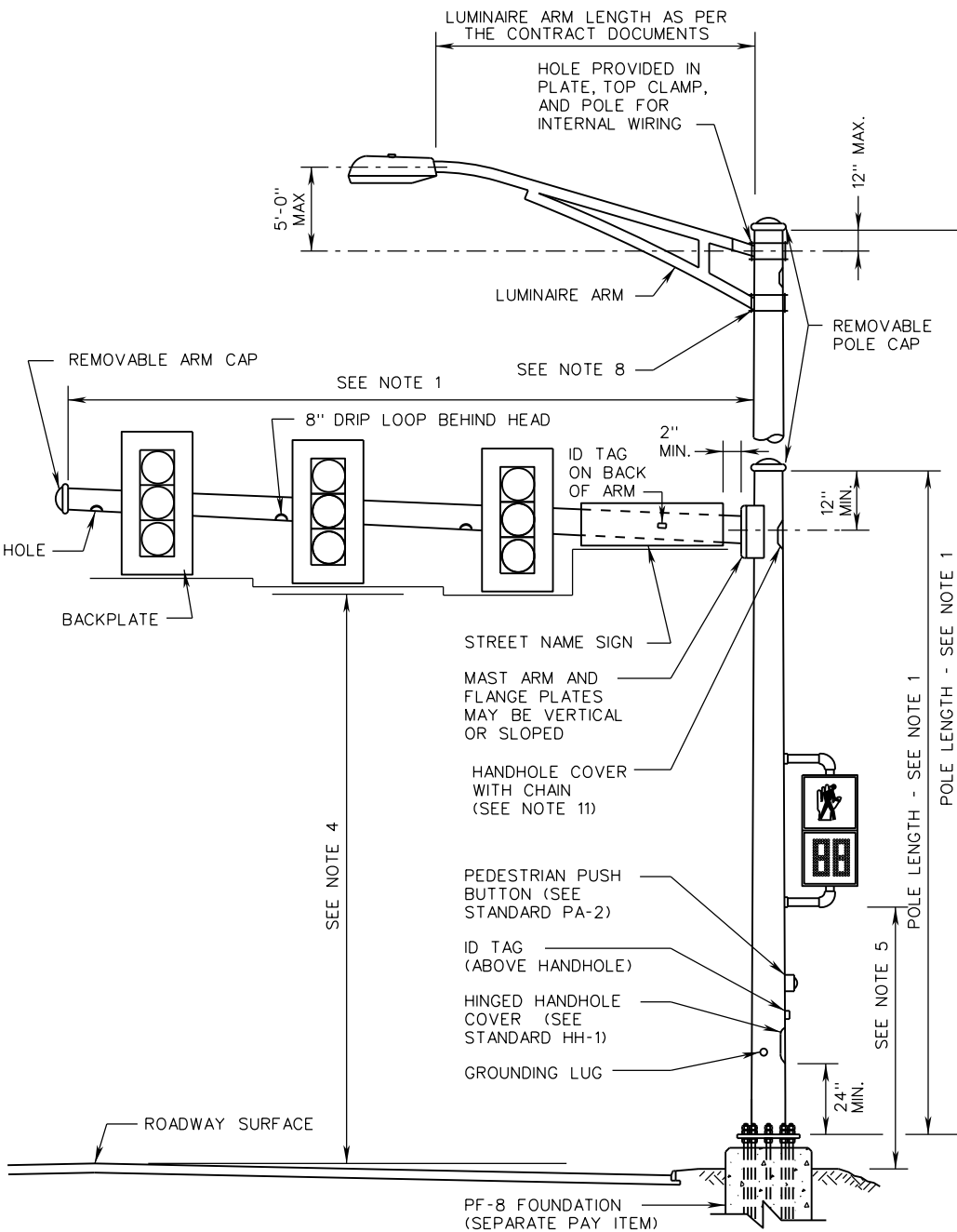


NOTES:

1. AS REQUIRED BY THE SPECIFICATIONS.
2. SIGNAL WIRING HOLE SHALL BE LOCATED ON THE BOTTOM OF THE ARM DIRECTLY BEHIND THE HANGER ASSEMBLY WHEN STANDARD SM-3 HANGER ASSEMBLIES ARE REQUIRED. SIGNAL WIRING SHALL BE CONCEALED IN THE STANDARD SM-3 HANGER ASSEMBLIES.
3. THE ALIGNMENT OF THE LUMINAIRE ARM SHALL BE AS SHOWN IN THE CONTRACT DOCUMENTS.
4. AFTER THE LOADS ARE APPLIED, THE VERTICAL CLEARANCE FROM THE HIGHEST POINT OF THE PAVEMENT SURFACE SHALL BE:
 - A. 16' MINIMUM (15' MINIMUM FOR MAINTENANCE ACTIVITIES) TO THE LOWEST POINT OF THE SIGNAL HEAD ASSEMBLIES (INCLUDING BACKPLATES) AND SIGNS.
 - B. 25' MAXIMUM TO THE TOPS OF THE SIGNAL HOUSINGS.
5. THE MOUNTING HEIGHT FROM THE PEDESTRIAN PATH (OR THE HIGHEST POINT OF THE PAVEMENT SURFACE IF THERE IS NO PEDESTRIAN PATH) TO THE LOWEST POINT OF THE SIGNAL HOUSING (INCLUDING BRACKETS AND BACKPLATE) SHALL BE AS PER THE CONTRACT DOCUMENTS.
6. A "J" HOOK FOR WIRE SUPPORT SHALL BE PLACED NEAR ALL HANDHOLES THAT ARE LOCATED MORE THAN 4 FEET UP THE STRUCTURE.
7. MAST ARMS MAY BE SPLICED. IF SPLICED, FIELD ASSEMBLY SHALL ACHIEVE A SNUG TIGHT JOINT. MATING SURFACES SHALL BE SMOOTH AND FREE OF BURRS, DENTS, OR LUMPS OF ZINC.
8. POLE CLAMP SHALL BE INSTALLED IN ACCORDANCE WITH MANUFACTURER'S INSTALLATION INSTRUCTIONS WITHOUT THE USE OF SPACERS OR SHIMS.
9. MAST ARMS SHALL BE CONNECTED TO THE POLE USING THRU-BOLTS. NEITHER WELDED STUDS NOR THREADED PLATES WILL BE ALLOWED.
10. DUAL MAST ARM CONNECTIONS MAY BE MADE BY USING TWO SINGLE ARM CONNECTIONS WITH THE LONGER MAST ARM ON THE BOTTOM.
11. HANDHOLES SHALL ONLY BE PROVIDED FOR COMBINATION MAST ARM / LUMINAIRE ARM POLES.



ROAD AND BRIDGE STANDARDS

A COPY OF THE ORIGINAL SEALED AND SIGNED DRAWING IS ON FILE IN THE CENTRAL OFFICE.

