

ELECTRICAL REQUIREMENTS FOR NEW POLE INSTALLATION

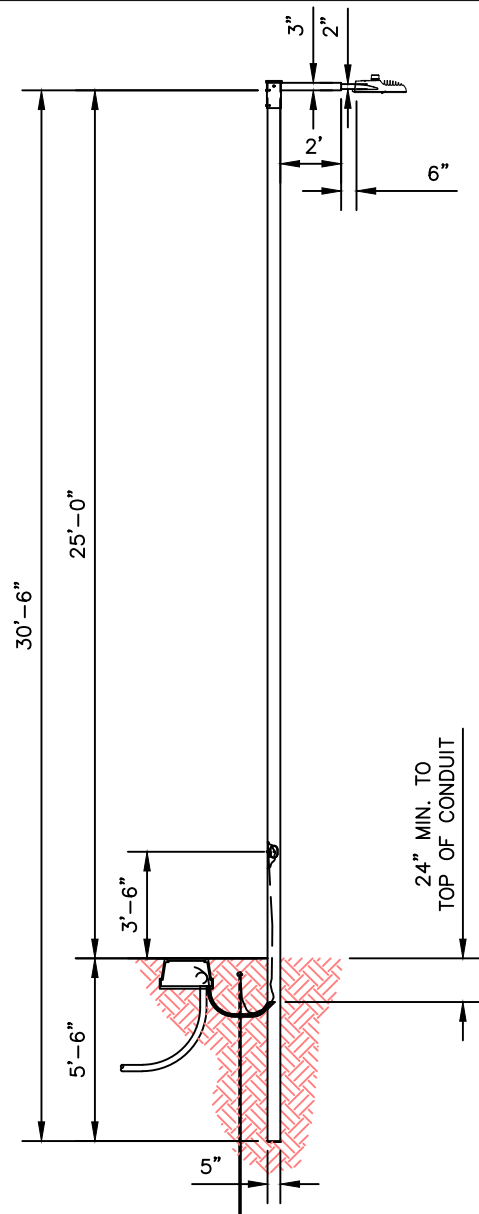
1. JUNCTION BOXES SHALL MEET UTILITY COMPANY STANDARDS.
2. CONDUIT, CONDUCTORS, AND FUSE HOLDERS SHALL BE LISTED AND LABELED FOR USE IN A WET LOCATION WHEN USED IN A JUNCTION BOX. NEC300.5(B), 310.8(C)
3. IN-LINE FUSE HOLDER USED IN HAND HOLE OR SERVICE DROP SHALL BE CONSIDERED AS DISCONNECTING MEANS. FUSE HOLDERS TO BE RATED AT 22,000 AIC MINIMUM. NEC 240.40
4. ELECTRICAL CONNECTIONS—CONDUCTORS OF DISSIMILAR METALS SHALL NOT BE INTERMIXED IN A TERMINAL OR SPLICING CONNECTOR WHERE PHYSICAL CONTACT OCCURS BETWEEN DISSIMILAR CONDUCTORS, (COPPER, ALUMINUM) UNLESS THE DEVICE IS IDENTIFIED FOR THE PURPOSE AND CONDITIONS OF USE. NEC 110.14
5. ELECTRICAL CONNECTIONS OR SPLICES IN AN UNDERGROUND INSTALLATION SHALL BE APPROVED FOR WET LOCATIONS. NEC 300.5
6. NON-CURRENT CARRYING CONDUCTIVE MATERIALS ENCLOSING ELECTRICAL CONDUCTORS OR EQUIPMENT, OR FORMING PART OF SUCH EQUIPMENT, SHALL BE CONNECTED TO EARTH IN A MANNER THAT WILL LIMIT THE VOLTAGE IMPOSED BY LIGHTNING OR UNINTENTIONAL VOLTAGE DUE TO SHORT CIRCUITS AND LIMIT THE VOLTAGE TO GROUND ON THESE MATERIALS. NEC 250.4(B) (GROUND RODS)
7. AN EQUIPMENT GROUNDING CONDUCTOR SHALL BE INSTALLED FROM THE GROUND LUG IN THE HAND-HOLE TO THE LUMINAIRE WITH THE CURRENT CARRYING CONDUCTORS. NEC 410.30(B)(3).
8. CONNECTION TO THE GROUND ROD AND THE GROUNDING ELECTRODE SHALL BE LISTED AND LABELED FOR USE. NEC 250.8
9. CONNECT #6 BARE COPPER WIRE FROM THE GROUND ROD ADJACENT TO THE POLE TO THE GROUND LUG IN THE POLE.

CONSTRUCTION NOTES:

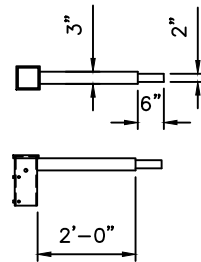
1. ADJUST PHOTO EYE TO FACE NORTH.
2. IN LOCATIONS WHERE A GROUND ROD CANNOT BE DRIVEN, AN ALTERNATE GROUND SHALL BE USED. SEE APS STANDARDS 2449 THRU 2460 FOR APPROVED ALTERNATES.
3. THE 40'-6" SELF-SUPPORTING STEEL POLE AND ONE OF THE 38'-0" POLES HAVE TWO MANUFACTURED INSTALLED SIMPLEX FITTINGS 180° APART FOR DOUBLE ARMS.
4. APS PART NUMBER (APN) 33701054 IS A POLE BAND ADAPTOR WITH A SIMPLEX FITTING FOR ROUND POLES. AN ADAPTOR IS REQUIRED FOR THE SECOND ARM IN DOUBLE ARM APPLICATIONS ON EXISTING POLES IN THE FIELD WITHOUT TWO SIMPLEX FITTINGS. SEE APS STANDARD 8198 FOR AVAILABLE SIZES.
5. POLES THAT HAVE MORE THAN ONE LUMINAIRE REQUIRE A SEPARATE CIRCUIT WITH FUSING FROM THE J-BOX TO EACH LUMINAIRE.
6. REFER TO DETAIL NO. G-3250-8 AND APS STANDARDS 8130 THRU 8143 FOR IN-LINE FUSE FOR UNDERGROUND FEEDS.
7. REFER TO DETAIL NO. G-3250-10 AND APS STANDARDS 8100 THRU 8107 FOR OVERHEAD ATTACHMENTS.

20 YEAR PHOTOCELL REQUIREMENTS

PHOTO-ELECTRIC, BROWN, 20 YEAR FAIL OFF, 120/208/240/277 MULTI-VOLT, SILICON, SOLID STATE, 2.40 TO 3.60 FC ON 1.2 TO 2.4 FC OFF, 60 HERTZ, 320 JOULE MOV, INVERSE ON/OFF RATIO .6:1 +/- .1, FAIL OFF, SEVEN PIN NEMA TWISTLOCK, 20 YEAR LIFE.



LOCAL STREET  
(SEE NOTE 2)

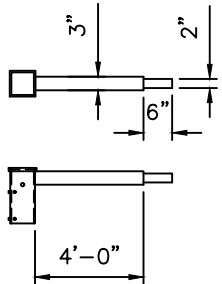


BRONZE SQUARE POLE  
LUMINAIRE ARMS

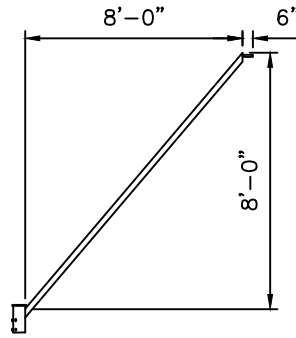
POLE TYPE	APS POLE CODE	POLE LENGTH	BURY DEPTH	POLE ABOVE GROUND	LUMINAIRE HEIGHT ABOVE GROUND			
					1FT ARM	2FT ARM	4FT ARM	8FT ARM
PEDESTRIAN	1940.20	20' - 0"	5' - 0"	15' - 0"	15'-0"	15'-0"	15'-0"	--
LOCAL	1940.30	30' - 6"	5' - 6"	25' - 0"	25'-0"	25'-0"	25'-0"	33'-0"
COLLECTOR	1940.34	34' - 0"	6' - 0"	28' - 0"	28'-0"	28'-0"	28'-0"	36'-0"
ARTERIAL	1940.38	38' - 0"	6' - 6"	31' - 6"	31'-6"	31'-6"	31'-6"	39'-6"

NOTES:

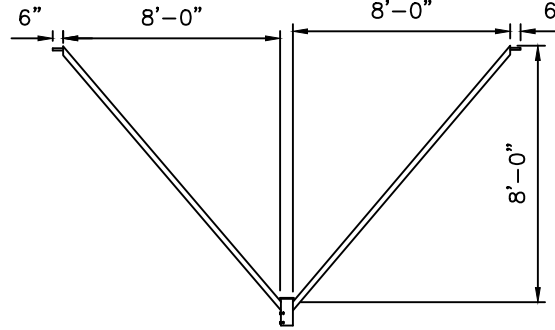
1. THIS STANDARD SHALL BE USED FOR LOCAL STREET AND PEDESTRIAN APPLICATIONS. ANY OTHER USE OF DIRECT BURY LIGHT POLES SHALL BE APPROVED BY THE CITY.
2. SEE TABLE FOR PEDESTRIAN POLE DIMENSIONS.
3. REFER TO DETAIL NO. G-3250-6 FOR SONO TUBE INSTALLATION DETAILS.



