



**UNDERGROUND ELECTRIC DISTRIBUTION  
CONSTRUCTION STANDARDS**

**2024 EDITION**

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# DEFINITIONS AND ABBREVIATIONS

## I. DEFINITIONS

- I.1. Builder:  
As used in this section, shall apply to JEA construction personnel, unit price contractors, or bulk bid contractors.
- I.2. Change Order:  
A written order to the contractor issued after execution of the contract and signed by JEA, authorizing an addition, deletion or revision in the work, and/or an adjustment in the contract price or the contract time.
- I.3. Conduit:  
A structure containing one or more ducts, duct bank.
- I.4. Conduit System:  
The combination of conduits, manholes, handholes, vaults and/or switching enclosures joined to form an integrated whole.
- I.5. Design Consultant:  
Professional Engineer responsible for the design of structures, duct banks, cabling, fusing, etc.
- I.6. Drawings:  
Any drawings and plans accompanying this specification which show the character and scope of the work to be performed that have been prepared or approved by the Engineer.
- I.7. Duct:  
A single enclosed raceway for conductors or cable.
- I.8. Engineer:  
Duly authorized representative(s) of the division or department of JEA preparing the Design and Project Documents
- I.9. Owner:  
JEA, Jacksonville, Florida.
- I.10. Project:  
The entire material to be supplied and/or work to be performed, as provided in the Contract Documents.
- I.11. Project Documents:  
The project cost estimate, the material list, the project detail and/or the conduit and conductor detail, the drawings, any special details and any other ancillary documents.
- I.12. Project Administrator:  
Duly authorized person assigned to coordinate, inspect, and administer the project.

I.13. Specifications:

- I.13.1. All written provisions, both general and specific.
- I.13.2. Underground Distribution Construction Standards Manual:
- I.13.3. Manual which provides Standard Engineering, Design and Construction practices. Contains Standard Construction plates which have a pictorial representation of the construction and a list of materials required to construct the item.

## II. ABBREVIATIONS

AASHTO	American Association of State Highway Traffic Officials
ACI	American Concrete Institute
ASTM	American Society for Testing and Materials
BPM	Blows per Minute
CF	Cubic Foot or Feet
CIP	Cast-In-Place
CRSI	Concrete Reinforcing Steel Institute
CWT	100 Pounds
CY	Cubic Yard
DB	Direct Buried
EA	Each
F	Fahrenheit
FDOT	Florida Department of Transportation
FRE	Fiberglass Reinforced Epoxy
FT	Foot or Feet
FTLB	Foot – Pound
HLF	Horizontal Linear Foot or Feet
ID	Inside Diameter
LF	Linear Foot or Feet
NEC	National Electric Code
NEMA	National Electrical Manufacturers Association
NESC	National Electric Safety Code
OC	On Center
OD	Outside Diameter
OSHA	Occupational Safety and Health Administrator
P&C	Power and Communications (Duct Grade)
PSF	Pounds per Square Foot
PSI	Pounds per Square Inch
PVC	Polyvinyl Chloride (Duct)
SF	Square Foot
SFCA	Square Foot Contact Area
SY	Square Yard
VLF	Vertical Linear Foot or Feet

# CONSTRUCTION NOTES

## I. GENERAL

- I.1. The Builder shall comply with all laws, ordinances, rules and regulations bearing on the conduct of the work. Permits required for construction of facilities within and/or crossing the right-of-way of state highways, railroads and waterways shall be obtained by JEA.
- I.2. No work shall be performed in such areas until said permits have been obtained. Easement for permanent structures and any construction easements required shall be secured by JEA before construction commences.
- I.3. The Builder shall: Perform all work using approved materials and methods in accordance with the project documents, drawings and the Underground Construction Standards Manual and Master Material List.

## II. SUB-SURFACE DATA

- II.1. Any borings and sub-surface data including ground water elevations, underground utility and structural locations that may be furnished or indicated on the plans are presented only as information that is available.
- II.2. Borings and sub-surface data are in no way guaranteed to represent materials at points other than those at which the borings were made nor the actual location or the non-existence of underground utilities or structures.

## III. SAFETY, PROTECTION AND EMERGENCIES

- III.1. The Builder shall be responsible for initiating, maintaining and supervising all safety precautions and programs in connection with the work. He shall take all necessary precautions for the safety of, and provide the necessary protection to prevent damage or injury to all employees and to the public; all the work and all the materials and equipment; and other property at or adjacent to the site, including trees, shrubs, lawns, walks, pavements, roadways, structures and utilities not designated for removal, relocation or replacement in the course of construction.
- III.2. He shall erect and maintain all necessary safeguards for safety and protection, including posting danger signs, barricades and other warnings against hazards. He shall notify owners of adjacent property and utilities when prosecution of the work may affect them.
- III.3. In emergencies affecting the safety of persons or the work or property at the site or adjacent thereto, the Builder, without special authorization from the Engineer or Owner, is obligated to act, at his discretion, to prevent threatened damage, injury or loss.

## IV. CLEANING UP

- IV.1. The Builder shall keep the premises, right-of-way and adjacent property free from accumulations of waste materials, rubbish and other debris resulting from the work, as well as all tools, construction equipment and surplus materials, and shall leave the site clean.

## **V. DRAINAGE**

- V.1. The Builder shall so conduct his operations and maintain the work in such condition that adequate drainage shall be in effect at all times.
- V.2. The Builder will not obstruct existing gutters, ditches and other run-off facilities.

## **VI. TRAFFIC INTERFERENCE**

- VI.1. The Builder shall plan and coordinate his work with the City of Jacksonville Traffic Engineer's Office so as to minimize traffic interference. The current "Procedure For Traffic Regulation During Street Excavations, Traffic Lane Closures and Work Within Streets Right-Of-Way" issued by Director of Public Works, City of Jacksonville, applies.

## **VII. TREE PROTECTION ON PUBLICLY-OWNED OR CONTROLLED PROPERTY**

- VII.1. The Builder shall protect all trees, as defined in City Ordinance 73-922-812, for damage by vehicles, equipment and machinery, except those trees designated for removal by the Engineer in accordance with paragraph "5".
- VII.2. Excavated dirt shall not be piled around the base of the tree. The Builder shall not bury or burn refuse around or near trees. The Builder shall proceed with caution when excavating in the vicinity of the root structure of any tree. Excavation shall be by hand if necessary.
- VII.3. Roots up to two inches in diameter when severed do not require any pruning paint. Roots from two inches to four inches in diameter must be severed with a pruning saw and painted. An axe or similar tool is not acceptable for pruning. The wood shall be treated with asphalt-type pruning paint as soon as possible after pruning. Roots over four inches in diameter shall not be severed except as directed by the Engineer.
- VII.4. Any tree whose root system has been disturbed or damaged must be properly fertilized to aid in their recovery. Application of fertilizer shall be made under the direction of JEA Urban Forester.
- VII.5. It shall be the responsibility of the Engineer to make all decisions pertaining to removal of trees. The Engineer shall use as a guide City Ordinance 73-922-812 in making his determinations. The Engineer is granted authority, as a blanket permit, for the necessary removal of trees under the requirements of said ordinance. Each project file is to contain documentation and a brief explanation of the Engineer's decision to remove trees so as to provide the justification for such action for later reference. The final authority in settling any conflict with trees on publicly-owned or controlled property shall remain with the Director of Public Works, City of Jacksonville.

## **VIII. STREET LIGHT REFERENCE**

- VIII.1. For any info on Street Lights, refer to the JEA Street Light Manual.

# HORIZONTAL BORING

## I. GENERAL

- I.1. Driven or bored casing pipe provides an effective housing for duct. Its use is required in situations where open cutting is not permitted such as crossings under railroads and heavily traveled highways.
- I.2. Horizontal borings under railroads shall be done in accordance with the requirements of the particular railroad involved.
- I.3. Borings under state roads shall be accomplished in accordance with the FDOT Utility Accommodation Guide.

## II. METHOD

Jacking and receiving pits shall be constructed at the termination of the crossing. Steel casing is then installed between the pits by machine boring and jacking.

## III. PROCEDURE

- III.1. A permit from the appropriate source shall be obtained by the JEA prior to beginning construction.
  - III.1.1. Subsurface Soil and Drainage Investigation:  
To correctly plan crossing procedures such as dewatering, use of cutting heads, positioning of auger within the casing, and to accurately locate potential problem areas, an adequate subsurface investigation shall be made. A report of such investigation is required for a DOT Permit and will be made by JEA.
  - III.1.2. Dewatering:  
Where the ground water level is above the invert of the proposed level must be designed, installed and in operation prior to beginning the crossing. The DOT requires, when dewatering is necessary, that a written plan showing the proposed method be included with the subsurface investigation report.
  - III.1.3. Jacking Pits:
    - III.1.3.1. Excavated areas from which jacking and receiving operations are accomplished. Jacking pits shall be located at a distance from the roadbed as specified by the appropriate permit. The pit dimensions shall be large enough to provide a safe, adequate working area.
    - III.1.3.2. Walls shall be sloped or supported in accordance with OSHA construction requirements. Where necessary to insure a solid, stable base for boring machinery, some means of stabilizing the pit floor must be provided.
  - III.1.4. Equipment Set-Up:  
To properly control line and grade, it is imperative that the jacking tracks be rigidly set to the predetermined level and alignment requirements. Control shall be insured by the use of appropriate engineering instruments.

## IV. CROSSING OPERATION

- IV.1. Determination and preparations for the following shall be accomplished prior to the commencement of the operation:
  - IV.1.1. Auger and casing lengths.
  - IV.1.2. Methods of reducing skin friction.
  - IV.1.3. Relationship between auger or cutting head to leading end of first casing section.
  - IV.1.4. Auger size and spacing.
  - IV.1.5. The use of steel shelving in the leading end of the casing to prevent undue flowback of spoil material.
  - IV.1.6. The use of drilling fluid.
  - IV.1.7. Traffic control.
- IV.2. The operation, once started, shall be continued until completed. The crossing shall be accomplished during daylight hours and shall not begin after the hour pre-established as the latest starting time.
- IV.3. If forward motion of the casing is halted at any time other than for reasons planned for in advance (addition of casing and auger sections, etc.) and prevention of voids under roadbed cannot be assured, the casing must be filled with concrete by pressure grouting as soon as possible and abandoned. If removal of the augers in the casing will allow voids to form at the casing head, the augers must be abandoned also.

## V. MULTIPLE DUCT IN CASINGS

- V.1. GENERAL:

Ducts to be installed in a casing shall be supported by circular plastic spacers. The void between the ducts and the casing will be filled with a concrete based material to provide a thermal path for the dissipation of heat.
- V.2. MATERIAL:
  - V.2.1. Duct:
    - V.2.1.1. Fiberglass reinforced epoxy duct shall be used. This type duct is specified because of its compressive strength to preclude collapse during grouting operations, its high stiffness properties which enables the use of fewer spacers, its low co-efficient of friction which enables longer cable-pulls, its resistance to deformation when overheated, its resistance to cable fusion when shorted, and its thermal expansion which is about the same as concrete.
    - V.2.1.2. Duct joints shall be specified which make the duct water tight and prevent pressurized grout from entering the duct during construction.
  - V.2.2. 5.2.2. Bore Spacers:

High-Density polyethylene spacers providing 1-1/2" spacing between ducts shall be used. They shall be designed with extra openings to permit easy flow of grout and to allow threading or wire guides.



## TYPICAL BORE SPACER CHART

		Casing Diameter (OD)											
		14"	16"	18"	20"	22"	24"	26"	28"	30"	32"	34"	36"
Duct Size	4"	2	3	5	7	7	9	11	15	16	16	19	22
	6"	--	--	2	4	4	5	5	7	8	8	9	11
		Duct Per Casing											

NOTE: Spacers will be installed at a maximum of 10' on centers.

### V.3. GROUT:

The grout used to fill the voids is an important consideration as it must fill completely. A regular cement grout is the least desirable as it is normally difficult to pump without leaving voids unless it is very fluid. Additives (such as "Elastizell" or "Mearicrete") which reduce the grout density to about 75 pounds per cubic foot and increase fluidity similar to that of an 11 inch slump allow for lower pumping pressures.

## VI. INSTALLATION

### VI.1. DUCT INSTALLATION:

Parallel 1/2" diameter wire rope is installed in the casing from the receiving pit to the jacking pit. The wire ropes are threaded through the spacers as the conduit is assembled into the spacers in the jacking pit. As the conduit is assembled it is slid into the casing. If necessary, spacers with rollers are available to facilitate the sliding of the conduit assembly into the casing. The purpose of the wire ropes is to prevent the ducts from skewing and getting out of position within the casing.

### VI.2. GROUT INSTALLATION:

The low end of the casing is blocked off except for an air vent at the top of the casing. The higher end of the casing is blocked off except to allow space for the pumping hose. Grout is then pumped until the casing is full and no voids remain.

## VII. ADDITIONAL PLATES

VII.1. Listed below are plates not otherwise covered by a Construction Standard Plate and Drawing.

VII.1.1. BORE-JACK\* plates include all required equipment, and labor to install duct.