SIGNAL POLE DETAILS

SPECIFICATION REFERENCE

MAST ARM AND COMBINATION LUMINAIRE MAST ARM POLE

SHEET 1 OF 4

REVISION DATE

VIRGINIA DEPARTMENT OF TRANSPORTATION











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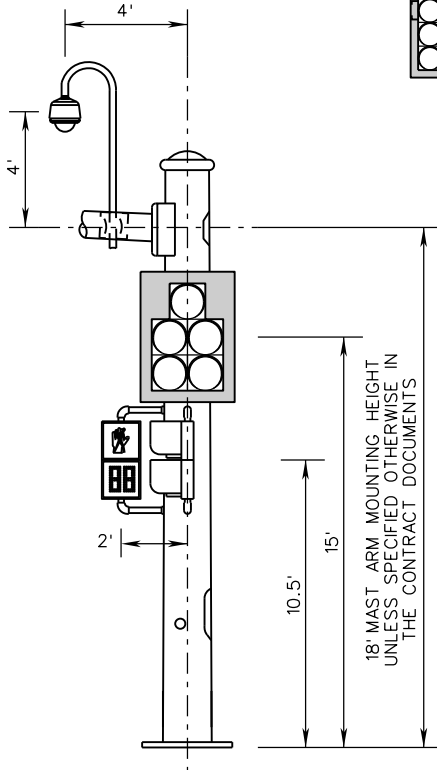
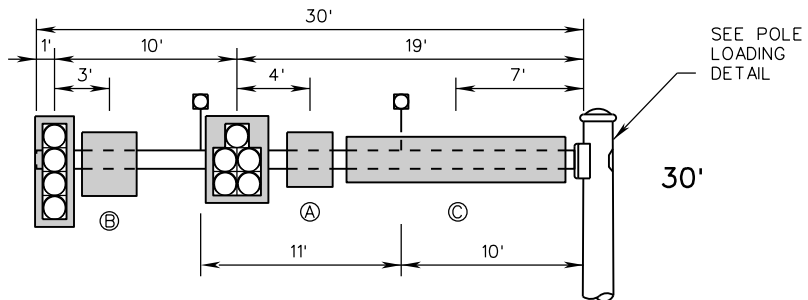
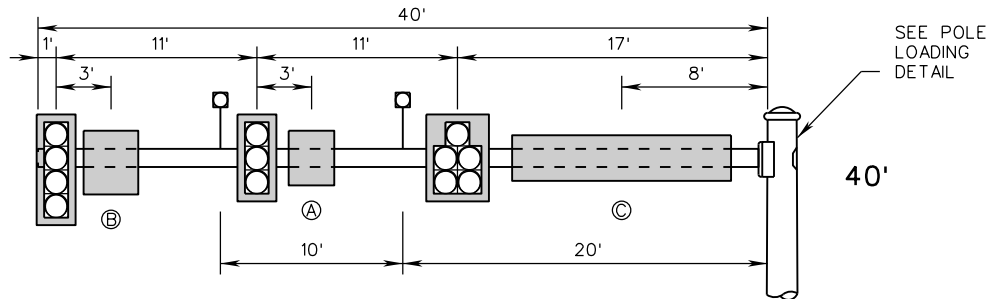
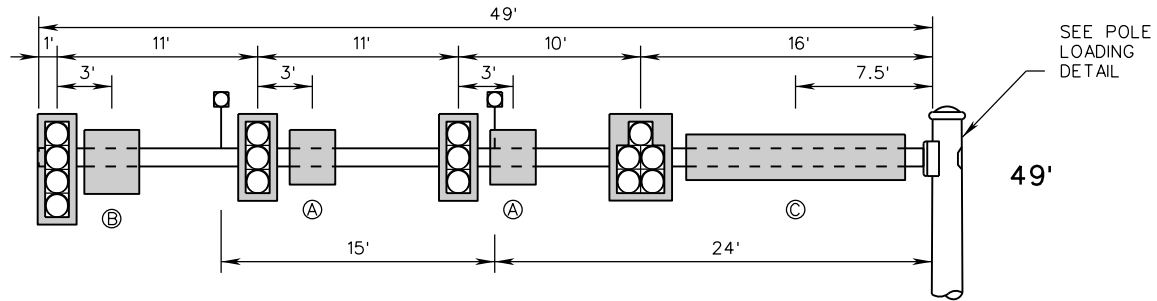
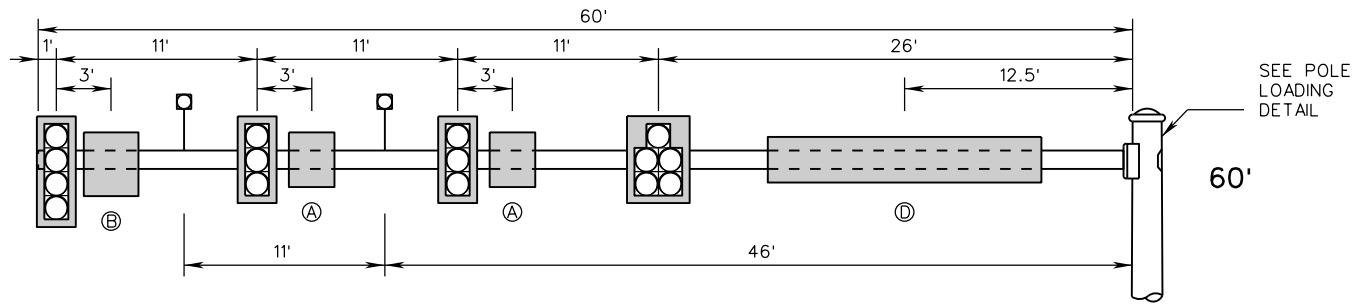
NOTES:

1. THESE LOADING REQUIREMENTS SHALL BE USED FOR THE DESIGN OF ALL NEW MAST ARM STRUCTURES, EXCEPT IN THE FOLLOWING SITUATIONS WHERE THE STRUCTURE SHALL REQUIRE A PROJECT-SPECIFIC DESIGN:
 - THE WIND LOADS OR DEAD LOADS ON THE MAST ARM STRUCTURE SPECIFIED ON THE PLANS WILL EXCEED WHAT IS SHOWN ON THIS STANDARD FOR THE PROPOSED ARM LENGTH.
 - THE STRUCTURE IS A DUAL ARM STRUCTURE WHERE THE ARMS ARE NOT AT 90 DEGREES TO EACH OTHER.
2. EMERGENCY VEHICLE PREEMPTION DEVICES, PEDESTRIAN PUSH BUTTONS, AND ANTENNAE SHALL BE CONSIDERED TO HAVE NEGLIGIBLE WEIGHT AND SURFACE AREA FOR THE PURPOSES OF STRUCTURAL DESIGN OF THE MAST ARM POLES AND FOUNDATIONS.
3. FOR DUAL MAST ARM STRUCTURES WITH TWO ARMS AT 90 DEGREES TO EACH OTHER, THE POLE AND FOUNDATION SHALL BE DESIGNED FOR THE WORST-CASE DEAD LOAD AND WIND LOAD CONDITIONS FROM EITHER ARM.
4. FOR THE PURPOSES OF WIND LOAD ANALYSIS, ALL LOADS SHALL BE TREATED AS IF THEY ARE POINTED IN THE SAME DIRECTION (FACING WIND). THERE SHALL BE NO DEDUCTIONS FOR DEVICES MOUNTED AT ANGLES.
5. THE AREAS PROVIDED DO NOT TAKE INTO ACCOUNT THE WIND DRAG COEFFICIENT.
6. UNLESS SPECIFIED OTHERWISE IN THE CONTRACT DOCUMENTS, EQUIPMENT LOADS AND SIZES SHOWN IN THIS STANDARD SHALL BE USED FOR THE STRUCTURE AND FOUNDATION DESIGN, EVEN IF LIGHTER LOADS OR SMALLER EQUIPMENT SIZES ARE PROPOSED.