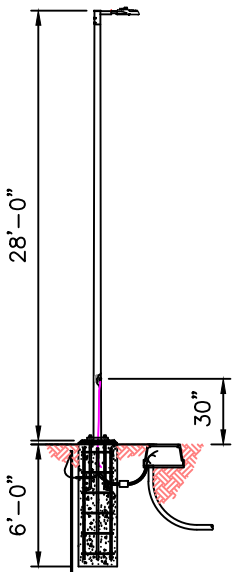
BRONZE SQUARE POLE  
LUMINAIRE ARMS



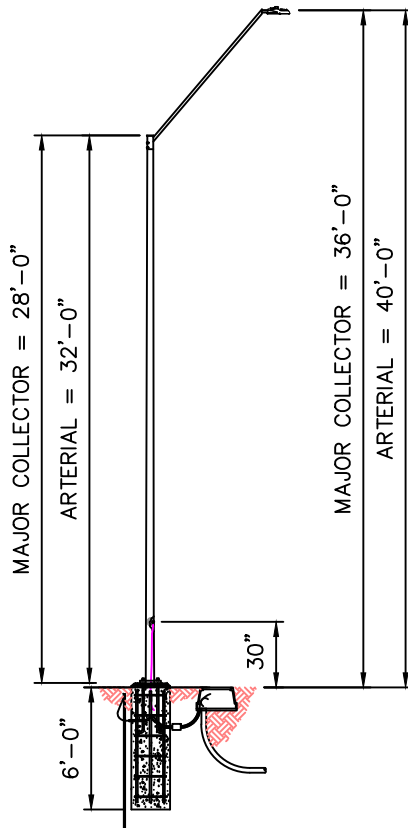
SINGLE ARM



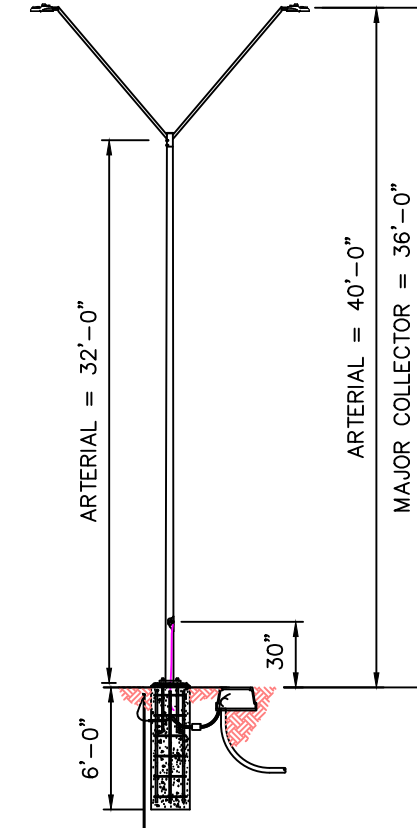
DOUBLE ARM



MINOR  
COLLECTOR



MAJOR  
COLLECTOR/ARTERIAL

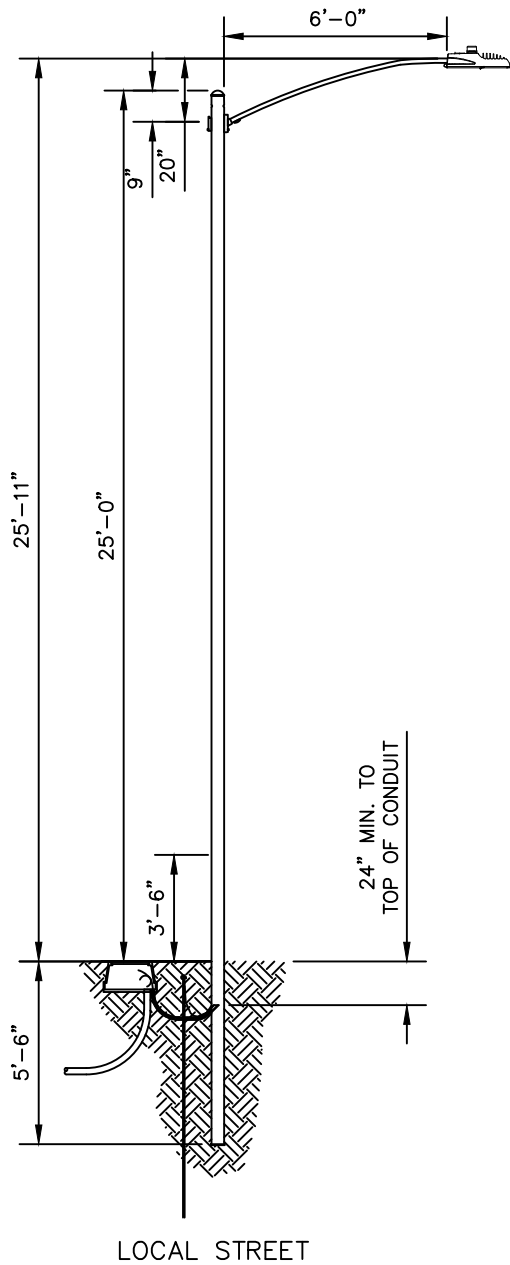


MAJOR  
COLLECTOR/  
ARTERIAL MEDIAN MOUNTED

POLE TYPE	POLE CODE	POLE LENGTH	LUMINAIRE HEIGHT ABOVE GROUND	
			4FT ARM	8FT ARM
MINOR COLLECTOR	1946S28	28'-0"	28'-0"	36'-0"
MAJOR COLLECTOR	1946S28	28'-0"	28'-0"	36'-0"
ARTERIAL	1946S32	32'-0"	32'-0"	40'-0"

NOTES:

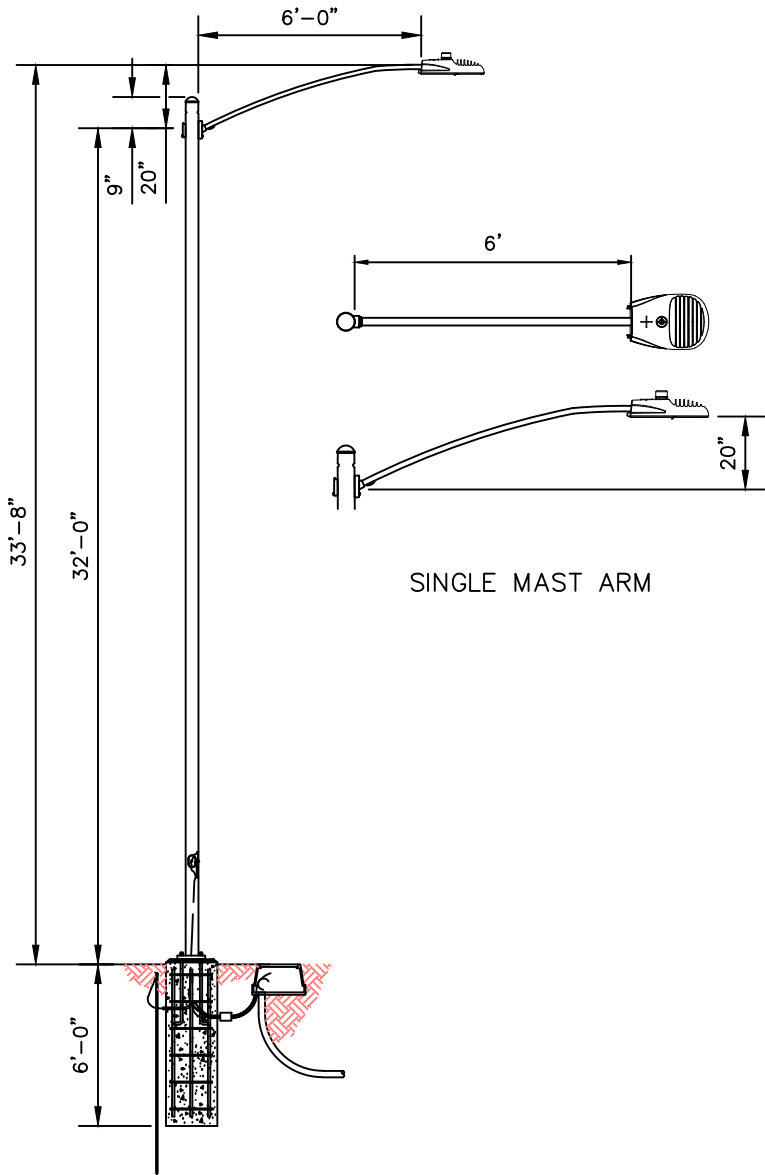
1. ALL POLES ARE TO BE DESIGNED PER A.A.S.H.T.O. - 80 SPECIFICATIONS.
2. ALL TUBING IS TO BE A.S.T.M. A500 GRADE B (46,000 P.S.I. MIN YIELD).
3. REFER TO DETAIL NO. G-3250-7 FOR FOUNDATION DETAILS.



