′-0″	YES
III	HEAVY-DUTY	2′-6″	7′-0″	1.27	1	4′-0″	YES

REINFORCING STEEL SCHEDULE

TYPE	V-BAR				STIRRUP								TOTAL STEEL WEIGHT LBS
						QUANTITY							
	SIZE #	QTY	LENGTH	WEIGHT LBS	SIZE #	VERTICAL SPACING ON 6″ CENTERS	VERTICAL SPACING ON 12″ CENTERS	TOTAL	LENGTH	DIAMETER "C" FT	OVERLAP MIN.	WEIGHT LBS	
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

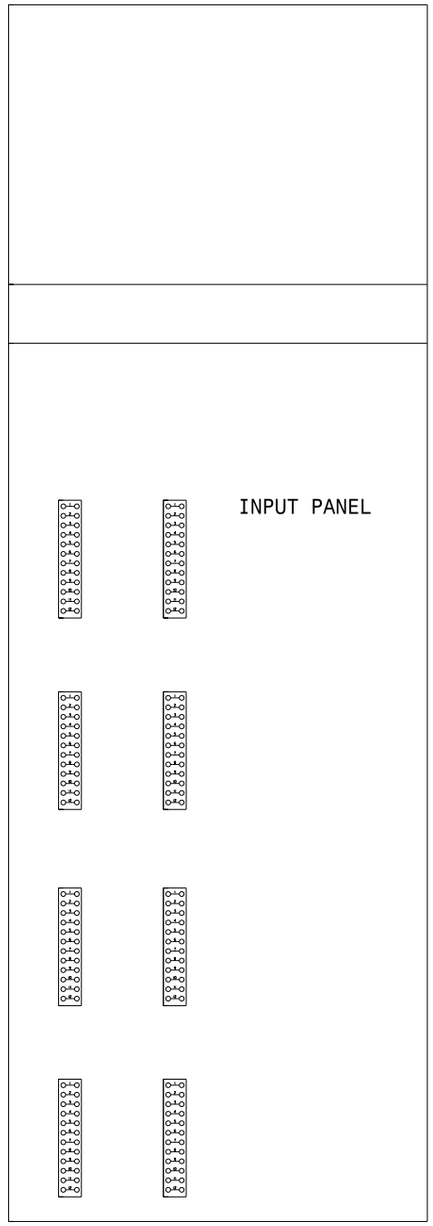
STATE OF NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