DEVICE		SURFACE AREA (SEE NOTES 5 & 6)	DEAD LOAD (SEE NOTE 6)
	3-SECTION SIGNAL HEAD W/ BACKPLATE	8.7 SF	65 LBS
	4-SECTION SIGNAL HEAD W/ BACKPLATE	11.0 SF	80 LBS
	5-SECTION SIGNAL HEAD W/ BACKPLATE (IN-LINE)	13.4 SF	95 LBS
	5-SECTION SIGNAL HEAD W/ BACKPLATE (DOGHOUSE/CLUSTER)	13.75 SF	105 LBS
	SP-9 PEDESTRIAN SIGNAL HEAD	2.4 SF	30 LBS
	30" x 36" SIGN	7.5 SF	22.5 LBS
	36" x 42" SIGN	10.5 SF	26.7 LBS
	12' x 2.5' STREET NAME SIGN	30 SF	66 LBS
	15' x 2.5' STREET NAME SIGN	37.5 SF	88.5 LBS
	VIDEO CAMERA	1.00 SF	22 LBS

SPECIFICATION REFERENCE 700	A COPY OF THE ORIGINAL SEALED AND SIGNED DRAWING IS ON FILE IN THE CENTRAL OFFICE. SIGNAL POLE DETAILS MAST ARM SIGNAL POLE MAXIMUM LOADING STANDARDS VIRGINIA DEPARTMENT OF TRANSPORTATION	 ROAD AND BRIDGE STANDARDS REVISION DATE: NEW 02/16 SHEET 2 OF 4 1302.25
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MP-3



POLE LOADING DETAIL

NOTES:

SEE SHEET 2 FOR NOTES.



ROAD AND BRIDGE STANDARDS

A COPY OF THE ORIGINAL SEALED AND SIGNED DRAWING IS ON FILE IN THE CENTRAL OFFICE.

SIGNAL POLE DETAILS

MAST ARM SIGNAL POLE MAXIMUM LOADING STANDARDS

VIRGINIA DEPARTMENT OF TRANSPORTATION

SPECIFICATION REFERENCE

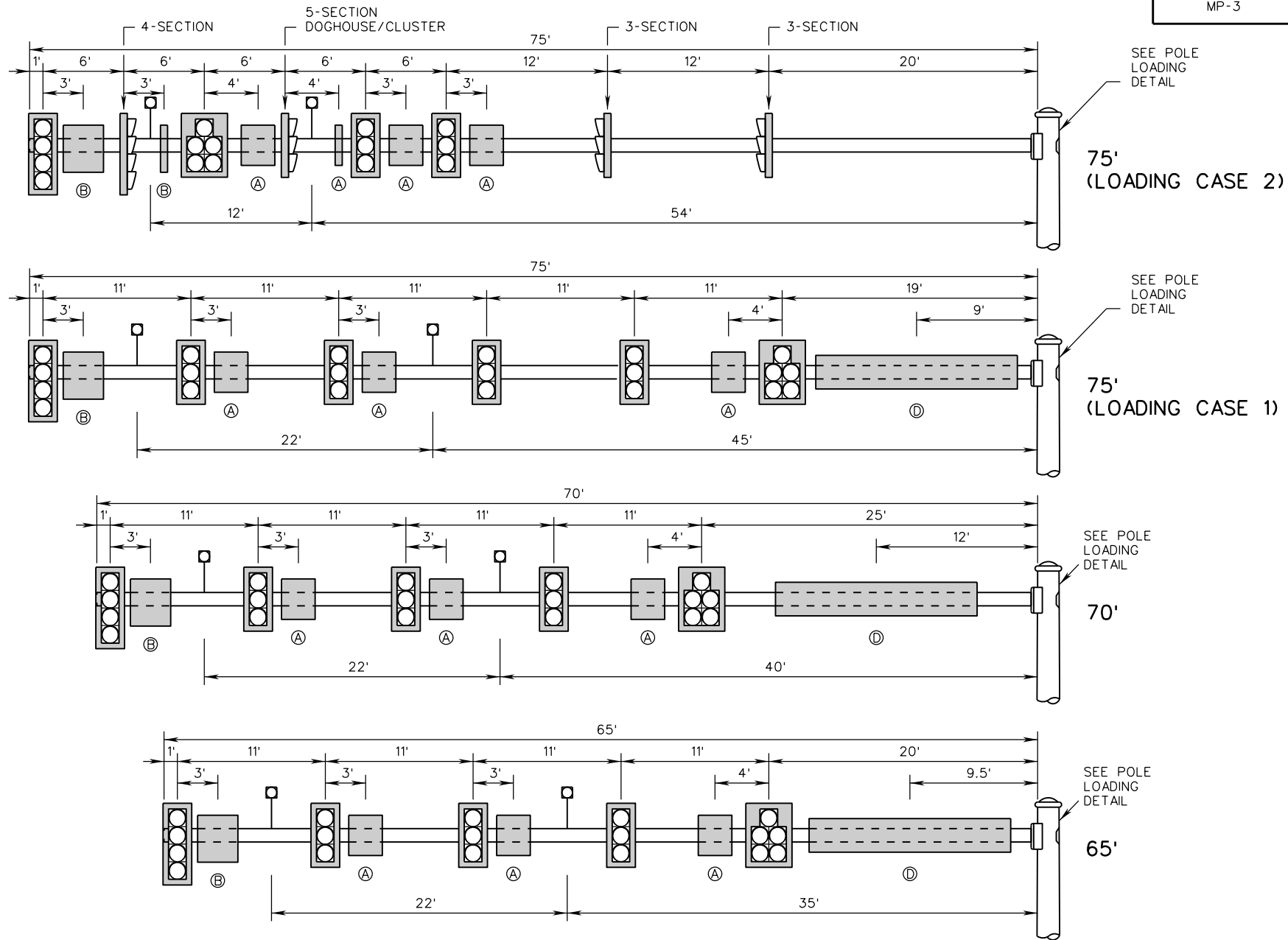
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SHEET 3 OF 4

REVISION DATE


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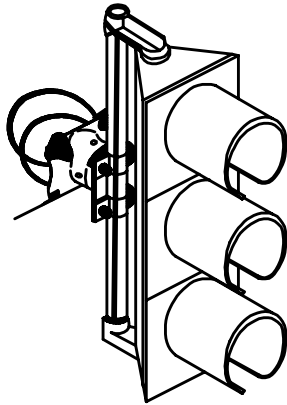
NEW 02/16



NOTES:

SEE SHEET 2 FOR NOTES.