POLE TYPE	POLE CODE	POLE LENGTH	BURY DEPTH	POLE ABOVE GROUND	POLE BUTT DIAMETER		WEIGHT	LUMINAIRE HEIGHT ABOVE GROUND ON ARM		
					STEP	TAPER		20"x6'	3'x8'	8'x8'
LOCAL	1944.30	30' - 6"	5' - 6"	25' - 0"	5-9/16"	7-5/16"	460	25'-11"	27'-3"	--
COLLECTOR	1944.38	38' - 6"	6' - 6"	32' - 0"	6-5/8"	9-3/4"	640	32'-11"	34'-3"	39'-3"
ARTERIAL	1944.38X	38' - 6"	6' - 6"	32' - 0"	6-5/8"	9-3/4"	640	32'-11"	34'-3"	39'-3"

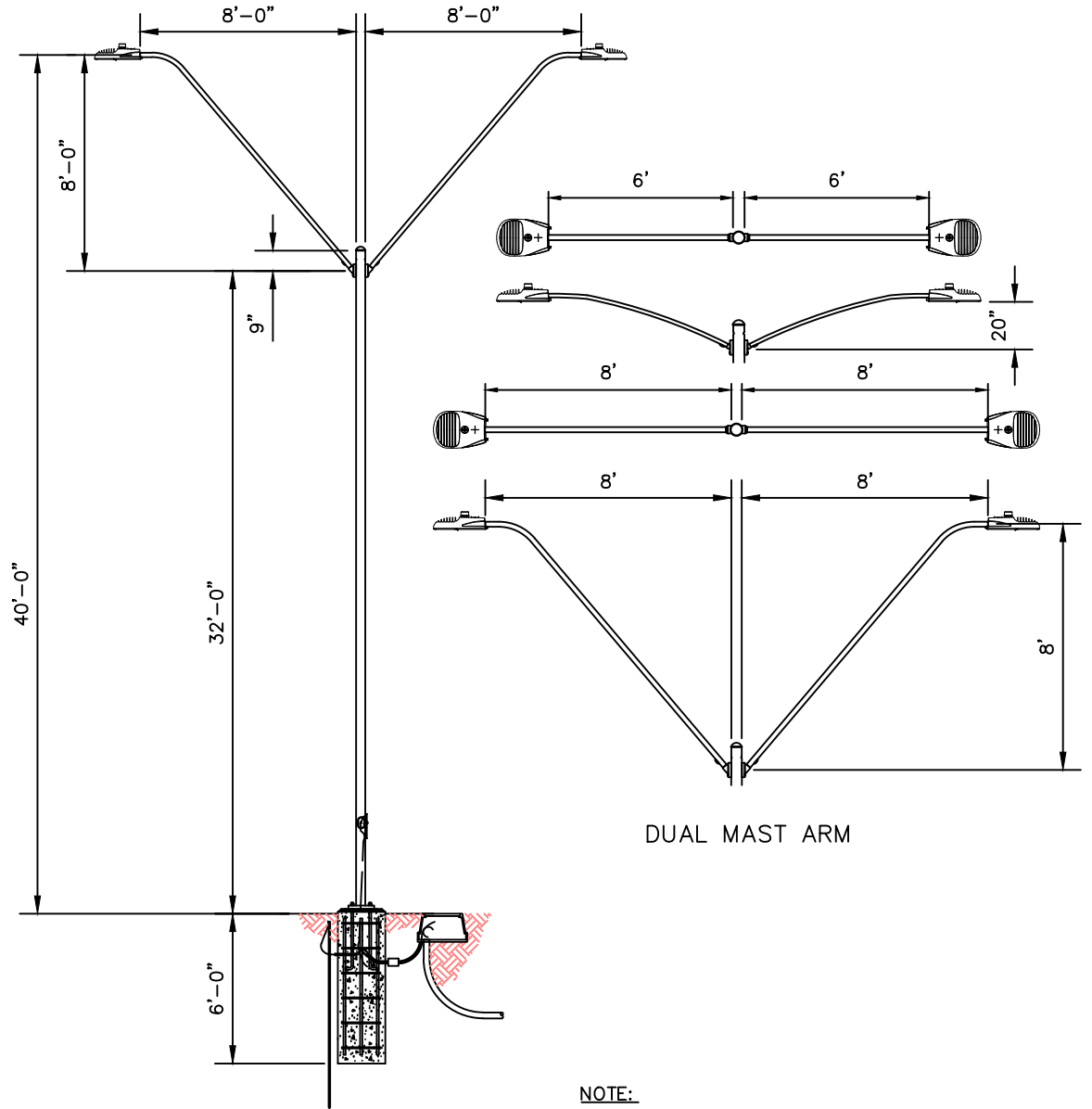
**NOTE:**

1. THIS STANDARD SHALL BE USED ON LOCAL STREETS WHERE EXISTING GRAY ROUND POLES ARE IN PLACE. ANY OTHER USE OF THIS STANDARD SHALL BE APPROVED BY THE CITY.
2. REFER TO DETAIL NO. G-3250-6 FOR SONO TUBE INSTALLATION DETAILS.



SINGLE MAST ARM

COLLECTOR & ARTERIAL

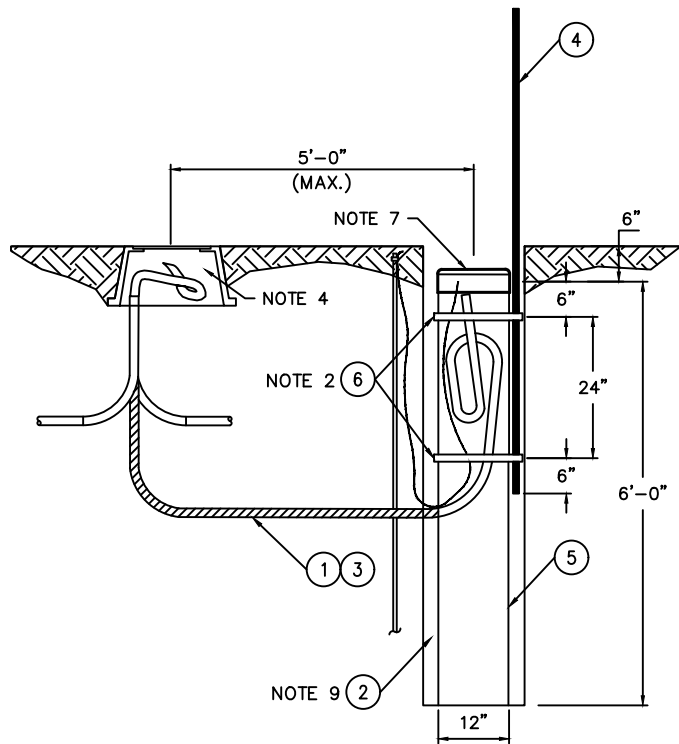


DUAL MAST ARM

ARTERIAL  
MEDIAN MOUNTED

NOTE:

