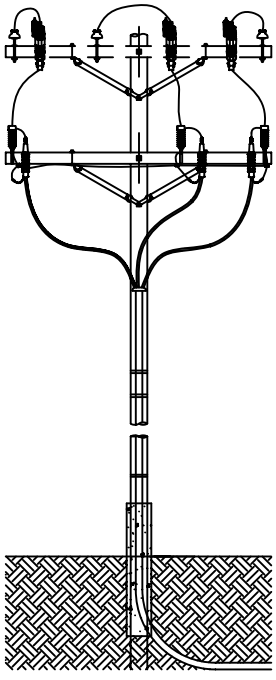
City of Alexandria

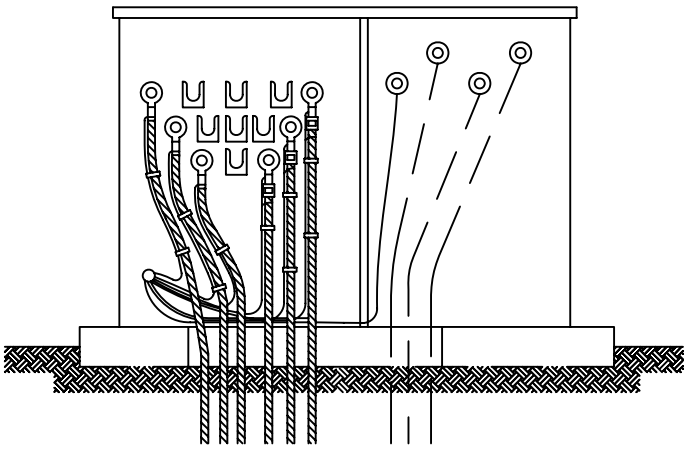
Electric Distribution Dept.

Underground Distribution

Construction Manual

Revision 4 - 03/28/08





CITY OF ALEXANDRIA ELECTRIC DISTRIBUTION DEPARTMENT

UNDERGROUND DISTRIBUTION CONSTRUCTION SPECIFICATONS

1. GENERAL

1.1 These specifications provide for the construction of underground distribution power facilities as specified by the City of Alexandria Electric Distribution Dept. (Owner).

1.2 It is the responsibility of the Contractor to ensure that all construction work shall be accomplished in a thorough and workmanlike manner in accordance with the staking sheets, plans and specifications, and the construction drawings.

2. STORAGE OF MATERIAL AND EQUIPMENT: It is the responsibility of the Contractor to ensure that all material and equipment to be used in construction must be stored so as to be protected from deteriorating effects of the elements. If outdoor storage cannot be avoided, the material and equipment must be stacked on supports well above the ground line and protected from the elements as appropriate, and with due regard to public safety.

3. HANDLING OF CABLE

3.1 It is the responsibility of the Contractor to ensure that the cable shall be handled carefully at all times to avoid damage, and shall not be dragged across the ground, fences or sharp projections. Care shall be exercised to avoid excessive bending of the cable. The Contractor shall ensure that the ends of the cable be sealed at all times against moisture with suitable end caps. Where it is necessary to cut the cable, the ends will be terminated or sealed immediately after the cutting operation.

3.2 At no time shall the cable reel be lifted in a way which applies pressure to the cables lays on the reel.

3.3 Contractor shall take all necessary precautions to ensure that the pulling tension does not exceed the manufacturer's recommended tension.

4. PLOWING

4.1 When cables are to be installed by plowing, it is the responsibility of the Contractor to ensure that the plowing equipment be subject to the approval of the Owner and the public authorities having jurisdiction over highway and road rights-of-way. The plow must be provided with a means to assure positive holddown of the plow blade to provide proper depth at all times.

4.2 The design of the plowshare must ensure that the cable passing through the plow will not be bent in a radius less than 12 times the outside diameter of the cable. The equipment must be capable of extending the plow a minimum of 6 inches below the specified depth under all terrain conditions of plow utilization.

4.3 The Contractor must ensure that equipment and construction methods used during construction cause minimum displacement of the soil. The slot made in the soil by the cable plows must be closed immediately by driving a vehicle track or wheel over the slot or by other suitable means.

4.4 Starting and terminating points of the plowing operation must be excavated prior to cable installation to reduce possible cable damage and to assure sufficient burial depth.

4.5 During the plowing operation, care is to be exercised to feed the cable or wire into the ground through the plow loosely and at minimum tension. Besides using proper equipment and construction methods, supervision by the Contractor or the Owners's representative shall be furnished at all times at the site of plowing operations to assure compliance with these specifications.

4.6 If, during the plowing operation, the plow should strike a buried object or rock that would stop the equipment and necessitate removal of the plow from the ground, the plow must be removed from the ground carefully and, if practical, without backing the plow. If it should be necessary to back the plow to remove it from the ground, the cable must be uncovered a sufficient distance back for inspection by the Owner to determine whether the cable or wire has been damaged.

4.7 The cable must be inspected carefully as it is payed out from the reel to be certain that it is free from visible defects. Every instance of damaged cable observed at any time, whether prior to installation, during installation, or when discovered by test or observation subsequent to installation in plant, shall be immediately called to the attention of the Owner. Repair or correction of such damage must be completed promptly and in accordance with the written instruction of the Owner. The location of any such repair must be indicated on the staking sheet.

5. SPECIAL REQUIREMENTS FOR COORDINATION BETWEEN OWNER AND CONTRACTOR WHERE CABLE IS TO BE INSTALLED BY PLOWING

5.1 It is the responsibility of the Contractor to ensure that the Contractor and the Owner shall jointly review the staking sheets prior to the start of construction. At that time, the Contractor shall propose any desirable changes or clarifications. These changes, if approved by the Owner, shall be made and recorded on the staking sheets. No changes on the staking sheets shall be made by the Contractor without the prior written approval of the Owner. A representative of the Owner shall remain in the immediate vicinity of the plowing operations at all times and shall consider and possibly approve any acceptable changes proposed by the Contractor. A representative of the Owner shall also inspect any damage to cable and approve acceptable methods of repair or correction of such damage in accordance with the provisions of these specifications.

5.2 In the event that rock is encountered during the plowing operation so that the buried cable cannot be installed to the required minimum depths in soil, the Contractor shall determine for the Owner the nature and extent of the rock encountered. Based on this information, the Owner shall determine whether the cable is to be rerouted, trenched in rock or a change made to aerial construction. This decision shall be made promptly, and appropriate changes in units shall be made on the staking sheets. Such changes shall be in writing, dated, and initialed by the Owner.

5.3 Due to the necessity of making on-the-spot corrections and changes on staking sheets, it may not be possible for the Owner to issue revised staking sheets to the Contractor in all cases. When changes are made, dated, and initialed by the Owner on a set of the Contractor's staking sheets, it shall be the Contractor's responsibility to transfer these changes to all other sets of staking sheets being used by the Contractor for construction purposes.

5.4 The Contractor shall provide a competent representative to work with the Owner on the inventory and inspection of buried cable units. The inventory of buried cable will be made as soon after the plowing operation as practical to avoid later disagreements on the quantity of cable installed when changes are required in the project.

6. TRENCHING

6.1 It is the responsibility of the Contractor to ensure that all trenching depths specified are minimum as measured from the final grade to the top surface of the cable. The routing must be as shown on the staking sheets and plans and specifications unless conditions encountered are such that changes are necessary to accomplish the work. In such event, the Owner shall be notified promptly. If rock or other difficult digging is involved, the Contractor shall determine the nature and extent of the difficulty, and the Owner shall determine whether rerouting, rock trenching, plowing or other changes are necessary. Loose soil or crumbly rock shall not be considered as "difficult digging." The trench widths specified are minimum and should be increased as necessary to obtain the required depths in loose soils.

6.2 Where trenches are intended for more than one cable, particular care must be taken to provide for extra depth and width to allow for soil falling into the trench during the laying of the first cables.

6.3 Care shall be exercised to minimize the likelihood of waterflow since this may cause trench damage and reduction in trench depth. If this occurs, the trench must be cleared to the specified depth before installing the cable.

6.4 All trenches must follow straight lines between staked points to the greatest extent possible. Secondary and service trenches must extend in a straight line from takeoff points wherever possible. The trenches must be dug so that the bottom has a smooth grade. Large rocks, stones and gravel in excess of l inch must be removed from the bottom of the trench. Where this cannot be accomplished, a 2 inch bed of sand or clean soil must be placed in the bottom of the trench.

6.5 Construction shall be arranged so that trenches may be left open for the shortest practical time to avoid creating a hazard to the public and to minimize the likelihood of collapse of the trench due to other construction activity, rain, accumulation of water in the trench, etc.

7. INSTALLING CONDUIT IN TRENCH

7.1 It is the responsibility of the Contractor to ensure that the conduit must be placed in the trench as soon after the trenching operation as feasible. Wherever possible, HDPE conduit must be payed out from the reel mounted on a moving vehicle or trailer. The reel must be supported so that it can turn easily without undue strain on the conduit. The conduit must be carefully placed in the trench by hand. All conduit placement will be done under constant supervision by the Contractor's representative who assure that no damage to the conduit occurs.

7.2 The conduit must be inspected carefully as it is removed from the reel in laying operations to be certain that it is free from visible defects. The Owner shall decide upon corrective action when defects are discovered.

7.3 Where more than one conduit is to be placed in a trench, the spacings required by the specifications must be observed. Care must be taken that any soil falling into the trench during the laying of the first conduit does not reduce the clearances of the last conduit below that specified. Should this occur, the excess soil must be removed carefully by hand or with equipment that will not damage the installed conduits.

7.4 The conduit trench must be restored to a minimum 95% compaction across any proposed road beds. Trenches in all other areas must be sufficiently backfilled and compacted to avoid future settlement or caving as outlined in Section 17.2.

8. CONDUIT (OTHER): It is the responsibility of the Contractor to ensure that all exposed ends of conduit must be plugged during construction to prevent the entrance of foreign matter and moisture into the conduit. Burrs or sharp projections which might injure the cable must be removed. Riser conduit must extend at least 18 inches below grade at all riser poles. An appropriately sized long-radius 90° elbow shall be installed between the riser conduit and the below ground conduit.

9. CABLE INSTALLATION:

9.1 It is the responsibility of the Contractor to ensure that the minimum bending radius of primary cable is 12 times the overall diameter of the cable. The minimum bending radius of secondary and service cable is six times the overall diameter of the cable. In all cases the minimum radius specified is measured to the surface of the cable on the inside of the bend. Cable bends must not be made within 6 inches of a cable terminal base.

9.2 When necessary the Contractor shall use pulling lubricants in an amount sufficient enough to prevent excessive binding of the cable during the pulling operation. Contractor shall take all necessary precautions to ensure that the pulling tension does not exceed the manufacturer's recommended tension.

9.3 The ends of all primary and secondary cables must be long enough to reach at least 12 inches above the top of the underground enclosure.

10. TAGGING OF CABLES AT TERMINATION POINTS: As the cables are pulled, it is the responsibility of the Contractor to coordinate with the Owner to ensure that they are identified and tagged. Cables feeding into a transformer or sectionalizing cabinet shall be marked with red marking tape; cables feeding out of a transformer or sectionalizing cabinet shall be marked with blue marking tape. In addition cables feeding out of a sectionalizing cabinet shall be labeled indicating the load they feed. The Contractor will be responsible for installing the marking tape; the Owner will install the permanent cable tags.

11. SPLICES

11.1 It is the responsibility of the Contractor to ensure that cable splices must be of the premolded rubber, heat-shrink, or cold-shrink type, of the correct voltage rating and must be installed in accordance with the splice manufacturer's instructions. Splices that depend solely on tape for a moisture barrier must not be used.

11.2 Not more than one splice may be permitted for each 2000 feet of cable installed unless authorized by the Owner. No bends may be permitted within 12 inches of the ends of a splice. The cable or circuit numbers and the exact location of all splices must be noted on the staking sheets (as built).

12. PRIMARY CABLE TERMINATION AND STRESS CONES: It is the responsibility of the Contractor to ensure that prefabricated stress cones or terminations must be installed in accordance with the manufacturer's instructions at all primary cable terminals. They must be suitable for the size and type of cable that they are used with and for the environment in which they will operate. Any indication of misfit, such as a loose or exceptionally tight fit, must be called to the Owner's attention. The outer conductive surface of the termination must be bonded to the system neutral. A heat-shrink or cold-shrink sleeve must be installed to seal between the body of the termination and the cable jacket.

13. SPECIAL PRECAUTIONS FOR CABLE SPLICES AND TERMINATIONS: It is the responsibility of the Contractor to ensure that a portable covering or shelter must be available for use when splices or terminations are being prepared and when prefabricated terminations are being switched. The shelter must be used as necessary to keep rain, snow and windblown dust off the insulating surfaces of these devices. Since cleanliness is essential in the preparation and installation of primary cable fittings, care shall be exercised to prevent the transfer of conducting particles from the hands to insulating surfaces. Mating surfaces must be wiped with a solvent such as denatured alcohol to remove any possible accumulation of dirt, moisture or other conducting materials. A silicone grease or similar lubricant should be applied afterwards in accordance with the manufacturer's recommendations. Whenever prefabricated cable devices are opened, the unenergized mating surfaces must be lubricated with silicone grease before the fittings are reconnected.

14. SECONDARY AND SERVICE CONNECTIONS

14.1 It is the responsibility of the Contractor to ensure that a suitable inhibiting compound must be used with all secondary and service connections.

14.2 All secondary cable connections located below grade or in secondary pedestals must be made with pre-insulated secondary connector blocks; uninsulated blocks shall have a insulating cover installed after secondary cables are terminated.

14.3 Secondary connections to terminals of pole-mounted transformers must be made so that moisture cannot get inside the cable insulation. This may be accomplished by covering the terminals and bare conductor ends with an appropriate moisture sealant or providing a drip loop.

14.4 The secondary connections and insulation must have accommodations for all future and existing services as shown on the plans and specifications.

15. PEDESTALS: Where required, it is the responsibility of the Contractor to ensure that Pedestal bases are properly buried below grade before cables are placed, and shall be located as shown on the staking sheets. Pedestals must be in place before the cable is installed. All pedestals should be approximately at the same height above finished grade.

16. INSPECTION AND INVENTORY OF BURIED UNITS: Before any backfilling operations are begun, it is the responsibility of the Contractor to ensure that the Contractor and Owner shall jointly inspect all trenches, cable placement, risers, pedestal stakes, and other construction that will not be accessible after backfilling, and an inventory of units shall be taken. If corrections are required, a second inspection shall be made after completion of the changes.

17. BACKFILLING

17.1 It is the responsibility of the Contractor to ensure that the first 6 inches of trench backfill shall be free from rock, gravel or other material which might damage the cable jacket. In lieu of cleaning the trench, the Contractor may, at the Contractor's option, place a 2 inch bed of clean sand or soil under the cable and 4 inches of clean soil above the cable. Cleaned soil backfill when used shall contain no solid material larger than l inch. This soil layer must be carefully compacted so that the cable will not be damaged.

17.2 Backfilling must be completed in such a manner that voids will be minimized. Excess soil must be piled on top and must be well tamped. All rock and debris must be removed from the site, and any damage to the premises repaired immediately.

17.3 Pieces of scrap cable or other material remaining after installation must not be buried in the trench as a means of disposal.

18. EQUIPMENT PADS: It is the responsibility of the Contractor to ensure that the site for the pad shall be on undisturbed earth adjacent to but not over the trench. The site shall be cleared of all debris and excavated to the specified depth. Gravel or sand may be added to the site and thoroughly compacted. The pad shall be installed level at the specified elevation.

19. TRANSFORMERS: It is the responsibility of the Contractor to ensure that transformers shall be handled carefully to avoid damage to the finish and shall be positioned in accordance with the staking sheets and the plans and specifications. Only qualified and experienced personnel shall be allowed to make connections and cable terminations.

20. EQUIPMENT ENCLOSURES: It is the responsibility of the Contractor to ensure that excavations for sleeve-type transformer pads and other below-grade enclosures shall be made so as to disturb the surrounding earth as little as practical. Enclosures shall be installed with side walls plumb. When enclosures are of fiber, plastic, or other semiflexible material, backfilling should be done with covers in place and with careful tamping so as to avoid distortion of the enclosure. When installation is complete, the cover of the enclosure shall not be lower than and not more than 2 inches higher than the grade specified by the Owner. Soil in the immediate vicinity shall be tamped and sloped away from the enclosure. At the Owner's option, the excess soil shall be removed from the site or spread evenly over the surface of the ground to the satisfaction of the Owner.

21. UTILITY SAFETY SIGNS: It is the responsibility of the Contractor to ensure that utility safety signs must be in accordance with ANSI Z535.2, Environmental and Facility Safety Signs. Copies of the ANSI Z535.2 may be obtained from the National Electrical Manufacturers Association (NEMA), 1300 North 17th Street, Suite 1847, Rosslyn, Virginia 22209.

22. GROUNDING

22.1 It is the responsibility of the Contractor to ensure that all neutral conductors, grounding electrodes, sacrificial anodes and groundable parts of equipment shall be interconnected. All interconnections shall be made as shown on the construction drawings. A copper-clad or galvanized steel ground rod with minimum length of 8 feet shall be installed at all equipment locations as shown in the construction drawings and at all cable splices and taps.

22.2 All pad-mounted equipment enclosures, including transformers, shall be grounded in such a manner that two separate grounding paths exist between the enclosure and the grounding rod(s).

23. CABLE LOCATION MARKERS: It is the responsibility of the Contractor to ensure that location of permanent cable markers shall be as shown on the staking sheets.

24. INSTALLED CABLE AND ACCEPTANCE TESTS

24.1 It is the responsibility of the Contractor to ensure that:

a. Continuity: After installation of the cable and prior to the high potential test specified below, authorized personnel shall perform a simple continuity test on the system. This can easily be accomplished by grounding the conductor at the source and checking for continuity from the end of each tap with an ohmmeter or with a battery and ammeter.

b. High Potential: After successful continuity tests, authorized personnel should perform high potential tests on each length of cable, with terminations in place but disconnected from the system.

24.2 The installation shall withstand for a minimum of 15 minutes a DC test potential as follows:

Primary URD Cable
(XLP-TR, and EPR)

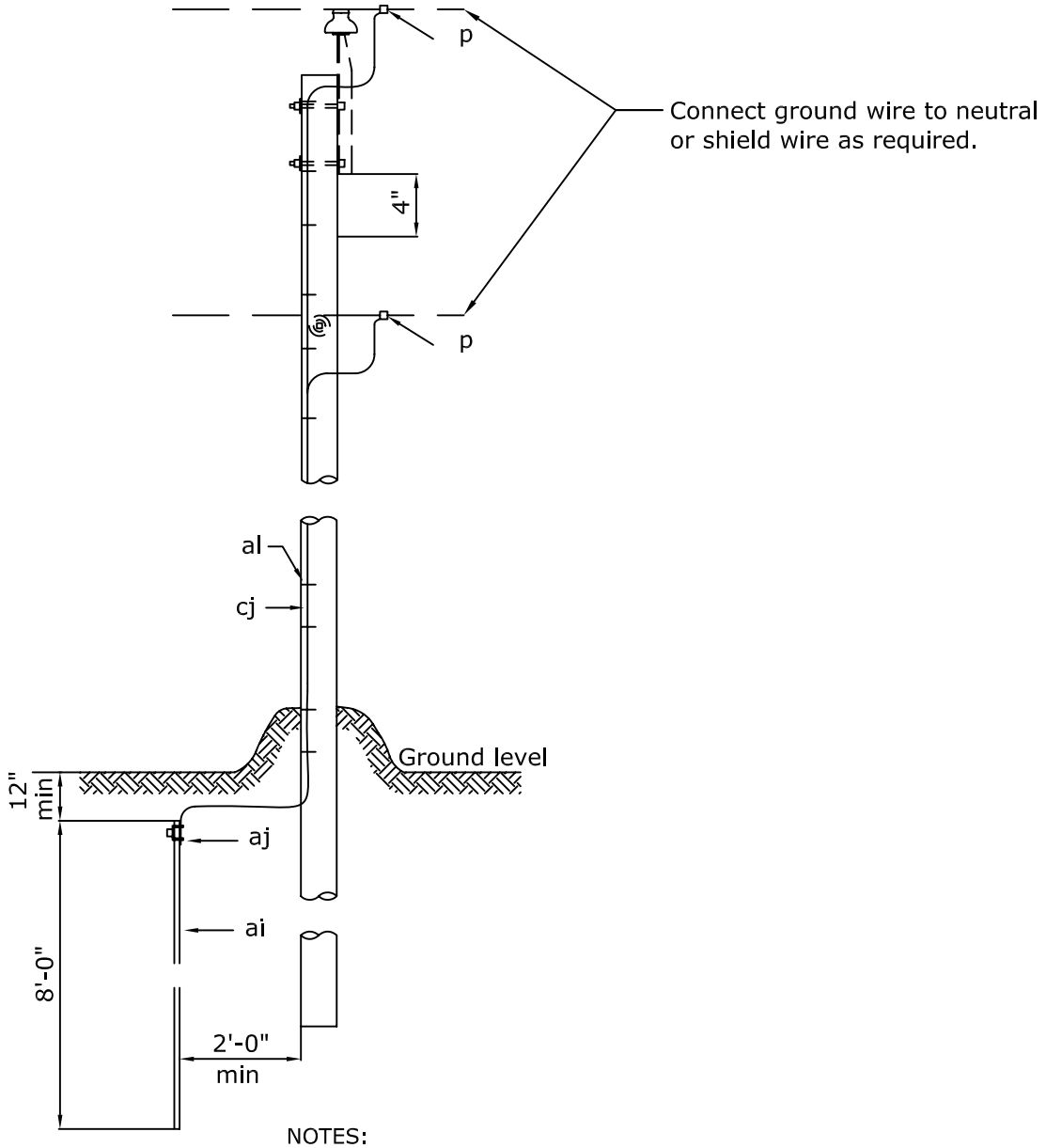
Rated Voltage (kV)	Insulation Thickness (Inches)	Field DC Acceptance Test Voltage (kV)
15	.220	64.0
25	.260	80.0
35	.345	100.0

The voltage may either be increased continuously or in steps to the maximum test value:

a. If increased continuously, the rate of increase of test voltage should be approximately uniform and increasing to maximum voltage in not less than 10 seconds and in not more than approximately 60 seconds.

b. If applied in steps, the rate of increase of test voltage from one step to the next should be approximately uniform. The duration at each step shall be long enough for the absorption current to attain reasonable stabilization (l minute minimum). Current and voltage readings should be taken at the end of each step duration. The number of steps should be from five to eight.