SPECIFICATION REFERENCE	A COPY OF THE ORIGINAL SEALED AND SIGNED DRAWING IS ON FILE IN THE CENTRAL OFFICE.	 ROAD AND BRIDGE STANDARDS	
700	SIGNAL POLE DETAILS MAST ARM SIGNAL POLE MAXIMUM LOADING STANDARDS VIRGINIA DEPARTMENT OF TRANSPORTATION		REVISION DATE 08/17

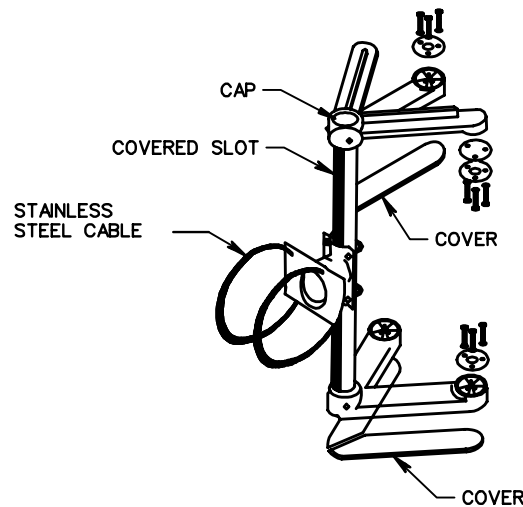


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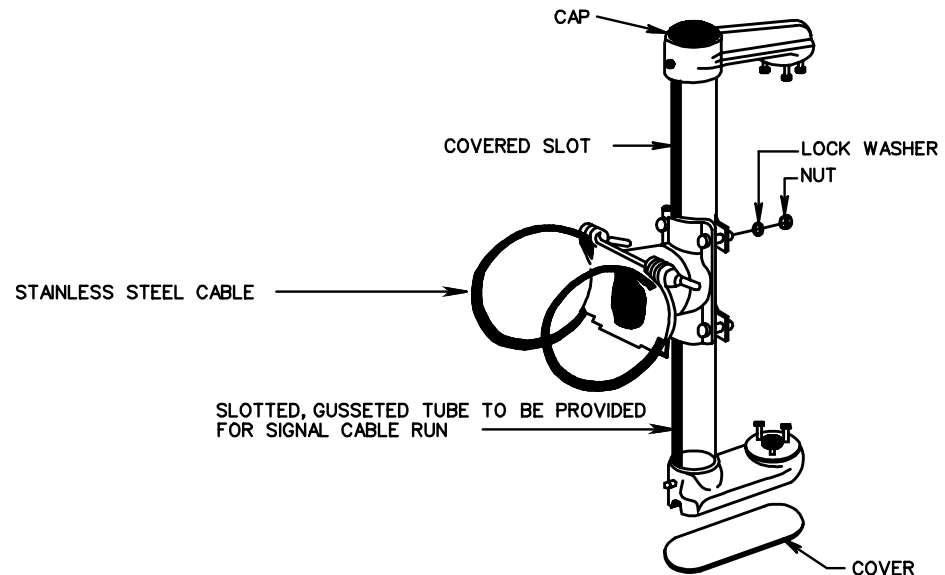
SIGNAL HEAD CABLES SHALL BE CONTINUOUS FROM THE CONTROLLER TO THE NEAREST SIGNAL HEAD TO WHICH IT APPLIES EXCEPT CABLE TERMINATIONS MAY BE ALLOWED ON THE POLE TERMINAL STRIP WHEN REQUIRED BY THE PLANS. THE CABLE SHALL ALSO BE CONTINUOUS FROM THE FIRST SIGNAL HEAD TO ANY ADDITIONAL HEADS WITH TERMINATION ON THE TERMINALS WITHIN THE SIGNAL HEAD HOUSING.

**POLE AND HANGER ASSEMBLY
HARDWARE REQUIREMENTS**

POLE TYPE	HARDWARE TYPE
GALVANIZED STEEL	ALUMINUM OR GALVANIZED IRON
STEEL PAINTED ALUMINUM	ALUMINUM, GALVANIZED IRON OR IRON PAINTED ALUMINUM
STEEL PAINTED OTHER THAN ALUMINUM	ALUMINUM OR IRON PAINTED TO MATCH POLE



**5 SECTION CLUSTER
MOUNTING DETAIL**

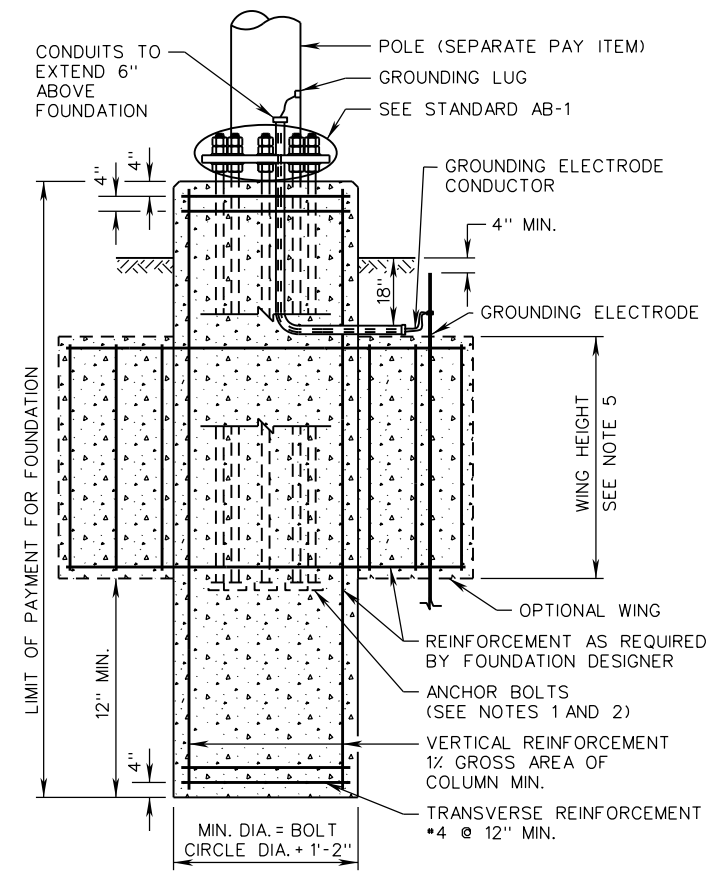
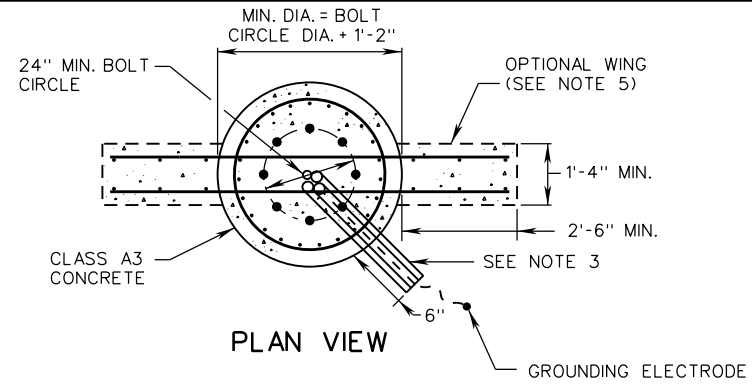