1. REFER TO DETAIL NO. G-3250-7 FOR FOUNDATION DETAILS.

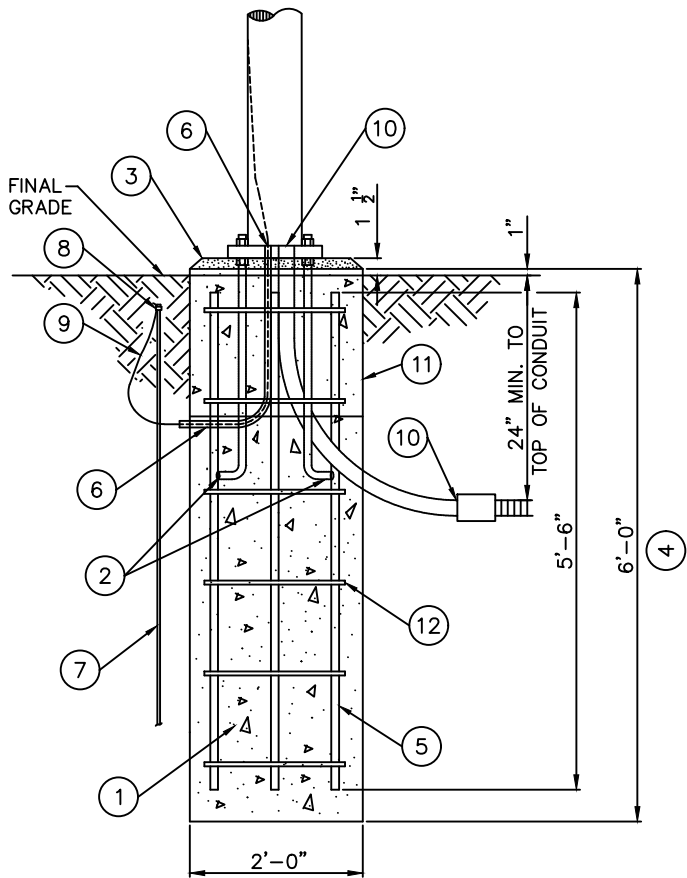


MATERIAL LIST	
1	CONDUIT 1" PVC FLEX CORR
2	FOAM BACKFILL 20 LB KIT
3	LINE PULLING FLAT STRAP
4	LOCATOR UNDERGROUND SERVICE
5	SONO TUBE 6 FT X 12 IN
6	TIE CABLE 30" BLACK NYLON

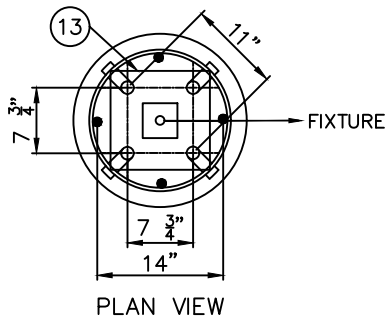
### CONSTRUCTION NOTES:

#### TUBE INSTALLATION:

1. DIG HOLE FOR TUBE 6'-6" DEEP BY EITHER OF THE FOLLOWING:
    - A. AUGERED HOLE: 18" DIAMETER (SEE NOTE 3).
    - B. SLOTTED STUB-OUT TRENCH: THE STUB-OUT TRENCH OPTION SHALL NOT EXCEED A 24" WIDTH AND LENGTH NOT TO EXCEED 18 INCHES BEYOND POLE PLACEMENT. THIS WILL MAINTAIN THREE SIDES OF UNDISTURBED SOIL AROUND POLE.
  2. PLACE RED PLASTIC LOCATOR MARKER OUTSIDE OF TUBE AND SECURE WITH SELF-LOCKING TIES IN TWO LOCATIONS.
  3. STREET LIGHT ONLY HOLES FOR SONO TUBES SHALL BE AUGERED WITH AN 18" OR 20" MAX. AUGER.
  4. PLACE STREET LIGHT FLEXIBLE CONDUIT IN TUBE WITH APPROXIMATELY 10FT COILED INSIDE. DO NOT MAKE SHARP BENDS. BEND END OF CONDUIT OVER AND INSERT DOWN INTO TUBE AS SHOWN. INSPECTOR TO ENSURE FLEX IS NOT KINKED AND PULL LINE IS INSTALLED IN FLEX.
  5. INSTALL THE OTHER END OF FLEX IN THE J-BOX. LEAVE SMALL COIL TO ALLOW LEVELING FOR FINAL GRADE. AFTER INSPECTION, BACKFILL.
  6. STRAIGHTEN AND COMPACT SOIL TO AT LEAST 85% COMPACTION AROUND TUBE.
- POLE INSTALLATION:
7. ELECTRONIC MARKER WILL MARK LID LOCATION THROUGH BLUE STAKE NOTICE, LIGHT INSTALLER DIGS DOWN TO LID, REMOVES LID AND PULLS FLEX TUBE.
  8. INSERT END OF FLEX THROUGH ACCESS HOLE AND PUSH IT UP THROUGH HAND HOLE AS LIGHT POLE IS LOWERED INTO TUBE.
  9. HOLD LIGHT POLE SECURELY WHILE BACKFILLING TO AT LEAST 85% COMPACTION. COMPACTION CAN BE OBTAINED BY EITHER OF THE FOLLOWING TWO METHODS:
    - A. BACKFILL FOAM IS PREFERRED TO SET POLE IN SONO TUBE.
    - B. SPECIAL ORDER PEA GRAVEL MAY BE USED TO COMPACT STREET LIGHT IN PLACE, (<3/4") SHOULD BE USED.
  10. THE MARKER BALL ATTACHED UNDER THE CAP OF THE SONO TUBE LID, SHOULD BE RETURNED TO STOCK.



FOUNDATION ELEVATION



PLAN VIEW

FOUNDATION NOTES

1. 3000 P.S.I. CLASS A CONCRETE PLACED NEXT TO UNDISTURBED EARTH.
2. 4 - 1"x36" GALVANIZED ANCHOR BOLTS WITH LEVELING NUTS & WASHERS. TACK WELD NUTS TO WASHERS AND WASHERS TO BASE PLATE AFTER TIGHTENING.
3. GROUT SHALL BE PORTLAND CEMENT CONCRETE WITH THE COARSE AGGREGATE OMITTED. SEE PAGE 2 OF 4 FOR REQUIREMENTS.
4. UNSTABLE SOILS, AND /OR POLE HEIGHTS OVER 40', SHALL REQUIRE SPECIAL ENGINEERING.
5. 4-#8 REBAR PER ASTM A 615-LATEST EDITION GRADE 60. REBAR SHALL BE TIED TOGETHER RATHER THAN TACK WELDED. REBAR SHALL NOT BE SET CLOSER THAN 3" TO ANY EXTERIOR SURFACE.
6. 1" PVC CONDUIT WITH CAPS.
7. 5/8"x8' COPPERCLAD GROUND ROD.
8. GROUND ROD CLAMP.
9. #6 SOLID BARE WIRE.
10. 2" PVC CONDUIT WITH CAPS.
11. SONO TUBE - 24" DIA x 18" LONG.
12. 6-#4 REBAR TIES W/12" LAP.
13. TEMPLATE - 11" BC, 1" AB.

CONSTRUCTION NOTES

1. ALL FINISHED POLE FOUNDATIONS SHALL BE CHAMFERED, AND AT SIDEWALK GRADE WHEN ADJACENT TO SIDEWALK. FOUNDATION SHALL BE 1" ABOVE FINAL GRADE WHEN NOT ADJACENT TO SIDEWALK.
2. CONDUIT SHALL EXTEND A MINIMUM OF 2" ABOVE THE FOUNDATION. INSTALL CONDUIT CAPS TO KEEP SWEEP FREE FROM DIRT DEBRIS DURING FOUNDATION CONSTRUCTION. DO NOT GLUE ON CAPS.
3. A MINIMUM OF 1-1/2" OF THE ANCHOR BOLT THREADS SHALL EXTEND BEYOND TOP SURFACE OF THE NUT.
4. HAND HOLE SHALL BE ORIENTED SO THAT IT IS ALIGNED WITH THE MAST ARM.
5. FOUNDATION SHALL BE Poured IN DRILLED HOLES.
6. FOUNDATION TO BE TROWELED SMOOTH WITH SLIGHT SLOPE TO PROMOTE MOISTURE RUNOFF FINISH WITH 1/2" ROUND EDGE. USE 18" DEEP SONO TUBE TO PROVIDE TOP WITH UNIFORM FOUNDATION. ANCHOR BOLT THREADS TO BE CLEAN OF CONCRETE OR DEBRIS FOR EASY INSTALLATION OF NUTS.
7. TEMPLATE SHALL BE REMOVED AFTER CONCRETE HAS SET, AND PRIOR TO INSTALLING POLE.
8. THE FOUNDATION MAY ALSO BE USED FOR DUAL MAST ARM POLES.
9. REFER TO PAGES 2 THRU 4 OF THIS DETAIL FOR MATERIAL AND CONSTRUCTION REQUIREMENTS.

1. MATERIAL

1.1. CONCRETE – GENERAL

PORTLAND CEMENT CONCRETE SHALL BE "READY MIXED" CONFORMING TO ASTM C94 TENTATIVE SPECIFICATIONS FOR "READY MIXED CONCRETE". CONCRETE SHALL NOT CONTAIN CALCIUM CHLORIDE.  
PORTLAND CEMENT USED SHALL BE TYPE I OR II PER ASTM C150 AND SHALL BE LOW-ALKALI (LESS THAN 0.6 PERCENT SODIUM EQUIVALENT AS DETERMINED BY SUMMATION OF THE PERCENTAGE OF SODIUM OXIDE PLUS 0.658 TIMES THE PERCENTAGE OF POTASSIUM OXIDE).