24.3 Warning: A hazardous voltage may still exist on the cable after the above testing has been completed. Therefore, before handling the cable, it is the responsibility of the Contractor to ensure that the conductor shall be grounded to permit any charge to drain to earth.



NOTES:

1- Ground wire to be located on same side as neutral conductor and in quadrant opposite climbing space or pole top pin.

2- Staples on ground wire shall be 2'-0" apart. Except for a distance of 8'-0" above ground and 8'-0" from top of pole, where they shall be 6" apart.

3- Ground wire to clear all hardware by 2" minimum, and shall be stapled to maintain this position.

MATERIAL LIST

Item	COA Commodity Code	Qty.	Description
p	28574022XX	1	Connector, Sized As Required
ai	2854002319	1	Ground Rod, 5/8" x 8', Copperweld
aj	2854002133	1	Clamp, Ground Rod
al	2857402330	.5	Staples, Ground Wire (per pound)
cj	2801602119	90	Ground Wire, #2, 7 Strand Bare Copper

City of Alexandria

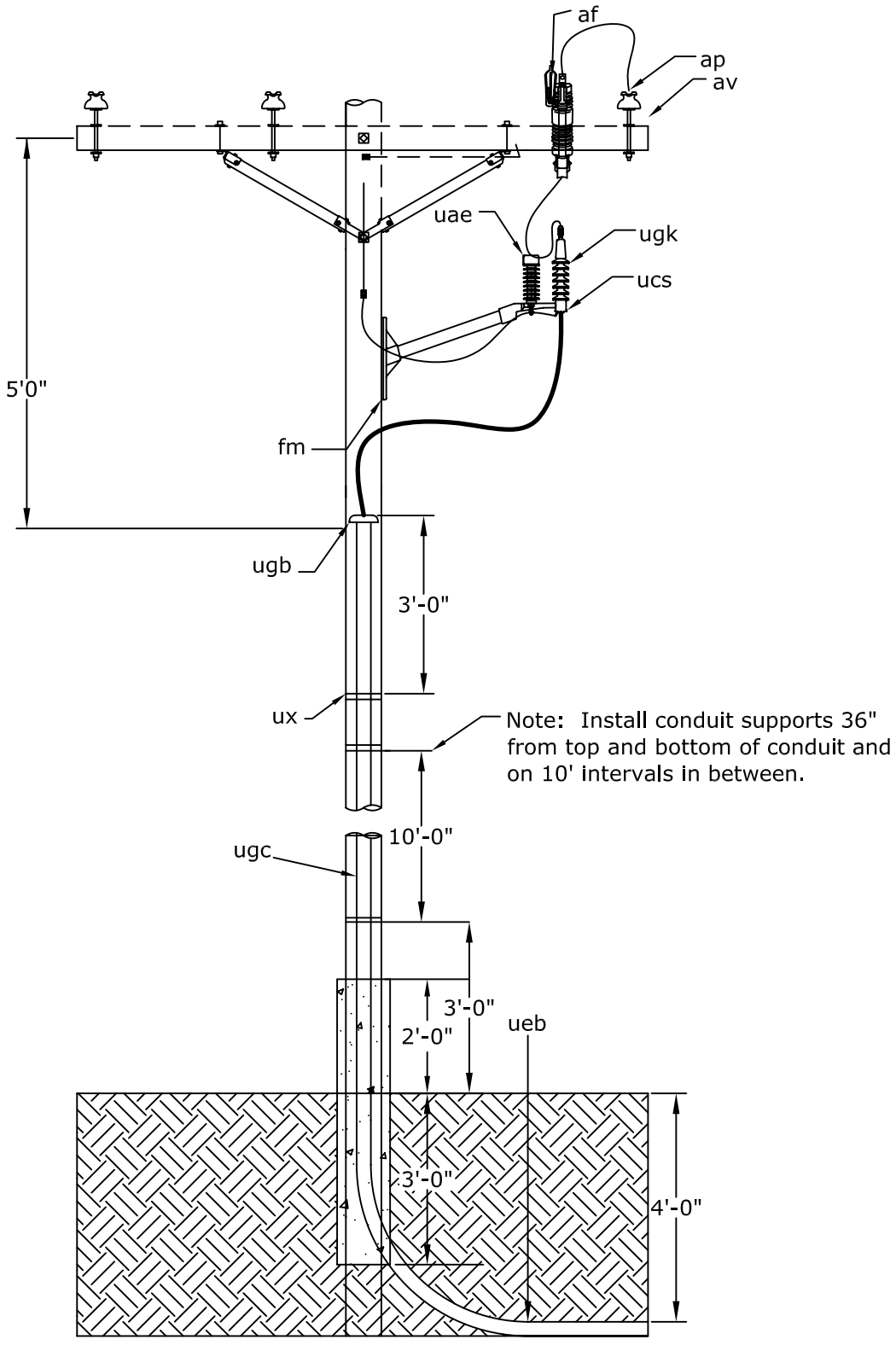
Electric Distribution

RISER POLE GROUNDING ASSEMBLY
GROUND ROD TYPE

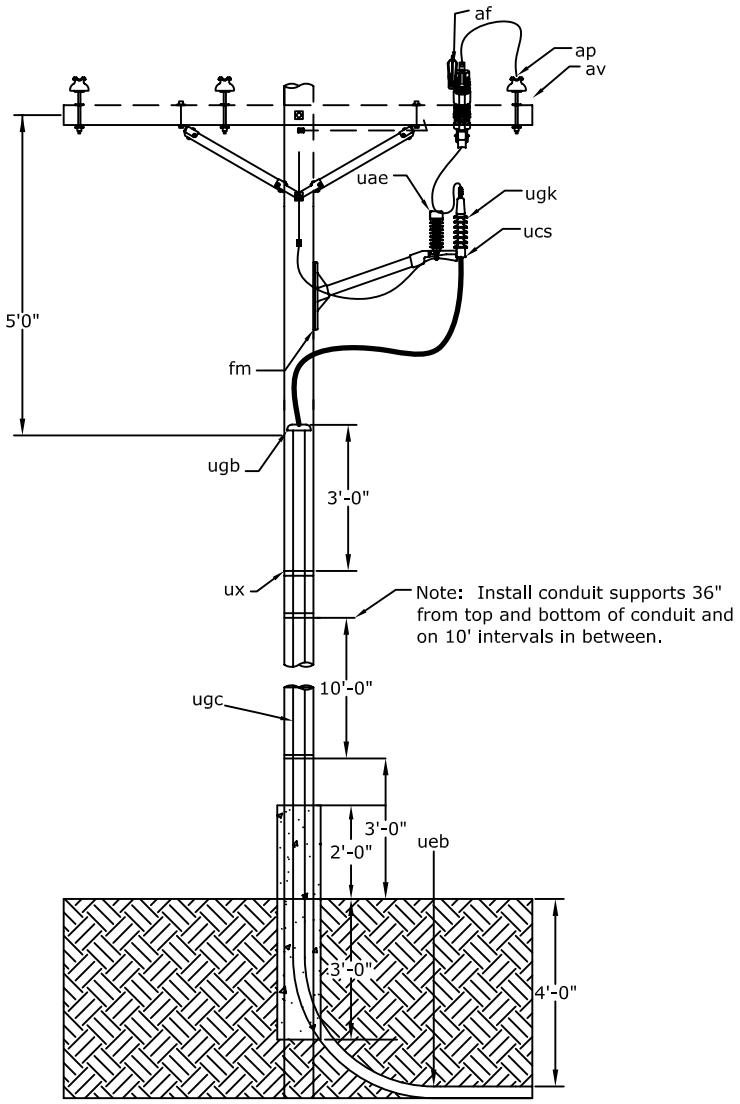
DATE: 04-20-07

STANDARD NUMBER

M2-1U



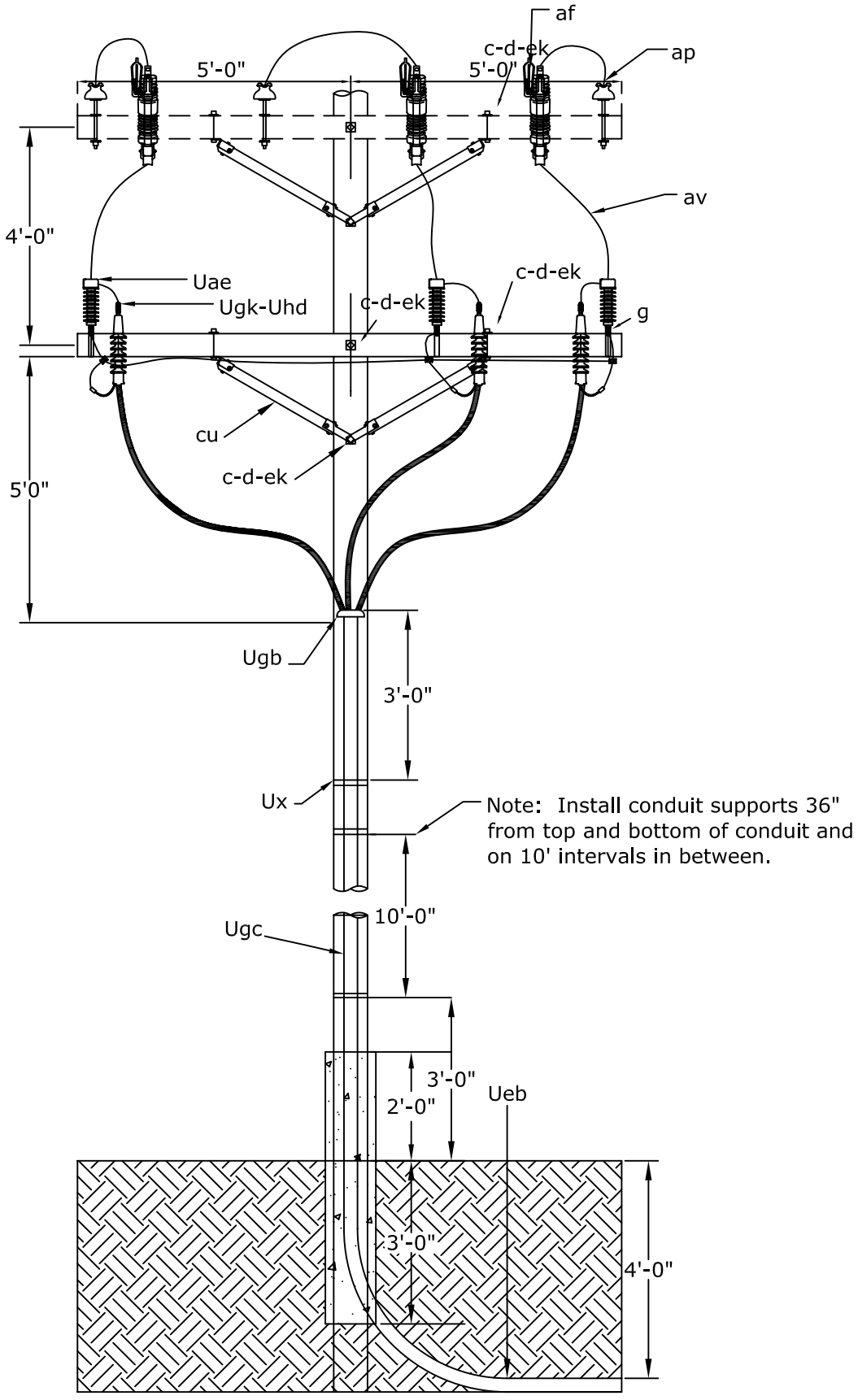
City of Alexandria *Electric Distribution*	SINGLE PHASE PRIMARY RISER POLE	DATE: 04-20-07 STANDARD NUMBER UA1



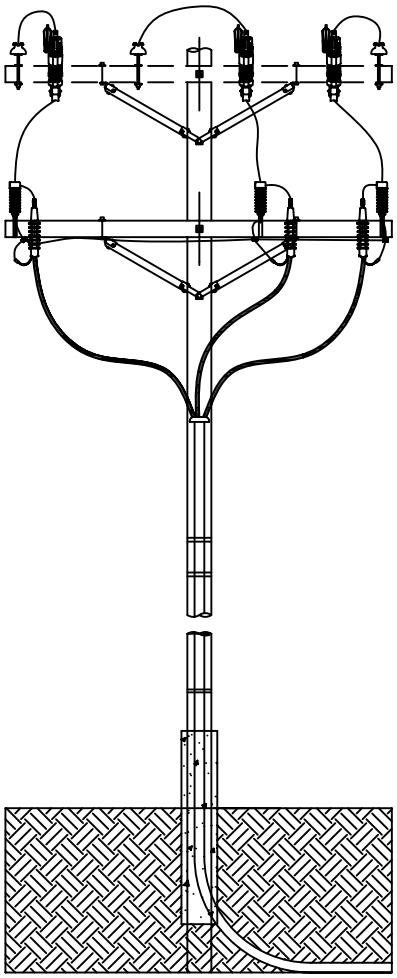
MATERIAL LIST

Item	COA Commodity Code	Qty.	Description
c	28574020XM	2	Bolt, Machine, 5/8" x Required Length
d	2857402322	2	Washer, 2 1/4" Square With 13/16" Hole, As Required
p	28574022XX	2	Connector, Sized As Required
ap	2851002131	1	Clamp, Hot Line
af	2852820002	1	Cutout, 15kV 100A Loadbreak
av	NA	2	Jumper, Sized As Required
fm	2857802474	1	Cutout and Arrester Mounting Bracket, Fiberglass
ek	285740XXXX	2	Locknut, 5/8"
uae	2858702470	1	Lightning Arrester, Riser Pole, 10kV
ueb	2851902345	1	2", Sch. 40 PVC, 90°, 36" Sweep Elbow
ugb	2858702425	1	Conduit Sealing Bushing, 2"
ugc	2851902487	3	RGS Conduit, 2" x 10' Length
ugk	2858702477	1	Cable Terminator, 15kV, 1/0 Al TRXLP
ucs	2858702405	1	Cable Sealing Kit
ux	2857802458	5	Conduit Stand-off Bracket

City of Alexandria *Electric Distribution*	SINGLE PHASE PRIMARY RISER POLE	DATE: 04-20-07 STANDARD NUMBER UA1



City of Alexandria *Electric Distribution*	THREE PHASE PRIMARY RISER POLE	DATE: 04-20-07 STANDARD NUMBER UC1



MATERIAL LIST

Item	COA Commodity Code	Qty.	Description
c	2857402008	2	Bolt, Machine, 1/2" x Required Length
c	28574020XM	2	Bolt, Machine, 5/8" x Required Length
d	2857402321	2	Washer, 1 3/8" Round With 9/16" Hole
d	2857402322	2	Washer, 2 1/4" Square With 13/16" Hole
g	2857802042	1	Crossarm, 3 3/4" x 4 3/4" x 10', Wood
p	28574022XX	6	Connector, Sized As Required
ap	2851002131	3	Clamp, Hot Line
af	2852820002	3	Cutout, 15kV 100A Loadbreak
av	NA	6	Jumper, Sized As Required
cu	2857802043	2	Brace, 60" Span (Wood)
ek	285740XXXX	2	Locknut, 5/8"
uae	2858702470	3	Lightning Arrester, Riser Pole, 10kV
ueb	SO-UG-UEB	1	4", 90°, 36" Sweep Elbow
ugb	2858702426	1	Conduit Sealing Bushing, Sized As Required
ugc	SO-UG-UGC4	3	RGS Conduit, 4" x 10' Length
ugk	2858702477	3	Cable Terminator, 15kV, 1/0 Al TRXLP
uhd	2858702401	3	Crossarm Mounting Bracket, Cable Terminator
ux	2857802458	5	Conduit Stand-off Bracket

City of Alexandria

Electric Distribution

THREE PHASE PRIMARY RISER POLE

DATE: 04-20-07

STANDARD NUMBER

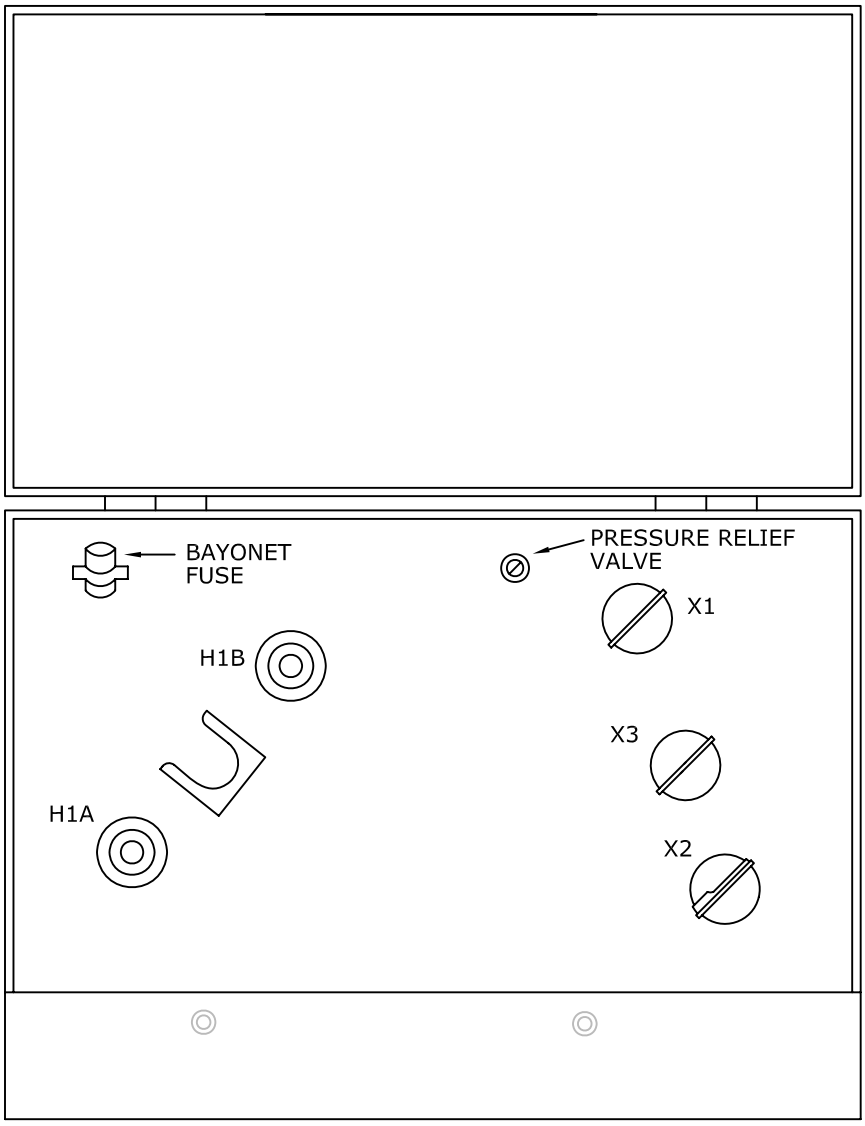
UC1

PRIMARY CONDUCTORS

Unit #	Description	Codename	COA Commodity Code	Unit of Measure
UD2CU	#2 Cu XLP, 15kV, Str. (One Phase)	N/A	2808002447	Per Foot
UD2CU-2	#2 Cu XLP, 15kV, Str. (Two Phases)	N/A	2808002447	Per Foot
UD2CU-3	#2 Cu XLP, 15kV, Str. (Three Phases)	N/A	2808002447	Per Foot
UD10AL	1/0 Al XLP, 15kV, Str. (One Phase)	N/A	2808002447	Per Foot
UD10AL-2	1/0 Al XLP, 15kV, Str. (Two Phases)	N/A	2808002447	Per Foot
UD10AL-3	1/0 Al XLP, 15kV, Str. (Three Phases)	N/A	2808002447	Per Foot
UD40AL	4/0 Al XLP, 15kV, Str. (One Phase)	N/A	SO-UG-UD40AL	Per Foot
UD40AL-2	4/0 Al XLP, 15kV, Str. (Two Phases)	N/A	SO-UG-UD40AL	Per Foot
UD40AL-3	4/0 Al XLP, 15kV, Str. (Three Phases)	N/A	SO-UG-UD40AL	Per Foot