RIGID MAST ARM MOUNTING DETAILS

SPECIFICATION REFERENCE	SIGNAL HEAD MOUNTING DETAILS	VDOT	
		ROAD AND BRIDGE STANDARDS	
703	MAST ARM	REVISION DATE	SHEET 1 OF 1
		1303.30	

NOTES:

1. ANCHOR BOLTS SHALL BE AS PER STANDARD AB-1.
2. ANCHOR BOLT LAYOUT SHALL BE CHECKED AGAINST LATEST APPROVED STRUCTURE DRAWINGS.
 - A. FOR MAST ARM SIGNAL POLE FOUNDATIONS, A MINIMUM OF EIGHT (8) 2-INCH DIAMETER ANCHOR BOLTS ARE REQUIRED. TYPE A AND TYPE D POLES MAY BE INSTALLED WITH SIX (6) 2-INCH DIAMETER ANCHOR BOLTS IN THE EIGHT-BOLT DESIGN CIRCLE IF THE CONTRACTOR'S DESIGN CALCULATIONS DEMONSTRATE THAT SIX BOLTS WILL BE SUFFICIENT FOR THE DESIGN AND LOADING REQUIREMENTS.
 - B. FOR HIGH MAST LIGHT POLE FOUNDATIONS, A MINIMUM OF TWELVE (12) TWO-INCH DIAMETER ANCHOR BOLTS ARE REQUIRED.
3. ALL CONDUITS AS SPECIFIED IN THE CONTRACT DOCUMENTS. IN ADDITION 1 - 1" MIN. CONDUIT REQUIRED FOR GROUNDING ELECTRODE CONDUCTOR. 2 - 2" PVC CONDUITS REQUIRED FOR FUTURE USE. NOTE THAT ADDITIONAL SPARE CONDUITS MAY BE REQUIRED BY THE CONTRACT DOCUMENTS.
4. IN STEEP SLOPE CONDITIONS, THE 4'-0" MAXIMUM CLEARANCE ON THE DOWNSLOPE SIDE MAY BE EXCEEDED IF APPROVED BY THE ENGINEER. THE 12" MINIMUM CLEARANCE ON THE UPSLOPE SIDE SHALL NOT BE DECREASED.
5. FOUNDATION SHALL BE DESIGNED FOR TORSION. WINGS MAY BE USED FOR TORSIONAL RESISTANCE IF REQUIRED BY FOUNDATION DESIGNER. IF TORSION WINGS ARE PROVIDED, THE ANGLE BETWEEN THE TWO TORSION WINGS SHALL NORMALLY BE 180°, BUT MAY VARY FROM 90° TO 180° DEPENDING ON SITE CONDITIONS.
6. ANCHOR BOLTS AND BOLT TEMPLATE SHALL BE FURNISHED WITH POLE. POLE SHALL BE CENTERED ON FOUNDATION.
7. EACH FOUNDATION SHALL BE PERMANENTLY MARKED TO INDICATE ALL SIDES FROM WHICH CONDUITS PASS. THIS MARK SHALL BE MADE WITH A TROWEL WHEN FINISHING THE CONCRETE AND SHALL BE 1/4" DEEP AND 4" TO 6" LONG. LOCATIONS OF EMPTY CONDUITS SHALL HAVE AN ADDITIONAL 2" LONG MARK MADE PERPENDICULAR TO AND CENTERED ON THIS MARKING.
8. NO MORTAR, GROUT, OR CONCRETE SHALL BE PLACED BETWEEN BOTTOM OF BASE PLATE AND TOP OF FOUNDATION.
9. HEIGHT, WIDTH, DEPTH, AND REINFORCEMENT OF FOUNDATION SHALL BE AS REQUIRED BY FOUNDATION DESIGNER.
10. FOUNDATIONS SHALL NOT BE INSTALLED IN THE CENTER OF A DRAINAGE DITCH. IF APPROVED BY THE ENGINEER, FOUNDATIONS MAY BE INSTALLED IN THE SLOPE OF A DRAINAGE DITCH AT AN APPROVED HEIGHT ABOVE GRADE. THE FOUNDATION SHALL NOT BE PLACED IN THE FRONT SLOPE UNLESS THE ENGINEER DETERMINES THAT BACK SLOPE PLACEMENT IS NOT FEASIBLE.
11. THE EDGE OF THE FOUNDATION SHALL BE 1'-0" MIN. FROM THE EDGE OF A PEDESTRIAN PATH, OR 3'-0" MIN. FROM THE EDGE OF A SHARED USE PATH (SEE DETAIL B). IF APPROVED BY THE ENGINEER, FOUNDATIONS MAY BE PLACED IMMEDIATELY ADJACENT TO PEDESTRIAN PATH OR SHARED USE PATH.
12. SPREAD FOOTING MAY BE USED IF APPROVED BY THE ENGINEER.
13. SEE STANDARD VS-1 FOR VARMINT SCREEN DETAILS.



SIDE VIEW

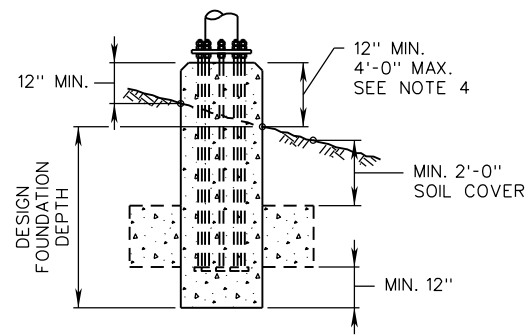
A COPY OF THE ORIGINAL SEALED AND SIGNED DRAWING IS ON FILE IN THE CENTRAL OFFICE.