PLATE	DESCRIPTION	UNIT
<b>BORE-JACK*2</b>	Jack 2" PVC	LF
<b>BORE-JACK*3</b>	Jack 3" PVC	LF
<b>BORE-JACK*4</b>	Jack 4" PVC	LF
<b>BORE-JACK*6</b>	Jack 6" PVC	LF
<b>BORE-JACK*2S</b>	Jack 2" Steel	LF
<b>BORE-JACK*3S</b>	Jack 3" Steel	LF
<b>BORE-JACK*4S</b>	Jack 4" Steel	LF
<b>BORE-JACK*6S</b>	Jack 6" Steel	LF

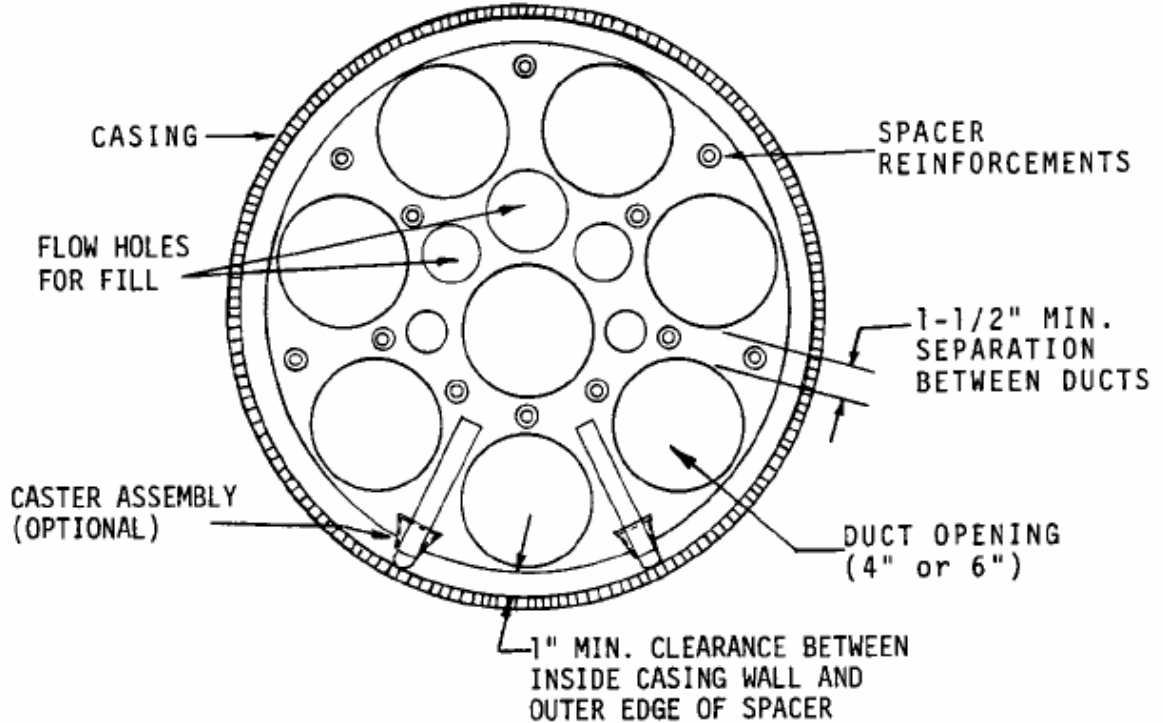
VII.1.2. B-J/SET-UP\_ plates are used to provide jacking and receiving pits for the above BORE-JACK\* plates. This plate can accommodate up to 6 runs of conduit. Standard depth is 5' deep.

PLATE	DESCRIPTION
<b>B-J/SET-UP</b>	Set up pits to BORE-JACK up to 5' deep
<b>B-J/SET-UP6</b>	Set up pits to BORE-JACK up to 6' deep
<b>B-J/SET-UP7</b>	Set up pits to BORE-JACK up to 7' deep
<b>B-J/SET-UP8</b>	Set up pits to BORE-JACK up to 8' deep
<b>B-J/SET-UP9</b>	Set up pits to BORE-JACK up to 9' deep
<b>B-J/SET-UP10</b>	Set up pits to BORE-JACK up to 10' or deeper

VII.1.3. DIR-BORE plates include all required excavations, equipment, material and labor to install conduit by directional boring.

PLATE	DESCRIPTION	UNIT
<b>DIR-BORE*1</b>	Directional bore and install 1" conduit	LF
<b>DIR-BORE*2</b>	Directional bore and install 2" conduit	LF
<b>DIR-BORE*3</b>	Directional bore and install 3" conduit	LF
<b>DIR-BORE*4</b>	Directional bore and install 4" conduit	LF
<b>DIR-BORE*2-4</b>	Directional bore and install Two 4" conduit	LF
<b>DIR-BORE*6</b>	Directional bore and install 6" conduit	LF
<b>DIR-FORE*2-6</b>	Directional bore and install Two 6" conduit	LF

**TYPICAL  
MULTIPLE DUCT IN CASING**



**BORE SPACER**

		Casing Diameter (OD)											
		14"	16"	18"	20"	22"	24"	26"	28"	30"	32"	34"	36"
Duct Size	4"	2	3	5	7	7	9	11	15	16	16	19	22
	6"	--	--	2	4	4	5	5	7	8	8	9	11
		Duct Per Casing											

Spacers will be installed at a maximum of 10' on centers.

\* 1-1/2" Minimum separation between ducts

Conduit type should be fiberglass, heavy wall steel, or Schedule 40 PVC.

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# PILES & PILE DRIVING

## I. SCOPE

The work under this section shall consist of furnishing all materials, driving, cutting off, etc., all timber piles as indicated and detailed on the drawings and as specified herein.

## II. MATERIALS

- II.1. All timber piles shall be 14" minimum butt diameter and 8" minimum tip diameter round piles conforming to Class B, ASTM Designation D25-73 unless otherwise noted on the drawings. Species shall be southern pine suitable for a design stress of 1,200 PSI in accordance with ASTM D2899-70 T.
- II.2. All piles above the permanent water table shall be treated with CCA to a minimum retention of .6 lbs. per cubic foot. All piles below the permanent water table may be untreated. Submit treatment list to Design Consultant for approval prior to installation.

## III. PILE DRIVING

### III.1. PREPARATION FOR DRIVING:

#### III.1.1. Caps:

- III.1.1.1. Cushion or cap blocks shall consist of a single block of hardwood of proper shape and dimension to fit the hammer. The grain of the block shall be perpendicular to the axis of the pile. If laminated materials are used, the strength of such material shall be equal to or greater than hardwood.
- III.1.1.2. The use of wood chips, small wood blocks, shavings or any similar material will not be permitted.
- III.1.1.3. The continuous or frequent introduction of materials to cushion the hammer blows will be prohibited.
- III.1.1.4. Details of the cap block will be submitted to the Design Consultant for approval before piles are driven.

#### III.1.2. Collars:

- III.1.2.1. Collars or bands to protect piles against splitting and brooming, where necessary, shall be provided.

#### III.1.3. Shoes:

- III.1.3.1. When necessary, the piles shall be shod with metal shoes of approved design, the points of piles being carefully shaped to secure an even and uniform bearing on the shoes.

### III.2. DRIVING:

#### III.2.1. Hammers:

- III.2.1.1. The hammer used for driving all types of timber pilings, whether in foundations, pile bents, fenders, or bulkheads, shall be either a power hammer, developing energy per blow of not less than 7,000 foot pounds, or a gravity hammer weighing not less than 3,000 pounds.

- III.2.1.2. The hammer used shall be operated at the pressure and speed recommended by manufacturer.
- III.2.1.3. Type of hammer to be used shall be furnished to the Design Consultant for approval before work begins.
- III.2.1.4. No blow count or set measurement will be made if the hammer is not working properly.
- III.2.1.5. In order to minimize thermodynamic losses in transmission with the use of steam or air hammers, the source of the steam or air shall be no farther than 150 feet from the hammer measured along the hose and piping carrying the steam or air to the hammer.

III.2.2. Water Jets:

Water jets may be used in starting and driving piles only with the permission of the Engineer and under such conditions as he may impose. In any case jetting will not be permitted in the last five (5) feet of driving.

III.2.3. Bearing Values:

- III.2.3.1. Timber piles shall be driven to a minimum bearing value of twenty (20) tons as determined by the Engineering News Record formula, given below:

$$R = 2WH/(S + 1.0) \text{ for gravity hammers}$$

or

$$R = 2E/(S + 0.10) \text{ for power hammers}$$

Where:

R = Safe bearing value in tons.

\*S = The average penetration per blow, in inches.

H = Height of hammer fall, in feet.

W = Weight of striking part of hammer in tons.

E = Energy per blow of hammer, in foot - tons; (which shall be the product W x H, for single-acting hammers and the manufacturer's rated capacity for the speed used in driving, for double-acting hammers. The energy per blow for combustion hammers shall be determined in accordance with the manufacturer's recommendations).

\* Generally, the average penetration per blow will be determined by computing the penetration per blow average through one foot of penetration. Where it is considered necessary by the Engineer, the average penetration per blow may be determined by averaging the penetration per blow through the last 10 to 20 blows of the hammer. The Design Consultant will calculate the driving resistance for all piles and will furnish this data to the Contractor. Actual depth of driving shall be subject to approval of the Engineer.

- III.2.3.2. Generally, piles shall be driven until the required bearing has been continuously maintained for five feet, or to practical or absolute refusal. Practical refusal is defined as a penetration per blow which is less than one-third the penetration per blow required to produce bearing resistance when that penetration per blow is maintained and not exceeded for two

feet of penetration. Absolute refusal is defined as the point at which penetration can no longer be achieved.

- III.2.3.3. Cutting Off – All piles shall be sawed off at the elevation determined in the field. Broken, split, or misplaced piles shall be drawn and replaced. No splicing shall be done. Piles driven below the cut off grade shall be withdrawn and replaced by new, and if necessary, longer piles. After cutting has been done, the heads of piles shall be treated with Copper Napthanate.

#### **IV. TOLERANCES**

- IV.1. All piles shall be driven with a variation of not more than 1/8 inch per foot from the vertical or better, as shown on the plans. A maximum deviation of 3 inches will also be permitted from the design plans position.
- IV.2. Pile driving rigs shall have firmly supported leads extending down to the lowest point the hammer must reach. A suitable driving cap shall be provided to prevent undue damage to the top of the pile, and to hold the pile center under the hammer.

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# EARTHWORK

## I. EXCAVATIONS

### I.1. EXCAVATIONS

Excavations shall be made in conformance with the latest revision of "Part II, Department of Labor, Occupational Safety and Health Administration, 29 CFR Part 1926, Occupational Safety and Health Standards - Excavations; Final Rule, Subpart P".

### I.2. SAFETY DATA

Bench Marks and other reference points shall be carefully maintained and protected.

### I.3. UNDERMINING

The Builder shall provide such dewatering, sheeting, and shoring as may be required to support the sides of any excavation to prevent earth movement that could endanger the work, workmen, or any existing structures, or to confine the construction within a specified area, so that all work may be accomplished and inspected in the dry.

### I.4. TEMPORARY ACCESS

Suitable safe temporary bridges, crossings, or access ways shall be provided during construction to maintain traffic and/or provide access to private property. Such structures shall be removed after construction is complete.

### I.5. DUST CONTROL

Dust conditions shall be kept to a minimum via a method to be approved by the Engineer.

### I.6. OTHER UTILITIES

Prior to opening an excavation the Builder shall notify other utilities and actual field locations shall be made of their facilities except new URD construction where "As-Builts" are furnished by the Developer. Overhead and underground utilities shall be properly protected by acceptable methods at all times during construction.

### I.7. HAND EXCAVATION

The Builder shall excavate by hand where excavation by machinery would endanger trees, structure or utilities unless prior arrangements have been made.

### I.8. OPEN EXCAVATION

The extent of excavation open at any one time will be held to a minimum consistent with the orderly prosecution of the work. All trench excavation will be open cut unless tunneling is specified by the Engineer.

### I.9. EXCAVATED MATERIAL

Such material to be used for backfill shall be neatly deposited. Where stockpiling is required, the Builder shall be responsible for obtaining the sites and shall so maintain his operations to provide for natural drainage and not present an unsightly appearance. Materials unsuitable for backfill shall be removed from the job site and disposed of by the Builder.

### I.10. BEDDING

Except where granular bedding is to be used mechanical excavation shall be stopped above the final grade elevation and the remaining material carefully hand excavated so that the conduit or structure may be constructed on a firm, undisturbed, native earth bed. In the event

excavation below the elevation required is made, bedding material will be placed and compacted to bring the excavation to grade.

I.11. BAD MATERIAL

If unstable or unsuitable material is encountered at or below the limits of excavation, such material shall be removed and replaced with suitable material compacted as specified, when specifically authorized by the Engineer.

I.12. ROCK

If rock is encountered, excavation shall be made to at least 6 inches below the finish grade of the structure or conduit. The resultant over excavation shall be filled and compacted with suitable bedding material.

## **II. BACKFILL**

II.1. GENERAL

II.1.1. The Builder shall be responsible for obtaining the necessary inspections, "As-Builts", and compaction tests, before, during, and after backfilling.

II.1.2. He shall re-excavate, refill and perform all such related work necessary to obtain satisfactory backfill results.

II.2. MATERIAL

Excavated native granular material free from perishable and objectionable objects such as roots, rocks, bricks, concrete, etc. and containing no stones or clods larger than 3 inches in diameter shall be used for backfilling. Excess or unsuitable backfill material will be disposed of by the Builder.

II.3. RAMPING

All backfill shall be placed in uniform horizontal layers. "Ramping", that is, pushing backfill materials down a ramp into excavated area, will not be permitted.

II.4. WHEN

Backfill shall be accomplished as soon as practicable after underground work on the conduit or structure is completed and inspected. No trash shall be allowed to accumulate in the space to be backfilled.

## **III. COMPACTION**

III.1. GENERAL

The below listed compaction requirements are in conformance with the City Standard Specifications for the City of Jacksonville, Florida of October, 1978 as amended. Specifications for work within State Road Rights-of-Way are in conformance with Requirements Paragraph 125-8.3.2 of the 1982 edition of the FDOT Standard Specifications for Road and Bridge Construction. If either or both of these specifications have been revised, the latest revision shall apply.

III.2. TESTING, WHEN REQUIRED

An approved independent testing laboratory shall be retained to make in-place density tests of trench backfill at intervals of not more than 150 feet for each compacted lift along all conduit. Reports of these tests shall be submitted in triplicate within 24 hours to the Engineer for approval.

### III.3. METHOD

The method of compacting backfill material shall be at the Builder's option provided the compaction requirements herein specified are obtained, except that consolidation by flooding will not be permitted under or adjacent to paved or unpaved traffic areas.

## IV. COMPACTION WITHIN CITY RIGHT-OF-WAY

### IV.1. TO TOP OF CONDUIT:

Backfill material up to the top of conduit shall be placed in layers not to exceed 6 inches compacted thickness and compacted to 100 percent (100%) of its maximum density at + 2% of optimum moisture content as determined by the Laboratory Modified Proctor Test (AASHTO-T-180). A tolerance of minus two percent (-2%) shall be allowed in the compactive effort.

### IV.2. UNDER ROADS:

In paved or unpaved roadways and traffic areas including road shoulders, railroad crossings, driveways and within the right-of-way, backfill material above the top of conduit and above the bottom of structures, shall be placed in layers not to exceed 12 inches loose thickness and compacted to 98 percent (98%) of its maximum density at + 2% of optimum moisture content as determined by the Laboratory Modified Proctor Test (AASHTO-T-180).

### IV.3. NOT UNDER ROADS:

In areas outside of roadways and outside of the right-of-way, backfill material above one foot over the top of conduit and above the bottom of structures shall be placed in layers not to exceed 12 inches compacted thickness.