1.2. CLASSES OF CONCRETE

1.2.1. GENERAL PURPOSE

PORTLAND CEMENT CONCRETE SHALL BE CONSIDERED TO BE GENERAL PURPOSE. MINIMUM COMPRESSIVE STRENGTH AT 28 DAYS SHALL BE 3000 PSI. SLUMP SHALL BE 4" MINIMUM TO 6" MAXIMUM. MINIMUM CEMENT CONTENT SHALL BE 5 SACKS PER CUBIC YARD. MAXIMUM AGGREGATE SIZE SHALL BE 1".

1.2.2. GROUT UNDER STEEL BASE PLATES

GROUT USED UNDER STEEL BASE PLATES SHALL BE PORTLAND CEMENT CONCRETE WITH THE COARSE AGGREGATE OMITTED. MINIMUM COMPRESSIVE STRENGTH SHALL BE 4,000 PSI AT 28 DAYS. SLUMP SHALL BE THE MINIMUM PERMITTING PLACEMENT.

1.3. REINFORCING STEEL

1.3.1. REINFORCING BARS

REINFORCING BARS SHALL BE DEFORMED BILLET-STEEL BARS CONFORMING TO ASTM A615, GRADE 60 MINIMUM. REINFORCING STEEL SHALL BE KEPT FREE FROM SCALE, OIL AND STRUCTURAL DEFECTS.

1.3.2. REINFORCING MESH

WELDED WIRE REINFORCING MESH SHALL CONFORM TO ASTM A185, LATEST EDITION.

2. WORKMANSHIP

2.1. CONCRETE FOR FOOTINGS SHALL BE PLACED AGAINST NATURAL SOIL WHERE PRACTICABLE. UNLESS OTHERWISE DIRECTED, SOIL SHALL BE WET BEFORE PLACING CONCRETE. FORMS, WHERE USED, SHALL CONFORM TO ACI 347 AND SHALL BE SUBSTANTIALLY CONSTRUCTED, TRUE TO LINE AND GRADE, AND TIGHT AGAINST LEAKAGE. FORMS SHALL BE CLEAN AND EITHER OILED OR WET PRIOR TO PLACING CONCRETE.

2.2. REINFORCING STEEL AND EMBED MATERIALS SHALL BE EFFECTIVELY SUPPORTED TO ENSURE PROPER POSITIONING IN THE FINISHED WORK.

2.3. ANCHOR BOLTS OR FERRULE LOOP INSERTS SET IN CONCRETE FOR STRUCTURAL STEEL OR EQUIPMENT SHALL BE ACCURATELY POSITIONED AS SHOWN ON THE DRAWINGS. BENDING OF ANCHOR BOLTS OR SLOTTING OF STEEL WILL NOT BE PERMITTED. ALL BOLTS AND NUTS SHALL BE PROTECTED TO PREVENT CONCRETE, GROUT OR LAITANCE ENCRUSTATION AND THREAD DAMAGE.

2.4. CONCRETE PLACING AND FINISHING SHALL BE PER ACI 304 – LATEST EDITION "GUIDE FOR MEASURING, MIXING AND PLACING CONCRETE". CONCRETE FOR ANCHOR BOLTED FOUNDATIONS SHALL BE THOROUGHLY VIBRATED WITH HIGH FREQUENCY MECHANICAL VIBRATORS OF AN APPROVED TYPE. CONCRETE BACKFILL AROUND DIRECT EMBEDDED POLES DOESN'T HAVE TO BE VIBRATED. ALL CONCRETE SHALL BE PROPERLY CURED BY EITHER KEEPING EXPOSED SURFACE CONTINUALLY MOIST OR BY SEALING SUCH SURFACES WITH TYPE II, WHITE PIGMENTED, LIQUID MEMBRANE-FORMING COMPOUND FOR CURING CONCRETE (ASTM C309). CURING SHALL COMMENCE IMMEDIATELY AFTER THE FINAL FINISHING OPERATIONS AND AFTER THE FREE WATER HAS DISAPPEARED AND SHALL BE CONTINUED FOR A MINIMUM OF 7 DAYS.

2.5. DURING PERIODS OF HOT WEATHER, PROCEDURES AS OUTLINED IN ACI 305 LATEST EDITION "HOT WEATHER CONCRETING" SHALL BE FOLLOWED IN ORDER TO KEEP THE TEMPERATURE OF THE CONCRETE AT TIME OF PLACEMENT BELOW 90 DEGREES FAHRENHEIT.

2.6. HONEYCOMB OR OTHER SURFACE IMPERFECTIONS ON FORMED EXPOSED CONCRETE SURFACES SHALL BE REPAIRED. AN APPROVED CONCRETE BONDING ADHESIVE SHALL BE USED WHEN DIRECTED BY THE INSPECTOR. ALL EXPOSED SURFACES SHALL THEN BE STONED. CONTRACTOR SHALL INSTALL A 3/4 INCH CHAMFER ON ALL CORNERS AND EDGES OF ALL CONCRETE FORMS ABOVE SUB GRADE. ROUND FOUNDATIONS MAY BE CHAMFERED WITH A CONCRETE EDGING TROWEL.  
UNLESS OTHERWISE SHOWN OR SPECIFIED, EXPOSED UNFORMED CONCRETE SURFACES SHALL BE FINISHED AS FOLLOWS:  
FOUNDATION CAPS – WOOD FLOAT OR LIGHT BROOMED.  
UNDER GROUT BASE PLATES – ROUGH GROUT SHALL BE FINISHED VERTICAL ALONG PERIMETER OF BASE PLATE.  
ALL FINISHED WORK SHALL BE DONE TO THE INSPECTOR'S SATISFACTION.



3. INFORMATION AND SAMPLES TO BE FURNISHED BY CONTRACTOR

3.1. PROPOSED MIX:

BEFORE COMMENCING CONCRETING OPERATIONS, CONTRACTOR SHALL SUBMIT TO THE CITY, THE MIX DESIGN(S) PROPOSED TO BE USED. SAID MIX DESIGN(S) SHALL SHOW THE QUANTITIES PER CUBIC YARD OF CONCRETE, CEMENT, FINE AGGREGATE, COARSE AGGREGATE, WATER AND ANY ADMIXTURES. CONTRACTOR SHALL ALSO SUBMIT THE BRAND, MANUFACTURING PLANT, CHEMICAL ANALYSIS CERTIFICATE AND ASTM TYPE OF THE PORTLAND CEMENT TO APS OR INSPECTOR. NO VARIATIONS FROM APPROVED MIX DESIGN(S) SHALL BE MADE WITHOUT PRIOR APS APPROVAL.

3.2. MATERIAL SAMPLES:

BEFORE COMMENCING CONCRETE OPERATIONS, WHERE REQUIRED BY THE CITY, CONTRACTOR SHALL SUBMIT TO THE LABORATORY THROUGH THE INSPECTOR, THE FOLLOWING MATERIAL SAMPLES:

- (1) PORTLAND CEMENT, MINIMUM SAMPLES TO BE 1 SACK OR 94 POUNDS.
  - (2) FINE AGGREGATE AND COARSE AGGREGATE, MINIMUM SAMPLES TO BE 50 POUNDS EACH. THE SAMPLES SHALL BE REPRESENTATIVE OF THE MATERIAL TO BE USED AND SHALL BE OBTAINED PER ASTM D75.
  - (3) ADMIXTURES, MINIMUM SAMPLES TO BE 1 POUND EACH.
  - (4) CURING COMPOUND, MINIMUM SAMPLES TO BE 1 POUND.
- ADDITIONAL SAMPLES OF PORTLAND CEMENT SHALL BE SUBMITTED FOR ANY CHANGE IN BRAND, MANUFACTURING PLANT OR ASTM TYPE. ADDITIONAL SAMPLES OF FINE OR COARSE AGGREGATE SHALL BE SUBMITTED FOR EACH CHANGE IN THE SOURCE OF MATERIAL AND FOR ANY MARKED CHANGE IN THE CHARACTER OF MATERIAL FROM AN EXISTING SOURCE. SAMPLES OF ANY NEW OR CHANGED ADMIXTURES SHALL ALSO BE SUBMITTED.