VDOT	
ROAD AND BRIDGE STANDARDS	
SHEET 1 OF 2	REVISION DATE
1310.12	07/16

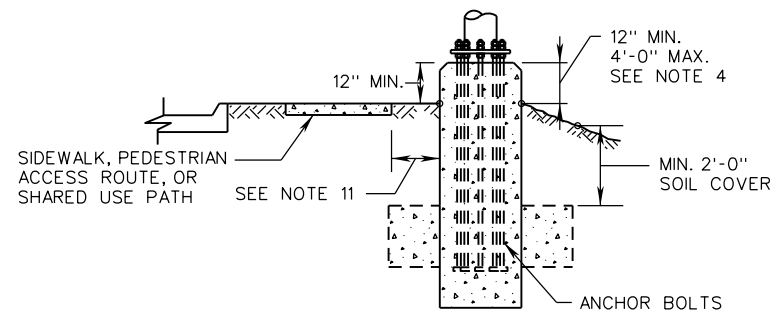
SIGNAL AND HIGH MAST LIGHT POLE FOUNDATION INSTALLATION DETAILS

VIRGINIA DEPARTMENT OF TRANSPORTATION

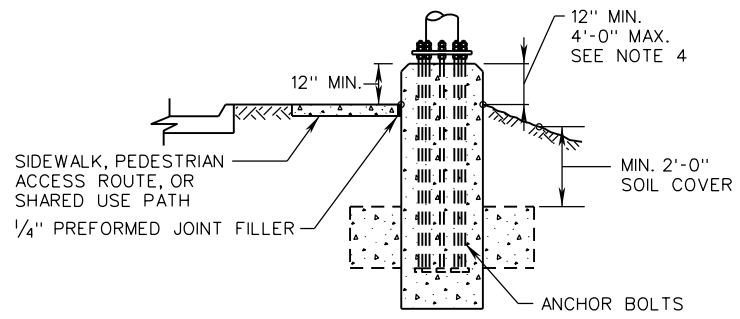
SPECIFICATION REFERENCE
700



DETAIL A
 FOUNDATION NOT ADJACENT TO
 PEDESTRIAN PATH DETAIL



DETAIL B
 FOUNDATION ADJACENT TO
 PEDESTRIAN PATH DETAIL



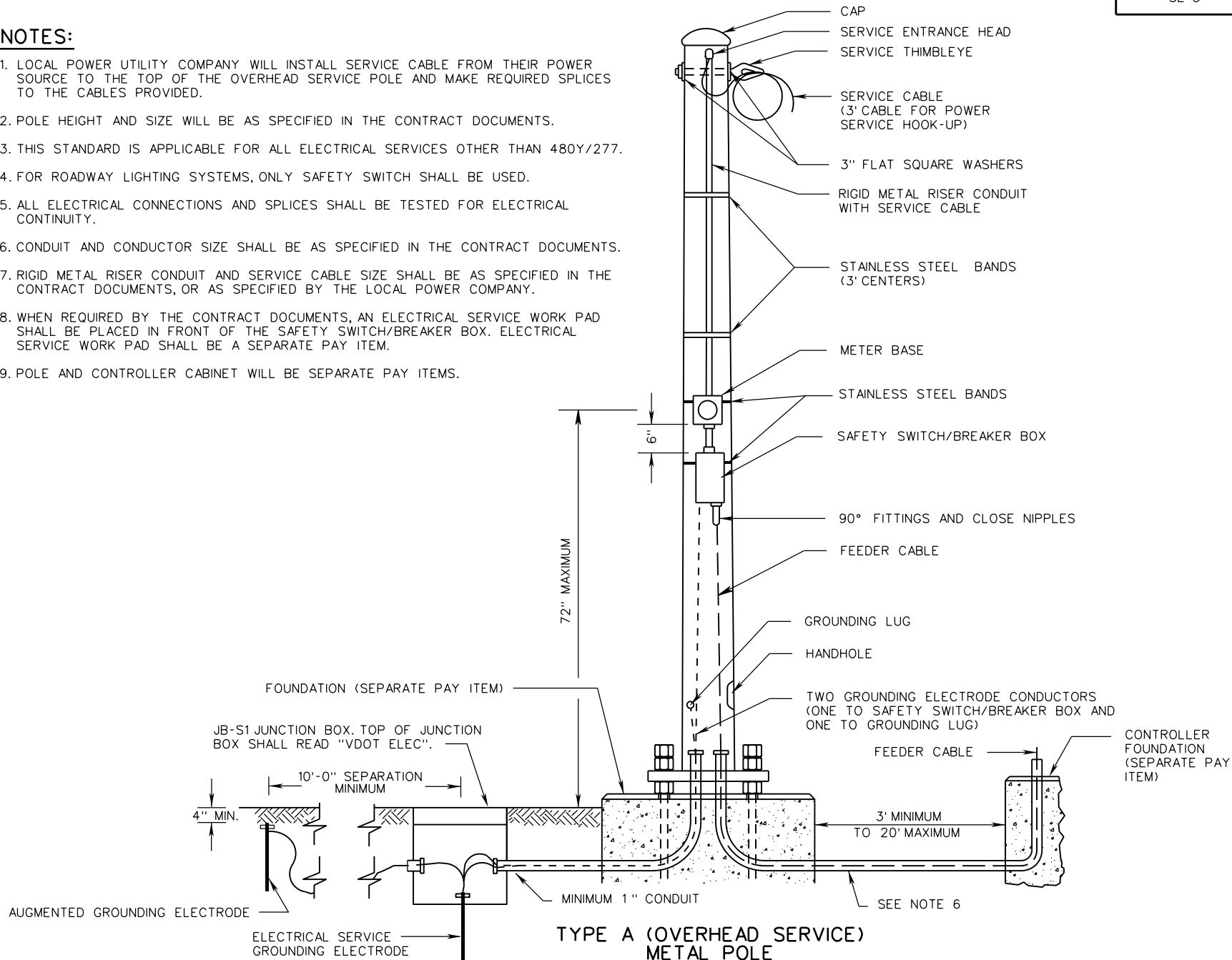
DETAIL C
 ALTERNATE FOUNDATION ADJACENT TO
 PEDESTRIAN PATH DETAIL
 (IF APPROVED BY THE ENGINEER)

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SPECIFICATION REFERENCE	SIGNAL AND HIGH MAST LIGHT POLE FOUNDATION INSTALLATION DETAILS	VDOT ROAD AND BRIDGE STANDARDS
700		

NOTES:

1. LOCAL POWER UTILITY COMPANY WILL INSTALL SERVICE CABLE FROM THEIR POWER SOURCE TO THE TOP OF THE OVERHEAD SERVICE POLE AND MAKE REQUIRED SPLICES TO THE CABLES PROVIDED.
2. POLE HEIGHT AND SIZE WILL BE AS SPECIFIED IN THE CONTRACT DOCUMENTS.
3. THIS STANDARD IS APPLICABLE FOR ALL ELECTRICAL SERVICES OTHER THAN 480Y/277.
4. FOR ROADWAY LIGHTING SYSTEMS, ONLY SAFETY SWITCH SHALL BE USED.
5. ALL ELECTRICAL CONNECTIONS AND SPLICES SHALL BE TESTED FOR ELECTRICAL CONTINUITY.
6. CONDUIT AND CONDUCTOR SIZE SHALL BE AS SPECIFIED IN THE CONTRACT DOCUMENTS.
7. RIGID METAL RISER CONDUIT AND SERVICE CABLE SIZE SHALL BE AS SPECIFIED IN THE CONTRACT DOCUMENTS, OR AS SPECIFIED BY THE LOCAL POWER COMPANY.
8. WHEN REQUIRED BY THE CONTRACT DOCUMENTS, AN ELECTRICAL SERVICE WORK PAD SHALL BE PLACED IN FRONT OF THE SAFETY SWITCH/BREAKER BOX. ELECTRICAL SERVICE WORK PAD SHALL BE A SEPARATE PAY ITEM.
9. POLE AND CONTROLLER CABINET WILL BE SEPARATE PAY ITEMS.