### IV.4. ON FILL:

Where conduit is laid or structures built on fill materials in lieu of undisturbed earth, the fill material shall be brought up to the bottom elevation of the conduit or structure in 6 inch maximum layers compacted thickness. Each layer shall be compacted to 100 percent (100%) of the maximum density as determined by the Laboratory Modified Proctor Test (AASHTO-T-180). A tolerance of minus two percent (-2%) shall be allowed in the compactive effort.

## V. COMPACTION WITHIN STATE ROAD RIGHT-OF-WAY

### V.1. APPLICATION:

As exception to the above paragraph, the following shall govern work within State Road Rights-of-Ways.

### V.2. TO TOP OF CONDUIT:

Backfill material up to the top of conduit, and up to the bottom of structures, shall be placed in layers not to exceed 6 inches (compacted thickness) and compacted to 100 percent (100%) of its maximum density at + 2% of optimum moisture content as determined by AASHTO-T-99. No minus tolerance shall be allowed in the compactive effort.

### V.3. UNDER ROADS:

When pavement is to be constructed over the conduit backfill material above the top of the conduit and above the bottom of structures shall be placed in the manner and compacted to the degree required in Paragraph V.2 above. No minus tolerance shall be allowed in the compactive effort.

V.4. 5.4. NOT UNDER ROADS:

Where no pavement is to be constructed and vehicular traffic is not to pass over the conduit, backfill material above the top of the conduit and above the bottom of structures shall be compacted to a firmness approximately equal to that of the soil adjacent to the conduit trench or structure excavation.

## VI. BASE COURSE

VI.1. APPLICATION

The base course shall consist of a layer of granular material (Krush Krete™) intended to serve as a foundation for and to replace unstable or unsatisfactory bedding material.

Where indicated, excavation for concrete encased duct bank and structures shall be made to allow for construction of a base course. The compacted thickness of this base is to be as indicated in the Project Documents. The width of this base shall extend one foot (1') to either side of the concrete encased duct bank.

The base under structures shall extend eighteen inches (18") beyond the perimeter of the structure, unless otherwise specified.

VI.2. MATERIAL

Base course shall consist of well-graded crushed stone, crushed gravel or crushed concrete (crushcrete) meeting the specification of ASTM C33, gradation 7 (1/2 in. to No. 4).

NOTE: If crushed concrete is used, a written certification and guarantee shall be provided from the material supplier pertaining to the cleanliness of the material. The material shall not contain any foreign objects, contamination or hazardous materials. Material found to be unsatisfactory shall be removed and replaced with satisfactory material at the builder's expense.

VI.3. COMPACTION

Base course granular fill material to be compacted shall be placed in layers not over six inches (6") thick, and each layer shall be thoroughly compacted with mechanical vibrators to a relative density of 80% as obtained from ASTM-2049.

## VII. SHEETING, SHORING AND BRACING

VII.1. GENERAL

VII.1.1. The Builder shall provide and install such sheeting and shoring as may be required to support the sides of any excavation to prevent earth movement that could endanger the work or workman, or any existing structures, or to confine the construction within a specified area such as an easement or street right-of-way.

VII.1.2. It shall be the Builder's responsibility to place this sheeting and shoring for such protective purposes without the Owner's instructions.

VII.2. DESIGN

Supporting systems, i.e., sheet piling, cribbing, shoring, etc., shall be designed by a qualified person and meet accepted engineering requirements.

VII.3. SHEET PILE INSTALLATION

Installation of sheet piling by the use of vibratory type pile drivers will not be done without the specific permission of the Engineer.

**VII.4. SHEET PILE EXTRACTION**

Extraction of sheet piling by the use of vibratory type pile drivers will not be done without the specific permission of the Engineer. The use of vibratory pile drivers shall be limited to that sheet piling driven no greater than five (5) feet below the bottom of the structure or duct bank. Sheet pile may be completely removed when sufficient backfill has been placed to prevent damage to the work and/or existing structures. All voids left shall be immediately backfilled and compacted.

**VII.5. TIMBER SHEETING LEFT IN PLACE**

Timber sheet pile may be left in place when it is used as the outer form for a cast-in-place structure. Such sheet pile shall have been treated prior to driving. The sheet pile shall be cut off.

**VII.6. STEEL SHEETING LEFT IN PLACE**

Steel sheeting left in place shall be limited to that sheeting more than five (5) feet below the bottom of a structure or duct bank grade which cannot be removed except with a vibratory pile driver. Such piling shall be cut off no less than thirty (30) inches below grade and left in place.

**VIII. ADDITIONAL PLATE(S)**

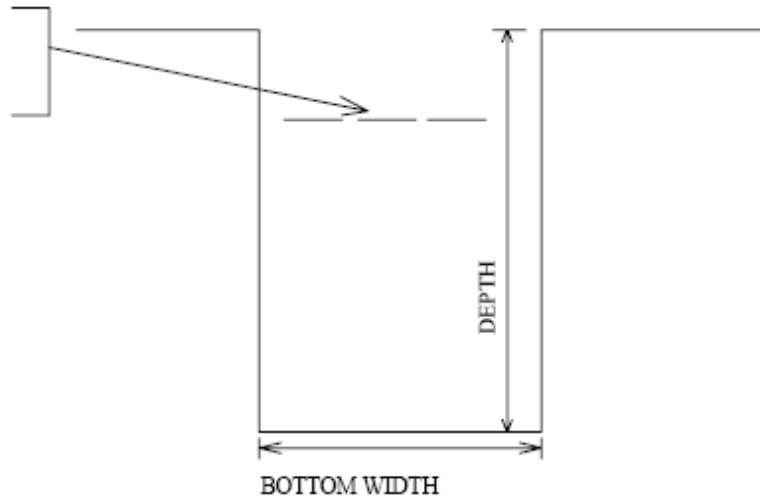
Listed below are plates not otherwise covered by a construction standard plate and drawing.

PLATE	DESCRIPTION	UNIT
<b>BASE-COURSE</b>	Stone/Gravel Base Course	CY
<b>BKFL</b>	Place Select Backfill, Uncompacted	CY
<b>BKFL-COMP</b>	Place & Compact Select Backfill	CY
<b>SEED 1</b>	Rake, Mulch & Seed (Less than 1,000 SF)	SF
<b>SEED 2</b>	Rake, Mulch & Seed (1,001 – 5000 SF)	SF
<b>SEED 3</b>	Rake, Mulch & Seed (5,001 and Greater SF)	SF
<b>SOD 1</b>	Grade & Sod (Less than 1,000 SF)	SF
<b>SOD 2</b>	Grade & Sod (Greater than 1,000 SF)	SF
<b>SODX</b>	Remove And Replace Existing Sod	SF
<b>EXC-1</b>	Excavate 2'x 4'x 5'dp	EA
<b>EXC-2</b>	Excavate 4'x 6'x 5'dp	EA
<b>EXC-3</b>	Excavate 6'x 6'x 5'dp	EA

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## UCT\* CONDUIT TRENCH EXCAVATION

\* MARKING TAPE AS SPECIFIED IN NOTE BELOW



### TRENCH EXCAVATION UNDEVELOPED AREA

Included in this plate are well pointing, sheeting, backfilling and compaction to original degree of consolidation.

PLATE	DESCRIPTION	UNIT
UCT24*U	TRENCH, 24"W X 48"D UNDEVELOPED AREA	LF
UCT36*U	TRENCH, 36"W X 48"D UNDEVELOPED AREA	LF
UCT24*U+1	TRENCH, 24"W, EACH FT OF DEPTH BEYOND 48" DEPTH	LF
UCT36*U+1	TRENCH 36"W, EACH FT OF DEPTH BEYOND 48" DEPTH	LF

### TRENCH EXCAVATION DEVELOPED AREA

Included in this plate is well pointing, sheeting, backfilling and compaction degree of consolidation. Surface restoration other than pavement included.

PLATE	DESCRIPTION	UNIT
UCT24*D	TRENCH, 24"W X 48"D DEVELOPED AREA	LF
UCT24*D+1	TRENCH, 24"W, EACH FT OF DEPTH BEYOND 48" DEPTH	LF
UCT36*D	TRENCH, 36"W X 48"D DEVELOPED AREA	LF
UCT36*D+1	TRENCH 36"W, EACH FT OF DEPTH BEYOND 48" DEPTH	LF

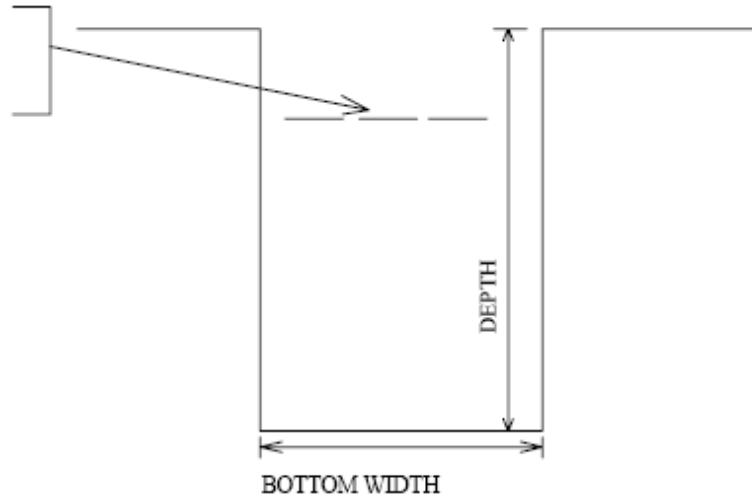
NOTE: Marking Tape Installation Instructions:

One caution tape is to be installed for a 12 inch wide trench, two tapes for a 24 inch or 30 inch wide trench, three tapes for a 42 inch wide trench, and four tapes for a 48 inch wide trench for both UCT and EXC plates.

- Five, six, and seven caution tapes are to be installed for the 54 inch, 60 inch, and 72 inch EXC plates respectively.
- Caution tapes are to be installed 12 inches below final grade in earth, and 18 inches above conduit in pavement.

# UCTC \* CONDUIT TRENCH EXCAVATION

\* MARKING TAPE AS SPECIFIED IN NOTE BELOW



### TRENCH EXCAVATION - PAVEMENT AREA

Included in this plate are well pointing, sheeting backfilling and compaction to ROW owner's requirements (COJ, FDOT, etc.)

PLATE	DESCRIPTION	UNIT
UCTC24*D	TRENCH, 24"W X 48"D PAVEMENT AREA	LF
UCTC24*D+1	TRENCH, 24"W, EACH FT OF DEPTH BEYOND 48" DEPTH	LF
UCTC36*D	TRENCH, 36"W x 48" PAVEMENT AREA	LF
UCTC36*D+1	TRENCH 36"W, EACH FT OF DEPTH BEYOND 48" DEPTH	LF

**NOTE:** Marking Tape Installation Instructions:

One caution tape is to be installed for a 12 inch wide trench, two tapes for a 24 inch or 30 inch wide trench, three tapes for a 42 inch wide trench, and four tapes for a 48 inch wide trench for both UCT and EXC plates.

1. Five, six, and seven caution tapes are to be installed for the 54 inch, 60 inch, and 72 inch EXC plates respectively.
2. Caution tapes are to be installed 12 inches below final grade in earth, and 18 inches above conduit in pavement.



## EXC\_ - \_ CONDUIT TRENCH EXCAVATION (DOWNTOWN)

\* MARKING TAPE AS SPECIFIED IN NOTE BELOW

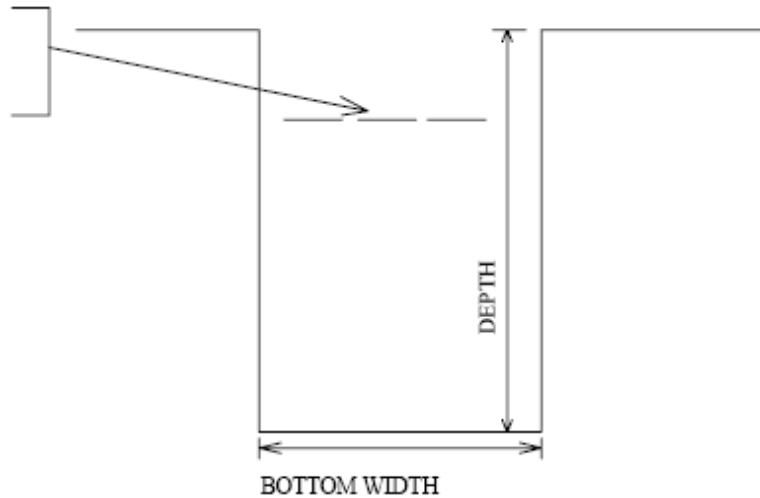


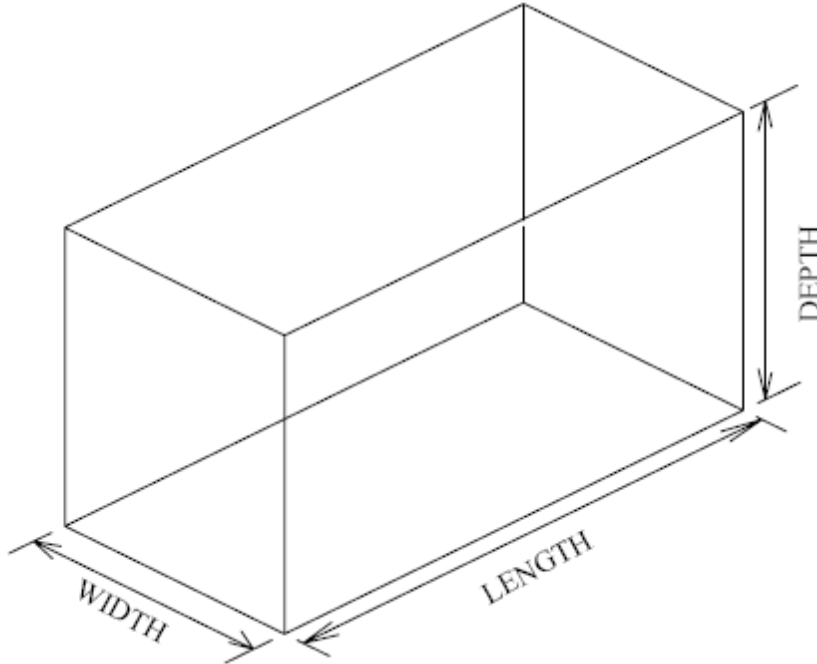
Plate includes well-pointing, sheeting, backfilling and compaction – depth in feet indicated by option.