SECONDARY CONDUCTORS

Unit #	Description	Codename	COA Commodity Code	Unit of Measure
UD6HL	#6 XHHW, 1 Each Red, Black, & Green	N/A	SO-6XHHWR SO-6XHHWB SO-6XHHWG	Per Foot
UD8SLW	#8 THHN, 1 Each Black, & White	N/A	SO-8THHNW SO-8THHNB	Per Foot
UD10SLW	#10 THHN, 1 Each Black, & White	N/A	SO-10THHNW SO-10THHNB	Per Foot
UD12SLW	#12 THHN, 1 Each Black, & White	N/A	2802402115 2802402117	Per Foot
UD40TPX	4/0 URD XLP Triplex	Sweetbriar	2801602464	Per Foot
UD350TPX	350 URD XLP Triplex	Wesleyan	2801602463	Per Foot



MATERIAL LIST

COA Commodity Code	Description	UG1-120 -25	UG1-120 -37.5	UG1-120 -50	UG1-120 -75	UG1-120 -100	UG1-120 -167
UG112025	Pad-Mounted Transformer, 240/120V, 25 KVA	1					
UG1120375	Pad-Mounted Transformer, 240/120V, 37.5 KVA		1				
UG112050	Pad-Mounted Transformer, 240/120V, 50 KVA			1			
UG112075	Pad-Mounted Transformer, 240/120V, 75 KVA				1		
UG1120100	Pad-Mounted Transformer, 240/120V, 100 KVA					1	
UG1120167	Pad-Mounted Transformer, 240/120V, 167 KVA						1
2858702404	Secondary Terminal Bars, Small	3	3	3	3		
2858702488	Secondary Terminal Bars, Large					3	3

City of Alexandria

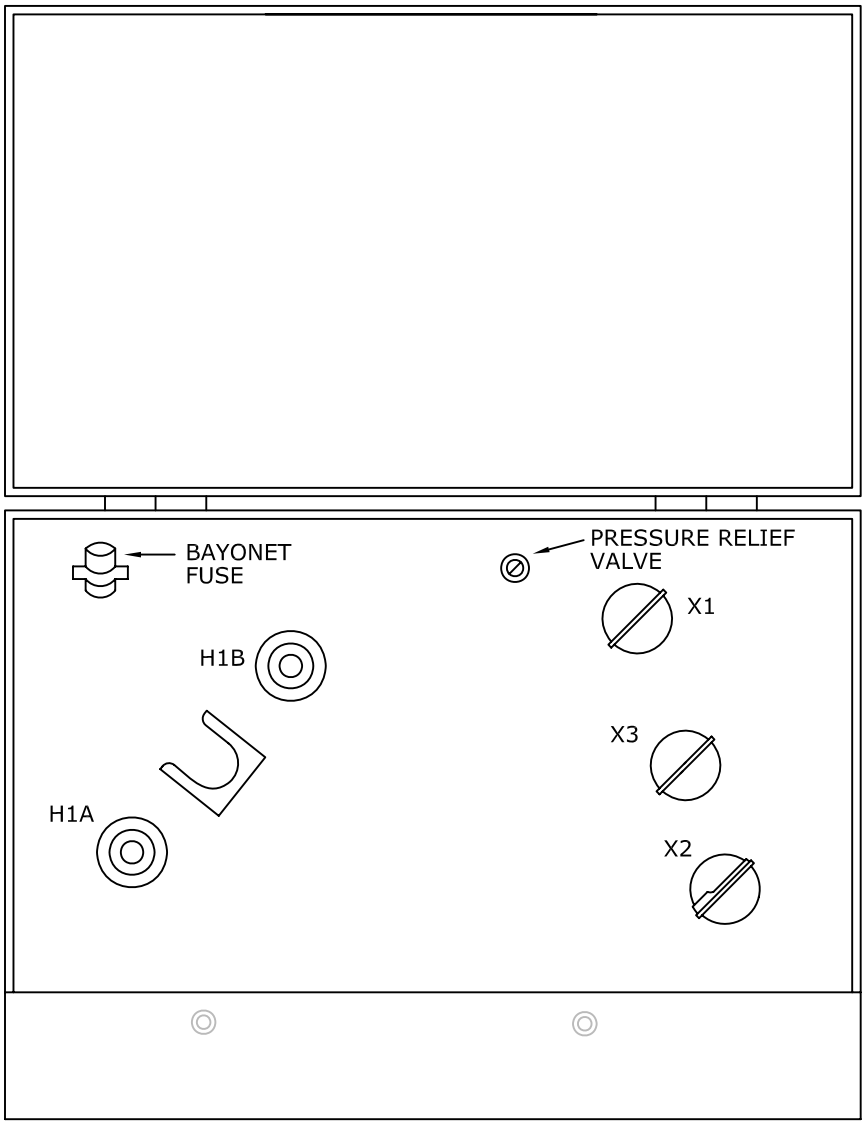
Electric Distribution

SINGLE-PHASE PAD-MOUNTED TRANSFORMER
7,200V PRIMARY, 240/120V SECONDARY

DATE: 04-20-07

STANDARD NUMBER

UG1-120-KVA



MATERIAL LIST

COA Commodity Code	Description	UG1-240 -25	UG1-240 -37.5	UG1-240 -50	UG1-240 -75	UG1-240 -100	UG1-240 -167
UG124025	Pad-Mounted Transformer, 480/240V, 25 KVA	1					
UG1240375	Pad-Mounted Transformer, 480/240V, 37.5 KVA		1				
UG124050	Pad-Mounted Transformer, 480/240V, 50 KVA			1			
UG124075	Pad-Mounted Transformer, 480/240V, 75 KVA				1		
UG1240100	Pad-Mounted Transformer, 480/240V, 100 KVA					1	
UG1240167	Pad-Mounted Transformer, 480/240V, 167 KVA						1
2858702404	Secondary Terminal Bars, Small	3	3	3	3		
2858702488	Secondary Terminal Bars, Large					3	3

City of Alexandria

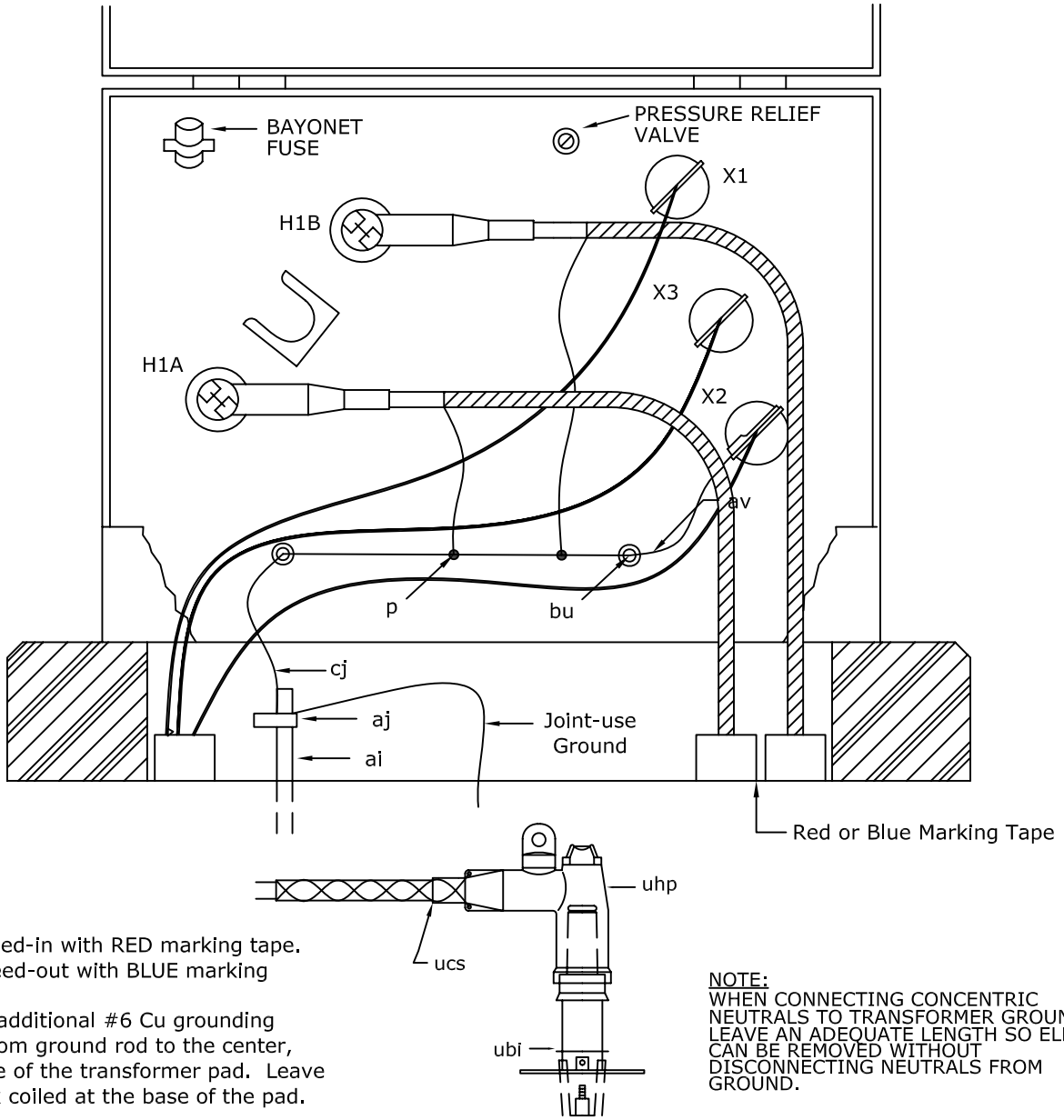
Electric Distribution

SINGLE-PHASE PAD-MOUNTED TRANSFORMER
7,200V PRIMARY, 480/240V SECONDARY

DATE: 04-20-07

STANDARD NUMBER

UG1-240-KVA



NOTES:
1. Mark feed-in with RED marking tape.
2. Mark feed-out with BLUE marking tape.
3. Install additional #6 Cu grounding jumper from ground rod to the center, street side of the transformer pad. Leave 3' of slack coiled at the base of the pad.

NOTE:
WHEN CONNECTING CONCENTRIC NEUTRALS TO TRANSFORMER GROUND, LEAVE AN ADEQUATE LENGTH SO ELBOWS CAN BE REMOVED WITHOUT DISCONNECTING NEUTRALS FROM GROUND.

MATERIAL LIST

Item	COA Commodity Code	Qty.	Description
p	28574022XX	2	Connector, Bolted
ai	2854002319	1	Ground Rod, 5/8" x 8', Copperweld
aj	2854002133	1	Clamp, Ground Rod
av	NA	1	Jumper, #2 Stranded Copper
bu	2851002136	2	Connector, Equipment Ground
cj	2801602119	25	Ground Wire, #2 Copper, 7-Strand
ubi	2858202097	2	Bushing Well Insert
ucs	2858702405	2	Cable Sealing Kit
uhp	2858202476	2	15kV Loadbreak Elbow, 1/0 Al TRXLP

City of Alexandria

Electric Distribution

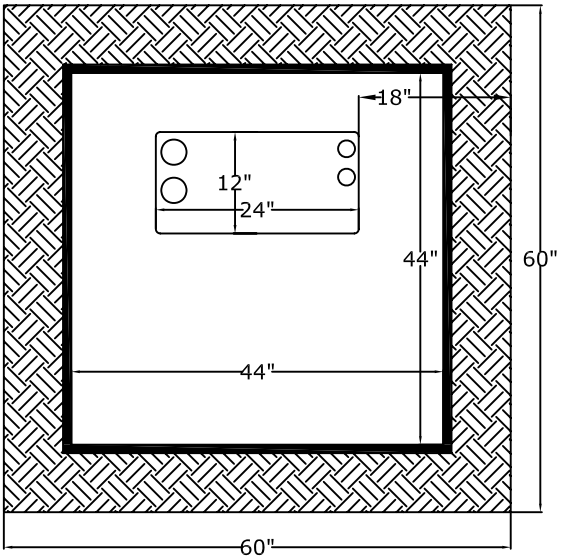
SINGLE-PHASE PAD-MOUNTED TRANSFORMER INSTALLATION ASSEMBLY

DATE: 04-20-07

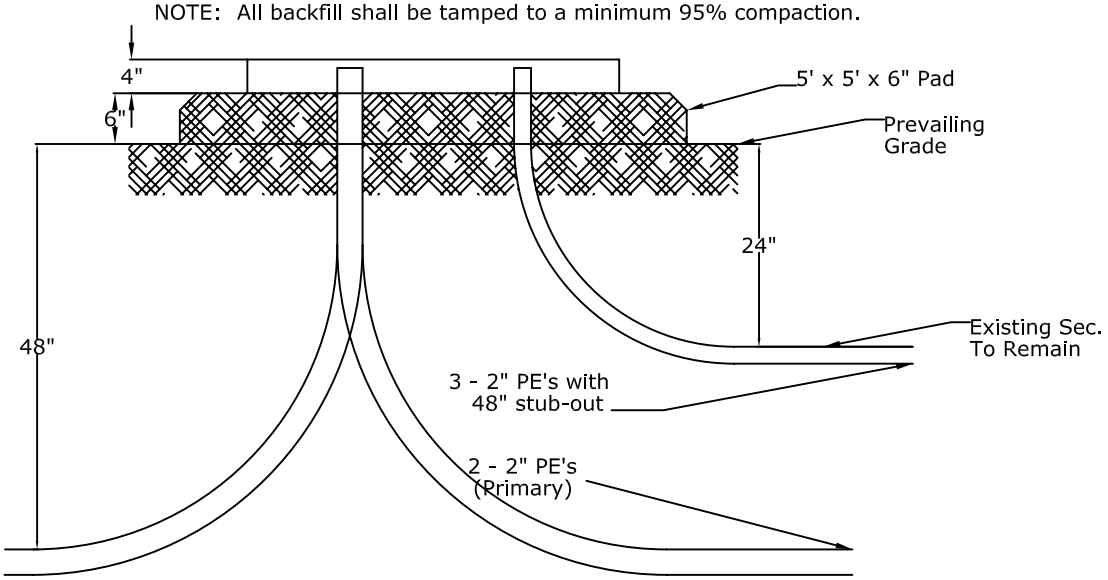
STANDARD NUMBER

UG1

LABOR ONLY UNIT

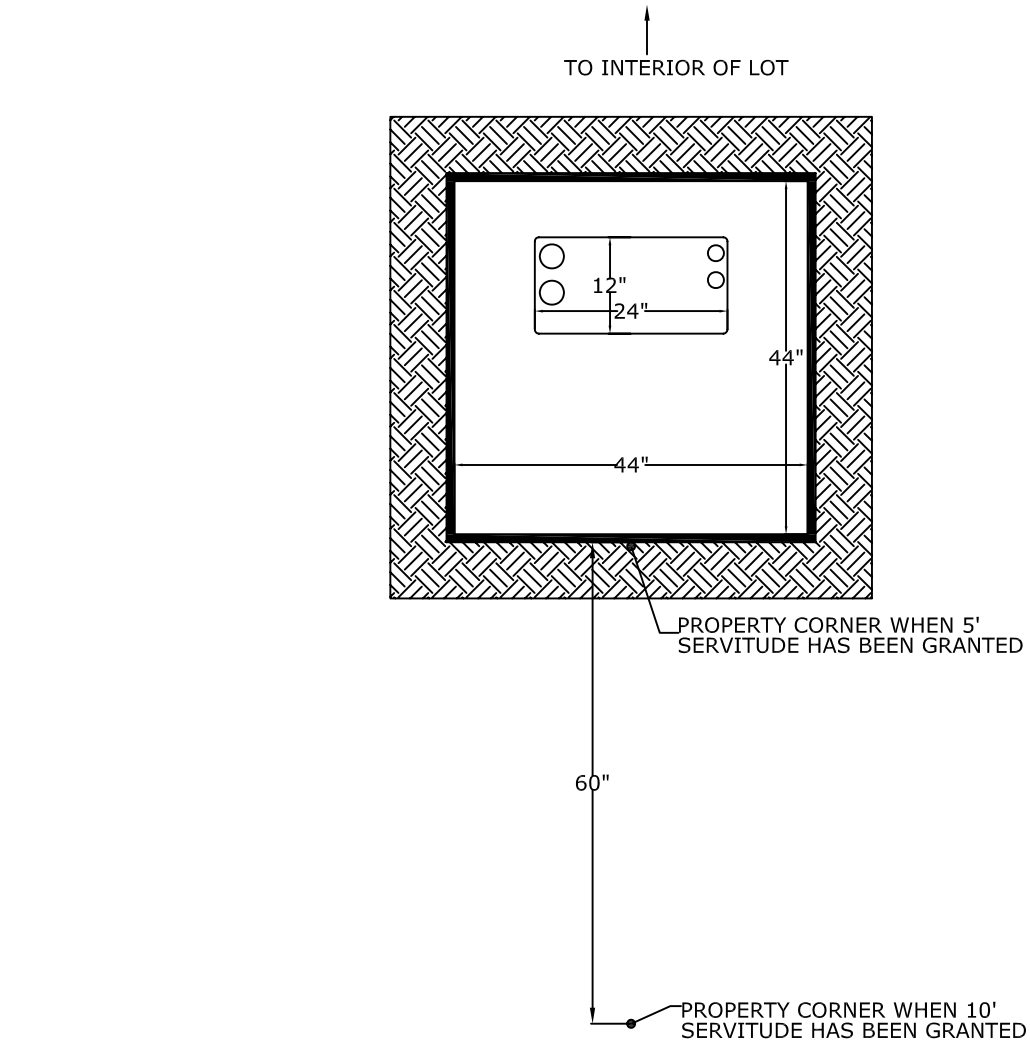


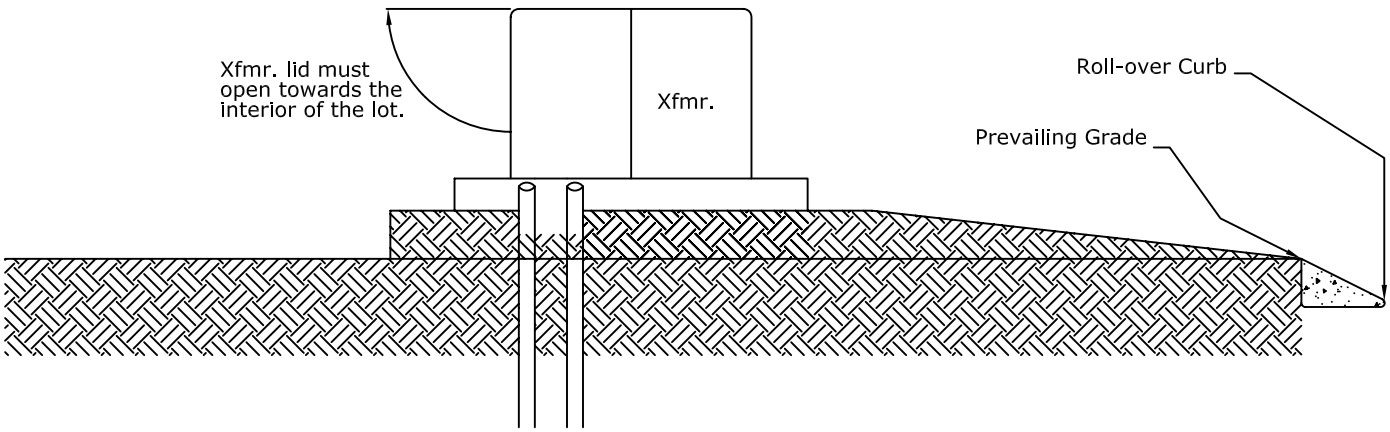
NOTE: All backfill shall be tamped to a minimum 95% compaction.



NOTE: Unit includes all cost of routing newly installed conduits into existing pad-mounted transformers including all excavation, backfill, and restoration.