TYPE A (OVERHEAD SERVICE) METAL POLE

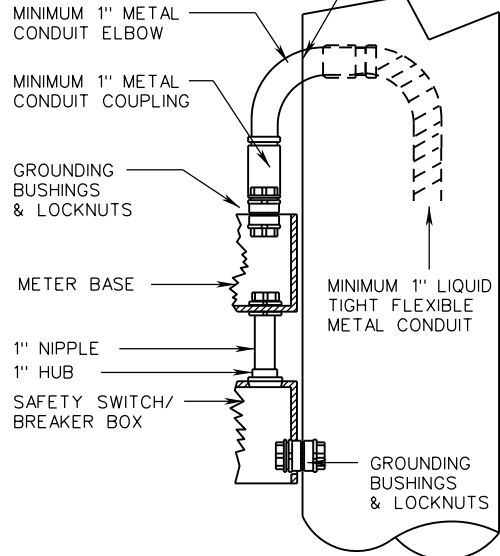
SPECIFICATION REFERENCE	A COPY OF THE ORIGINAL SEALED AND SIGNED DRAWING IS ON FILE IN THE CENTRAL OFFICE.		VDOT ROAD AND BRIDGE STANDARDS
	700	ELECTRICAL SERVICE INSTALLATION DETAILS VIRGINIA DEPARTMENT OF TRANSPORTATION	
			SHEET 1 OF 2 1312.30

SE-3

NOTES:

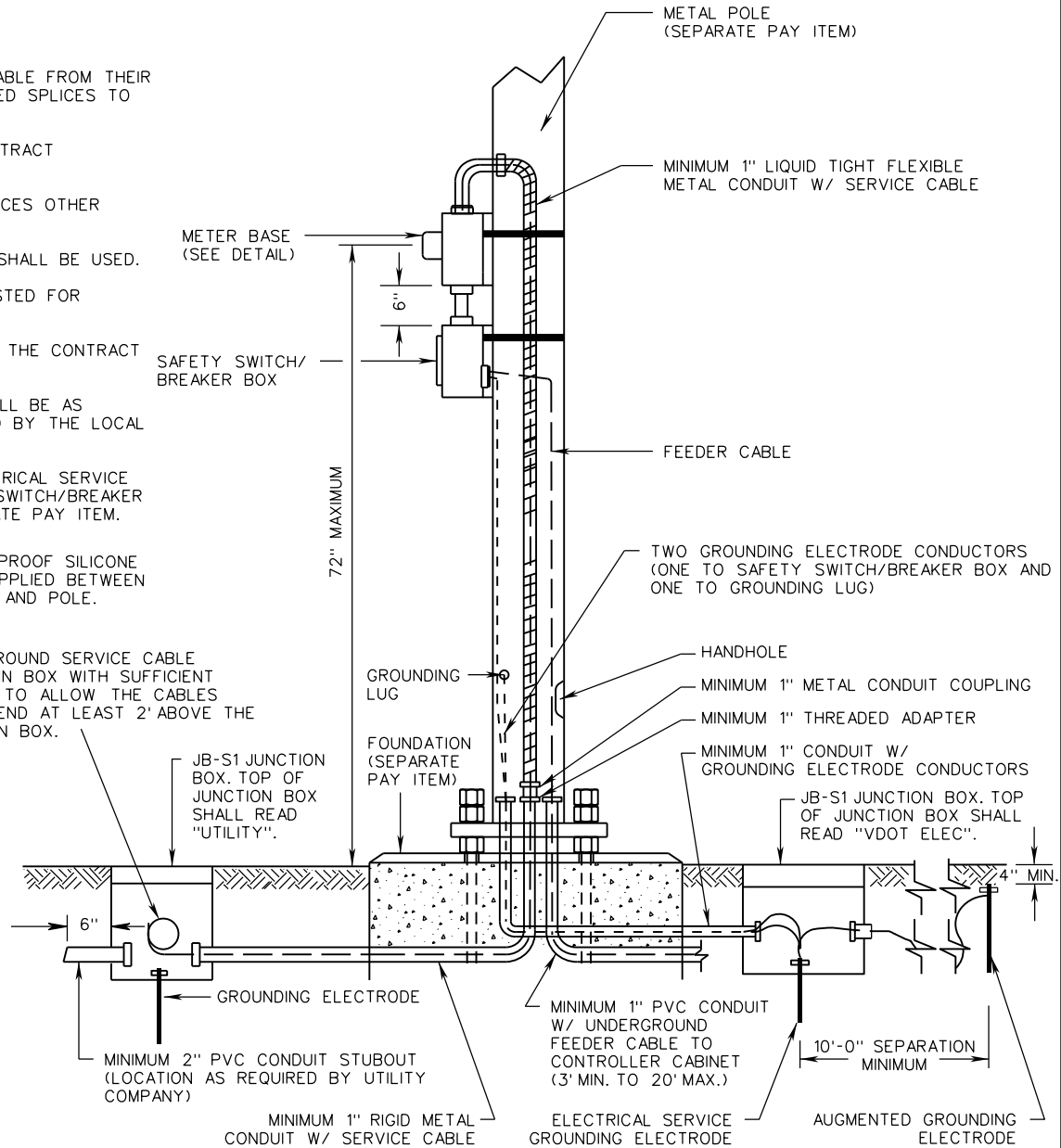
1. LOCAL POWER UTILITY COMPANY WILL INSTALL SERVICE CABLE FROM THEIR POWER SOURCE TO THE JUNCTION BOX AND MAKE REQUIRED SPLICES TO THE CABLES PROVIDED.
2. POLE HEIGHT AND SIZE WILL BE AS SPECIFIED IN THE CONTRACT DOCUMENTS.
3. THIS STANDARD IS APPLICABLE FOR ALL ELECTRICAL SERVICES OTHER THAN 480Y/277.
4. FOR ROADWAY LIGHTING SYSTEMS, ONLY SAFETY SWITCH SHALL BE USED.
5. ALL ELECTRICAL CONNECTIONS AND SPLICES SHALL BE TESTED FOR ELECTRICAL CONTINUITY.
6. CONDUIT AND CONDUCTOR SIZE SHALL BE AS SPECIFIED IN THE CONTRACT DOCUMENTS.
7. RIGID METAL RISER CONDUIT AND SERVICE CABLE SIZE SHALL BE AS SPECIFIED IN THE CONTRACT DOCUMENTS, OR AS SPECIFIED BY THE LOCAL POWER COMPANY.
8. WHEN REQUIRED BY THE CONTRACT DOCUMENTS, AN ELECTRICAL SERVICE WORK PAD SHALL BE PLACED IN FRONT OF THE SAFETY SWITCH/BREAKER BOX. ELECTRICAL SERVICE WORK PAD SHALL BE A SEPARATE PAY ITEM.