PLATE	DESCRIPTION	UNIT
EXC12-OPTION	EXCAVATE 12" WIDE TRENCH Options Available: 2, 2.5, 3, 3.5	LF
EXC24-OPTION	EXCAVATE 24" WIDE TRENCH Options Available: 2, 2.5, 3, 3.5, 4, 5, 6, 7, 8	LF
EXC30- OPTION	EXCAVATE 30" WIDE TRENCH Options Available: 2, 2.5, 3, 3.5, 4, 5, 6, 7, 8, 9	LF
EXC42- OPTION	EXCAVATE 42" WIDE TRENCH Options Available: 3, 3.5, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14	LF
EXC48- OPTION	EXCAVATE 48" WIDE TRENCH Options Available: 3.5, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14	LF
EXC54- OPTION	EXCAVATE 54" WIDE TRENCH Options Available: 3.5, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14	LF
EXC60- OPTION	EXCAVATE 60" WIDE TRENCH Options Available: 3.5, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14	LF
EXC72- OPTION	EXCAVATE 72" WIDE TRENCH Options Available: 3.5, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14	LF

EXAMPLE: EXC60-7

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## EXC\_X\_-\_ BULK EXCAVATION FOR CAST-IN-PLACE STRUCTURES



### EXCAVATION FOR CAST-IN-PLACE STRUCTURES

Includes well-pointing, sheeting backfilling and compaction. Depth in feet indicated by option.

	DESCRIPTION	UNIT
<b>EXC4X6- OPTION</b>	8' X 10' Excavation Or Equal Perimeter Options Available: 9, 10, 11, 12, 13, 14	EA
<b>EXC6X12- OPTION</b>	10' X 16' Excavation Or Equal Perimeter Options Available: 9, 10, 11, 12, 13, 14, 15	EA
<b>EXC8X12- OPTION</b>	12' X 16' Excavation Or Equal Perimeter Options Available: 9, 10, 11, 12, 13, 14, 15	EA
<b>EXC8X16- OPTION</b>	12' X 20' Excavation Or Equal Perimeter Options Available: 12, 13, 14, 15	EA
<b>EXC8X30- OPTION</b>	13' X 34' Excavation Or Equal Perimeter Options Available: 12, 13, 14, 15	EA
<b>EXC6X9- OPTION</b>	10' X 13' Excavation Or Equal Perimeter Options Available: 9, 10, 11, 12, 13, 14	EA

**EXAMPLE:**

EXC6X9-12 (10' X 13' X 12'DEEP EXCAVATION)

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# CONCRETE WORK

## I. SCOPE

This section includes the standards for concrete, reinforcing steel, formwork, concrete placement, curing, and construction joints. Concrete work for structures and duct bank shall be done in accordance with these requirements.

## II. APPLICABLE STANDARDS

- II.1. All concrete work shall be in accordance with the following standards of the American Concrete Institute (ACI), except as may be modified by these specifications:
- II.2. ACI 318 (latest revision) "Building Code Requirements for Reinforced Concrete." ACI 301 (latest revision) "Building Code Requirement for Structural Concrete."
- II.3. ACI 306 (latest revision) "Recommended Practice for Cold Weather Concreting."
- II.4. ACI 305 (latest revision) "Recommended Practice for Hot Weather Concreting."
- II.5. ACI 613 (latest revision) "Recommended Practice for Selecting Proportions for Concrete."

## III. MATERIALS

### III.1. CEMENT:

Cement shall be a single brand of approved Portland Cement conforming to ASTM "Specifications for Portland Cement" (ASTM C 150). Unless otherwise permitted or required, cement shall be Type I, ASTM C 150, or Type II.

### III.2. AGGREGATES:

Fine Aggregate shall consist of sand meeting the requirements of "Standard Specification for Concrete Aggregates" (ASTM C 33). Coarse aggregate shall consist of gravel, crushed gravel, crushed stone or air-cooled blast furnace slag or a combination thereof, conforming to the requirements of ASTM C 33.

### III.3. PROPORTIONING:

Concrete shall be of plastic consistency such that it can be worked readily into all parts of the form and around embedded work without segregation of constituent material or collection of free water on the surface.

### III.4. STRENGTH:

Concrete shall be proportioned and mixed to obtain a 28-day compressive strength of 3000 PSI. On occasion, 3500 PSI, 4000 PSI or 5000 PSI, 28-day strength concrete may be specified. Unless otherwise noted all downtown network concrete duct banks shall use 5000 PSI strength concrete.

### III.5. SLUMP:

The slump shall be 4 inches to 6 inches for concrete which is to be mechanically vibrated and 5 inches to 7 inches for concrete which is to be placed without consolidation. The minimum slump shall be waived on concrete used in sloping construction.

### III.6. MIXING AND DELIVERY:

All concrete shall be ready-mixed and mixed and delivered in accordance with the requirements set forth in "Specifications for Ready-Mixed Concrete", (ASTM C-94). Attention

is directed to the importance of dispatching trucks from the plant so that they shall arrive at the site just before the concrete is required, thus avoiding excessive mixing of concrete while waiting. Concrete shall be discharged into forms within 1-1/2 hours after water was first added to the mix and shall be mixed at least five (5) minutes after all water has been added.

**III.7. TEST SAMPLES:**

The number and frequency of test samples for the purpose of determining the strength of the concrete placed shall be in accordance with the following or as required by the Project Inspector.

III.7.1. One set of four cylinders shall be made for each 30 cubic yards or fraction thereof, placed each day.

III.7.2. The number and frequency of test samples required above shall apply to each design and each plant batch, separately.

**III.8. CORE TEST:**

III.8.1. If specimen strength tests do not conform to the requirements of these specifications, approval may be given by the Engineer for the Contractor to have alternate strength tests made on specimens secured from the structure in accordance with ASTM C-42 (Core test). These alternate tests shall be made at the contractor's expense.

III.8.2. If the concrete does not meet the required specifications, the concrete so represented or the entire structure, if concrete not meeting these specifications is a part thereof, shall be removed and replaced by the contractor at his expense.

III.8.3. In structure elements for which the strength of the concrete is not critical and the structural integrity is not affected, the Engineer may, at his discretion, allow the concrete to remain in place.

**III.9. ADDITIONAL PLATES:**

Listed below are plates not otherwise covered by a construction standard Plate and Drawing.

	DESCRIPTION	UNIT
<b>CONC-3</b>	3000 PSI Concrete, Cast-in-place	CY
<b>CONC-3.5</b>	3500 PSI Concrete, Cast-in-place	CY
<b>CONC-5</b>	5000 PSI Concrete, Cast-in-place	CY
<b>GROUT1:10</b>	1:10 Grout	CY

**IV. REINFORCING STEEL**

**IV.1. GRADE OF BARS:**

All bars shall conform to the "Standard Specification for Deformed and Plain Billet Steel bars for Concrete Reinforcement", Grade 60 (60,000 PSI minimum yield strength) ASTM 615. Size to be as specified in details.

**IV.2. DETAILS OF REINFORCEMENT:**

Reinforcing steel shall be fabricated and placed in conformance with the specification of "Building Code Requirements for Reinforced Concrete" (ACI-318 Latest).

#### IV.3. CUTTING BARS:

Bars may be cut by shearing, sawing, or acetylene torch.

#### IV.4. BENDING BARS:

Bars shall be bent to the tolerances prescribed by ACI-318.

#### IV.5. SURFACE CONDITION OF REINFORCEMENT:

Reinforcement, at the time that the concrete is placed, shall be free from mud, oil, ice, or other non-metallic coatings. Bars with rust, mill scale, or a combination of both, shall be considered satisfactory, provided the minimum dimensions, including height or deformations, and weight of a hand brushed specimen are not less than the ASTM specifications.

#### IV.6. PLACING REINFORCEMENT:

Reinforcement, ducts and other embedded objects shall be placed and adequately supported to provide the minimum concrete cover required, and shall be secured against displacement within tolerances permitted by ACI-318.

#### IV.7. LAP SPLICES:

Lap splices shall be lapped the distance specified in the rebar schedule.

### V. FORMWORK

#### V.1. DESIGN:

V.1.1. Forms shall result in a final structure that conforms to shapes, lines, and dimensions of the members as required by the design drawings.

V.1.2. Earth cuts shall not be used as forms for vertical surfaces unless approved by the engineer.

V.1.3. Forms shall be substantial and sufficiently tight to prevent the leakage of mortar.

V.1.4. Forms shall be properly braced or tied together to maintain position and shape.

V.1.5. Design of formwork shall include consideration of the rate and method of placing concrete and construction loads, including vertical, horizontal, and impact loads.

#### V.2. REMOVAL OF SHORING:

No construction loads shall be supported on, nor any shoring removed from, any part of the structure under construction except when that portion of the structure in combination with remaining forming and shoring system has sufficient strength to support safely its weight and loads placed thereon.

#### V.3. REMOVAL OF FORMS:

Forms shall be removed in such manner as not to impair safety and serviceability of the structure. All concrete to be exposed by form removal shall have sufficient strength not to be damaged thereby.

### VI. PLACING CONCRETE

#### VI.1. GENERAL:

Concrete shall be placed in accordance with ACI-301 (latest revision), "Specifications for Structural Concrete for Buildings."

## VI.2. PREPARATION BEFORE PLACING:

The subgrade should be moist, but free of standing water and soft spots. If limestone base course is used it should be sprinkled sufficiently to eliminate suction. Forms and ducts should be moist.

### DEPOSITING:

Concrete shall be deposited continuously, or in layers of such thickness that no concrete will be deposited on concrete which has hardened sufficiently to cause the formation of seams or planes of weakness within the section. Temporary spreaders in forms shall be removed when the concrete has reached an elevation rendering their service unnecessary. Concrete shall be deposited as nearly as practicable in its final position to avoid segregation due to falling, rehandling or flowing.

## VI.3. CONSOLIDATION:

All concrete shall be consolidated by vibration, spading, rodding, or forking so that the concrete is thoroughly around the reinforcement, around embedded items, and into corners of forms. Over-vibrating and use of vibrators to transport concrete within forms shall not be allowed. Vibrators shall be inserted and withdrawn at many points, from 18 to 30 inches apart. At each insertion, the duration shall be sufficient to consolidate the concrete, but not sufficient to cause segregation, generally from 5 to 15 seconds duration.

## VI.4. WEATHER CONDITIONS:

Detailed recommendations for placing concrete in hot and cold weather are contained in ACI-305 and ACI-306, respectively.

## VI.5. PROTECTION:

Unless adequate protection is provided, concrete shall not be placed during rain, sleet or snow. Rain water shall not be allowed to increase the mixing water.

## VI.6. PLACING TEMPERATURE:

### VI.6.1. Cold Weather:

When the air temperature falls below 40°F, the minimum temperature of concrete as placed shall be 50 degrees F, or warmer.

### VI.6.2. Hot Weather:

Concrete deposited in hot weather shall have a placing temperature which will not cause difficulty from loss of slump, flash set, or cold joints (usually somewhat less than 90° F).

## VII. CURING CONCRETE

### VII.1. GENERAL:

Freshly deposited concrete shall be protected from premature drying and excessively hot or cold temperatures, and shall be maintained with minimal moisture loss at a relatively constant temperature for the period of time necessary for the hydration of the cement and proper hardening of the concrete

### VII.2. TEMPERATURE:

#### VII.2.1. Cold Weather:

When the mean daily air temperature is less than 40° F, the temperature of the concrete shall be maintained between 50°F and 70°F for 48 hours after placement.



## VII.2.2. 7.2.2. Hot Weather:

VII.2.2.1. When necessary, arrangements for installation of windbreaks, shading, fog spraying, sprinkling, etc. shall be made in advance of placement, and such protective measures shall be taken as quickly as concrete hardening will allow.

VII.2.2.2. On hot days when the humidity is low it is advisable to place the concrete late in the day and to insure that the forms and trench are well-moistened just prior to placement.

## VIII. CONSTRUCTION JOINTS, DUCT BANK

### VIII.1. GENERAL:

In the construction of duct banks, construction joints need to be made more frequently than in normal concrete work. In order to avoid the creation of shear planes, special precautions are required. The below specifications shall be strictly followed.

### VIII.2. LOCATION:

The construction joint shall be made between spacers. No spacer should fall in the sloping plane of the joint.

### VIII.3. CONCRETE:

The surface of the joint shall be at an angle of 30° to 45° with the horizontal plane of the duct bank. The concrete shall be allowed to flow outward at the bottom and slope back toward the top of the freshly poured duct at the angle specified above. The concrete in the area shall be consolidated about the duct and reinforcement. Unless otherwise noted all downtown network concrete duct banks shall use 5000 PSI strength concrete.

### VIII.4. REINFORCING STEEL:

The reinforcing steel bars shall extend beyond the surface of the concrete a distance which will allow a lap splice to be made as specified in the details for the particular size of bar.

### VIII.5. DUCT:

Ducts shall extend beyond the joint surface and finished to accept a coupling. A plug will be installed in each duct.

### VIII.6. CLEANING:

Prior to continuing the placement of the next section of concrete, the surface of the concrete joint shall be thoroughly cleaned with clean water to remove all dirt, loosened particles of aggregate, and laitance.

### VIII.7. BONDING AGENT:

VIII.7.1. Where new concrete is to be placed against concrete which has reached its initial set, the existing concrete surface shall be coated with a bonding agent prior to placing new concrete.

VIII.7.2. The bonding agent shall be "Procobond" manufactured by Protective Coatings Co. or equal.

VIII.7.3. Application shall be in strict accordance with the manufacturer's recommendations.

**IX. CONSTRUCTION JOINTS – STRUCTURES**

IX.1. GENERAL:

Joints not shown on the drawings shall be made and located as to least impair the strength of the structure and shall be approved. Joints shall be perpendicular to the main reinforcement. All reinforcing steel shall be continued across joints. Longitudinal keys at least 1–1/2” deep shall be provided in all joints in walls and between walls and slabs.

IX.2. CLEANING:

The surface of the concrete at all joints shall be thoroughly cleaned and all laitance removed.

IX.3. BONDING:

Bond shall be obtained either by:

IX.3.1. The use of an approved adhesive such as “Procobond”.

IX.3.2. By roughening the surface of the concrete in an approved manner which will expose the aggregate uniformly and will not leave laitance, loosened particles of aggregate or damaged concrete at the surface.

# REBAR-

## STEEL REINFORCING BAR

### REBAR CONVERSION FORMULAS:

Rebar must be converted to pounds and item coded by size.