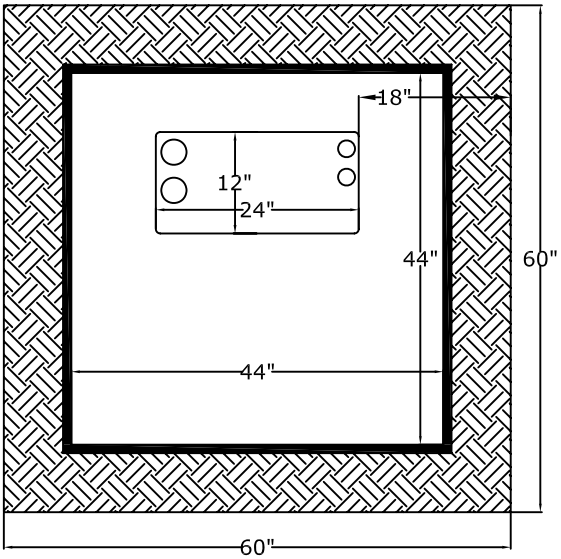
City of Alexandria *Electric Distribution*	CONDUIT INSTALLATION FOR EXISTING SINGLE-PHASE PAD-MOUNTED TRANSFORMER	DATE: 09-28-06 STANDARD NUMBER UG1-ENT

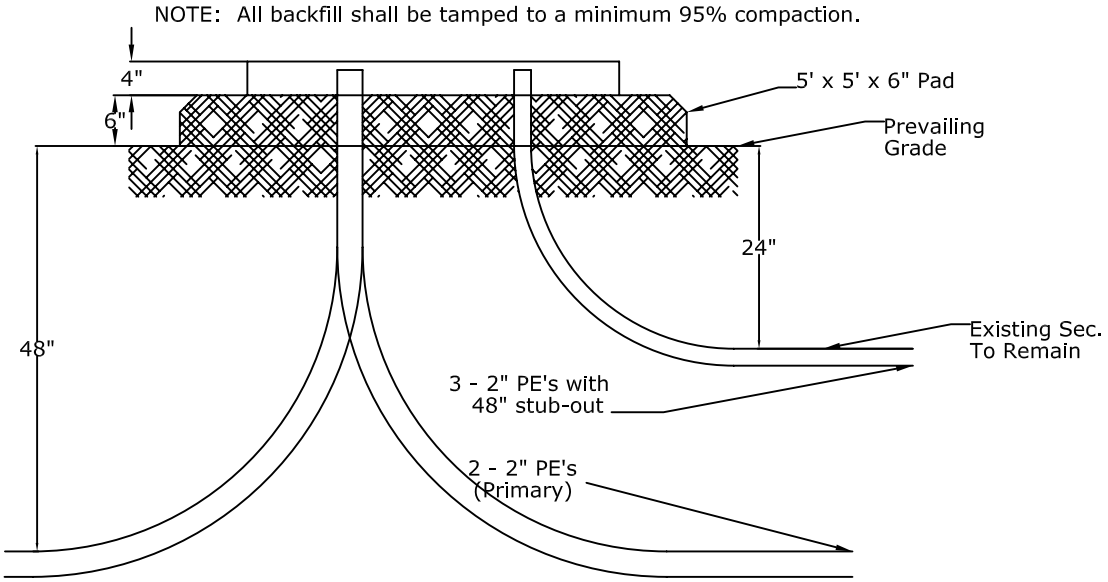




City of Alexandria *Electric Distribution*	SINGLE-PHASE PAD-MOUNTED TRANSFORMER PAD PLACEMENT DETAILS	DATE: 04-20-07 STANDARD NUMBER UG1L

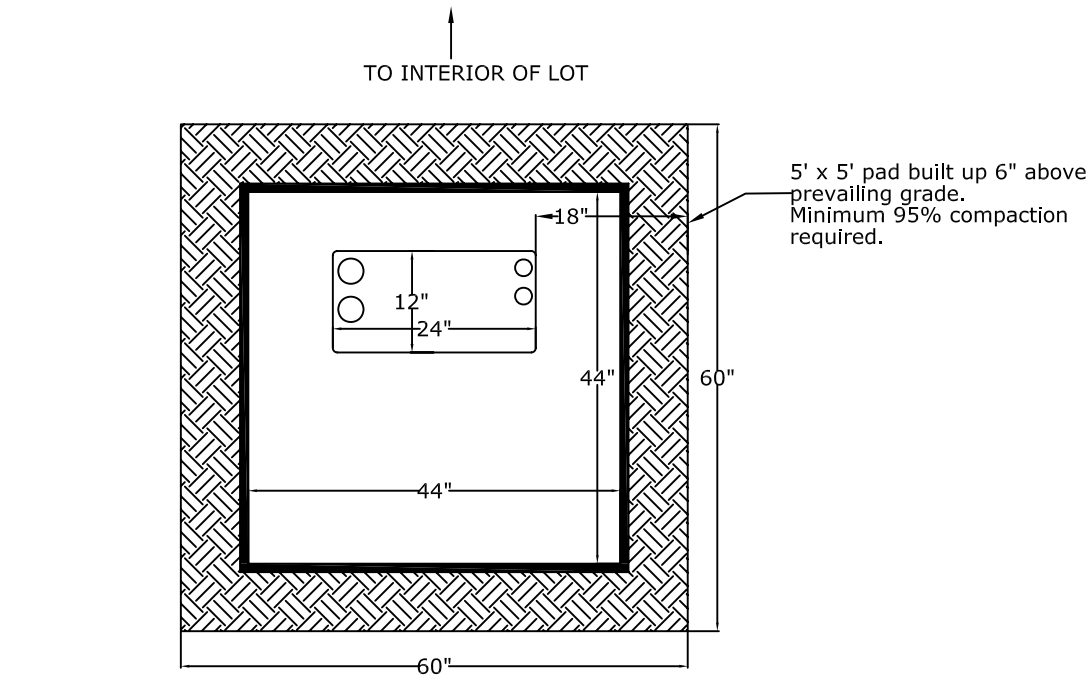
LABOR ONLY UNIT



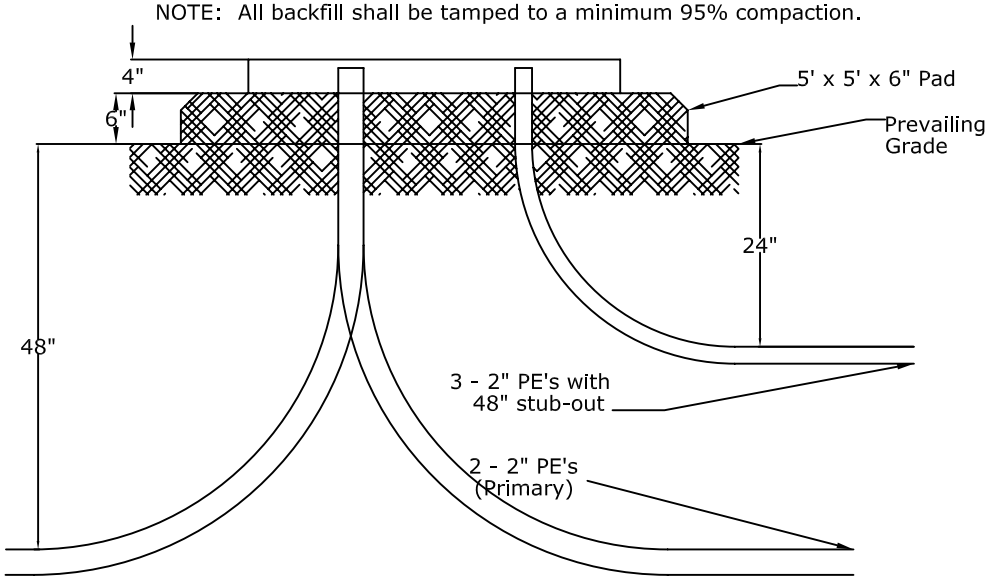


NOTE: Unit includes all cost of leveling existing pad-mounted transformers including all excavation, backfill, and restoration.

City of Alexandria *Electric Distribution*	LEVEL EXISTING SINGLE-PHASE PAD-MOUNTED TRANSFORMER	DATE: 09-28-06 STANDARD NUMBER UG1-LVL



NOTE: All backfill shall be tamped to a minimum 95% compaction.



LOOKING FROM STREET

MATERIAL LIST			
Item	COA Commodity Code	Qty.	Description
-	2858702417	1	Single-phase Transformer Pad

City of Alexandria *Electric Distribution*	SINGLE-PHASE PAD-MOUNTED TRANSFORMER PAD INSTALLATION DETAILS	DATE: 04-20-07 STANDARD NUMBER UG1P

MATERIAL LIST

COA Commodity Code	Description	UG3L -120-75	UG3L -120-112	UG3L -120-150	UG3L -120-225	UG3L -120-300	UG3L -120-500	UG3L -120-750	UG3L -120-1000	UG3L -120-1500	UG3L -120-2000	UG3L -120-2500
UG3L12075	Pad-Mounted Transformer, 120/208V, 75 KVA	1										
UG3L120112	Pad-Mounted Transformer, 120/208V, 112.5 KVA		1									
UG3L120150	Pad-Mounted Transformer, 120/208V, 150 KVA			1								
UG3L120225	Pad-Mounted Transformer, 120/208V, 225 KVA				1							
UG3L120300	Pad-Mounted Transformer, 120/208V, 300 KVA					1						
UG3L120500	Pad-Mounted Transformer, 120/208V, 500 KVA						1					
UG3L120750	Pad-Mounted Transformer, 120/208V, 750 KVA							1				
UG3L1201000	Pad-Mounted Transformer, 120/208V, 1000 KVA								1			
UG3L1201500	Pad-Mounted Transformer, 120/208V, 1500 KVA									1		
UG3L1202000	Pad-Mounted Transformer, 120/208V, 2000 KVA										1	
UG3L1202500	Pad-Mounted Transformer, 120/208V, 2500 KVA											1

City of Alexandria

Electric Distribution

THREE-PHASE PAD-MOUNTED TRANSFORMER
120/208V SECONDARY, DEAD-FRONT LOOP FEED

DATE: 04-20-07

STANDARD NUMBER

UG3L-120-KVA

MATERIAL LIST

COA Commodity Code	Description	UG3L -277-75	UG3L -277-112	UG3L -277-150	UG3L -277-225	UG3L -277-300	UG3L -277-500	UG3L -277-750	UG3L -277-1000	UG3L -277-1500	UG3L -277-2000	UG3L -277-2500
UG3L27775	Pad-Mounted Transformer, 277/480V, 75 KVA	1										
UG3L277112	Pad-Mounted Transformer, 277/480V, 112.5 KVA		1									
UG3L277150	Pad-Mounted Transformer, 277/480V, 150 KVA			1								
UG3L277225	Pad-Mounted Transformer, 277/480V, 225 KVA				1							
UG3L277300	Pad-Mounted Transformer, 277/480V, 300 KVA					1						
UG3L277500	Pad-Mounted Transformer, 277/480V, 500 KVA						1					
UG3L277750	Pad-Mounted Transformer, 277/480V, 750 KVA							1				
UG3L2771000	Pad-Mounted Transformer, 277/480V, 1000 KVA								1			
UG3L2771500	Pad-Mounted Transformer, 277/480V, 1500 KVA									1		
UG3L2772000	Pad-Mounted Transformer, 277/480V, 2000 KVA										1	
UG3L2772500	Pad-Mounted Transformer, 277/480V, 2500 KVA											1

City of Alexandria

Electric Distribution

THREE-PHASE PAD-MOUNTED TRANSFORMER
277/480V SECONDARY, DEAD-FRONT LOOP FEED

DATE: 04-20-07

STANDARD NUMBER

UG3L-277-KVA

MATERIAL LIST

COA Commodity Code	Description	UG3R -120-75	UG3R -120-112	UG3R -120-150	UG3R -120-225	UG3R -120-300	UG3R -120-500	UG3R -120-750	UG3R -120-1000	UG3R -120-1500	UG3R -120-2000	UG3R -120-2500
UG3R12075	Pad-Mounted Transformer, 120/208V, 75 KVA	1										
UG3R120112	Pad-Mounted Transformer, 120/208V, 112.5 KVA		1									
UG3R120150	Pad-Mounted Transformer, 120/208V, 150 KVA			1								
UG3R120225	Pad-Mounted Transformer, 120/208V, 225 KVA				1							
UG3R120300	Pad-Mounted Transformer, 120/208V, 300 KVA					1						
UG3R120500	Pad-Mounted Transformer, 120/208V, 500 KVA						1					
UG3R120750	Pad-Mounted Transformer, 120/208V, 750 KVA							1				
UG3R1201000	Pad-Mounted Transformer, 120/208V, 1000 KVA								1			
UG3R1201500	Pad-Mounted Transformer, 120/208V, 1500 KVA									1		
UG3R1202000	Pad-Mounted Transformer, 120/208V, 2000 KVA										1	
UG3R1202500	Pad-Mounted Transformer, 120/208V, 2500 KVA											1

City of Alexandria

Electric Distribution

THREE-PHASE PAD-MOUNTED TRANSFORMER
120/208V SECONDARY, DEAD-FRONT RADIAL FEED

DATE: 04-20-07

STANDARD NUMBER

UG3R-120-KVA

MATERIAL LIST

COA Commodity Code	Description	UG3R -277-75	UG3R -277-112	UG3R -277-150	UG3R -277-225	UG3R -277-300	UG3R -277-500	UG3R -277-750	UG3R -277-1000	UG3R -277-1500	UG3R -277-2000	UG3R -277-2500
UG3R27775	Pad-Mounted Transformer, 277/480V, 75 KVA	1										
UG3R277112	Pad-Mounted Transformer, 277/480V, 112.5 KVA		1									
UG3R277150	Pad-Mounted Transformer, 277/480V, 150 KVA			1								
UG3R277225	Pad-Mounted Transformer, 277/480V, 225 KVA				1							
UG3R277300	Pad-Mounted Transformer, 277/480V, 300 KVA					1						
UG3R277500	Pad-Mounted Transformer, 277/480V, 500 KVA						1					
UG3R277750	Pad-Mounted Transformer, 277/480V, 750 KVA							1				
UG3R2771000	Pad-Mounted Transformer, 277/480V, 1000 KVA								1			
UG3R2771500	Pad-Mounted Transformer, 277/480V, 1500 KVA									1		
UG3R2772000	Pad-Mounted Transformer, 277/480V, 2000 KVA										1	
UG3R2772500	Pad-Mounted Transformer, 277/480V, 2500 KVA											1

City of Alexandria

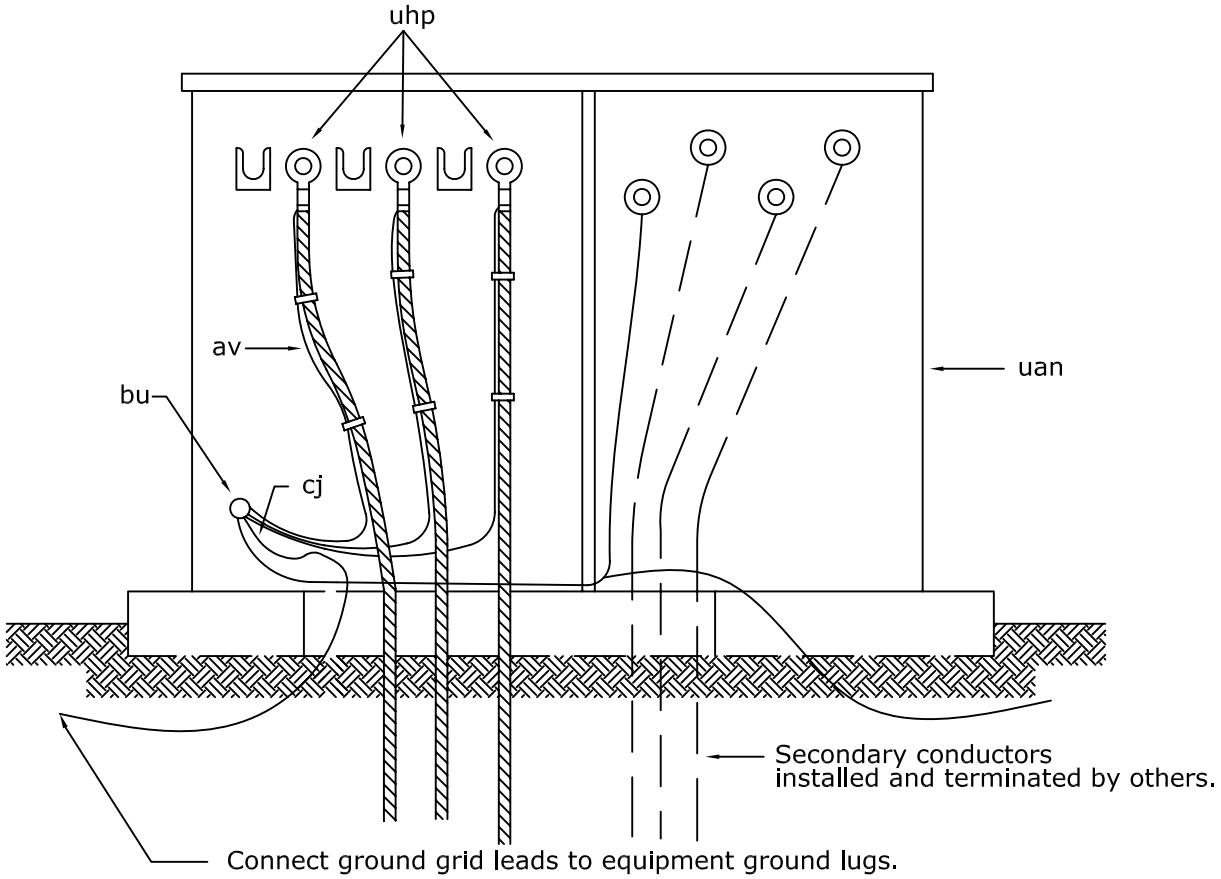
Electric Distribution

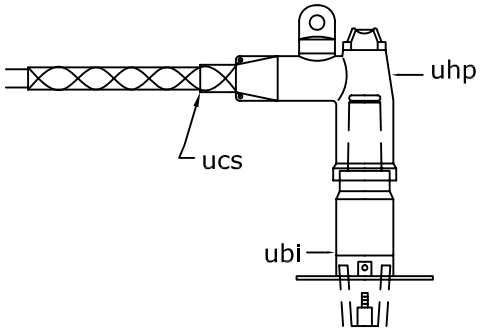
THREE-PHASE PAD-MOUNTED TRANSFORMER
277/480V SECONDARY, DEAD-FRONT RADIAL FEED

DATE: 04-20-07

STANDARD NUMBER

UG3R-277-KVA





NOTE:
WHEN CONNECTING CONCENTRIC NEUTRALS TO TRANSFORMER GROUND, LEAVE AN ADEQUATE LENGTH SO ELBOWS CAN BE REMOVED WITHOUT DISCONNECTING NEUTRALS FROM GROUND.

MATERIAL LIST

Item	COA Commodity Code	Qty.	Description
p	28574022XX	2	Connector, Bolted
av	NA	1	Jumper, #2 Stranded Copper
bu	2851002136	2	Connector, Equipment Ground
cj	2801602119	25	Ground Wire, #2 Copper, 7-Strand
ubi	2858202097	3	Bushing Well Insert
ucs	2858702405	3	Cable Sealing Kit
uhp	2858202476	3	15kV Loadbreak Elbow, 1/0 Al TRXLP

City of Alexandria

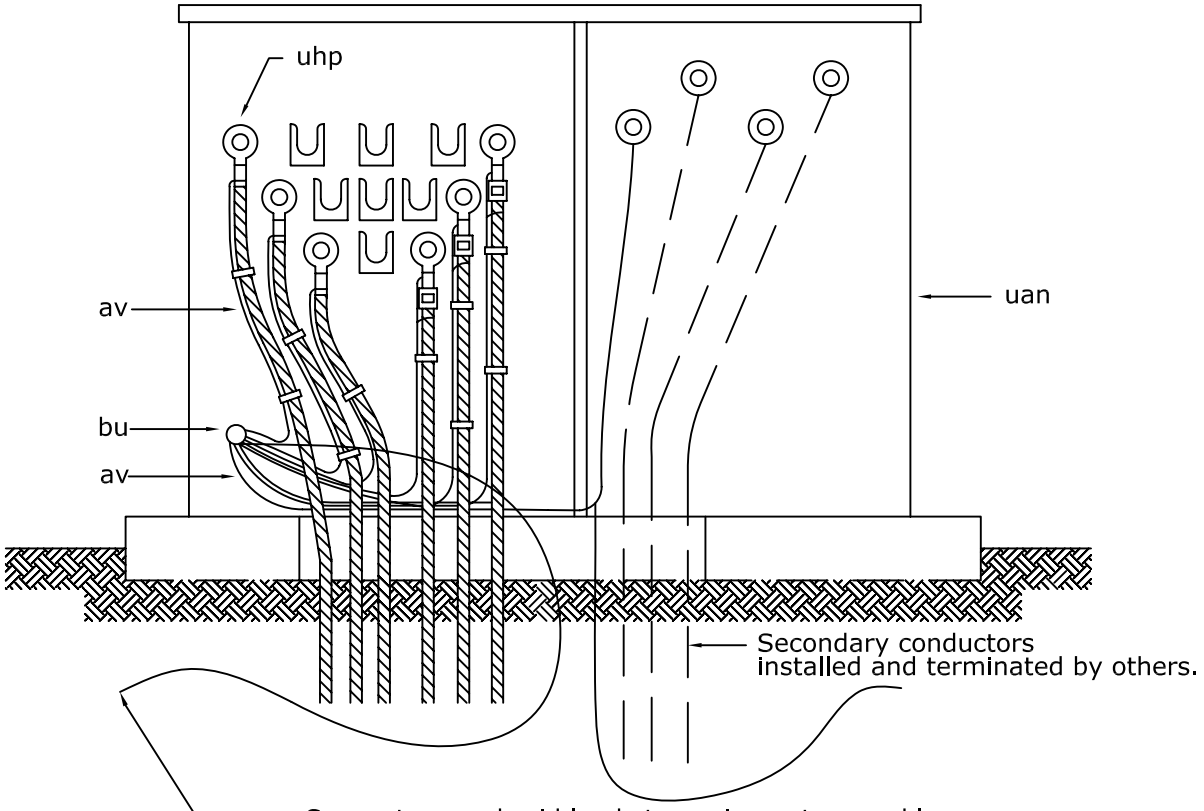
Electric Distribution

THREE-PHASE PAD-MOUNTED TRANSFORMER
DEAD FRONT RADIAL FEED

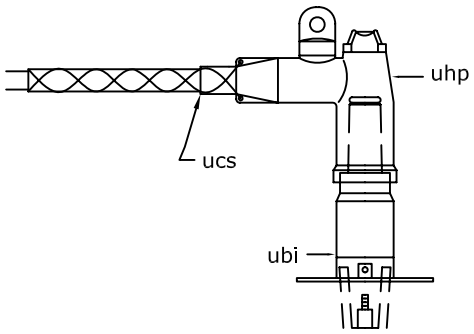
DATE: 04-20-07

STANDARD NUMBER

UG31



NOTE: Mark feed-in with RED marking tape. Mark feed-out with BLUE marking tape.