AN APPROVED WATERPROOF SILICONE SEALANT SHALL BE APPLIED BETWEEN THE CONDUIT ELBOW AND POLE.



DETAIL FOR CONNECTION OF CONDUIT TO METER BASE

UNDERGROUND SERVICE CABLE COILED IN BOX WITH SUFFICIENT LENGTH TO ALLOW THE CABLES TO EXTEND AT LEAST 2' ABOVE THE JUNCTION BOX.



TYPE B (UNDERGROUND SERVICE) METAL POLE

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**ELECTRICAL SERVICE
INSTALLATION DETAILS**

VIRGINIA DEPARTMENT OF TRANSPORTATION

SPECIFICATION
REFERENCE

700



ROAD AND BRIDGE STANDARDS

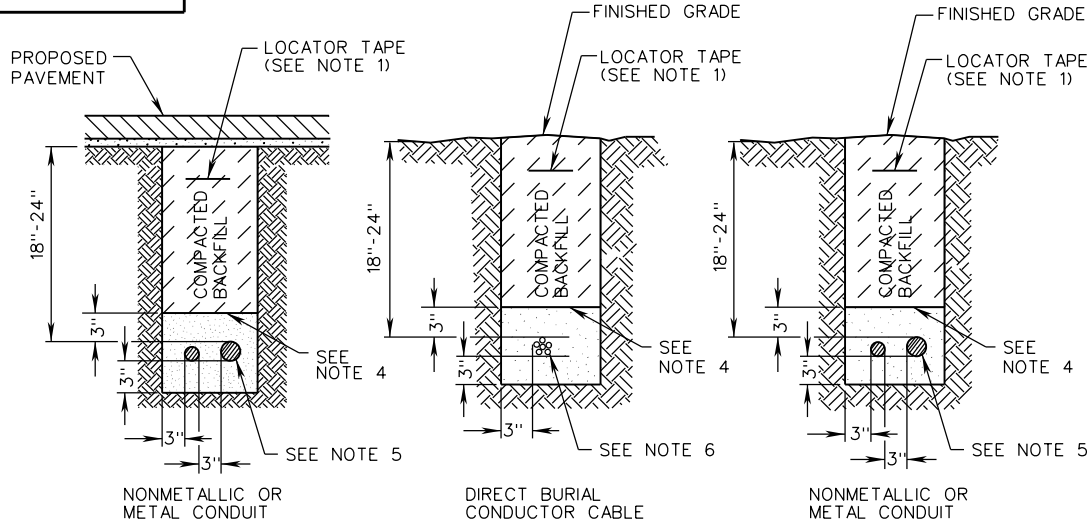
SHEET 2 OF 2

REVISION DATE

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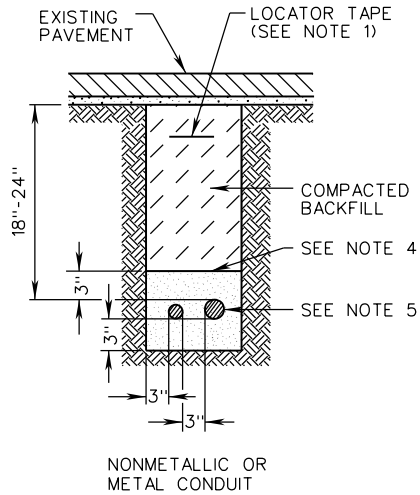
ECI-1



NON - PAVEMENT AND PROPOSED PAVEMENT AREA INSTALLATION

ECI-2

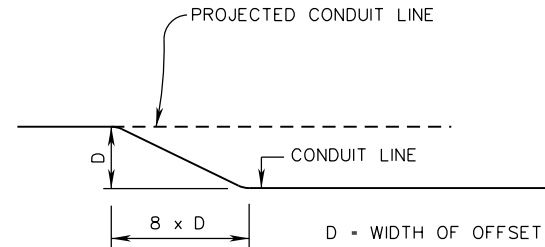
PAVEMENT SHALL BE RESTORED IN ACCORDANCE WITH THE CONTRACT DOCUMENTS.



EXISTING PAVEMENT AREA INSTALLATION

NOTES:

1. CONTRACTOR SHALL INSTALL A 2" MINIMUM TO 6" MAXIMUM WIDE RED DETECTABLE LOCATOR TAPE BETWEEN 6" AND 8" BELOW FINISHED GRADE, AND DIRECTLY ABOVE BURIED CONDUIT OR DIRECT BURIAL CONDUCTOR CABLE.
2. CONDUIT INSTALLED UNDER EXISTING OR PROPOSED ROADWAYS OR SIDEWALK FOR DIRECT BURIED CABLES SHALL EXTEND 24" BEYOND THE PAVED SURFACE AND/OR SIDEWALK.
3. WHERE CONDUIT FOR POWER AND CONDUIT FOR COMMUNICATION ARE TO BE INSTALLED IN CLOSE PROXIMITY TO EACH OTHER, CONDUITS SHALL BE PLACED PARALLEL IN A COMMON TRENCH WITH NO LESS THAN 6" OF SEPARATION BETWEEN CONDUIT SYSTEMS.
4. BACKFILL MATERIAL BELOW THIS LEVEL SHALL BE SANDY FILL (FREE OF ANY STONES, CINDERS, WOOD, ROOTS, DEBRIS, ETC.).
5. ONE OR MORE CONDUITS AS REQUIRED.
6. ONE OR MORE CONDUCTOR CABLES AS REQUIRED.
7. OFFSETTING OF CONDUIT MAY BE USED FOR TYING INTO EXISTING CONDUIT SYSTEMS OR BYPASSING OBSTRUCTIONS AS DIRECTED BY THE ENGINEER.
8. WHEN OFFSETTING CONDUIT TO BYPASS AN OBSTRUCTION, THE CONDUIT SHALL MAINTAIN A MINIMUM CLEARANCE OF 12" FROM THE CLOSEST POINT OF THE OBSTRUCTION.



METHOD OF OFFSETTING CONDUIT



ROAD AND BRIDGE STANDARDS

SHEET 1 OF 1

REVISION DATE

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ELECTRICAL CONDUIT AND CONDUCTOR CABLE

UNDERGROUND INSTALLATION

VIRGINIA DEPARTMENT OF TRANSPORTATION

SPECIFICATION REFERENCE

700
302