To calculate the number of pounds required, use the following formulas:

$$\text{REBAR - S}^* = (\text{Number of bars same length \& size}) \times (\text{Length of bar 'feet'}) \times (\text{Weight of rebar 'pounds per foot'})$$

$$\text{REBAR - L}^* = (\text{Number of bars same size}) \times (\text{Weight of rebar 'pounds per foot'}) \times (\text{Length of duct bank span 'feet'}) \times \left\{1 + \frac{(\text{Rebar Lap splice "Feet"})}{20'}\right\}$$

$$\text{REBAR - T}^* = (\text{Length of duct bank span 'feet'}) \times (\text{Length of rebar 'inches'}) \times (\text{Weight of rebar 'pounds per foot'}) / \text{divided by (Number of inches rebar on center.)}$$

Bar Sizes	Weight (pounds per foot)
# 3	0.376
# 4	0.668
# 5	1.043
# 6	1.502
# 7	2.044
# 8	2.670
# 9	3.400
# 10	4.303

**REBAR – S\*** = Rebar used in cast-in place structures (manholes, pads, etc.) Bar sizes available – # 3, # 4, # 5, # 6, # 7, & # 8 (e.g. REBAR – S\*5).

**REBAR – L\*** = Longitudinal Rebar used in concrete encased duct bank construction Bar sizes available – #6, #7, #8, #9, & #10 (e.g. REBAR – L\*8).

**REBAR – T\*** = Transverse Rebar used in concrete encased duct bank construction Bar sizes available – # 6 & # 7 (e.g. REBAR – T\*6)

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# MANHOLES

## I. CAST-IN-PLACE STRUCTURES

### I.1. GENERAL

Cast-in-place structures are specified when existing cables or adjacent buildings, etc. preclude the possibility of setting a pre-cast unit. This normally dictates that the excavation be sheet piled and built around existing energized cables.

### I.2. DESIGN

I.2.1. Cast-in-place structures are individually designed by the Design Consultant based on soil information, water levels, anticipated loading, etc.

I.2.2. The design consultant may require that a base course of several feet thickness and extending beyond the perimeter of the structure by 18" to 24" be placed, or that the structure be constructed on piling. This may or may not preclude the use of the sheet piling to form the outer wall of the manhole.

### I.3. DESIGN CLASSES

The component parts of the structure may be designed in various ways as itemized below:

#### I.3.1. Bottom (with Sump Holes):

I.3.1.1. Pile Cap, rectangular or hexagonal.

I.3.1.2. Mat Foundation, rectangular or hexagonal.

#### I.3.2. Walls:

I.3.2.1. Bearing walls with 2 way reinforcement.

I.3.2.2. Walls designed for future knock-out with 2 way reinforcement and plastered columns.

#### I.3.3. Top:

I.3.3.1. Elevated flat plate slab with 2 way reinforcement and angled reinforcement around openings.

I.3.3.2. Elevated 2 way beam and slab.

#### I.3.4. Columns, Plastered, Rectangular:

I.3.4.1. Square tied reinforcement.

#### I.3.5. Access:

I.3.5.1. Pre-cast grade extension rings.

I.3.5.2. Curb, straight, reinforced with imbedded grate frame.

### I.4. ADDITIONAL ITEMS

Sump holes, pulling irons, ground rods, and duct bell ends will be installed in all manholes. In addition, sump pump drain pipes will be installed in transformer vaults.

### I.5. CONSTRUCTION

Specifications for concrete work including formwork, shore removal and placement of reinforcing steel are prescribed in the Concrete and Piles Section.

**I.6. MODIFYING EXISTING STRUCTURES**

This work will consist of replacing portions of existing structures with one or more of the design classes indicated above.

**I.7. PLATING INSTRUCTIONS**

To plate a cast-in-place structure, it is necessary to plate the following items separately, obtaining quantities from the design consultants' plans.

Excavation	EXC ___ X ___ - ___
<b>Forms</b>	FORM -
<b>Rebar</b>	REBAR - ___ * ___
<b>Concrete</b>	CONC ___
<b>Manhole Neck and Frame and Cover</b>	MBLD-MH-NECK
	BLD-MH-NECK.

**I.8. ADDITIONAL PLATES**

PLATE	DESCRIPTION	UNIT
<b>PULL-IRONS</b>	Installation of Pulling Irons	EA
<b>GROUT-DUCT*C</b> <b>GROUT-DUCT*H</b>	Fill and Seal Around Duct (C=COLD, H=HOT)	EA
<b>MPUMP-MH</b> <b>PUMP-MH</b>	Pump out Manhole	EA
<b>MCLEAN-MH</b> <b>CLEAN-MH</b>	Clean out Manhole	EA
<b>MSTUB-OUT</b> <b>STUB-OUT</b>	Drill Hole in Manhole Wall for up to 6" Duct, Grout around Duct	EA

**II. PRECAST STRUCTURES**

**II.1. GENERAL**

II.1.1. Includes well-pointing, sheeting, installation, backfilling, compaction and building of neck, depth in feet indicated by option.

II.1.2. Pre-cast structures may be set in locations where there may or may not be existing cables. Excavations may or may not need to be sheeted, but in most cases will require well-pointing.

II.1.3. Excavations where there are existing cables must be large enough to allow the bottom portion of the structure to be swung under the cables.

II.1.4. A driven ground rod megged to 25 OHMS or less is to be installed at each structure location.

**II.2. INSTALLING SECTIONS**

Pre-cast concrete sections shall be set so the structure will be vertical and with sections in true alignment. Joint surfaces between the sections shall be sealed with a pre-molded plastic joint sealer equal to "Ramnek" applied to the bottom section according to the structure manufacturer's instructions.

**II.3. NON-SHRINK JOINTS**

All holes in structures for entering pipes or ducts shall be thoroughly plugged with non-shrinking mortar, applied so there will be zero leakage around pipes and ducts. The mortar will be finished smooth and flush with the ducts, pipes, etc. and the adjoining interior walls.

**II.4. DUCT TERMINATION**

Plastic bell-ends will be installed on each duct flush with inside walls. If bell-ends with a membrane to seal the duct are available they will be used.

**II.5. TEMPORARY DUCT SEALS**

Once all duct entering the manhole is declared satisfactory, an expandable foam mixture, if available, will be placed in each duct opening. This will provide a watertight, temporary seal to prevent duct from becoming clogged and to prevent water from traveling between adjacent manholes. If foam is not available, use proper size PVC conduit plug.

**II.6. ADDITIONAL PLATES**

Listed below are plates not otherwise covered by a Construction Standard Plate and Drawing.

Plate	Description	Unit
<b>FOAM-DUCT</b>	Installing Expandable Foam	EA
<b>MFOAM-DUCT</b>	Mixture in Duct Opening	
<b>I.CODBE001</b>	2" PVC BELL END	EA
<b>I.CODBE002</b>	3" PVC BELL END	EA
<b>I.CODBE003</b>	4" PVC BELL END	EA
<b>I.CODBE004</b>	6" PVC BELL END	EA
<b>I.CODRC001</b>	3" - 2" PVC REDUCER COUPLING	EA
<b>I.CODRC002</b>	3" - 2-1/2" PVC REDUCER COUPLING	EA
<b>I.CODRC042</b>	4" - 2" PVC REDUCER COUPLING	EA
<b>I.CODRC043</b>	4" - 3" PVC REDUCER COUPLING	EA
<b>I.CODRC062</b>	6" - 2" PVC REDUCER COUPLING	EA
<b>I.CODRC063</b>	6" - 3" PVC REDUCER COUPLING	EA
<b>I.CODRC064</b>	6" - 4" PVC REDUCER COUPLING	EA

**III. MANHOLE AND VAULT GRADE ADJUSTMENT**

**III.1. GENERAL**

III.1.1. For grade adjustment in setting a manhole frame, brick masonry shall be used on top of the manhole or on top of a pre-cast concrete grade extension ring in accordance with the drawings.

III.1.2. For grade adjustment of vault frames a cast-in-place concrete curb shall be constructed on the vault top, the work under this section shall also include the adjustment of existing structures.

**III.2. MATERIAL**

**III.2.1. Brick:**

The brick shall be clay or shale brick, sound, hard and uniform in shape and size meeting the requirements of ASTM Standard Specifications for Sewer Brick, Designation C-32, Grade MM.

- III.2.2. Mortar for Brickwork:  
The mortar shall be composed of one part Portland Cement (ASTM C150-71, Type I), and two parts washed silica sand (ASTM C144-70). Lime shall not be used.
- III.2.3. Concrete:  
The concrete used in construction shall be as specified in the Project Documents.
- III.2.4. Grade Extension Ring:  
The standard grade extension ring has a 36" inside diameter, has a 6" wall and is 15" high. Rings 6" and 9" high are also available.
- III.2.5. Frames and Covers:  
Specifications for frames, grates, and covers are as specified by the Standards Section.
- III.3. LAYING BRICKWORK  
Only clean brick shall be used. All brick shall be saturated with water before being laid. Each brick shall be laid in a full bed and joint of mortar without requiring subsequent grouting, flushing, or filling and shall be thoroughly bonded.
- III.4. PLASTERING AND CURING BRICK-MASONRY
  - III.4.1. Outside faces of brick masonry shall be plastered with mortar from 1/4 inch to 3/8 inch thick. If required, the masonry shall be properly moistened prior to application of the mortar.
  - III.4.2. The plaster shall be carefully spread and troweled so that all cracks are thoroughly worked out.
  - III.4.3. After hardening, the plaster shall be carefully checked, by being tapped, for bond and soundness. Unbonded or unsound plaster shall be removed and replaced.
  - III.4.4. Brick masonry and plaster shall be protected from too rapid drying by the use of burlaps kept moist, or by other approved means, and shall be protected from the weather and frost, all as required.
- III.5. SETTING MANHOLE FRAMES
  - III.5.1. Manhole frames and covers shall be set to conform accurately to the finished ground or pavement surface as established by the drawings, unless otherwise directed by the Engineer.
  - III.5.2. Frames shall be set concentric with the masonry and in a full bed of mortar so that the space between the top of the manhole masonry and the bottom flanges of the frame shall be completely filled and made water tight.
  - III.5.3. A ring of mortar at least one inch thick and pitched to shed water away from the frame shall be placed around the outside of the bottom flange. Mortar shall extend to the outer edge of the masonry and shall be finished smooth and flush with the top of the flange.
- III.6. TRAFFIC BEARING COVERS  
Grade adjustment of manholes subject to traffic shall be done according to City Specifications. This requires that an 18 inch ring of 4000 PSI concrete, a minimum of 6 inches in thickness be poured around the frame. See Manhole Cover Adjustment Plate.
- III.7. ADDITIONAL PLATES:  
Listed below are plates not otherwise covered by a Construction Plate and Drawing.



PLATE	DESCRIPTION	UNIT
<b>ADD-BRICK</b>	One additional course of brick to adjust manhole frame and cover.	EA
<b>MADD-BRICK</b>		
<b>REP-BFLY-SP (See notes)</b>	Remove existing "Butterfly" manhole roof and replace it with a 1" thick steel plate (Grade B minimum - per ASTM A238-81).	EA

**REP-BFLY-SP Notes:**

- a. Steel plate to be cut one (1) foot longer and wider than interior dimensions of manhole.
- b. Do not use this Plate for manholes larger than 4'x 6'.
- c. 36" diameter hole to be cut in center of plate.
- d. After all cuts are made coat both sides of steel plate with an asphalt base emulsion as per ASTM-D1187-82
- e. Use other appropriate Plates to build neck or adjust cover to grade.

#### IV. MANHOLE ABANDONMENT

PLATE	DESCRIPTION	UNIT
<b>MH-ABND</b>	See Notes Below	CU FT

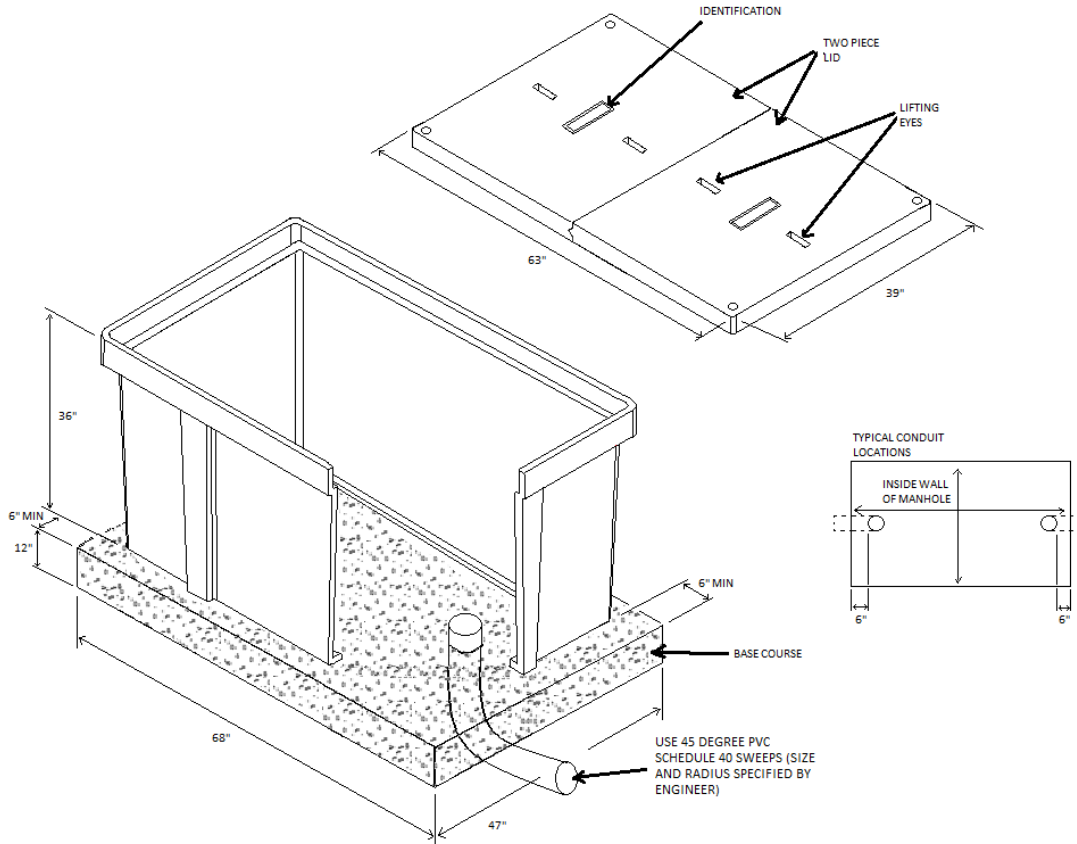
##### IV.1. MANHOLE ABANDONMENT NOTES

- IV.1.1. This construction plate provides for the abandonment of manholes, vaults, or other underground structures which have no further use to JEA.
- IV.1.2. The unit of measure shall be one (1) cubic foot. Measurements shall be the volume of the interior of the manhole prior to demolition, expressed in cubic feet rounded off to the next whole cubic foot. All materials shall be furnished by the contractor.