4. INSPECTION AND TESTING

4.1. NOTIFICATION OF INSPECTOR:

CONTRACTOR SHALL NOTIFY THE INSPECTOR AT LEAST 24 HOURS IN ADVANCE OF ALL PROPOSED CONCRETE PLACEMENT. ANCHOR BOLTS, REINFORCING STEEL AND ANY FORMS SHALL BE INSTALLED SUFFICIENTLY IN ADVANCE OF CONCRETE PLACEMENT TO PROVIDE THE INSPECTOR REASONABLE OPPORTUNITY TO CHECK THESE AND ANY SIMILAR ITEMS. ALL CONCRETE PLACEMENT, UNLESS SPECIFICALLY WAIVED, SHALL BE DONE IN THE PRESENCE OF THE INSPECTOR AND SHALL NOT BE COMMENCED UNTIL HE HAS AUTHORIZED THE WORK TO PROCEED.

4.2. FIELD TESTS:

THE INSPECTOR WILL MAKE SUCH FIELD TESTS AND TAKE SUCH SAMPLES AS HE OR THE CITY DEEM NECESSARY. MINIMUM ROUTINE TESTS AND SAMPLES WHICH WILL BE REQUIRED ARE:

- (1) SLUMP TEST, STANDARD CONE TYPE (ASTM C143). AT LEAST ONE SLUMP TEST WILL NORMALLY BE TAKEN FOR EACH 24 CUBIC YARDS OF CONCRETE. TEMPERATURE OF CONCRETE SHALL BE TAKEN WITH EACH SLUMP TEST.
- (2) COMPRESSION TESTS CYLINDERS (ASTM C31). AT LEAST THREE TEST CYLINDERS WILL NORMALLY BE TAKEN FOR THE CONCRETE PLACED EACH DAY AND FOR EACH 50 CUBIC YARDS THEREAFTER. ONE 7 DAY TEST, TWO 28 DAY TESTS FOR TYPE I OR II WILL BE TAKEN.
- (3) FOR AIR ENTRAINED CONCRETE, ENTRAINED AIR TEST (EITHER ASTM C173 OR C231). AT LEAST ONE TEST WILL NORMALLY BE TAKEN FOR THE CONCRETE PLACED EACH DAY.

THE CONTRACTOR SHALL AFFORD THE INSPECTOR ALL REASONABLE FACILITIES, WITHOUT CHARGE, FOR SECURING SAMPLES TO DETERMINE WHETHER MATERIAL IS BEING FURNISHED PER THESE SPECIFICATIONS. ALL TEST AND INSPECTIONS WILL BE SO CONDUCTED AS NOT TO INTERFERE UNNECESSARILY WITH THE WORK.

4.3 LABORATORY TESTS:

THE LABORATORY WILL PERFORM SUCH TESTS AS IT OR THE CITY DEEM NECESSARY. MINIMUM ROUTINE TESTS WHICH WILL BE REQUIRED ARE:

- (1) COMPRESSION TESTS ON CONCRETE TEST CYLINDER (ASTM C39).
  - (2) SIEVE ANALYSIS ON COARSE AND FINE AGGREGATES (ASTM C136).
- IN ADDITION TO OTHER TESTS OF MATERIALS, THE LABORATORY MAY PREPARE AND TEST SAMPLE BATCHES OF CONCRETE USING THE DESIGN MIX AND THE MATERIALS PROPOSED TO BE USED BY THE CONTRACTOR.  
ALL LABORATORY TESTING AS REQUIRED BY THESE SPECIFICATIONS SHALL BE PAID FOR BY THE CITY.

DETAIL NO. G-3250-7	CITY OF GOODYEAR STANDARD DETAIL	APPROVED:01/19	STANDARD SQUARE & ROUND POLE FOUNDATION DETAILS (3 of 4)	DETAIL NO. G-3250-7
------------------------	-------------------------------------	----------------	--	------------------------

4. INSPECTION AND TESTING (CONT)

4.4 MODIFICATION OR REJECTION OF MATERIALS:

ON THE BASIS OF FIELD OR LABORATORY TESTS, THE CITY OR INSPECTOR MAY REQUIRE ANY MODIFICATION OF MATERIALS WHICH MAY BE NECESSARY TO CONFORM TO THESE SPECIFICATIONS. SUCH MODIFICATIONS SHALL BE MADE BY THE CONTRACTOR AT ITS SOLE EXPENSE. NO MATERIAL WHICH HAS BEEN REJECTED FOR NON-CONFORMANCE WITH THESE SPECIFICATIONS SHALL BE USED IN THE WORK. FRESHLY MIXED CONCRETE WHICH HAS BEEN REJECTED FOR NON-CONFORMANCE WITH THESE SPECIFICATIONS SHALL BE WASTED OR OTHERWISE DISPOSED OF AS DIRECTED BY THE INSPECTOR. HARDENED CONCRETE WHICH HAS BEEN REJECTED FOR NON-CONFORMANCE WITH THESE SPECIFICATIONS SHALL BE REMOVED, WASTED AND REPLACED BY THE CONTRACTOR AT HIS SOLE EXPENSE.

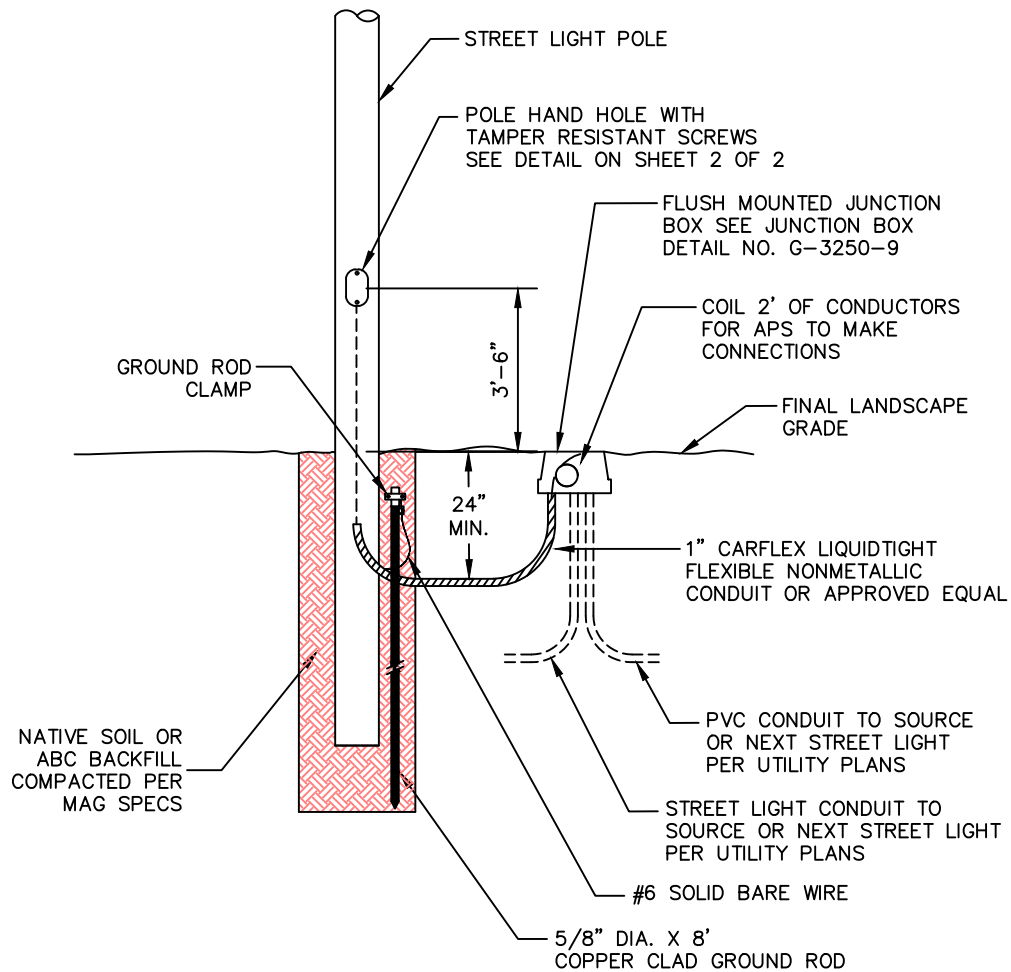
4.5 REQUIRED STRENGTH:

STRENGTH TESTS REPRESENTING EACH CLASS OF CONCRETE SHALL MEET ALL OF THE FOLLOWING REQUIREMENTS:

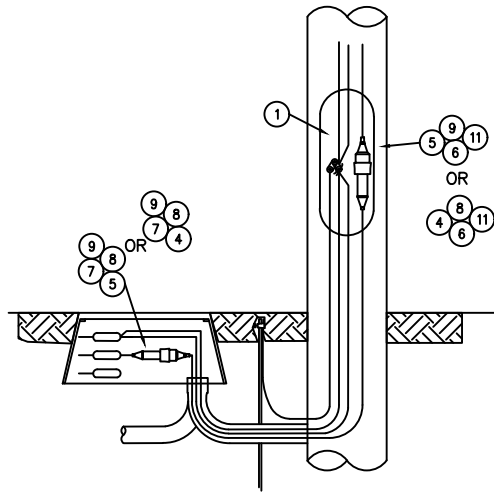
- 4.5.1 THE AVERAGE OF ANY THREE (3) CONSECUTIVE STRENGTH TESTS SHALL BE EQUAL TO OR GREATER THAN THE SPECIFIED STRENGTH.
- 4.5.2 NOT MORE 10% OF THE STRENGTH TESTS SHALL HAVE VALUES LESS THAN THE SPECIFIED STRENGTH.
- 4.5.3 ANY SINGLE STRENGTH TEST SHALL BE EQUAL TO OR GREATER THAN 85% OF THE SPECIFIED STRENGTH.