NOTE:
WHEN CONNECTING CONCENTRIC NEUTRALS TO TRANSFORMER GROUND, LEAVE AN ADEQUATE LENGTH SO ELBOWS CAN BE REMOVED WITHOUT DISCONNECTING NEUTRALS FROM GROUND.

MATERIAL LIST

Item	COA Commodity Code	Qty.	Description
p	28574022XX	2	Connector, Bolted
av	NA	1	Jumper, #2 Stranded Copper
bu	2851002136	2	Connector, Equipment Ground
cj	2801602119	25	Ground Wire, #2 Copper, 7-Strand
ubi	2858202097	6	Bushing Well Insert
ucs	2858702405	6	Cable Sealing Kit
uhp	2858202476	6	15kV Loadbreak Elbow, 1/0 Al TRXLP

City of Alexandria

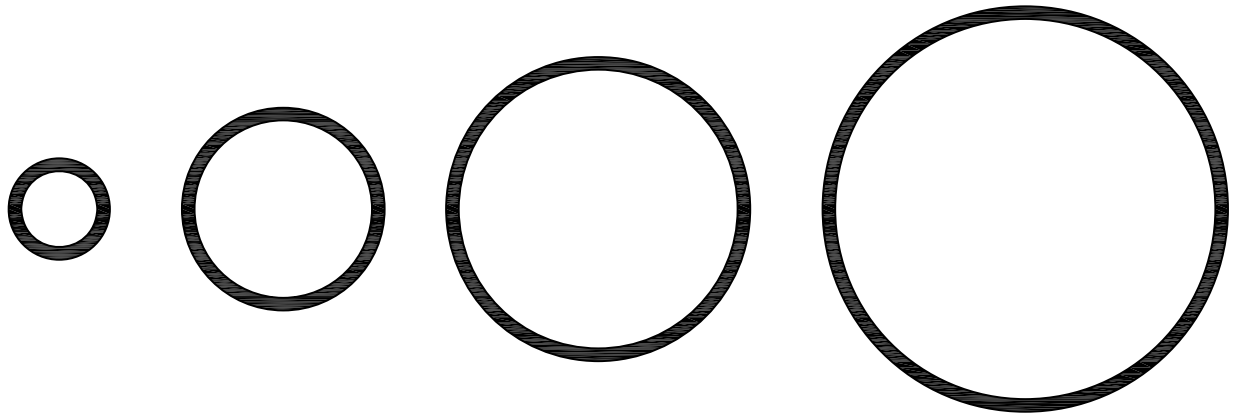
Electric Distribution

THREE-PHASE PAD-MOUNTED TRANSFORMER
DEAD FRONT LOOP FEED

DATE: 04-20-07

STANDARD NUMBER

UG32

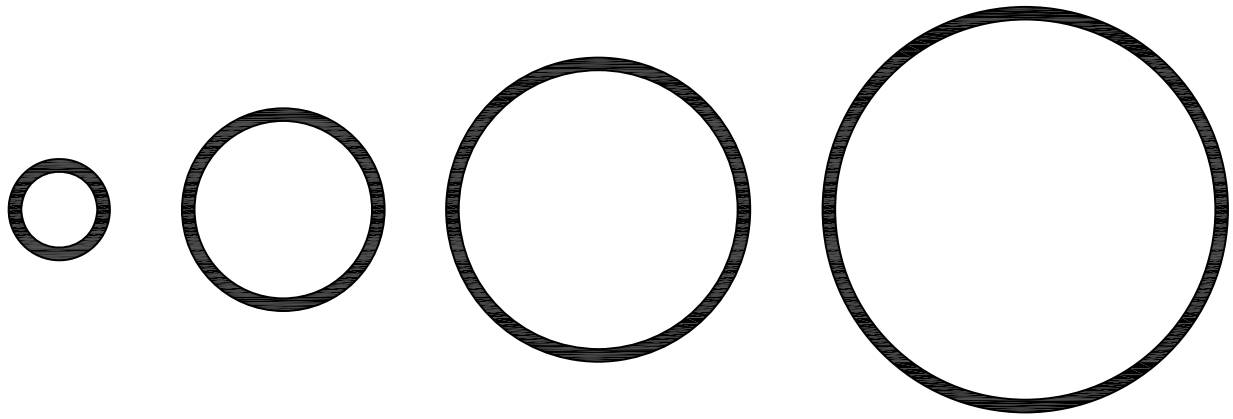


1" RED HDPE | 2" RED HDPE | 3" RED HDPE | 4" RED HDPE

NOTE: Unit of meausure is Per Foot.

UHDPE - MATERIAL LIST

COA Commodity Code	Description	UHDPE-1	UHDPE-2	UHDPE-3	UHDPE-4
2851902352	Petroflex, 1" HDPE Sch. 40 Conduit, Red	1			
2851902353	Petroflex, 2" HDPE Sch. 40 Conduit, Red		1		
2851902354	Petroflex, 3" HDPE Sch. 40 Conduit, Red			1	
2851902509	Petroflex, 4" HDPE Sch. 40 Conduit, Red				1



1" SCH. 40 PVC | 2" SCH. 40 PVC | 3" SCH. 40 PVC | 4" SCH. 40 PVC

NOTE: Unit of meausure is Per Foot.

UPVC - MATERIAL LIST

COA Commodity Code	Description	UPVC-1	UPVC-2	UPVC-3	UPVC-4
2851902505	1" Sch. 40 PVC Conduit, Gray	1			
2851902506	2" Sch. 40 PVC Conduit, Gray		1		
2851902350	3" Sch. 40 PVC Conduit, Gray			1	
2851902508	4" Sch. 40 PVC Conduit, Gray				1

City of Alexandria

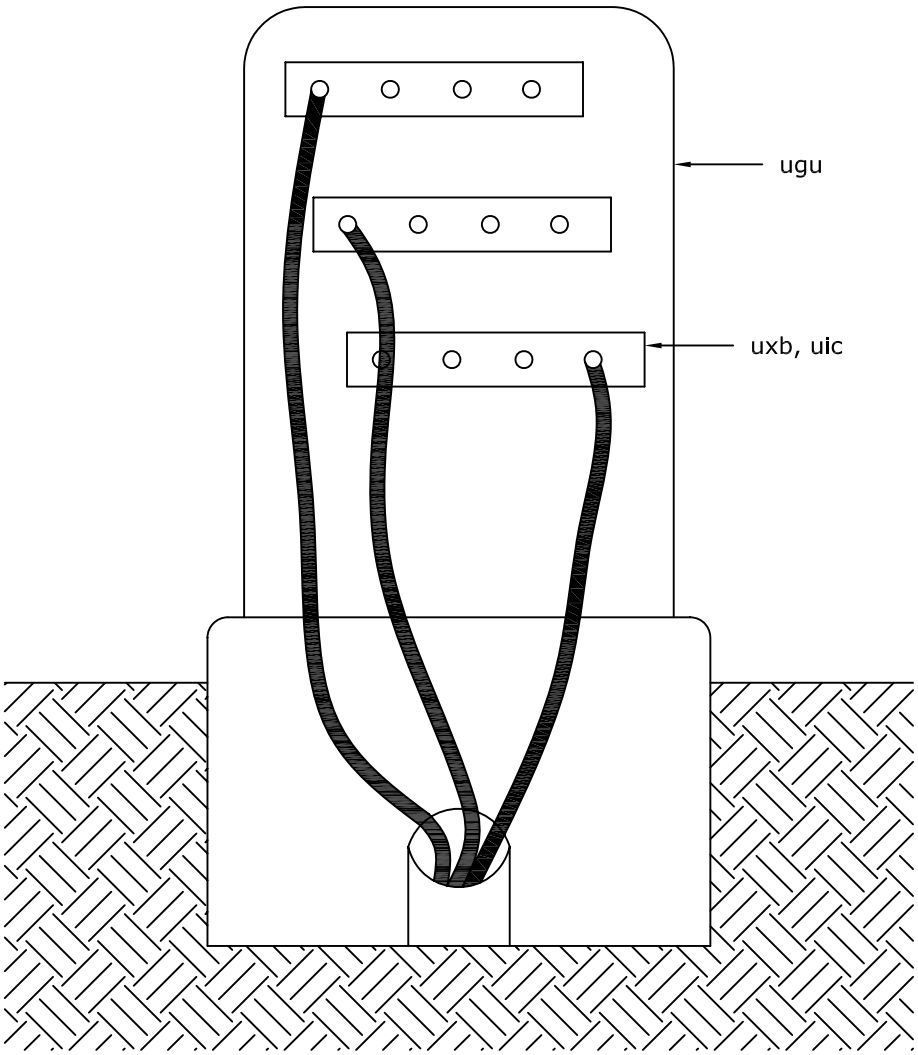
Electric Distribution

CONDUIT INSTALLATION ASSEMBLIES

DATE: 04-20-07

STANDARD NUMBER

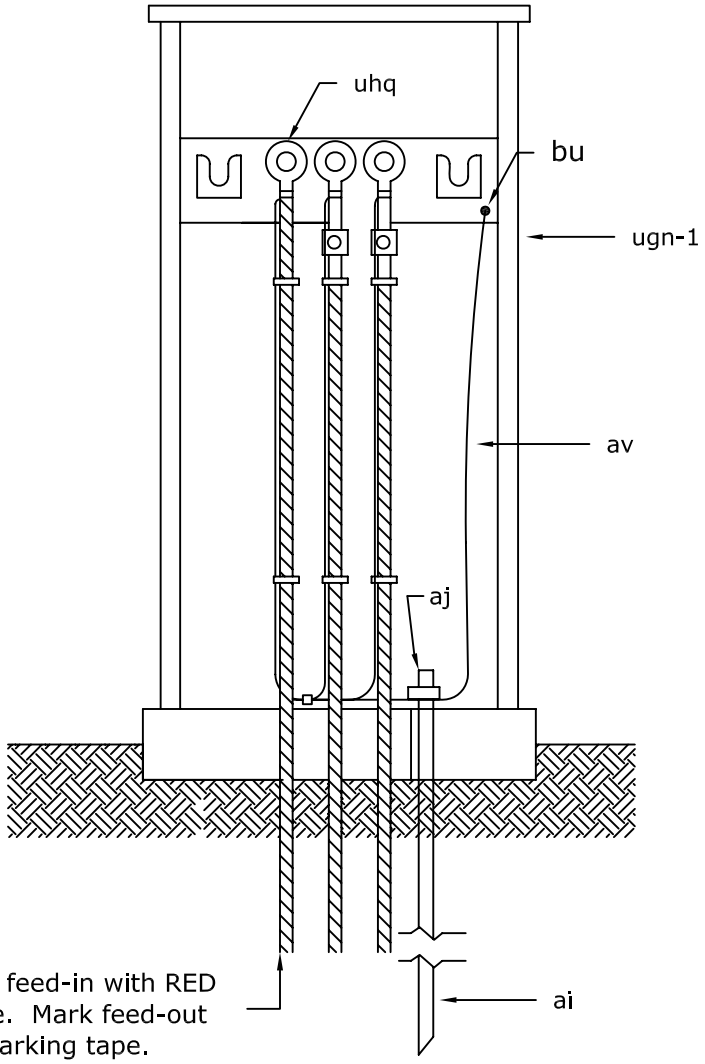
UHDPE-(Dia.)
UPVC-(Dia.)



MATERIAL LIST

Item	COA Commodity Code	Qty.	Description
ugu	2857402450	1	Secondary Pedestal, Above Grade
uic	2859902532	3	Insulating Cover
uxb	2858702417	3	Secondary Terminal Bars

City of Alexandria *Electric Distribution*	DIRECT BURIED SECONDARY PEDESTAL	DATE: 04-20-07 STANDARD NUMBER UK-1



NOTE: Mark feed-in with RED marking tape. Mark feed-out with BLUE marking tape.

NOTE: 1. Specify load-break elbows and feed-thru modules seperately.
2. Assembly includes sectionalizing enclosure and fiberglass ground sleeve.

MATERIAL LIST

Item	COA Commodity Code	Qty.	Description
ai	2854002319	1	Ground Rod, 5/8" x 8', Copperweld
aj	2854002133	1	Clamp, Ground Rod
av	2801602119	15	Jumpers, #2 7 Str. Cu, As Required
bu	2851002136	1	Connector, Equipment Ground
ugn	2858702468 2858702468	1 1	Enclosure, Single-phase Direct Burial Base

City of Alexandria

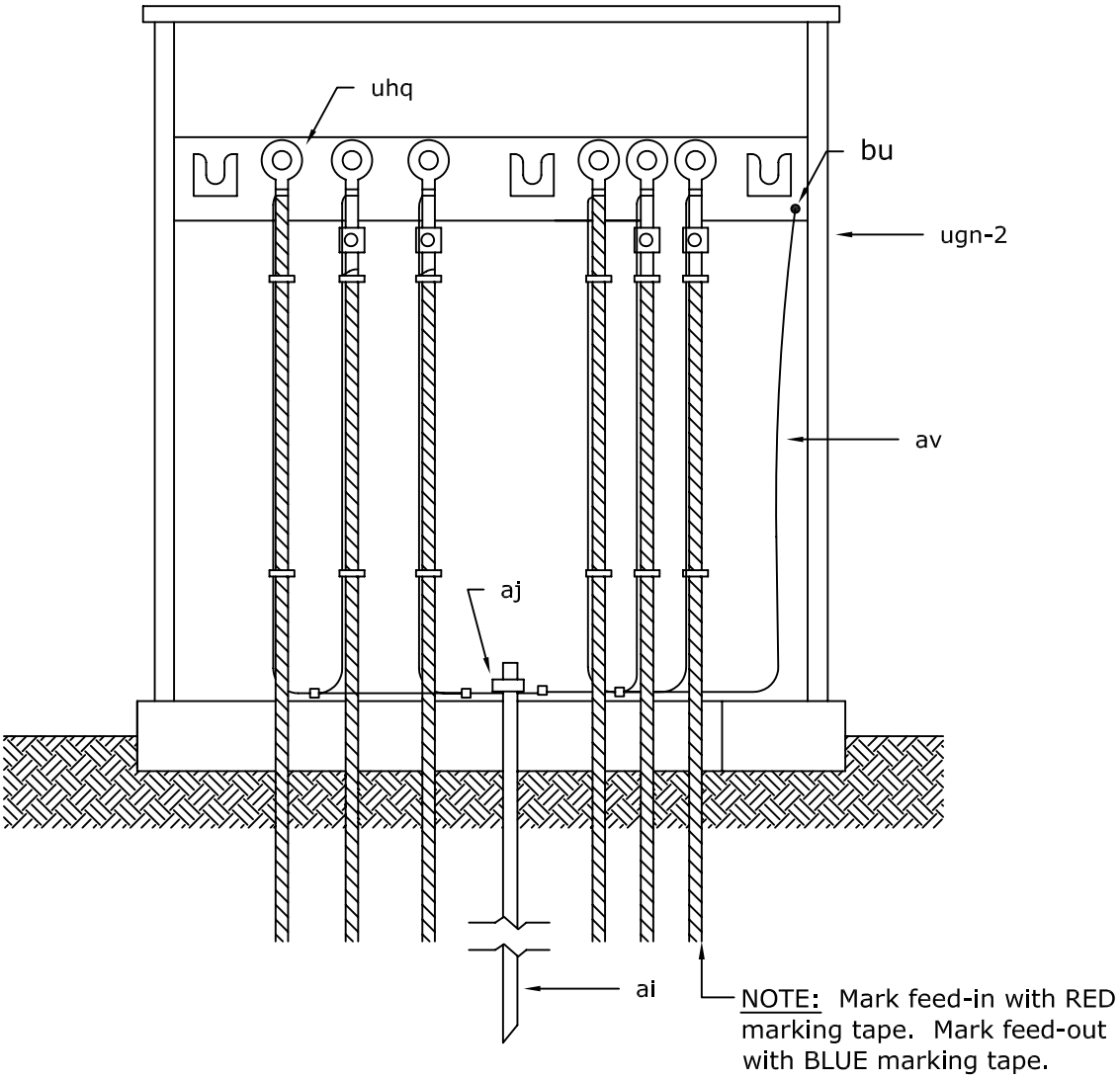
Electric Distribution

SINGLE-PHASE DIRECT BURIED SECTIONALIZING ASSEMBLY

DATE: 04-20-07

STANDARD NUMBER

UM3-1



NOTE: 1. Specify load-break elbows and feed-thru modules seperately.
2. Assembly includes sectionalizing enclosure and fiberglass ground sleeve.

MATERIAL LIST

Item	COA Commodity Code	Qty.	Description
ai	2854002319	2	Ground Rod, 5/8" x 8', Copperweld
aj	2854002133	2	Clamp, Ground Rod
av	2801602119	20	Jumpers, #2 7 Str. Cu, As Required
bu	2851002136	1	Connector, Equipment Ground
ugn-3	2857402448 2857402249	1 1	Enclosure, Three-phase Direct Burial Base

City of Alexandria

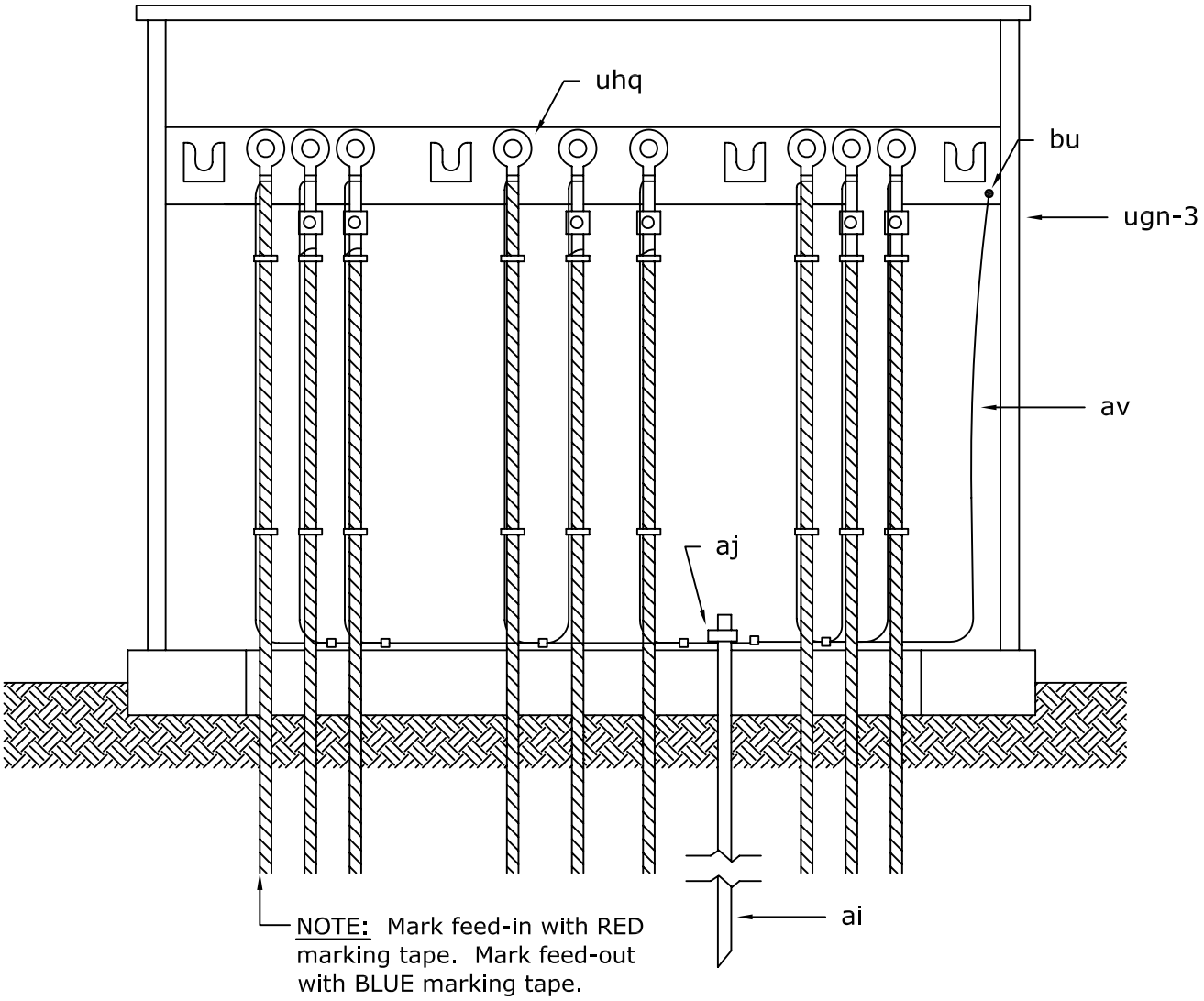
Electric Distribution

TWO-PHASE DIRECT BURIED SECTIONALIZING ASSEMBLY

DATE: 04-20-07

STANDARD NUMBER

UM3-2



NOTE: 1. Specify load-break elbows and feed-thru modules seperately.
2. Assembly includes sectionalizing enclosure and fiberglass ground sleeve.