# SET-PVC-MH

## MSET-PVC-MH

REINFORCED PLASTIC MANHOLE  
NON TRAFFIC RATING



Maximum Allowed: 3-Cables, 3-Splices, Cable Size – 1/0 Primary  
Average Weight: 400-800 lbs.

**MSET-PVC-MH OPTION:**

**INSTALLATION CONDITIONS:**

- C = Cold, New Construction
- H = Hot, Construction around existing Cables

**EXAMPLE: MSET-PVC-MH\*C**

ITEM	QTY	DESCRIPTION
MANHO005	1	MANHOLE, REINFORCED PLASTIC
	1 CU. YD.	BASE COURSE *

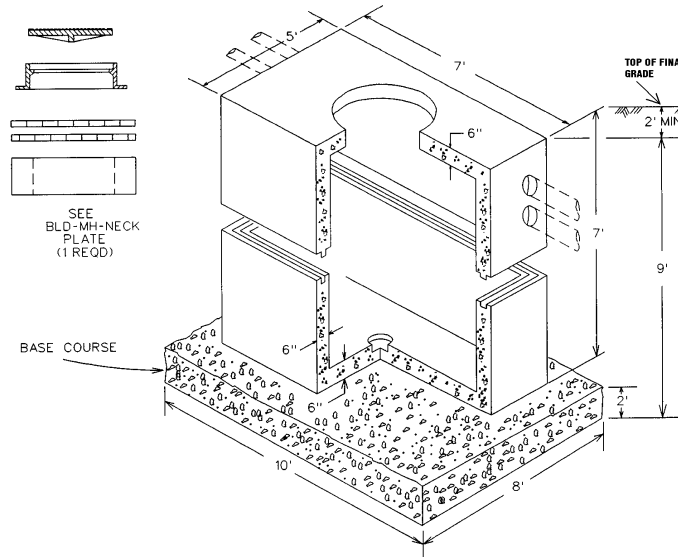
**\*NOTE:**

A compacted base course footing shall be included in this plate. Footing shall be level, minimum of one (1) foot deep, and extend a minimum of six (6) inches beyond the outside edges of the manhole base. (+/- 4.0' x 6.0' x 1.0'deep)

## SET-4 X 6\*

PRE-CAST STRUCTURES  
RESIDENTIAL MANHOLE

(NOT FOR COMMERCIAL USE)



Maximum Allowed: 6-Cables; 6-Splices; Cable Size-1/0 Primary; 4" Stub-outs  
Average Weight: 14000 lbs.

Needs to be Plated with Grounding Plates: G2P, G3P, and (G2P-C or G2P-CT)

For all applications, 1' - 6" concrete poured-in-place collar is required. See Plate ADJ-MH pg19.

### MSET OPTIONS

DEPTH: Depth of excavation in feet indicated by option: 9, 10, 11, 12

INSTALLATION: Installation condition indicated by option:

C - New construction (cold) or

H - Construction around existing cables (hot).

EXAMPLE: MSET-4X6\*9C

### SET OPTIONS

DEPTH: All manholes are to be set with two feet (2') of cover minimum above roof (Max 3').

INSTALLATION: Installation condition indicated by option:

U - Undeveloped area (new) or

D - Developed area (existing).

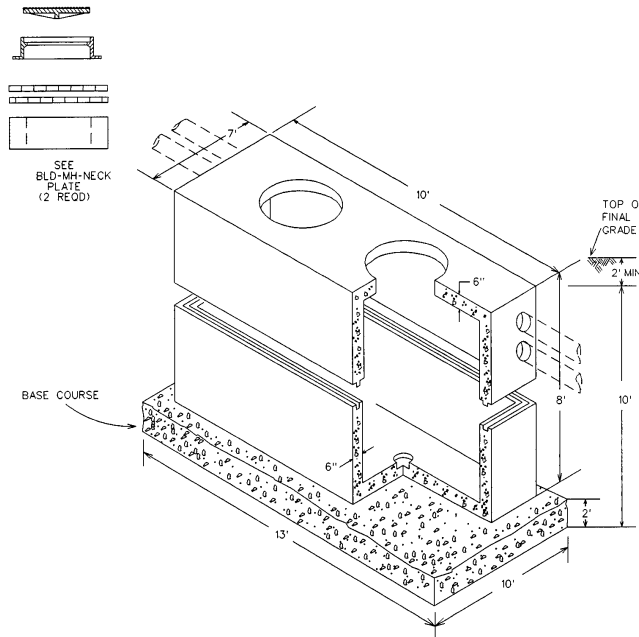
EXAMPLE: SET-4X6\*D

ITEM	QTY	DESCRIPTION
	42	BRICK, COMMON
	1	CEMENT, MORTAR, 96# BAG
COVMA001	1	COVER, MANHOLE
FRAMC001	1	FRAME, MANHOLE COVER
MANER003	1	GRADE EXTENSION RING
MANH0001	1	MANHOLE, PRECAST CONCRETE
	AS REQUIRED	BASE COURSE *

\* NOTE:

A compacted base course footing shall be included in this plate.

# SET-6 X 9\* PRE-CAST STRUCTURES



NOTE: Do Not Install 1000 MCM Cables In The 6x9 Manhole.

Average Weight: 27500 lbs.

Needs to be Plated with Grounding Plates: G2P, G3P, and (G2P-C or G2P-CT)

For all applications, 1' - 6" concrete poured-in-place collar is required. See Plate ADJ-MH pg19.

### MSET OPTIONS

DEPTH: Depth of excavation in feet indicated by option: 9, 10, 11, 12

INSTALLATION: Installation condition indicated by option:

C - New construction (cold) or

H - Construction around existing cables (hot).

Example: MSET-6X9\*9C

### SET OPTIONS

DEPTH: All manholes are to be set with two feet (2') of cover minimum above roof (Max 3').

INSTALLATION: Installation condition indicated by option:

U - Undeveloped area (new) or

D - Developed area (existing).

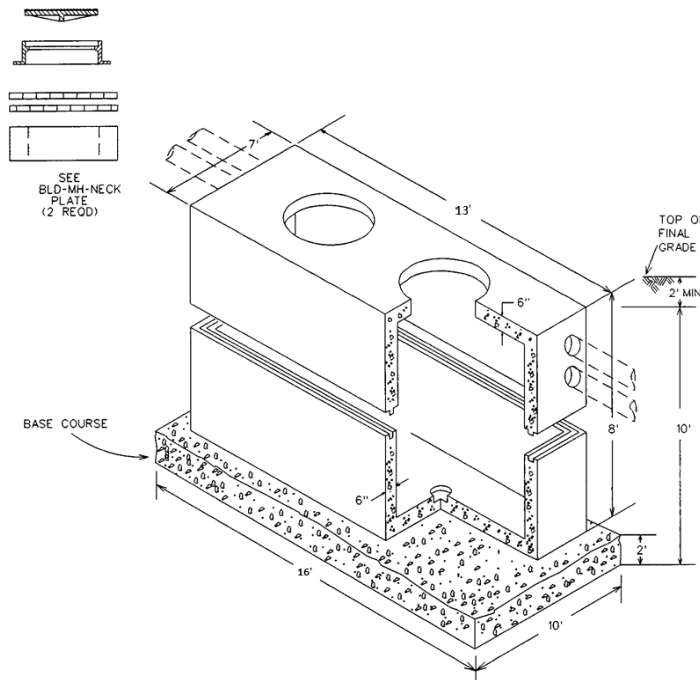
Example: SET-6X9\*D

ITEM	QTY	DESCRIPTION
	84	BRICK, COMMON
	2	CEMENT, MORTAR, 96# BAG
COVMA001	2	COVER, MANHOLE
FRAMC001	2	FRAME, MANHOLE COVER
MANER003	2	GRADE EXTENSION RING
MANH0006	1	MANHOLE, PRECAST CONCRETE
	AS REQUIRED	BASE COURSE *

\*NOTE:

A compacted base course footing shall be included in this plate.

## SET-6 X 12\* PRE-CAST STRUCTURES



Average Weight: 32000 lbs.

**Needs to be Plated with Grounding Plates: G2P, G3P, and (G2P-C or G2P-CT)**  
**For all applications, 1' - 6" concrete poured-in-place collar is required. See Plate ADJ-MH pg19.**

### MSET OPTIONS

DEPTH: Depth of excavation in feet indicated by option: 10, 11, 12, 13

INSTALLATION: Installation condition indicated by option:  
 C - New construction (cold) or  
 H - Construction around existing cables (hot).

Example: MSET-6X12\*11C

### SET OPTIONS

DEPTH: All manholes are to be set with two feet (2') of cover minimum above roof (Max 3').

INSTALLATION: Installation condition indicated by option:  
 U - Undeveloped area (new) or  
 D - Developed area (existing).

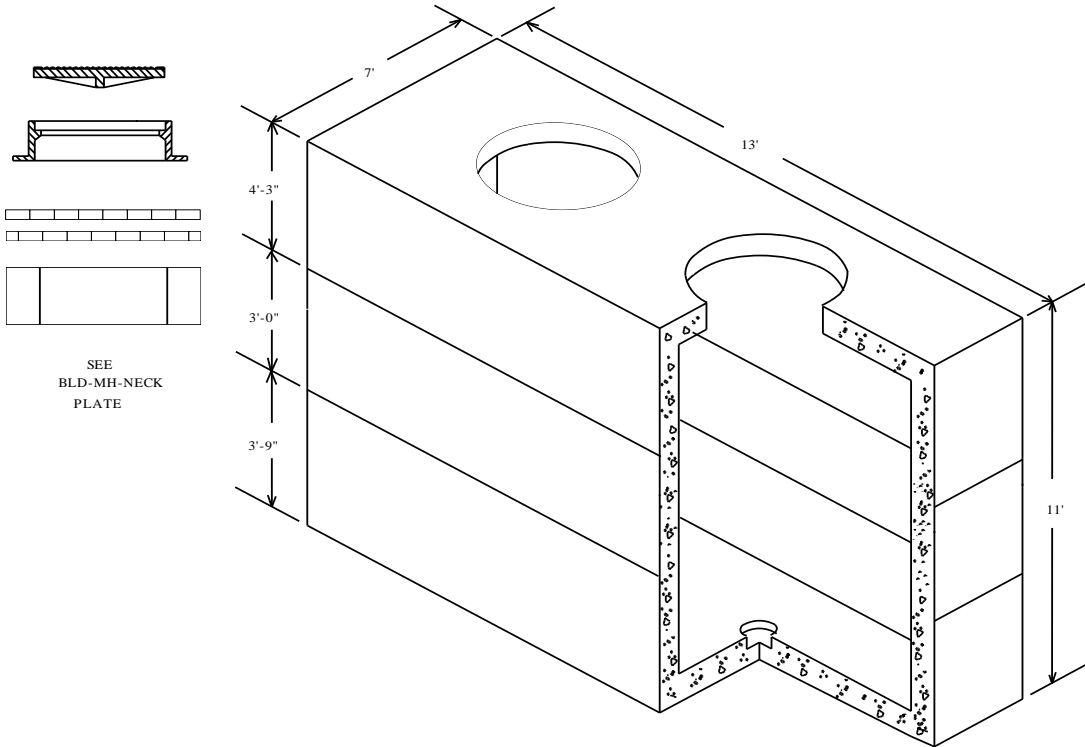
Example: SET-6X12\*D

ITEM	QTY	DESCRIPTION
	84	BRICK, COMMON
	2	CEMENT, MORTAR, 96# BAG
COVMA001	2	COVER, MANHOLE
FRAMC001	2	FRAME, MANHOLE COVER
MANER003	2	GRADE EXTENSION RING
MANH0002	1	MANHOLE, PRECAST CONCRETE
	AS REQUIRED	BASE COURSE *

### \*NOTE:

A compacted base course footing shall be included in this plate.

# MSET 6 X 12 X 10\* PRE-CAST STRUCTURES



Average Weight: 32000 lbs. + MANEX001

**Needs to be Plated with Grounding Plates: G2P, G3P, and (G2P-C or G2P-CT)**

**For all applications, 1' - 6" concrete poured-in-place collar is required. See Plate ADJ-MH pg19.**

### MSET OPTIONS

DEPTH: Depth of excavation in feet indicated by option: 13, 14, 15, 16

INSTALLATION: Installation condition indicated by option:

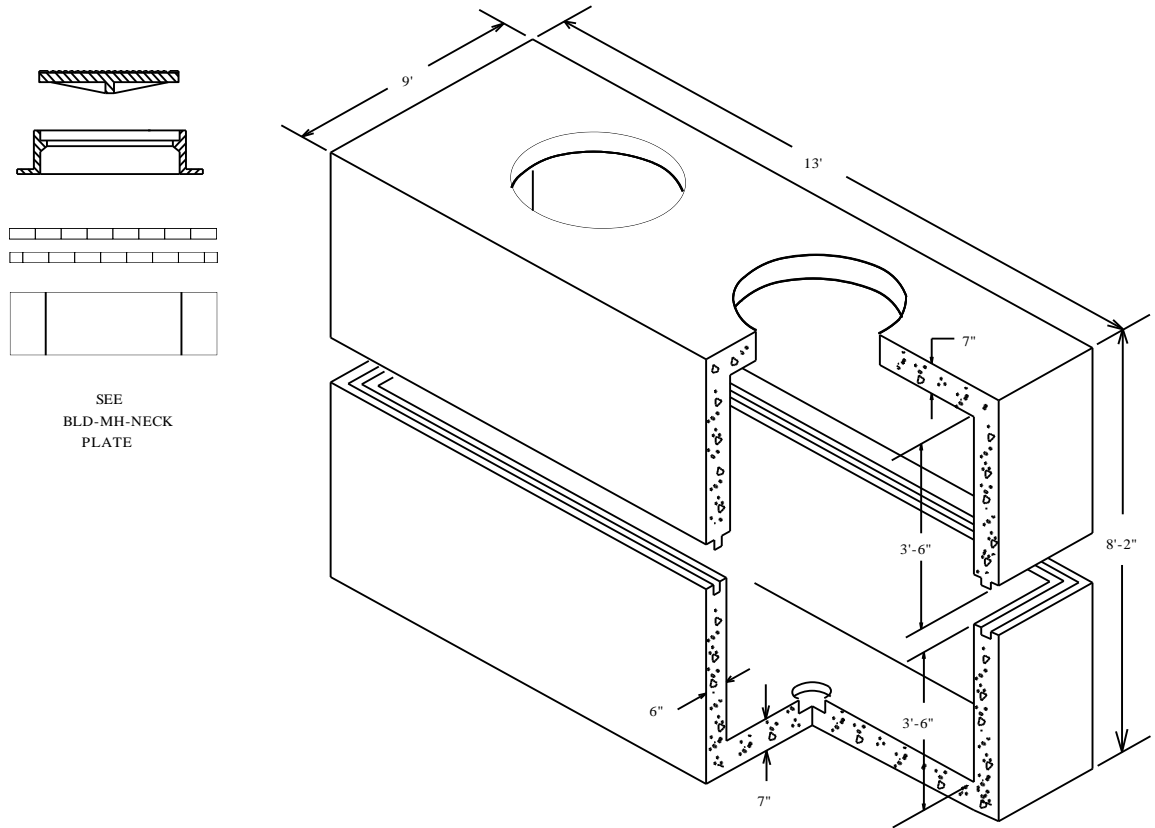
C - New construction (cold) or

H - Construction around existing cables (hot).