1-24

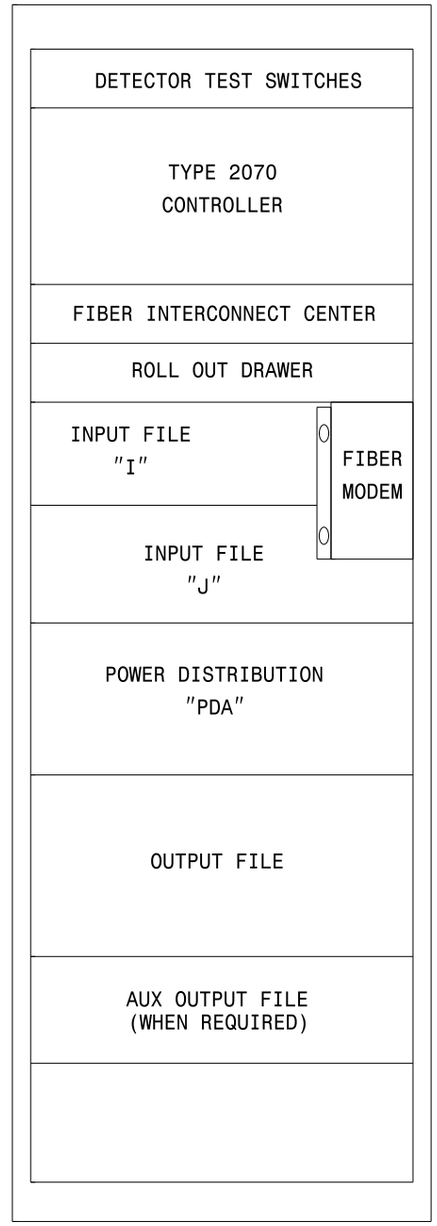
ENGLISH STANDARD DRAWING FOR
PEDESTALS
FOUNDATIONS

SHEET 1 OF 1

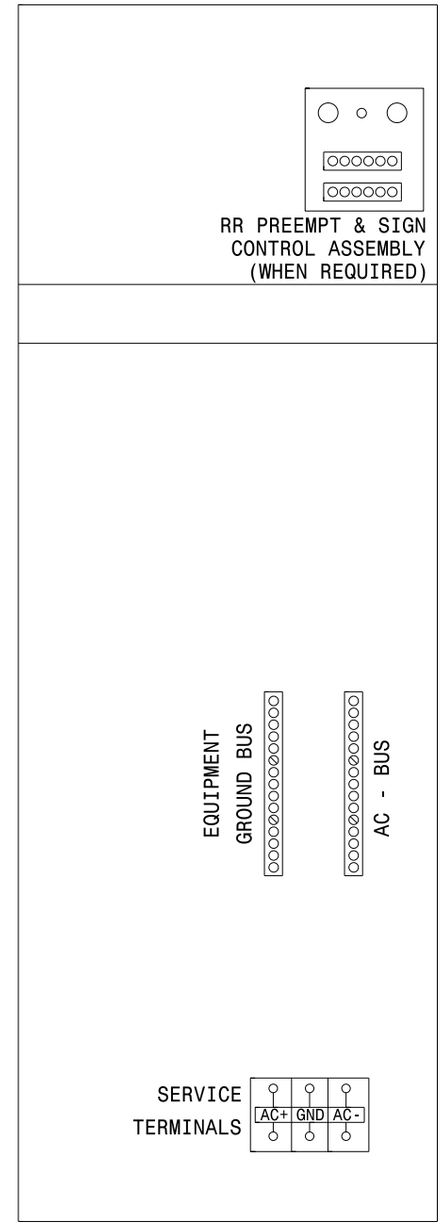
1743.04



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.

1-24

ROADWAY STANDARD DRAWING FOR

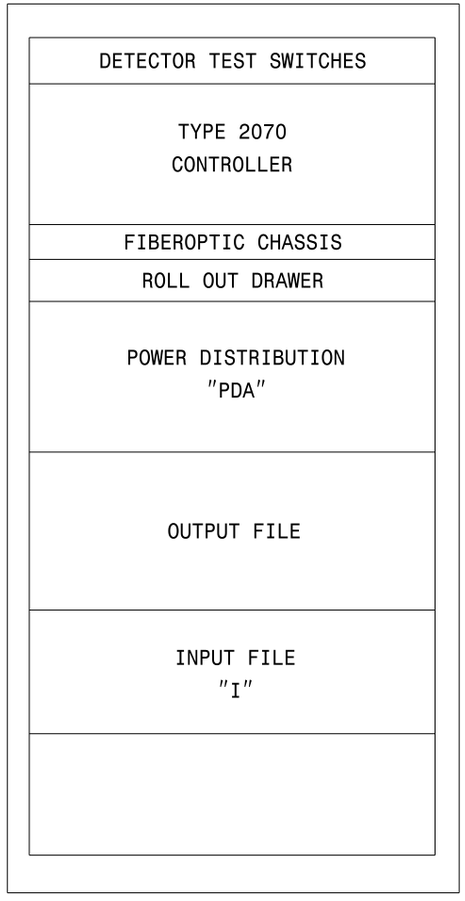
CONTROLLERS AND CABINETS

CABINET COMPONENT LAYOUT (BASEMOUNT)

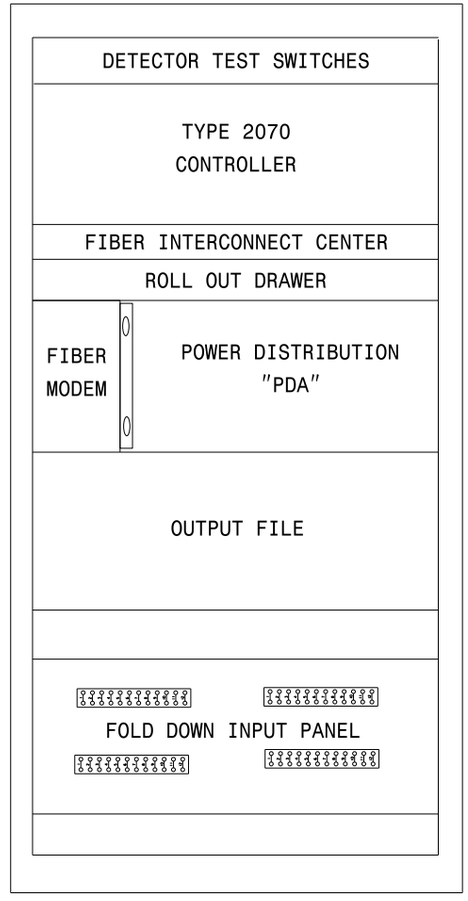
170 CABINET MODEL 332 WITH 2070 CONTROLLER