5. WAIVERS OF REQUIREMENTS

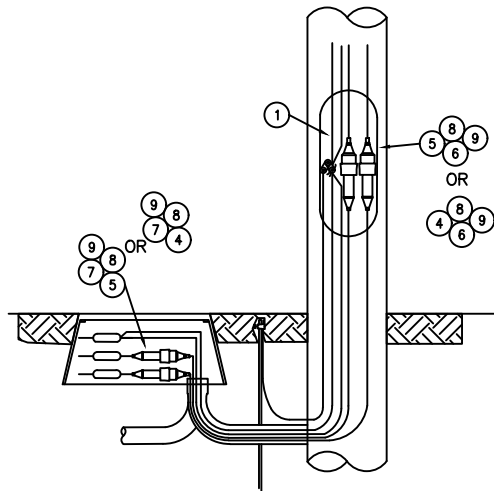
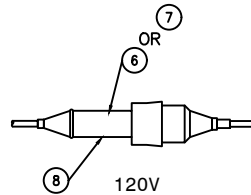
- 5.1. MATERIAL SAMPLES (PARAGRAPH 3.2 HEREIN) WILL NOT BE REQUIRED FOR CONCRETE PRODUCED BY AN ESTABLISHED COMMERCIAL BATCH PLANT WITH A SATISFACTORY HISTORY OF QUALITY CONTROL. SUCH MATERIAL SAMPLES WILL BE REQUIRED WHEN NEW AND UNPROVEN AGGREGATE SOURCES ARE PROPOSED FOR USE. SUBMITTED SAMPLES WILL BE SUBJECTED TO LABORATORY TEST (PARAGRAPH 4.3 HEREIN) AND MAY BE USED FOR LABORATORY PREPARATION AND TESTING OF SAMPLE BATCHES OF CONCRETE. MATERIAL SAMPLES MAY ALSO BE REQUIRED AT ANY TIME AT THE OPTION OF INSPECTOR OR THE CITY IN THE EVENT OF KNOWN OR SUSPECTED QUALITY CONTROL PROBLEMS.
- 5.2. FIELD AND LABORATORY TESTS (PARAGRAPH 4.2 AND 4.3 HEREIN) MAY BE OMITTED AT THE OPTION OF THE CITY FOR NON-STRUCTURAL AND NON-CRITICAL MINOR WORK. SPECIFICALLY, COMPRESSION TESTS ARE NOT REQUIRED FOR CONCRETE USED FOR BACK FILLING DIRECT EMBEDDED POLES.
- 5.3. FIELD MIXED CONCRETE MAY BE USED WHEN APPROVED BY INSPECTOR FOR MINOR WORK NOT EXCEEDING 5 CUBIC YARDS WHICH IS NON-STRUCTURAL AND NON-CRITICAL. PROPOSED MIX DESIGN WILL NOT BE REQUIRED. THE WORK HOWEVER, SHALL CONFORM TO GENERALLY ACCEPTED CONSTRUCTION PRACTICES TO THE SATISFACTION OF THE INSPECTOR.



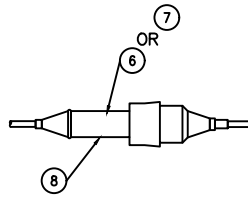
NOTE:  
THIS DETAIL SHOWS DIRECT BURY POLES. SEE DETAIL NO.  
G-3250-7 FOR BASE MOUNTED POLES.



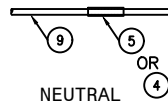
120V CONNECTION



208V OR 240V CONNECTION



208V OR 240V

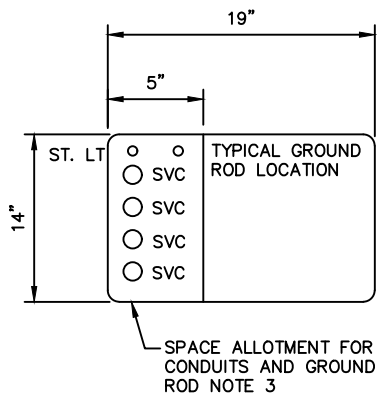
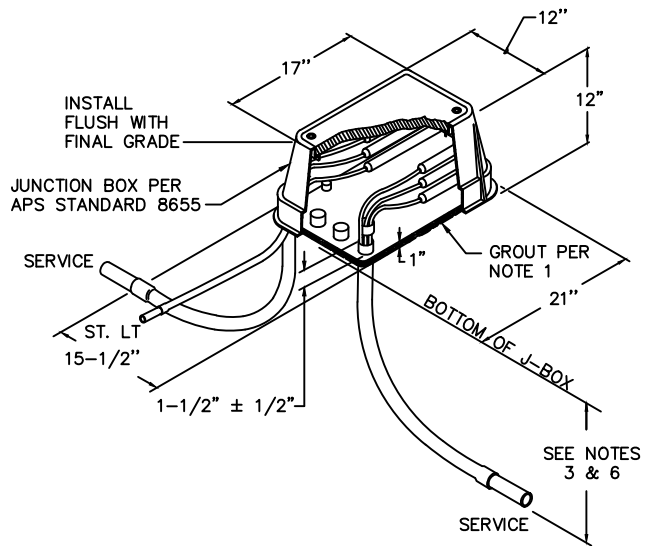


NEUTRAL

MATERIAL LIST	
1	CABLE 2/C #14CU UF
2	CABLE 3/C #12CU UF-B 90 C
3	CABLE 3/C #14CU UF
4	CONN BUTT SPLICE #12-#10
5	CONN BUTT SPLICE #16-#14
6	FUSE CARTRIDGE 10A
7	FUSE CARTRIDGE 15A
8	FUSEHOLDER IN-LINE 600 B
9	TUBING SHRINKABLE 1/4

**CONSTRUCTION NOTES:**

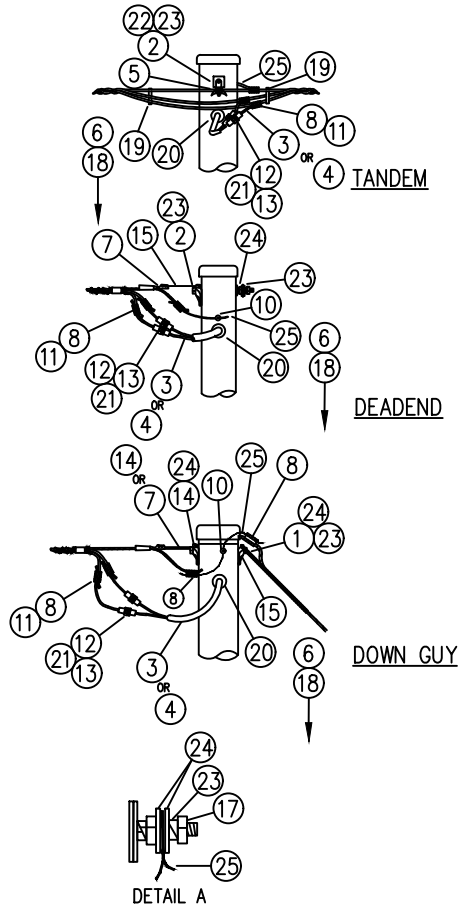
1. USE INDENT TOOL TO COMPRESS THE FUSE HOLDER ONTO THE WIRE.
2. THE PREFERRED METHOD IS TO FUSE IN THE J-BOX WITH A 15 AMP FUSE AND IN THE HANDHOLE WITH A 10 AMP FUSE. WHEN FEEDING EXISTING SINGLE LIGHTS WITH #14 CU FROM AN UNDERGROUND TRANSFORMER WITHOUT A J-BOX A 15 AMP FUSE MUST BE INSTALLED AT THE TRANSFORMER AND A 10 AMP FUSE IN THE HANDHOLE.
3. POLES THAT HAVE MORE THAN ONE LUMINAIRE REQUIRE A SEPARATE CIRCUIT WITH FUSING FROM THE J-BOX TO EACH LUMINAIRE.
4. FOR UNDERGROUND SERVICE CONNECTIONS ON CUSTOMER-OWNED DUSK-TO-DAWN INSTALLATION REQUIREMENTS, SEE THE APS ELECTRIC SERVICE REQUIREMENTS MANUAL, SECTION 500 (506.13).
5. INSTALLATION OF STREET LIGHT CIRCUITS OTHER THAN THREE-WIRE 120/240 VOLT REQUIRES APS ENGINEERING APPROVAL.
6. FOR CITY OR DEVELOPER INSTALLED AND CITY MAINTAINED FUSING IN APS AREAS, APS TO PROVIDE AND INSTALL 15 AMP FUSES IN J-BOX, WITH FLOOD SEALS. CUSTOMER FUSING IN THE HAND HOLE NOT TO EXCEED 10 AMPS. FOR APS WIRING REQUIREMENTS CONTACT APS ENGINEERING.
7. WHEN SOURCE CONDUCTOR IS #14 AND NO JUNCTION BARS OR GEL PACKS ARE USED, A NEUTRAL #14 TO #14 BUTT SPLICE IS REQUIRED. USE A 2-INCH PIECE OF HEAT SHRINK TUBING OVER SPLICE TO INSULATE AND WATERPROOF.
8. SEE APS SPEC 2433 FOR ADDITIONAL GROUNDING REQUIREMENTS FOR MUNICIPALITIES.