**EXAMPLE: MSET6X12X10\*14C**

ITEM	QTY	DESCRIPTION
	84	BRICK, COMMON
	2	CEMENT, MORTAR, 96# BAG
COVMA001	2	COVER, MANHOLE
FRAMC001	2	FRAME, MANHOLE COVER
MANER003	2	GRADE EXTENSION RING
MANH0002	1	MANHOLE, PRECAST CONCRETE
MANEX001	1	MANHOLE EXTENSION, PRECAST CONCRETE
	AS REQUIRED	BASE COURSE

# MSET-8 X 12\* PRE-CAST STRUCTURES



Average Weight: 42000 lbs.

Needs to be Plated with Grounding Plates: G2P, G3P, and (G2P-C or G2P-CT)  
For all applications, 1' - 6" concrete poured-in-place collar is required. See Plate ADJ-MH pg19.

**MSET OPTIONS**

DEPTH: Depth of excavation in feet indicated by option: 10, 11, 12, 13

INSTALLATION: Installation condition indicated by option:

C - New construction (cold) or

H - Construction around existing cables (hot).

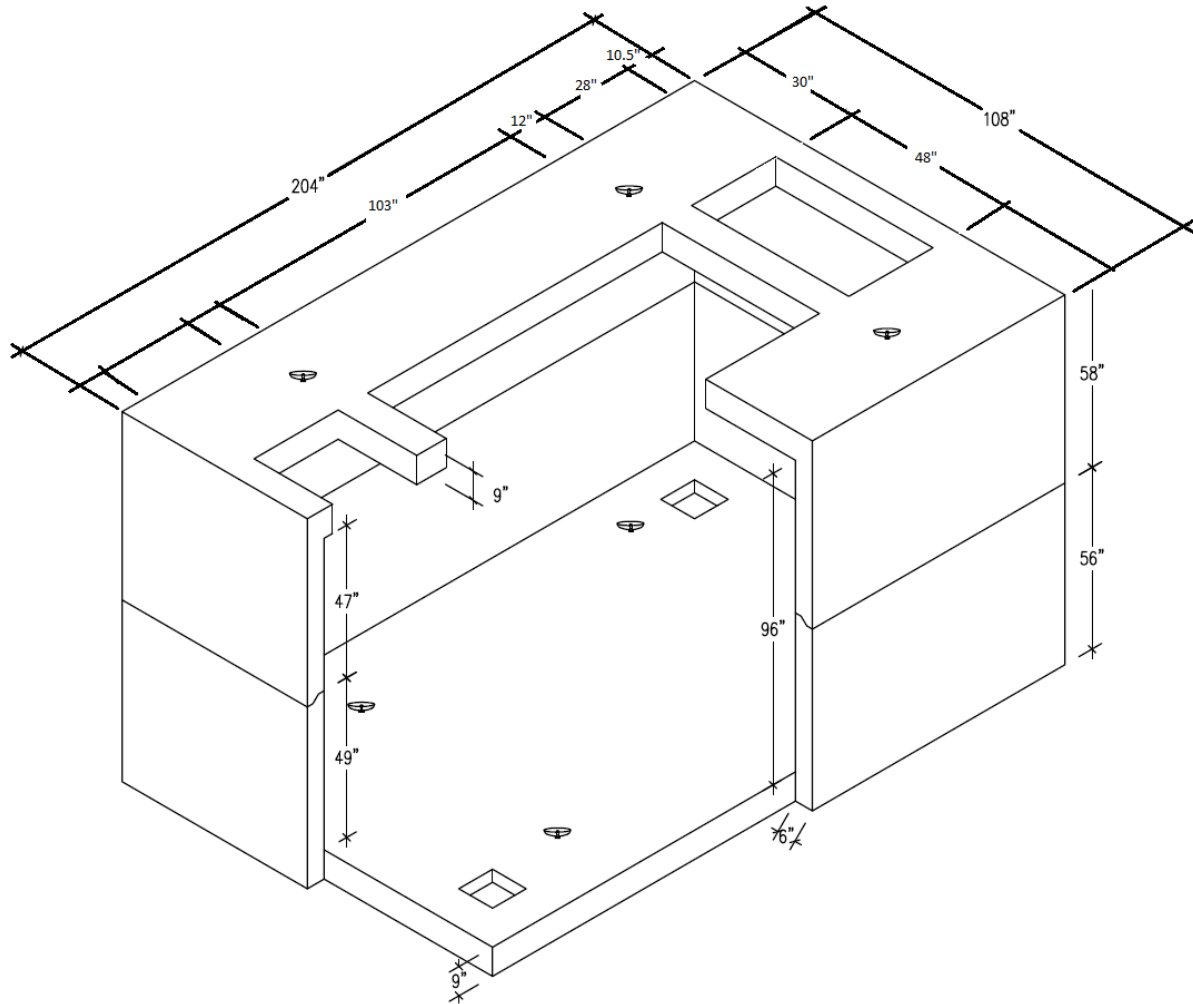
EXAMPLE: MSET-8X12\*13C

ITEM	QTY	DESCRIPTION
	84	BRICK, COMMON
	2	CEMENT, MORTAR, 96# BAG
COVMA001	2	COVER, MANHOLE
FRAMC001	2	FRAME, MANHOLE COVER
MANER003	2	GRADE EXTENSION RING
MANH0003	1	MANHOLE, PRECAST CONCRETE
	AS REQUIRED	BASE COURSE

**NOTE:**

Install Racks as Needed.

# MSET-8 X 16\* PRE-CAST STRUCTURES



Average Weight: 56000 lbs.

**Needs to be Plated with Grounding Plates: G2P, G3P, and (G2P-C or G2P-CT)**

**For all applications, 1' - 6" concrete poured-in-place collar is required. See Plate ADJ-MH pg19.**

**MSET OPTIONS**

DEPTH: Depth of excavation in feet indicated by option: 10, 11, 12, 13, 14

INSTALLATION: Installation condition indicated by option:

C - New construction (cold) or

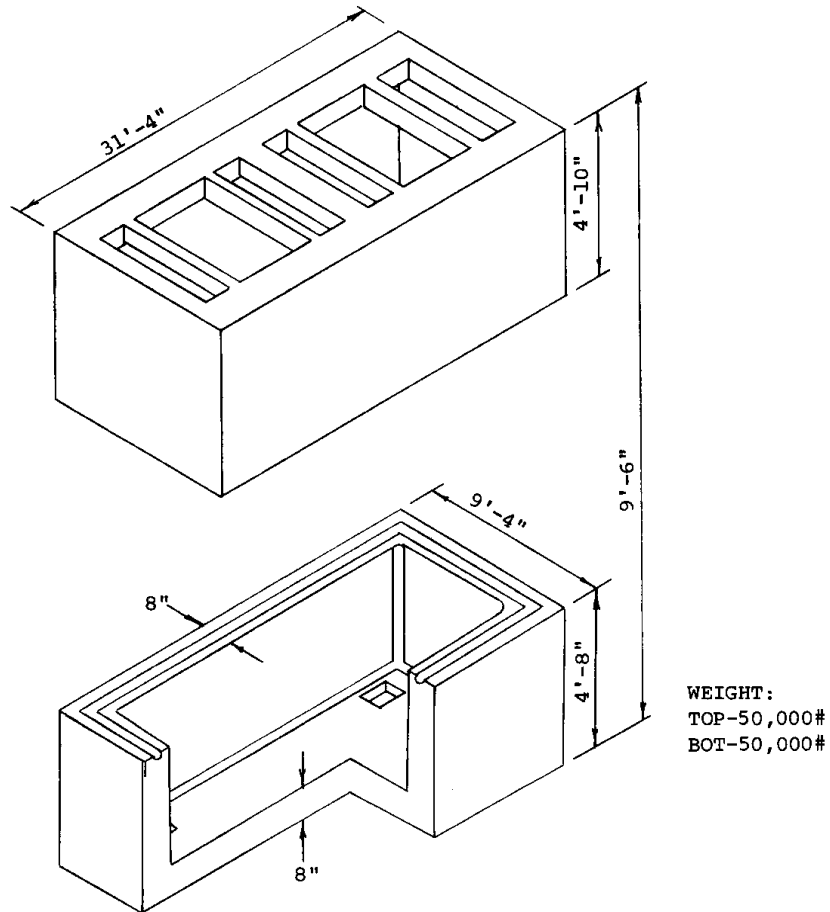
H - Construction around existing cables (hot).

**Example:** MSET-8X16\*12C

ITEM	QTY	DESCRIPTION
GRAMH001	2	VENTILATED GRATE COVER
GRAMH002	2	FILLED GRATE COVER
FRAGR002	2	VENTILATED GRATE FRAME
FRAGR001	1	FILLED GRATE FRAME
MANHO004	1	VAULT, PRECAST CONCRETE



# SET-8 X 30\* PRE-CAST STRUCTURES



Needs to be Plated with Grounding Plates: G2P, G3P, and (G2P-C or G2P-CT)  
For all applications, 1' - 6" concrete poured-in-place collar is required. See Plate ADJ-MH pg19.

**MSET OPTIONS**

DEPTH: Depth of excavation in feet indicated by option: 10, 11, 12, 13, 14

INSTALLATION: Installation condition indicated by option:

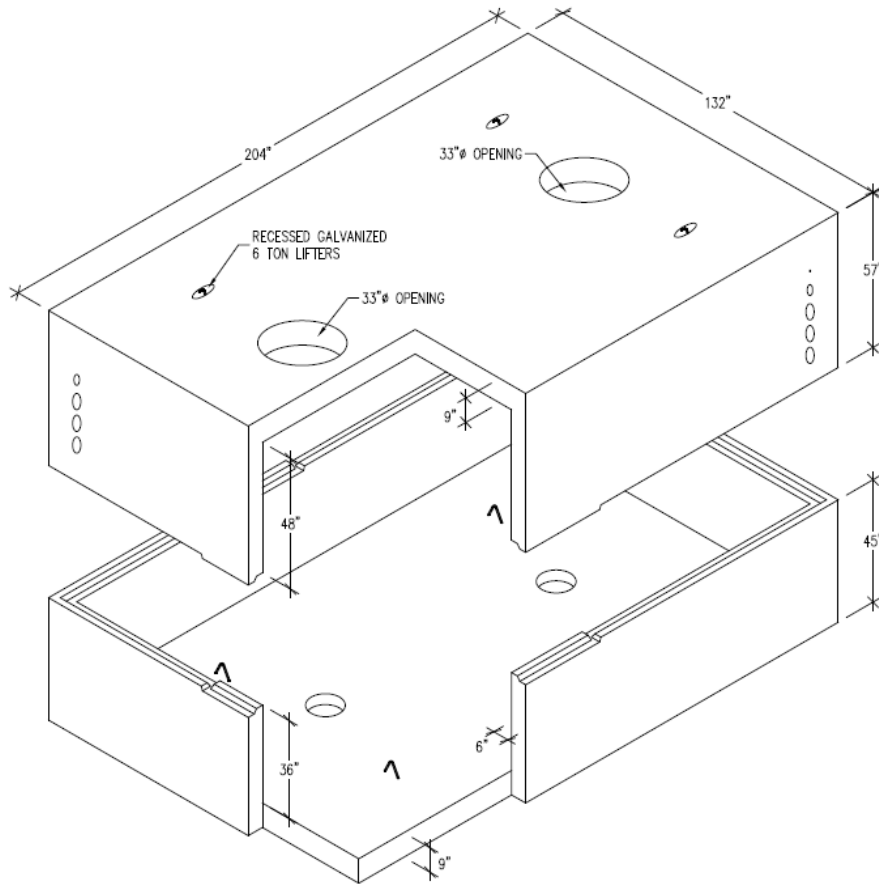
C - New construction (cold) or

H - Construction around existing cables (hot).

Example: SET-8X30\*14H

ITEM	QTY	DESCRIPTION
GRAMH001	4	VENTILATED GRATE COVER
GRAMH002	4	FILLED GRATE COVER
FRAGR002	4	VENTILATED GRATE FRAME
FRAGR001	2	FILLED GRATE FRAME
SPECIAL ORDER	1	VAULT, PRE CAST CONCRETE

# SET-10 X 16\* PRE-CAST STRUCTURES



Average Weight: 68000 lbs.