MATERIAL LIST

Item	COA Commodity Code	Qty.	Description
ai	2854002319	3	Ground Rod, 5/8" x 8', Copperweld
aj	2854002133	3	Clamp, Ground Rod
av	2801602119	25	Jumpers, #2 7 Str. Cu, As Required
bu	2851002136	1	Connector, Equipment Ground
ugn-3	2857402448 2857402249	1 1	Enclosure, Three-phase Direct Burial Base

City of Alexandria

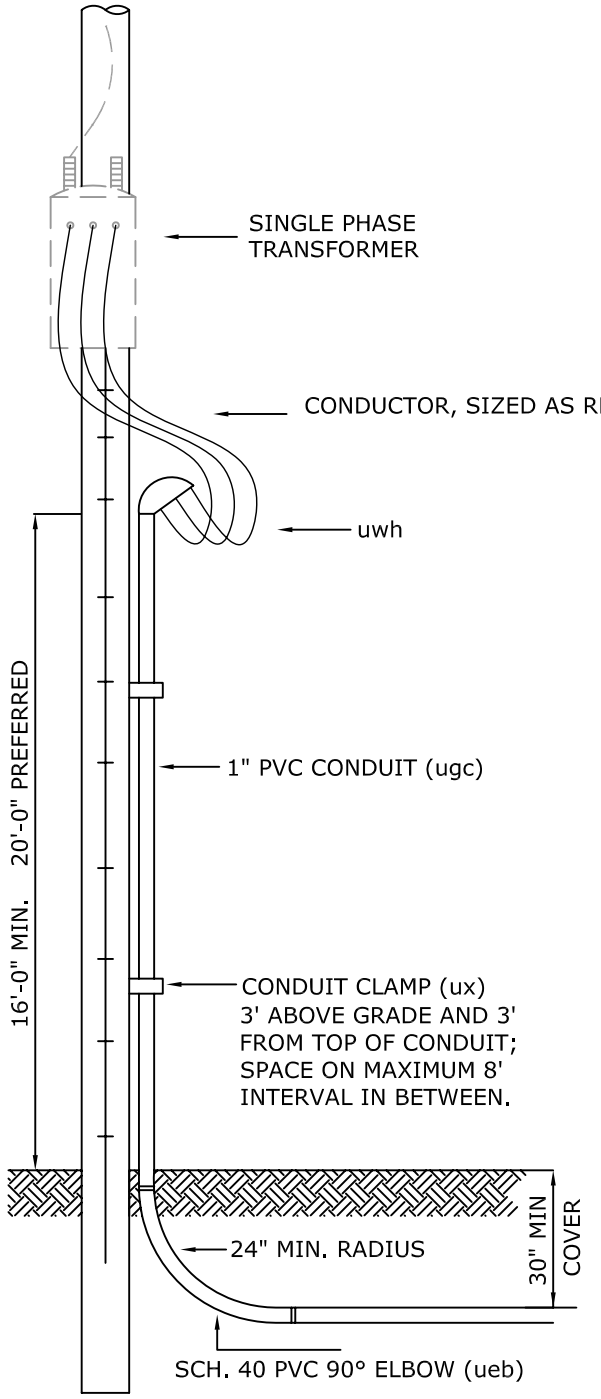
Electric Distribution

THREE-PHASE DIRECT BURIED SECTIONALIZING ASSEMBLY

DATE: 04-20-07

STANDARD NUMBER

UM3-3



MATERIAL LIST

Item	COA Commodity Code	Qty.	Description
p	28574022XX	3	Connector, Sized As Required
ucp1	2851902338	1	Coupling, 1", Drive-on
ueb	SO-UG-UEB1	1	1", Sch. 40 PVC, 90°, 24" Sweep Elbow
uwh	SO-UG-UWH1	1	Weather Head, 1" RGS
ugc	2851902505	3	PVC Conduit, Sch. 40, 1" x 10' Length
ux	2857802458	4	Conduit Stand-off Bracket

City of Alexandria

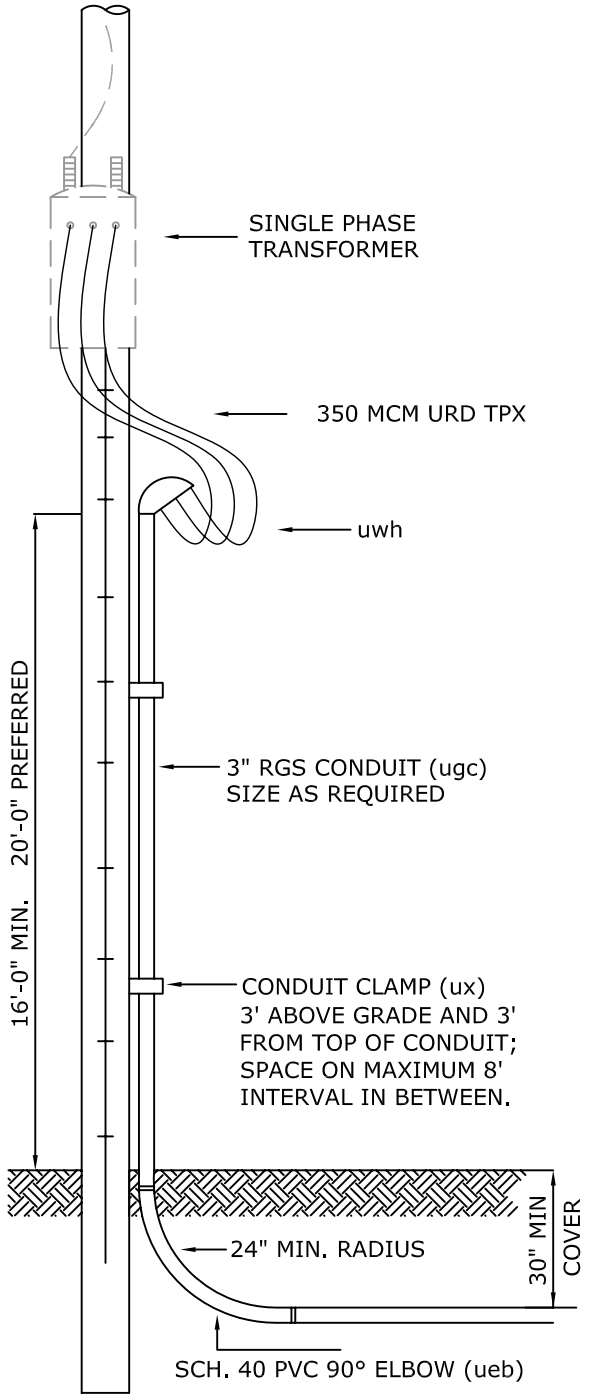
Electric Distribution

SINGLE-PHASE SECONDARY RISER POLE

DATE: 03-28-08

STANDARD NUMBER

UM5-1



NOTE:
SCHEDULE 40 PVC DUCT MAY BE UTILIZED IN LIEU OF RIGID STEEL BELOW GRADE ONLY.

MATERIAL LIST

Item	COA Commodity Code	Qty.	Description
p	28574022XX	3	Connector, Sized As Required
ucp3	2851902340	1	Coupling, 3", Drive-on
ueb	2851902346	1	3", Sch. 40 PVC, 90°, 24" Sweep Elbow
uwh	SO-UG-UWH3	1	Weather Head, 3" RGS
ugc	2851902507	3	RGS Conduit, 3" x 10' Length
ux	2857802458	4	Conduit Stand-off Bracket

City of Alexandria

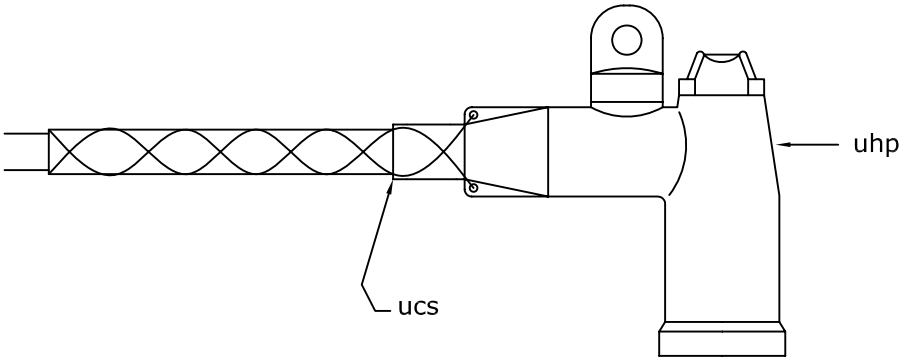
Electric Distribution

SINGLE-PHASE SECONDARY RISER POLE

DATE: 03-28-08

STANDARD NUMBER

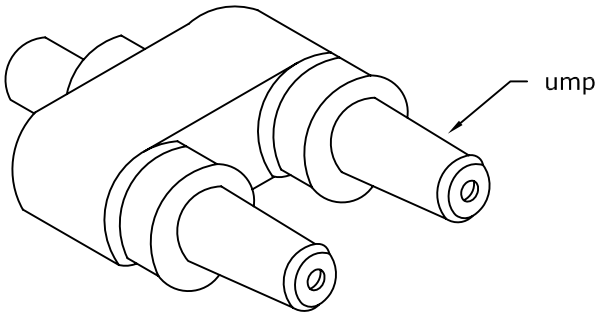
UM5-3



NOTE:
WHEN CONNECTING CONCENTRIC NEUTRALS TO TRANSFORMER GROUND, LEAVE AN ADEQUATE LENGTH SO ELBOWS CAN BE REMOVED WITHOUT DISCONNECTING NEUTRALS FROM GROUND.

UM6-1 - MATERIAL LIST

Item	COA Commodity Code	Qty.	Description
ucs	2858702405	1	Cable Sealing Kit
uhp	2858202476	1	15kV Loadbreak Elbow, 1/0 Al TRXLP



UM6-5 - MATERIAL LIST

Item	COA Commodity Code	Qty.	Description
ump	2858202093	1	15kV Feed-thru Loadbreak Insert

City of Alexandria

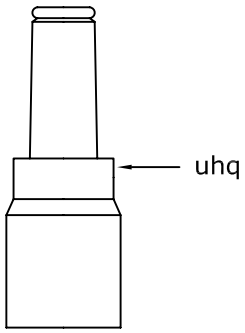
Electric Distribution

MISCELLANEOUS ACCESSORIES

DATE: 04-20-07

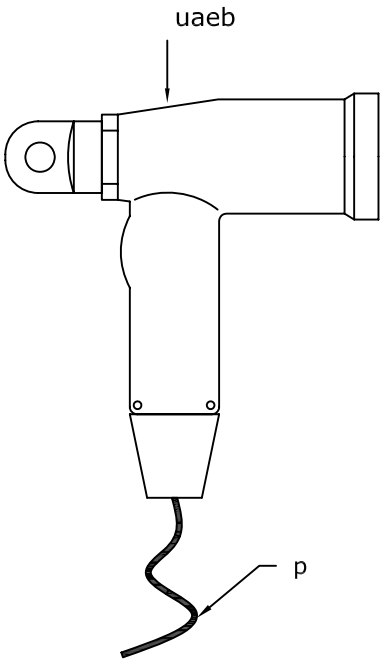
STANDARD NUMBER

UM6-1
UM6-5



MATERIAL LIST

Item	COA Commodity Code	Qty.	Description
uhq	2858202098	1	Bushing, Insulated Parking

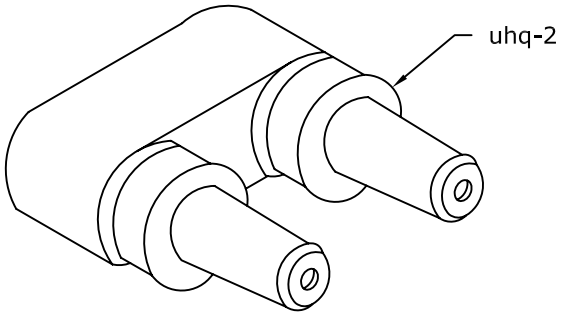


MATERIAL LIST

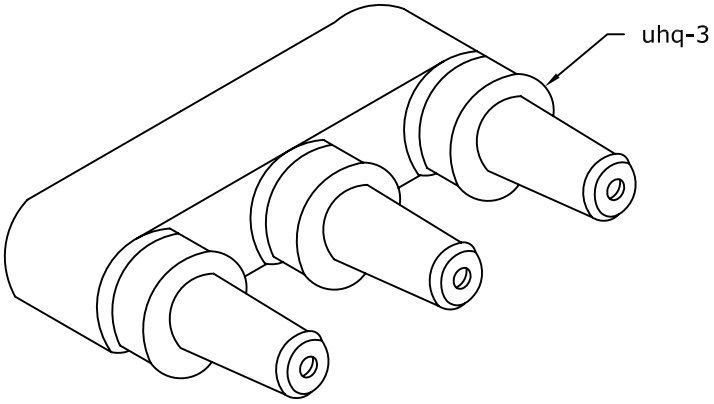
Item	COA Commodity Code	Qty.	Description
p	28574022XX	1	Connector, Sized As Required
uaeb	2858202090	1	Elbow Surge Arrester, 10kV MOVE

City of Alexandria *Electric Distribution*	MISCELLANEOUS ACCESSORIES	DATE: 04-20-07 STANDARD NUMBER UM6-15 UM6-34

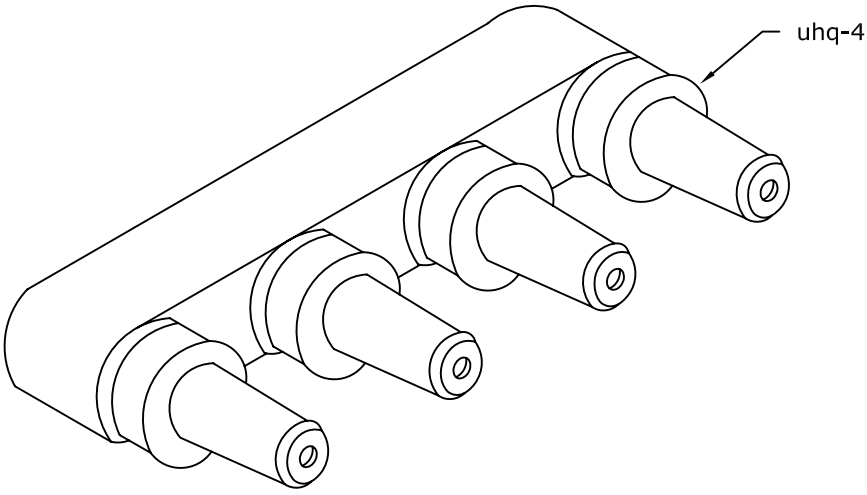
UM6-22



UM6-23



UM6-24



U6-2(#) - MATERIAL LIST

Item	COA Commodity Code	Description	UM6-22	UM6-23	UM6-24
uhq-2	SO-UG-UHQ2	Module, Feed-thru, 2 Point	1		
uhq-3	2858702403	Module, Feed-thru, 3 Point		1	
uhq-4	2858702529	Module, Feed-thru, 4 Point			1

City of Alexandria

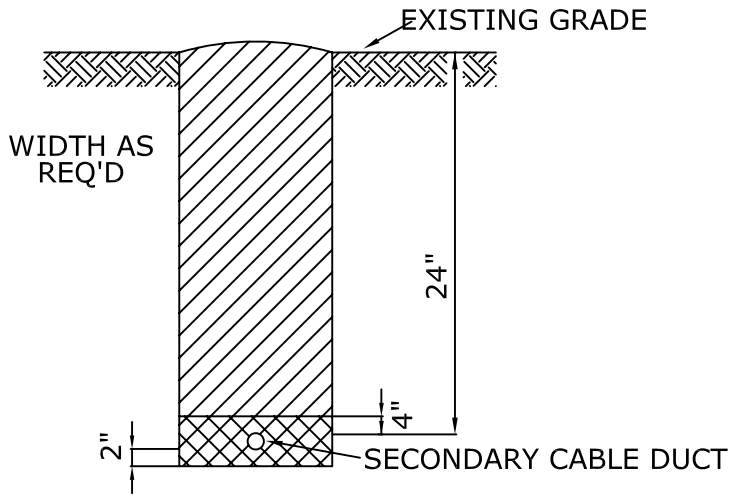
Electric Distribution

MULTI-POINT FEED-THRU MODULES
2, 3, OR 4 POINT

DATE: 04-20-07

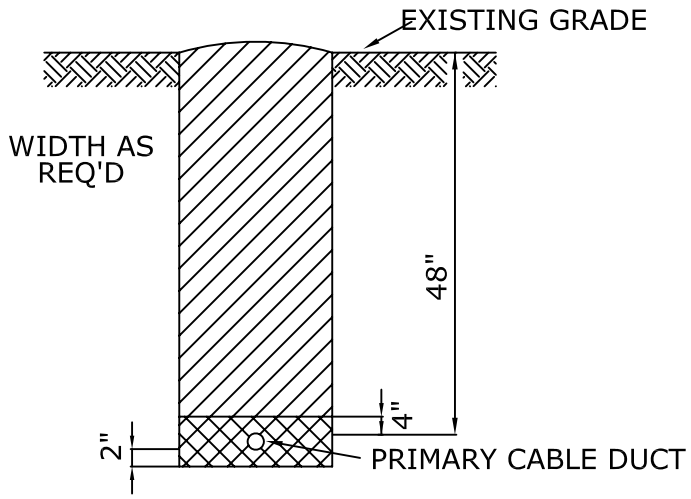
STANDARD NUMBER

UM6-2(# Pts.)



SECONDARY SUPPLY DUCT ONLY

NOTE:
1. Backfill and compact trench to a minimum 95% compaction.
2. Request inspection of trench depth before backfilling.
3. Unit of measure is Per Foot.
4. Specify UR2B when conduit requires installation by directional boring.

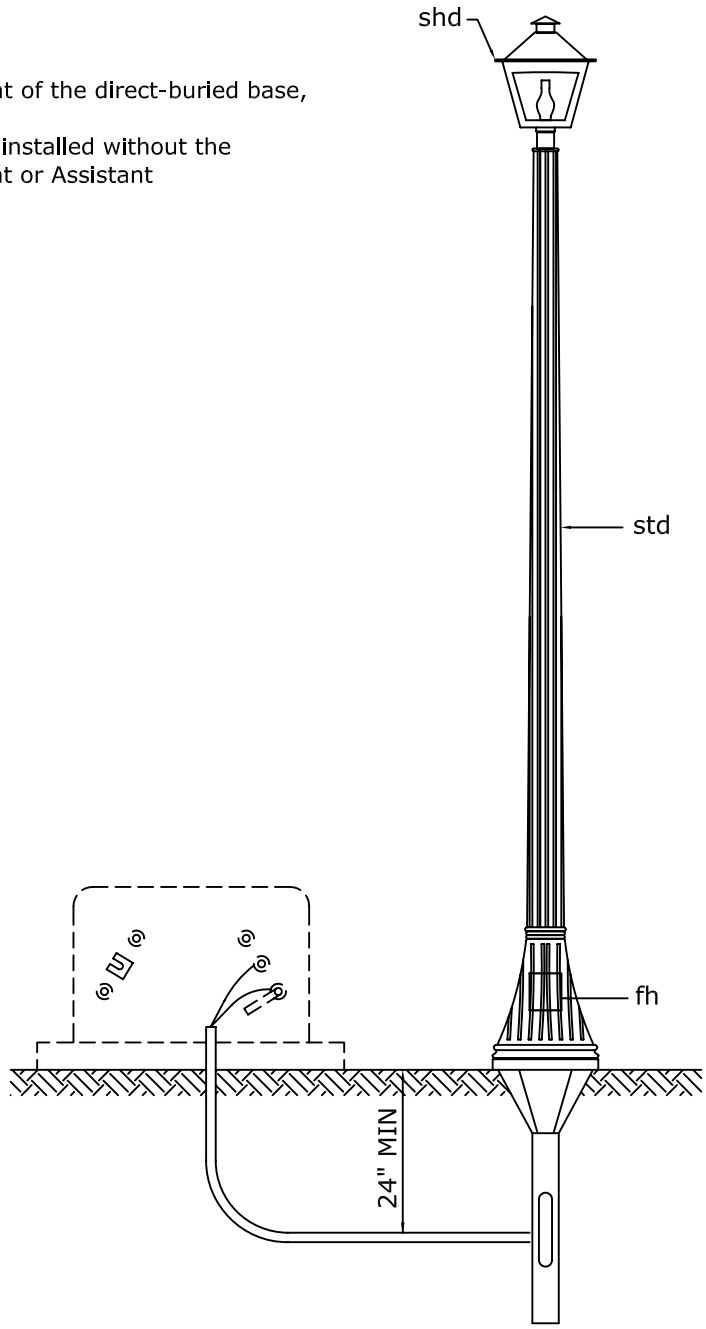


PRIMARY SUPPLY DUCT ONLY

NOTE:
1. Backfill and compact trench to a minimum 95% compaction.
2. Request inspection of trench depth before backfilling.
3. Unit of measure is Per Foot.
4. Specify UR4B when conduit requires installation by directional boring.