SHEET 1 OF 2

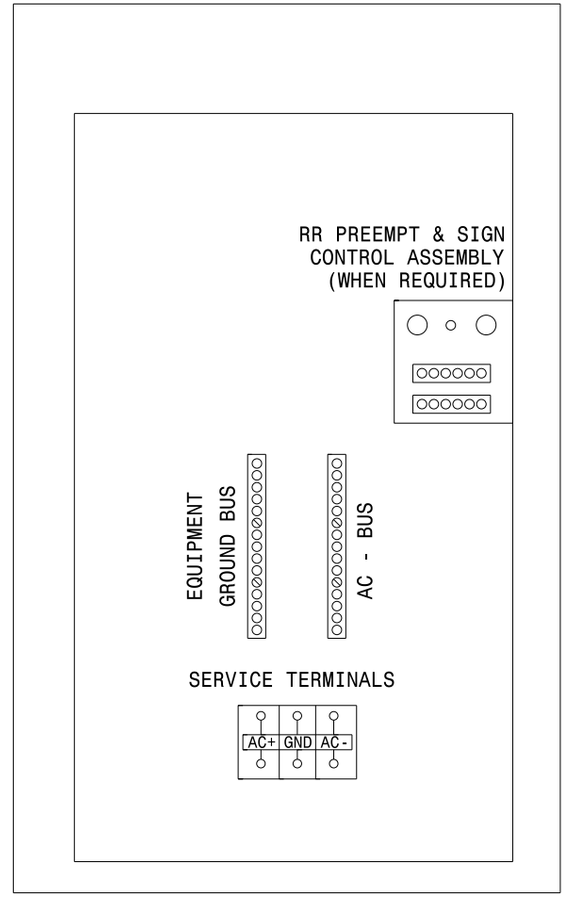
1751.01



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.

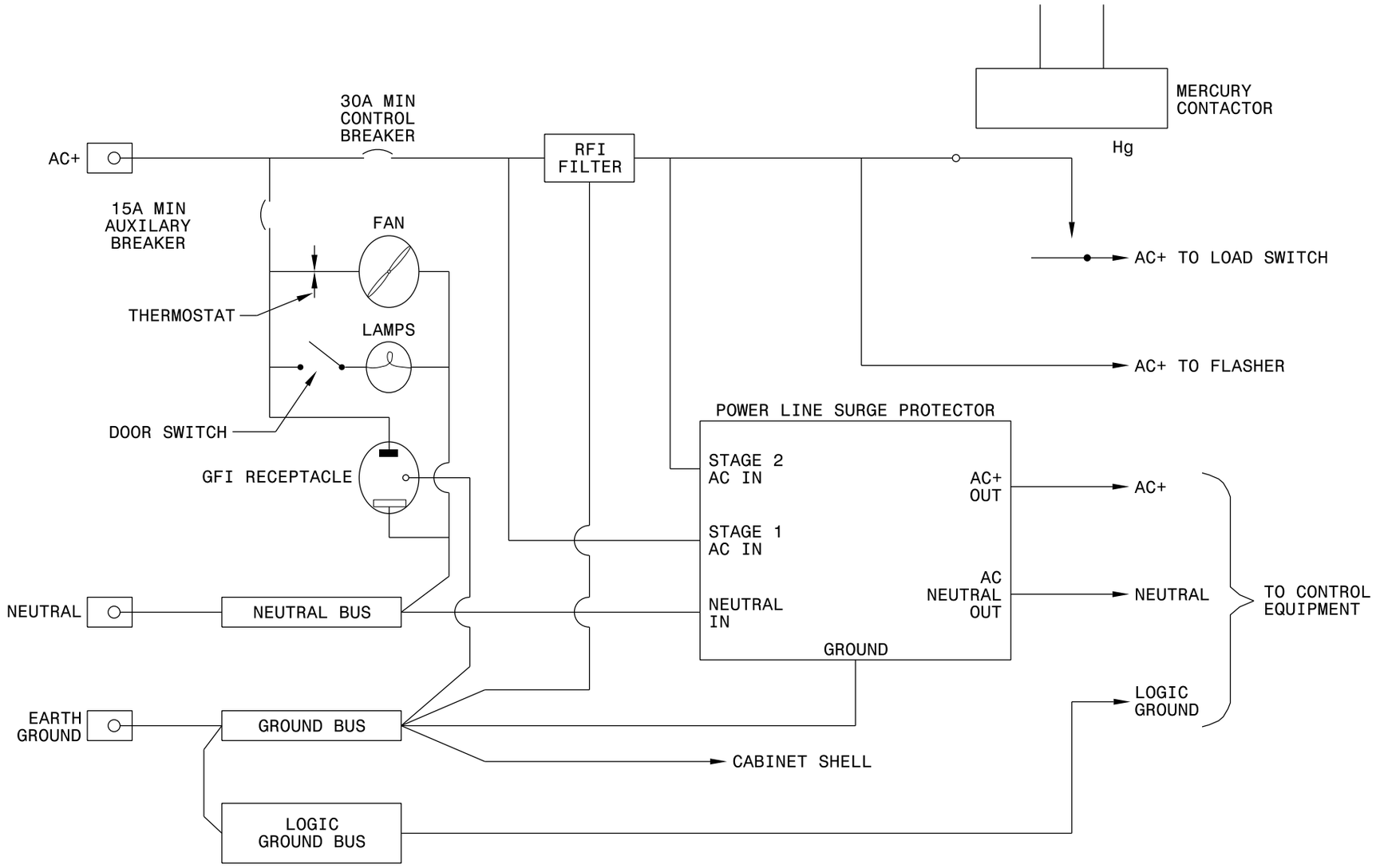
STATE OF
NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

1-24

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

SHEET 2 OF 2

1751.01



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

1-24

ROADWAY STANDARD DRAWING FOR

CONTROLLERS AND CABINETS

POWER, GROUND, AND AUXILIARY POWER SYSTEMS
NEMA TS-2

SHEET 1 OF 1

1751.02