DETAIL "A"

NOTES:

1. CONCRETE GROUT SHALL BE PREMIX, APS PART NO. 71301280 OR EQUIVALENT.
2. 3/8" CAPTIVE PENTA-HEAD BOLTS SHALL BE INSTALLED PRIOR TO ENERGIZING NEW UNDERGROUND SYSTEMS. LOST OR MISPLACED PENTA-HEAD BOLTS SHALL BE REPLACED WITH APS PART NO. 71402608.
3. BRING ALL CABLE/CONDUITS AND GROUND ROD INTO THE SAME END OF THE BOX TO ENABLE CABLES TO BE RAISED AND LOWERED EASILY. CONDUIT SWEEPS SHALL BE POSITIONED AND ALIGNED SO THAT WHEN TWO AND FOUR POSITION JUNCTION BARS ARE SPECIFIED, THE ST. LT., SECONDARY AND SERVICE CONDUITS SHALL BE INSTALLED AS SHOWN IN DETAIL "A".
4. COMPACTION BENEATH AND AROUND JUNCTION BOX SHALL BE A MINIMUM OF 85 PERCENT.
5. COVER SHALL BE MARKED WITH "STREET LIGHTING" IN 1" LETTERS.
6. ADDITIONAL TRENCH DEPTH IS USUALLY REQUIRED AT ALL EQUIPMENT LOCATIONS. SEE APS STANDARD 8648 FOR THE MINIMUM TRENCH DEPTHS AND THE DEGREE OF SLOPE ALLOWED AS THE TRENCH DEPTH CHANGES.
7. TORQUE BOLTS TO 5 FT - LBS (60 IN - LBS).
8. CONDUIT SWEEPS SHALL BE 90 DEGREES.
9. GEL PACK CONNECTORS ARE PREFERRED FOR ALL TWO POSITION APPLICATIONS FOR CABLE SIZES #1/0 AL AND SMALLER.
10. THE SMALL JUNCTION BOX IS SUITABLE FOR USE WITH THE THREE POSITION JUNCTION BARS. CONDUIT POSITIONS ENTERING THE JUNCTION BOX SHALL BE LIMITED TO THREE (INCLUDES ST LT CONDUIT) OR LESS. THIS BOX IS RECOMMENDED FOR SECONDARY/SERVICE CABLE #1/0 AL AND SMALLER. FOR STREET LIGHT CIRCUITS WHERE THE JUNCTION BOX MUST BE INSTALLED IN THE SIDEWALK, APS STANDARD 8663 IS THE PREFERRED BOX.
11. THIS JUNCTION BOX SHALL NOT BE INSTALLED IN A VEHICULAR TRAFFIC AREA.
12. AN ELECTRONIC MARKER IS PROVIDED WITH THE J-BOX. THE MARKER IS SCREWED INTO THE J-BOX LID.
13. SEE APS STANDARD 1226 FOR CABLE MARKER INSTALLATION DETAILS
14. MINIMUM BENDING RADIUS FOR CABLE IS SPECIFIED IN APS SPEC 6210.



NOTES:

1. STEEL POLES AND ALL MAST ARMS MUST BE GROUNDED.
2. OVERHEAD ATTACHMENTS MUST BE GROUNDED TO THE STREET LIGHT POLE. A 1/16" HOLE HAS BEEN ADDED 6" BELOW TOP OF STREET LIGHT POLE TO INSTALL A GROUNDING INSERT APN 00055552. TOOL TO INSTALL RIVNUT IS APH 00053279. SEE STANDARD 240B. WHERE RIVNUTS ARE NOT AVAILABLE GROUND PER DETAIL A.
3. ALL OVERHEAD FED STREET LIGHT POLES SHALL HAVE A GROUND ROD INSTALLED AND A #6 GROUND WIRE BONDED TO THE GROUNDING LUG AT THE BACK OF THE HAND HOLE.
4. THESE CODES PROVIDE THE #14 CU FOR THE MAST ARMS, HARDWARE FOR ATTACHING TANGENT OR DEADEND SECONDARY, AND THE CONNECTORS.

8100. \_\_\_ TWO WIRE 120V, 277V  
TANGENT

8101. \_\_\_ THREE WIRE 208V, 240V  
TANGENT

IF APPLICABLE:  
D = DUSK-TO-DAWN  
WIRE CODE

8102. \_\_\_ TWO WIRE 120V, 277V  
DEADEND

8103. \_\_\_ THREE WIRE 208V, 240V

8106. \_\_\_ TWO WIRE 120V, 277V  
DEADEND WITH GUY HOOK

8107. \_\_\_ THREE WIRE 208V, 240V  
DEADEND WITH GUY HOOK

CODE	8100	8101	8102	8103	8106	8107	DETAIL A	MATERIAL LIST	
ITEM	QTY	QTY	QTY	QTY	QTY	QTY	QTY	DESCRIPTION	APN
1	-	-	-	-	1	1	-	BOLT GALV MACH 5/8" X 10"	33001549
2	1	1	1	1	-	-	-	BOLT GALV MACH 5/8" X 8"	33001547
3	10	-	10	-	10	-	-	CABLE 2/C #14CU UF	31102132
4	-	10	-	10	-	10	-	CABLE 3/C #14CU UF	31102135
5	1	1	-	-	-	-	-	CLAMP ANGLE .162 TO .60	33002502
6	1	1	1	1	1	1	-	CLAMP GROUND ROD 5/8"	33002580
7	-	-	1	1	-	-	-	CLAMP WEDGE FELX 4-2AL	33002772
8	2	3	2	3	4	2	-	CONN AL PG - SEE 2250	
9	-	-	-	-	1	1	-	CONN CU "C" - SEE 2255	
10	1	1	1	1	1	1	-	CONN POST 1/2" S SS #6-1/0	00095704
11	1	2	1	2	1	2	-	COVER D DIE INSULATING	33003192
12	1	2	1	2	1	2	-	FUSE CARTRIDGE 15A	72602410
13	1	2	1	2	1	2	-	FUSEHOLDER IN-LINE 600V	00097502
14	-	-	-	-	1	1	-	GRIP DE PREF - SEE 2135	
15	-	-	1	1	2	2	-	HOOK GUY - MED DUTY 5/8"	33003831
16	1	1	1	1	1	1	-	NUT INSERT RIVNUT	00055552
17	-	-	-	-	-	1	-	NUT SQ GALV 5/8"	33004176
18	1	1	1	1	1	1	-	ROD COPPERCLAD GRD 5/8" X 8"	33004805
19	2	2	-	-	-	-	-	SPACER MULTIPLEX CABLE	33006510
20	1	1	1	1	1	1	-	STOPPER BUG AND DUST	33806955
21	1	1	1	1	1	1	-	TUBING SHRINKABLE 1/4"	71606200
22	2	2	2	2	-	-	-	WASHER GALV CU 3X3X1/4"	33007126
23	1	1	1	1	1	1	1	WASHER GALV DBL COIL 5/8"	33007154
24	-	-	-	-	-	2	-	WASHER GALV RD 5/8"	33007185
25	2	2	2	2	2	2	-	WIRE BARE #6 SOLID CU	33007580