City of Alexandria *Electric Distribution*	TYPICAL TRENCHES SECONDARY AND PRIMARY CONDUITS	DATE: 04-20-07 STANDARD NUMBER UR2, UR2B UR4, UR4B

NOTES:
1. To reduce future settlement of the direct-buried base, backfill with 1# Polecrete kit.
2. This assembly may not be installed without the approval of the Superintendent or Assistant Superintendent.



MATERIAL LIST

Item	COA Commodity Code	Qty.	Description
av	2802402115	60	Jumper, #12 THHN, Black
av	2802402117	60	Jumper, #12 THHN, White
fh	2858202088	1	Fuse Holder
shd	2857602479	1	Luminaire, 100W HPS, Vertical
std	2858302478	1	Decorative Streetlight Pole, 14.5' Precast Fiberglass, Direct Burial Base
-	2851502496	1	Polecrete Stabilizer, 1 Gallon Kit

City of Alexandria

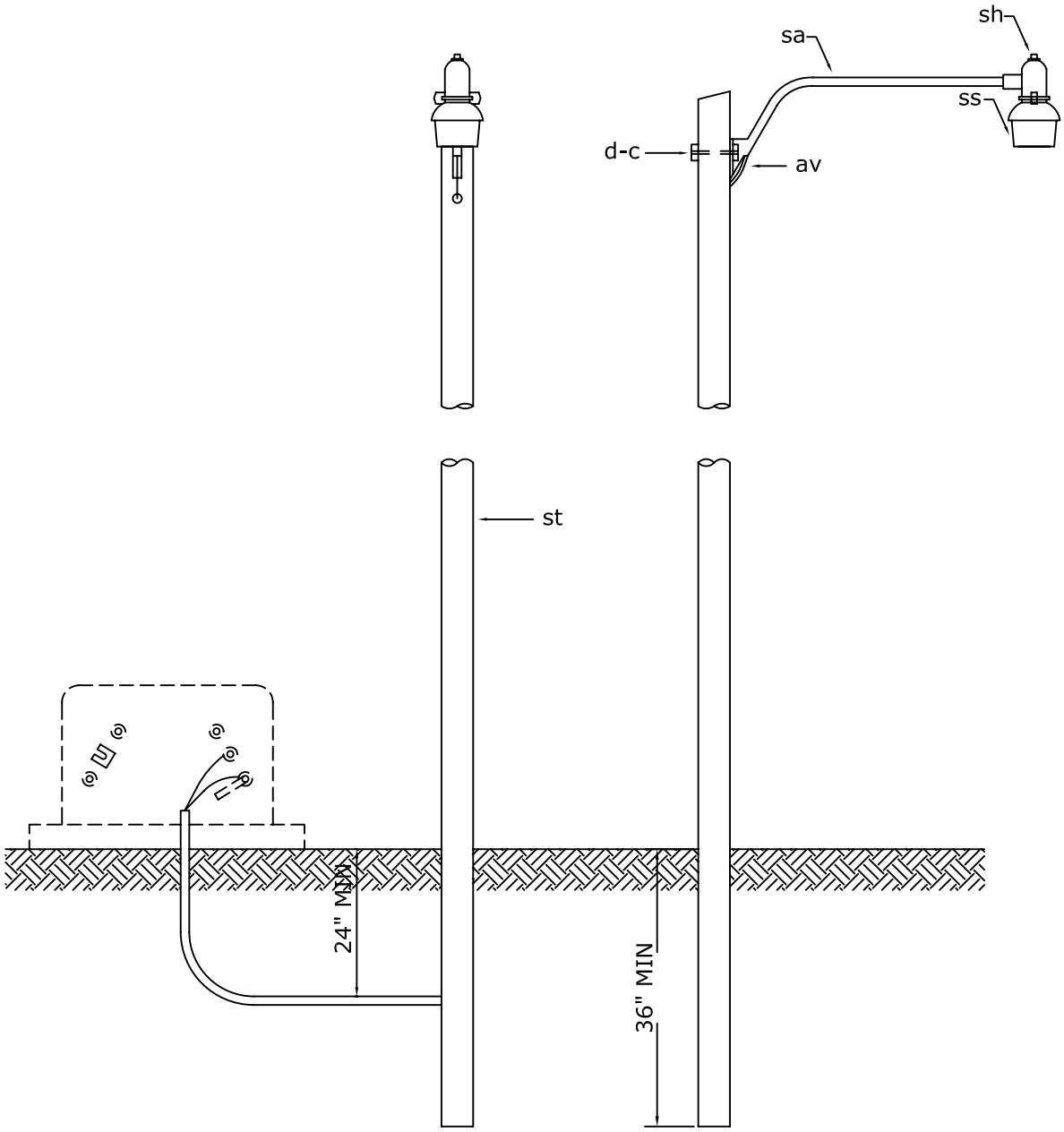
Electric Distribution

DECORATIVE STREETLIGHT ASSEMBLY
100W HPS

DATE: 04-20-07

STANDARD NUMBER

UDL-100



MATERIAL LIST

Item	COA Commodity Code	Qty.	Description
c	2857402010	2	Bolt, Machine, 5/8" x 6"
d	2857402322	2	Washer, 2 1/4" Square With 13/16" Hole
av	2802402115	60	Jumper, #12 THHN, Black
av	2802402117	60	Jumper, #12 THHN, White
fh	2858202088	1	Fuse Holder
sa	2858302162	1	Street Light Arm, 6' for Fiberglass Poles
sh	2857602047	1	Street Light Head, 100W HPS
ss	2857602048	1	Shade, Acrylic
st	2858302161	1	Streetlight Pole, 25' Precast Fiberglass, Direct Burial

City of Alexandria

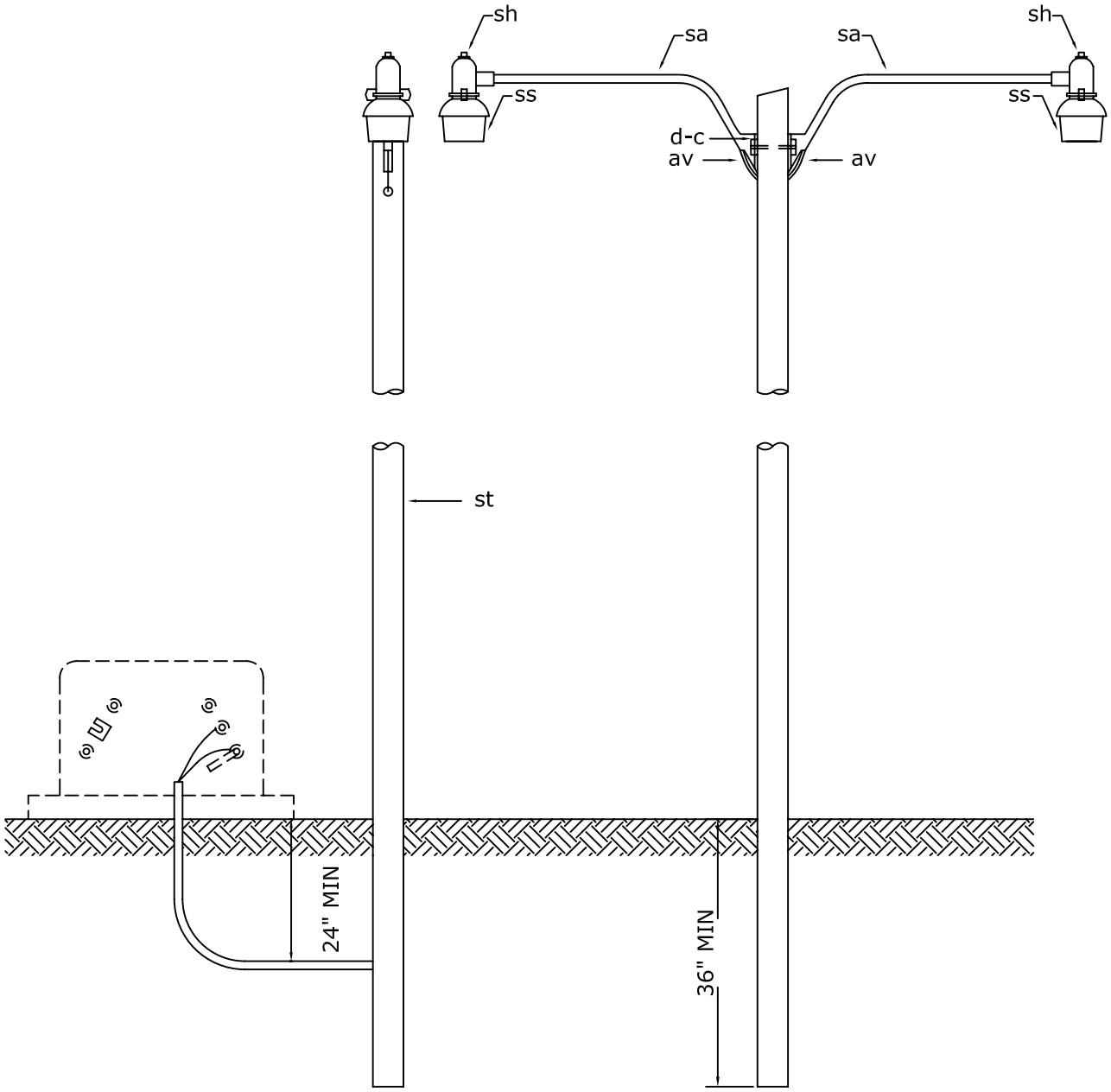
Electric Distribution

RESIDENTIAL STREETLIGHT ASSEMBLY
100W HPS

DATE: 04-20-07

STANDARD NUMBER

USL-100



MATERIAL LIST

Item	COA Commodity Code	Qty.	Description
c	2857402010	2	Bolt, Machine, 5/8" x 6"
d	2857402322	2	Washer, 2 1/4" Square With 13/16" Hole
av	2802402115	65	Jumper, #12 THHN, Black
av	2802402117	65	Jumper, #12 THHN, White
fh	2858202088	1	Fuse Holder
sa	2858302162	2	Street Light Arm, 6' for Fiberglass Poles
sh	2857602047	2	Street Light Head, 100W HPS
ss	2857602048	2	Shade, Acrylic
st	2858302161	1	Streetlight Pole, 25' Precast Fiberglass, Direct Burial

City of Alexandria

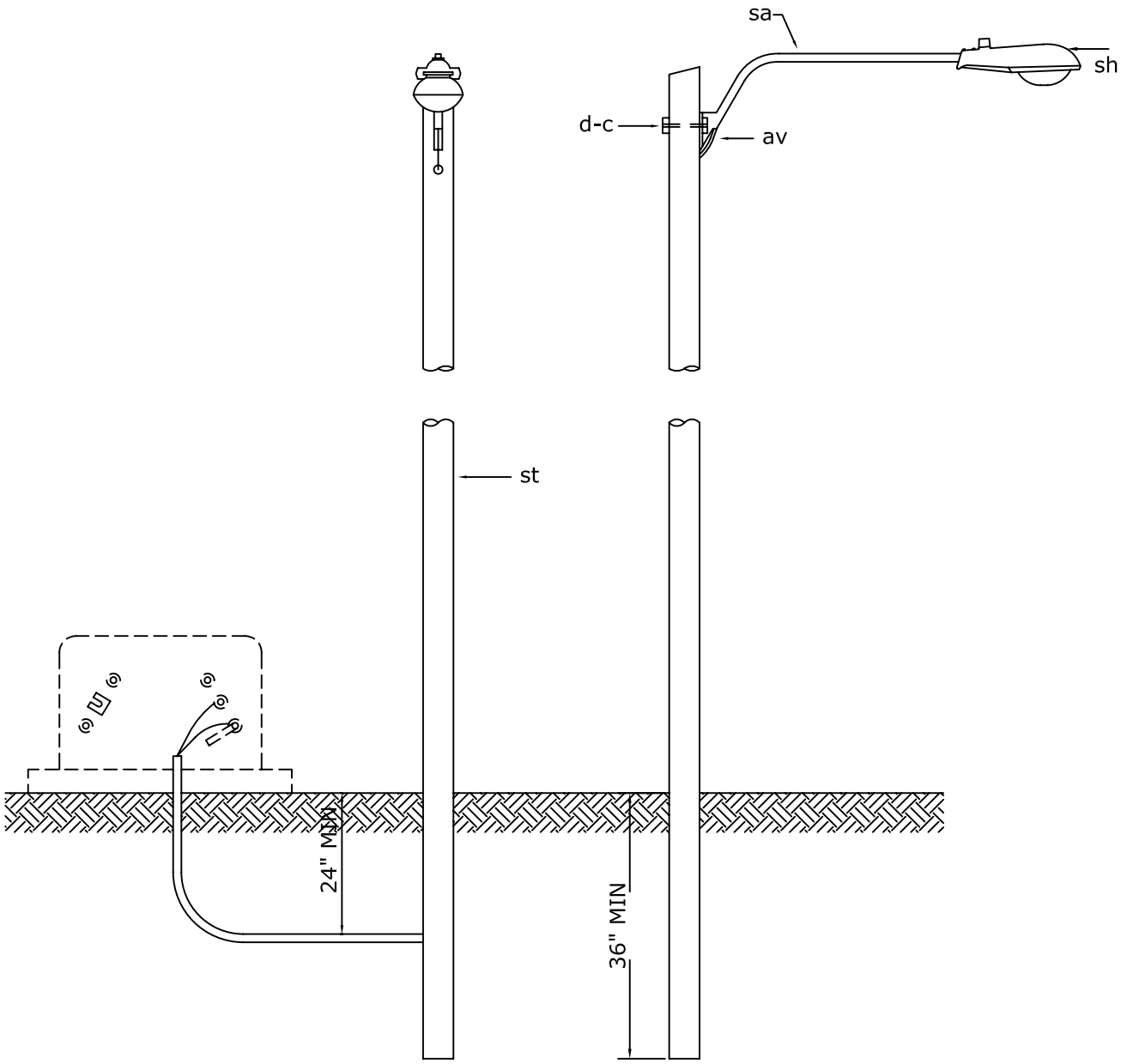
Electric Distribution

RESIDENTIAL STREETLIGHT ASSEMBLY
DOUBLE 100W HPS

DATE: 04-20-07

STANDARD NUMBER

USL-100-2



MATERIAL LIST

Item	COA Commodity Code	Qty.	Description
c	2857402010	2	Bolt, Machine, 5/8" x 6"
d	2857402322	2	Washer, 2 1/4" Square With 13/16" Hole
av	2802402115	60	Jumper, #12 THHN, Black
av	2802402117	60	Jumper, #12 THHN, White
fh	2858202088	1	Fuse Holder
sa	2858302162	1	Street Light Arm, 6' for Fiberglass Poles
sh	2857602053	1	Street Light Head, 250W HPS
st	2858302161	1	Streetlight Pole, 25' Precast Fiberglass, Direct Burial

City of Alexandria

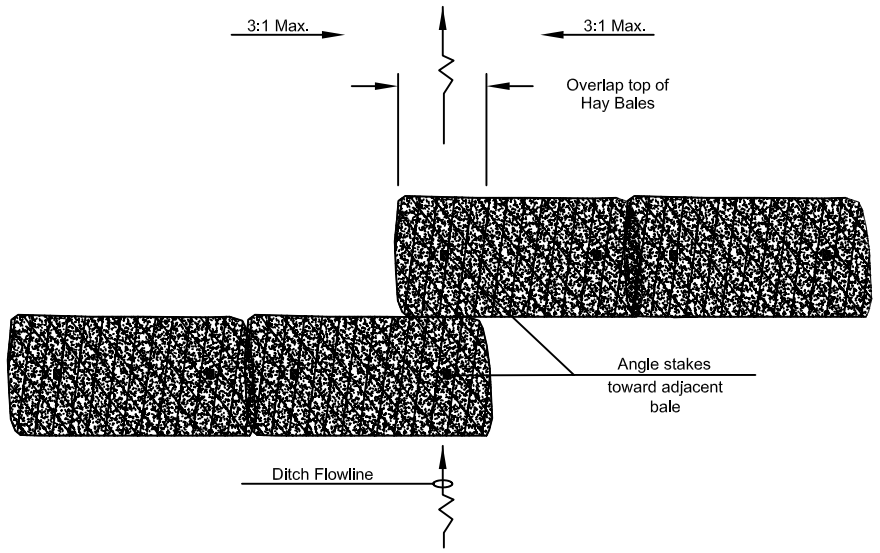
Electric Distribution

RESIDENTIAL STREETLIGHT ASSEMBLY
100W HPS

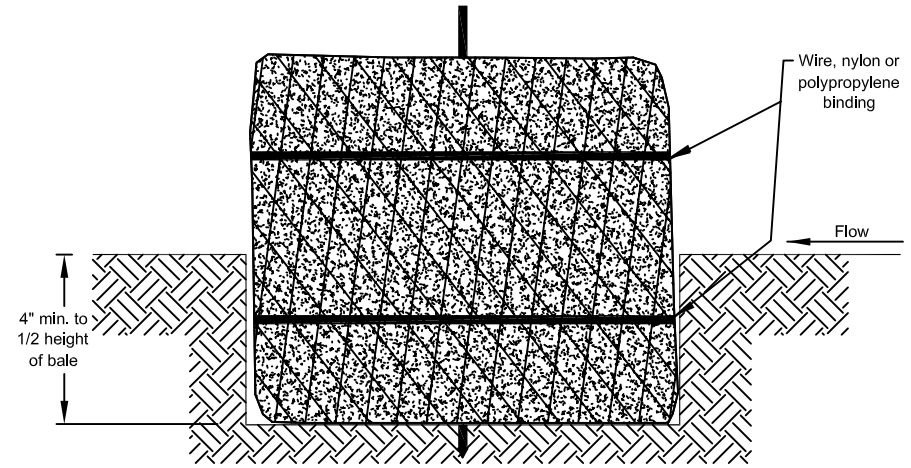
DATE: 03-28-08

STANDARD NUMBER

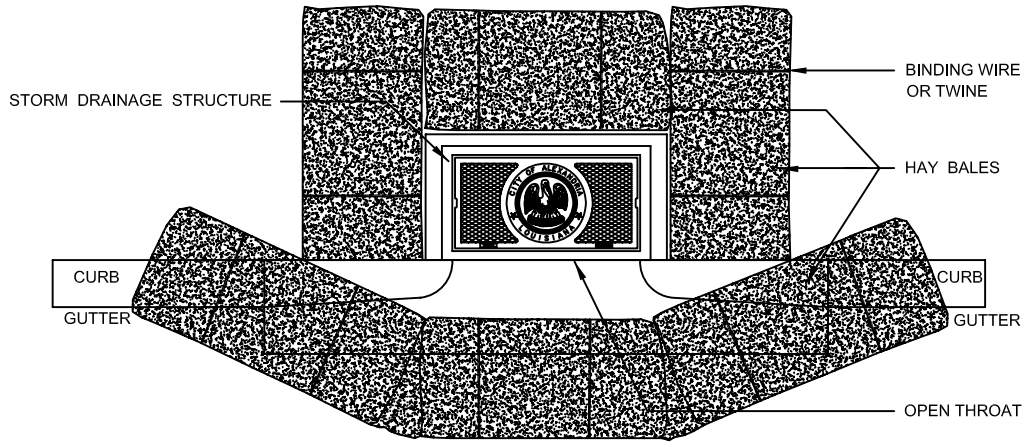
USL-250



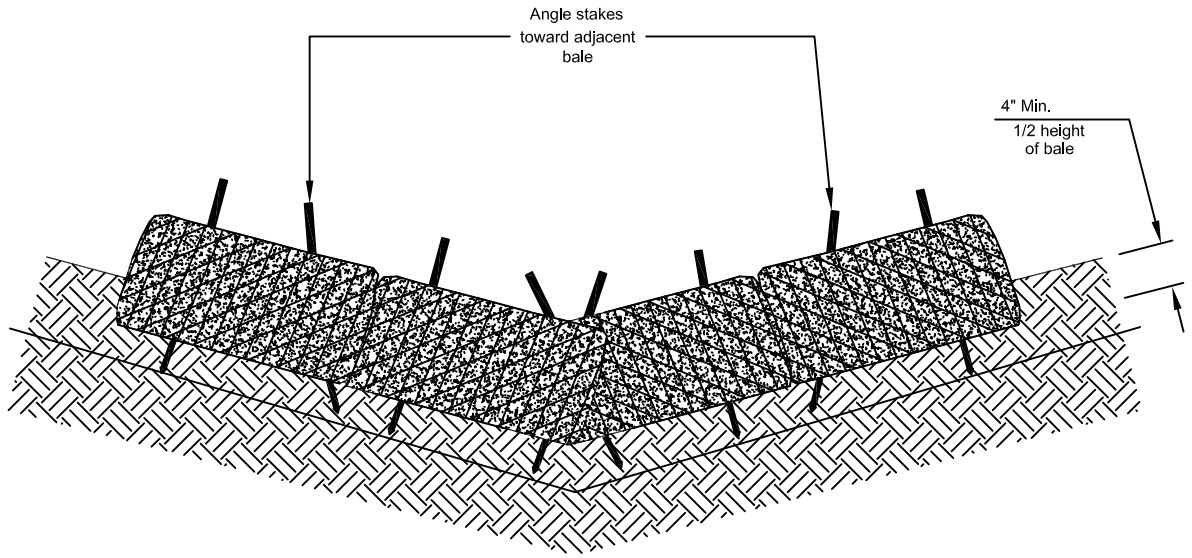
PLAN VIEW



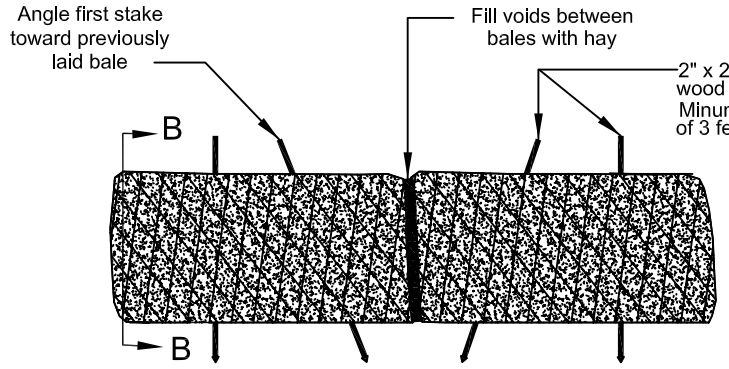
SECTION B - B



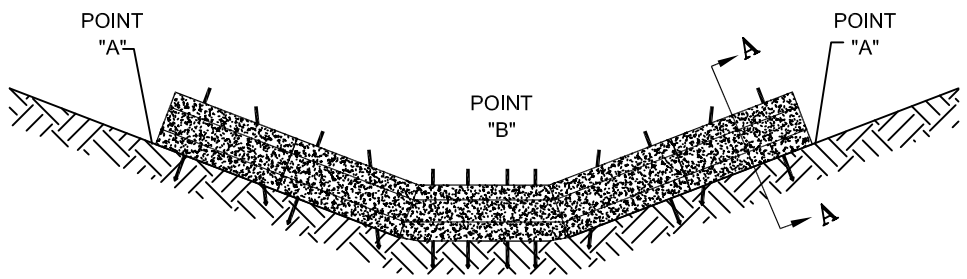
PLAN SHOWING HAY BALES
TEMPORARY BALED HAY OR STRAW



PROFILE VIEW

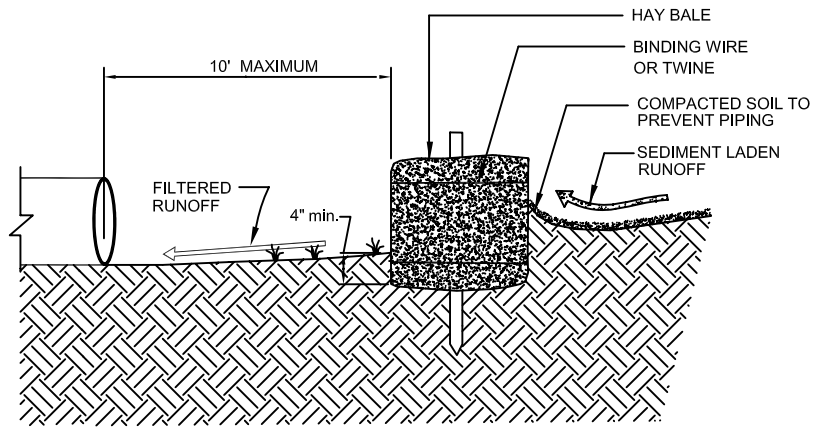


BALED HAY FOR EROSION CONTROL



POINTS "A" SHOULD BE HIGHER THAN POINT "B".

ELEVATION



SECTION A - A

NOTES - (TEMPORARY HAY BARRIER)

A hay barrier is a temporary sediment barrier consisting of a row of entrenched and anchored bales of straw or hay. The hay bale barrier is also used as a check dam to reduce the velocity in small ditches or swales.

A few basic design guidelines for the use of a Hay Bale Barrier are:

1. Use where erosion would occur in the form of sheet and rill erosion.
2. Use in minor swales or ditches where the maximum drainage area is 1 acres.
3. Only use where the effectiveness is required for less than 3 months.
4. Do not use in live streams or in swales or ditches where there is a possibility of a washout.
5. Hay bales shall be in accordance with Technical Specification EC-100.

For Baled Hay installations in small ditches, the additional following considerations apply:

1. The ditch sideslopes should be graded as flat as possible to maximize the drainage flowrate thru the hay.
2. The ditch should be graded large enough to contain the overtopping drainage when sediment has filled to the top of the baled hay.

Bales should be replaced usually every 2 months or more often during wet weather when loss of structural integrity is accelerated.

TEMPORARY SEDIMENT CHECK DAM (HAY)

LEGEND:
- CHAIN LINK FENCE
- 69.77 — EXISTING GRADE
- 71.23 — FINISH GRADE
- FIRE HYDRANT
- GAS LINE
- GAS SERVICE VALVE
- POWERPOLE
- PROPERTY LINE
- SEWER CLEAN OUT
- SEWER LINE
- SEWER MANHOLE
- WATER LINE
- WATER SERVICE METER
- WATER VALVE BOX
- WOOD FENCE

CITY OF ALEXANDRIA - CONTACT NUMBERS
1. ELECTRIC DEPT. - 473-1344
2. ENGINEERING DEPT.-473-1171
3. FIRE DEPT. - 441-6600
4. GAS DEPT. - 441-6018
5. TRAFFIC DEPT - 441-6127
6. WASTEWATER DEPT.- 441-6240
7. WATER DEPT. - 441-6214

NOTICE
48 HOURS BEFORE DIGGING
CALL 1-800-272-3020
TO LOCATE UTILITY LINES

DATE	DESCRIPTION	BY
	REVISIONS	

STANDARD DETAILS

TEMPORARY EROSION CONTROL DETAILS HAY BALES

CITY OF ALEXANDRIA, LA.
ENGINEERING DEPARTMENT

DESIGNED: L.O.M.	DRAWN BY: D.J.	SCALE: AS SHOWN	
CHECKED: L.O.M.	CHECKED: L.O.M.	DATE: MARCH - 2005	
FILE: I:\Dwg\Standards\City Standards\62-09A		SHT. OF	

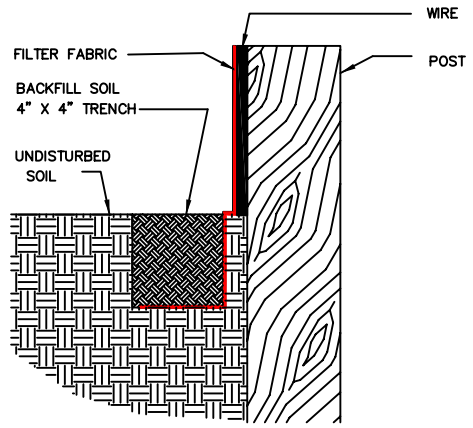
62-09A

NOTES - (TEMPORARY SILT FENCING)

Silt fencing is a temporary sediment barrier consisting of a filter fabric supported by post and stretched across an area to intercept and detain small amounts of sediment. The silt fencing shall be installed in accordance with EC–100 of the Technical Specifications.

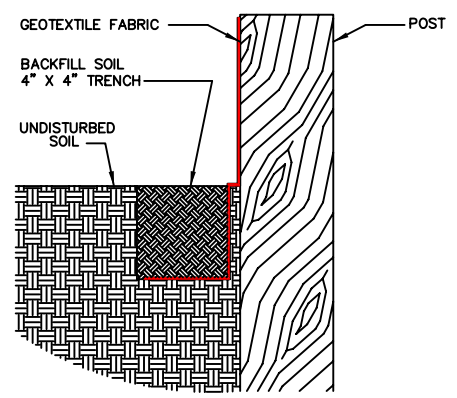
A few basic guidelines for the use of Silt fencing are:

1. Use where erosion would occur in the form of sheet and rill erosion.
2. Use where the maximum slope length behind the barrier is 100 feet.
3. Do not use silt fences in live streams or in ditches or swales where flows exceed one cubic foot per second.
4. Staple spacing for connection of filter fabric or wire fencing to wooden posts shall be a maximum of 6 inches.
5. Wooden posts shall be driven into the ground a minimum of 16 inches.

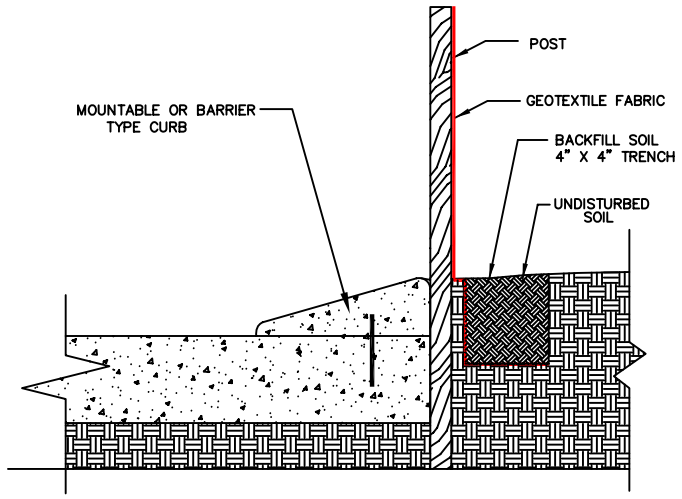


EXTENTION OF FABRIC INTO THE TRENCH

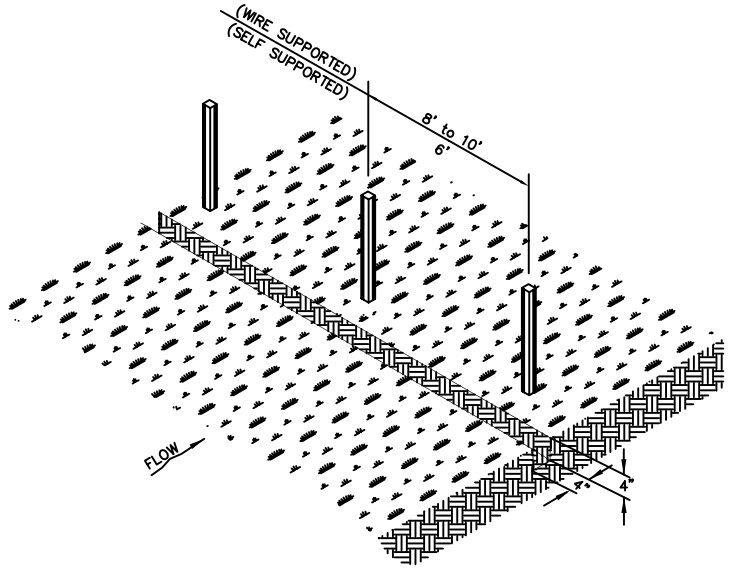
(Wire supported silt fence is shown. Self supported silt fence will be constructed according to manufacturers specifications.



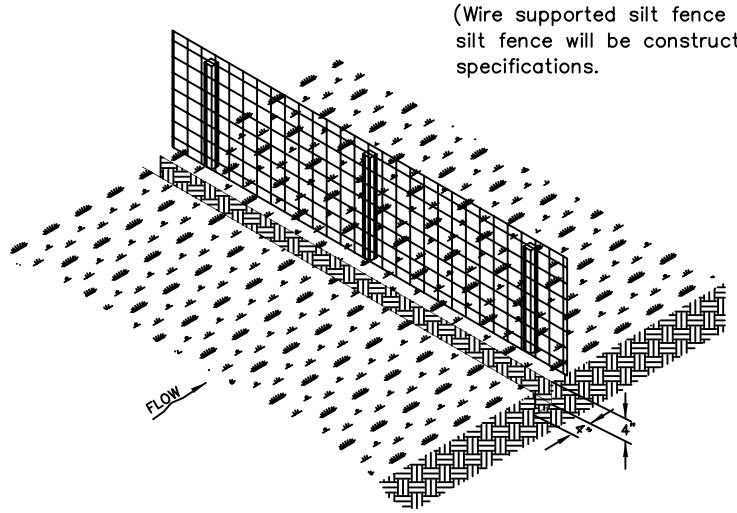
SECTION THRU TRENCH SHOWING GEOTEXTILE FABRIC



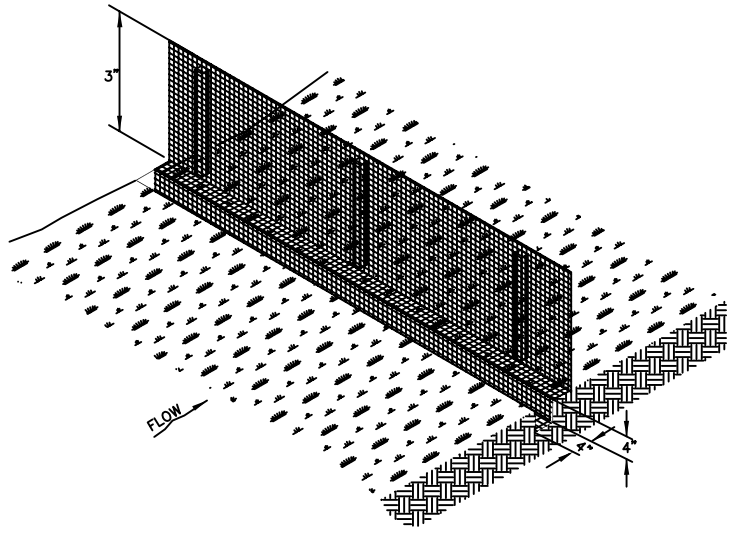
TEMPORARY SILT FENCING BEHIND BACK OF CURB



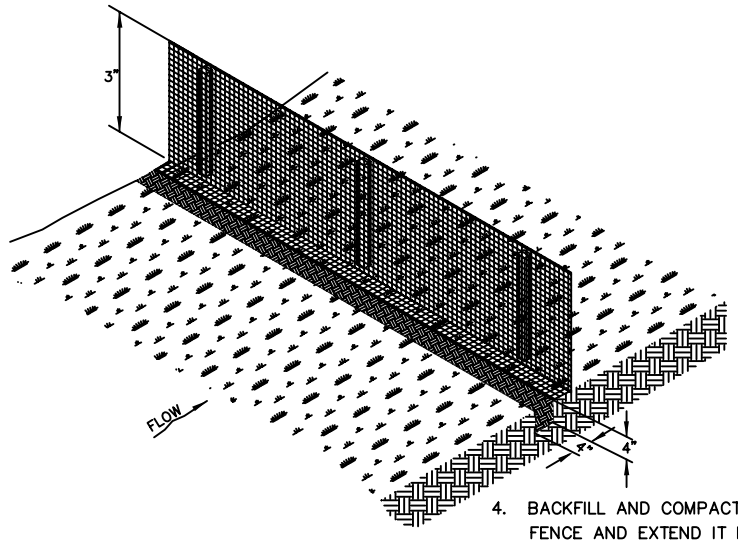
1. SET POSTS AND EXCAVATE A 4" X 4" TRENCH UPSLOPE ALONG THE LINE OF POSTS.



2. STAPLE WIRE FENCING TO THE POSTS.



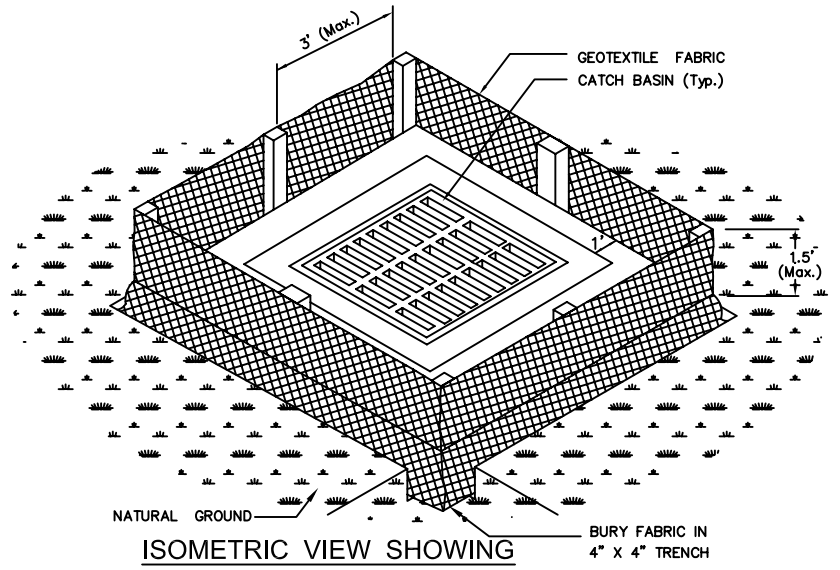
3. ATTACH THE FILTER FABRIC TO THE WIRE FENCE AND EXTEND IT INTO THE TRENCH.



4. BACKFILL AND COMPACT EXCAVATED SOIL. FENCE AND EXTEND IT INTO THE TRENCH.

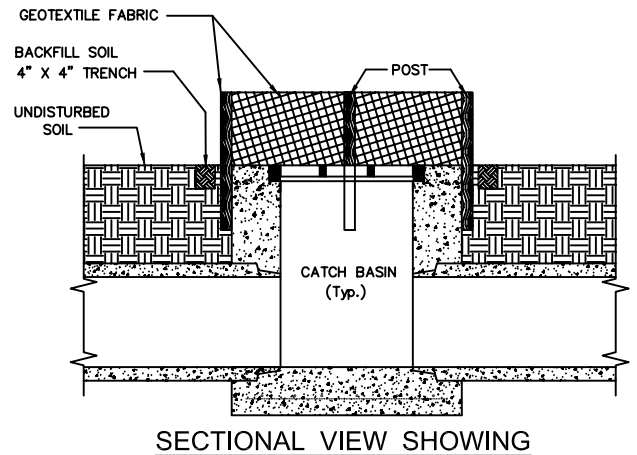
CONSTRUCTION OF TEMPORARY SILT FENCING

(WIRE SUPPORTED SILT FENCE IS SHOWN. SELF SUPPORTED SILT FENCE WILL BE CONSTRUCTED ACCORDING TO MANUFACTURERS SPECIFICATIONS.)



ISOMETRIC VIEW SHOWING GEOTEXTILE FABRIC

(BACK FILL SOIL NOT SHOWN)



SECTIONAL VIEW SHOWING GEOTEXTILE FABRIC

(FOR CATCH BASIN LOCATED OUTSIDE THE LIMITS OF THE ROADWAY)

NOTES - (TEMPORARY DROP INLET SILT TRAP)

The temporary drop inlet silt trap is to be used for small drainage areas (less than 1 acre) where the storm drain is functional before the area is stabilized. The trap can be either geotextile fabric or hay bales.

1. The geotextile fabric shall conform to Section 1019 (Type G) of the LA DOTD Standard Specifications, Latest Edition.
2. Wooden stakes supporting the fabric shall be 2" x 2" or 2" x 4" with a minimum length of 3 feet. The stakes shall be spaced around the inlet at a maximum spacing of 3 feet.
3. The height of the fabric above the inlet shall be limited to 1.5' and the bottom of the fabric shall be buried in a trench approximately 4" wide by 4" deep. The fabric shall be stapled to the post with 1/2" staples.
4. The trap should be inspected regulary and after each storm. The sediment should be removed and make sure each stake is firmly in the ground.
5. Temporary drop inlet silt trap shall be installed outside the limits of the roadway and/or all traffic areas.

LEGEND:

- CHAIN LINK FENCE
- 69.77 — EXISTING GRADE
- 71.23 — FINISH GRADE
- FIRE HYDRANT
- GAS LINE
- GAS SERVICE VALVE
- POWERPOLE
- PROPERTY LINE
- SEWER CLEAN OUT
- SEWER LINE
- SEWER MANHOLE
- WATER LINE
- WATER SERVICE METER
- WATER VALVE BOX
- WOOD FENCE

CITY OF ALEXANDRIA - CONTACT NUMBERS

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3.	FIRE DEPT. -	441-6600
4.	GAS DEPT. -	441-6018
5.	TRAFFIC DEPT -	441-6127
6.	WASTEWATER DEPT.-	441-6240
7.	WATER DEPT. -	441-6214

NOTICE

48 HOURS BEFORE DIGGING
CALL 1-800-272-3020
TO LOCATE UTILITY LINES

DATE	DESCRIPTION	BY
	REVISIONS	

STANDARD DETAILS

TEMPORARY EROSION CONTROL DETAILS SILT FENCE

CITY OF ALEXANDRIA, LA.
ENGINEERING DEPARTMENT

DESIGNED: L.O.M.	DRAWN BY: D.J.	SCALE: AS SHOWN	
CHECKED: L.O.M.	CHECKED: L.O.M.	DATE: MARCH - 2005	
FILE: I:\Dwg\Standards\City Standards\62-09B		SHT. OF	

62-09B