**Needs to be Plated with Grounding Plates: G2P, G3P, and (G2P-C or G2P-CT)**

**For all applications, 1' - 6" concrete poured-in-place collar is required. See Plate ADJ-MH pg19.**

**MSET OPTIONS**

DEPTH: Depth of excavation in feet indicated by option: 10, 11, 12, 13, 14

INSTALLATION: Installation condition indicated by option:

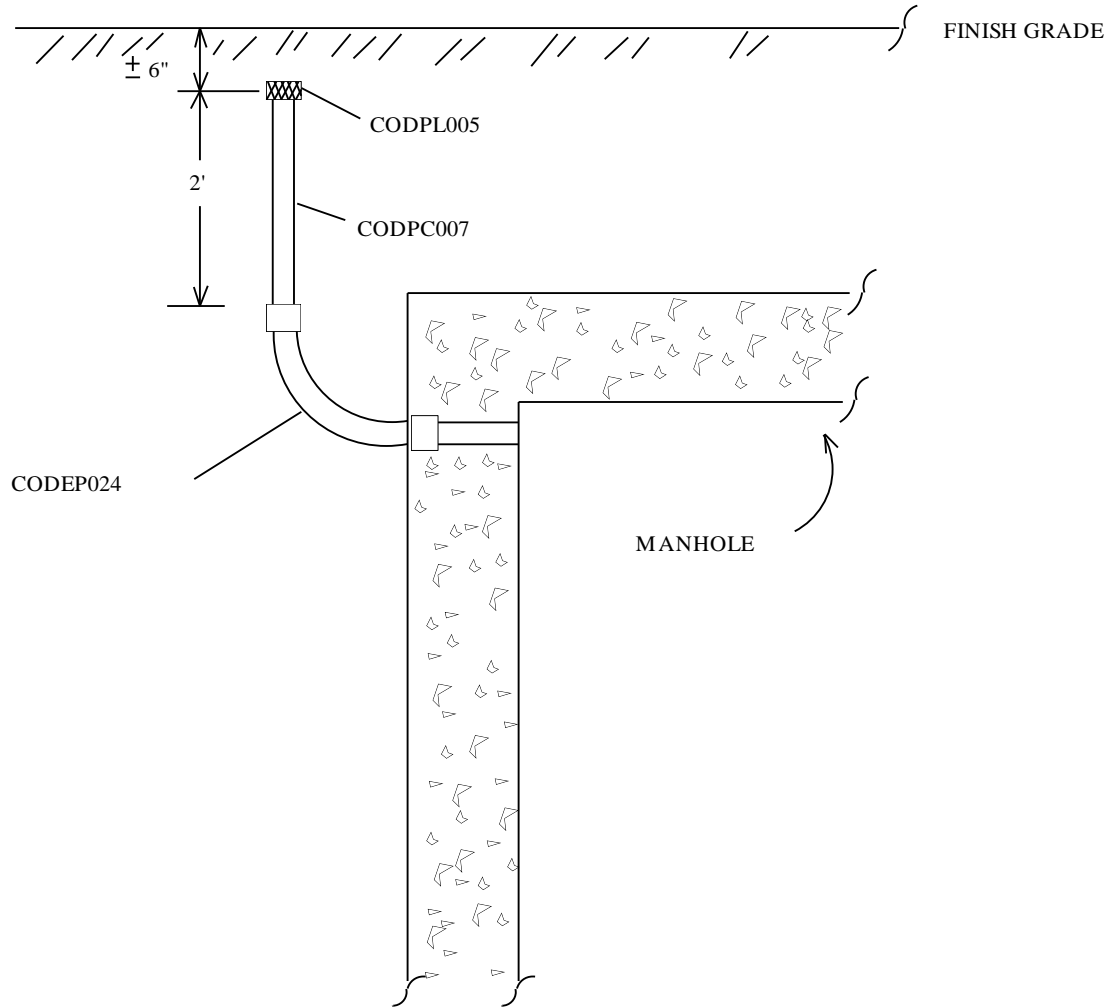
C - New construction (cold) or

H - Construction around existing cables (hot).

**Example:** SET-10X16\*14H

ITEM	QTY	DESCRIPTION
	84	BRICK, COMMON
	2	CEMENT, MORTAR, 96# BAG
<b>COVMA001</b>	2	COVER, MANHOLE
<b>FRAMC001</b>	2	FRAME, MANHOLE COVER
<b>MANER003</b>	2	GRADE EXTENSION RING
<b>MANH0009</b>	1	MANHOLE, PRECAST CONCRETE
	AS REQUIRED	BASE COURSE

# MANHOLE GROUND GROUNDING PROVISIONS



ITEM	QTY	DESCRIPTION
CODEP024	1	ELBOW, 1" PVC SCH 40, 90 DEG., 18"RAD.
CODPC007	2 FT	CONDUIT, 1" PVC DB-120
CODPL005	1	PLUG, CONDUIT, 1" PVC

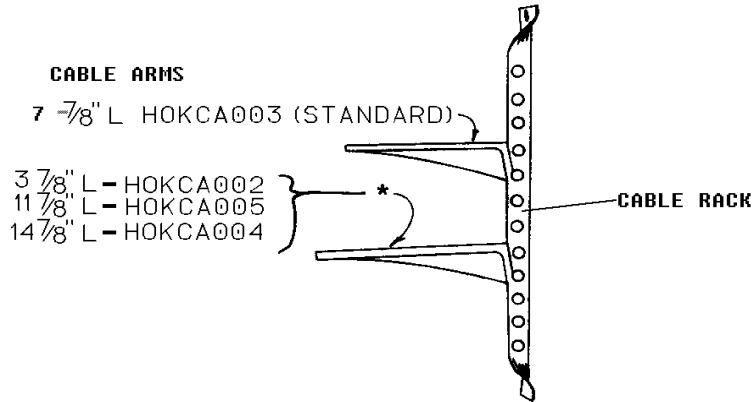
**NOTES:**

1. Please see the grounding Plate G2P-C.
2. This material is issued with all SET-\_X\_ Manhole plates.

# CBL-ARM

# CBL-RACK

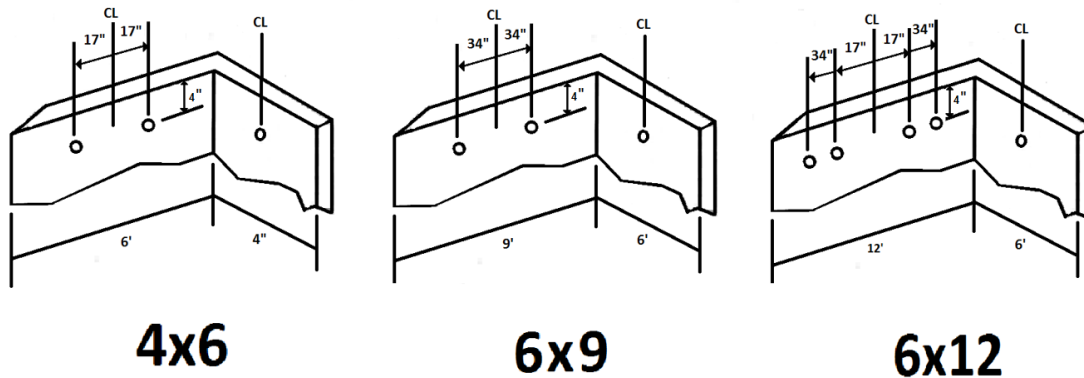
## MANHOLE CABLE ARM & CABLE RACK



\*There are four sizes of hooks. Itemize other hooks as required.

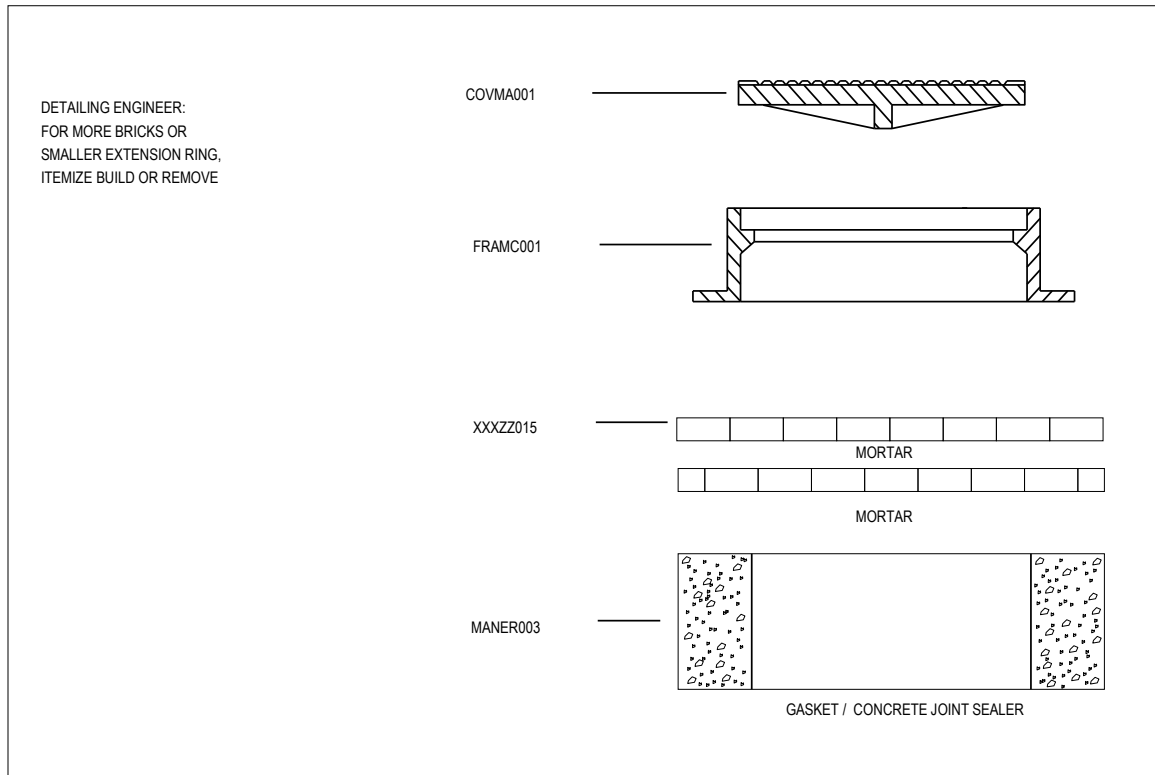
	ITEM	QTY	DESCRIPTION
<b>CBL-ARM (CABLE-ARM)</b>	HOKCA003	1	HOOK, CABLE 7-7/8 INCH EXT. LOCK TYPE
	INSCA001	1	INSULATOR, CABLE RACK
<b>CBL-RACK (CABLE-RACK)</b>	ANCSD001	2	ANCHOR, SELF DRILLING 1/2 X 2 INCHES
	BOLMH002	2	BOLT, MACHINE HEX HEAD 1/2 X 2 INCHES
	RACUC003	1	RACK, CABLE 55 INCHES

### Cable Rack Anchor Hole Dimension



# BLD-MH-NECK

## BUILD MANHOLE NECK



### BLD-MH-NECK

ITEM	QTY	DESCRIPTION
	1	CEMENT, MORTAR 96LB. BAG
	42	BRICK, COMMON 2"
<b>COVMA001</b>	1	COVER, MANHOLE 34 3/4" DIAMETER, REGULAR
<b>FRAMC001</b>	1	FRAME, MANHOLE COVER 33-1/4" CAST IRON, 4-1/8" HIGH
<b>MANER003</b>	1	GRADE EXTENSION RING, CONCRETE, 15" HIGH (JEA STOCK)

## FORM- CAST IN PLACE MANHOLE

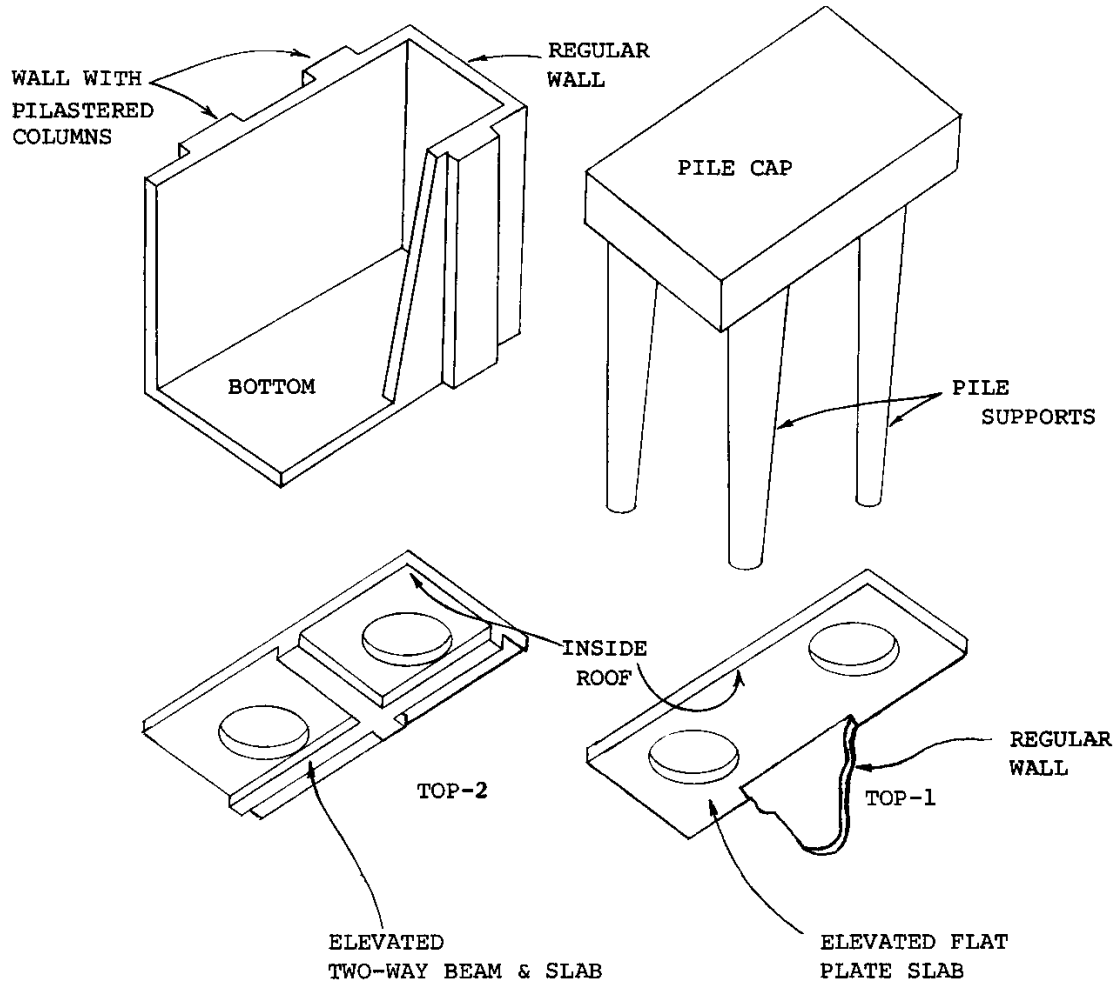
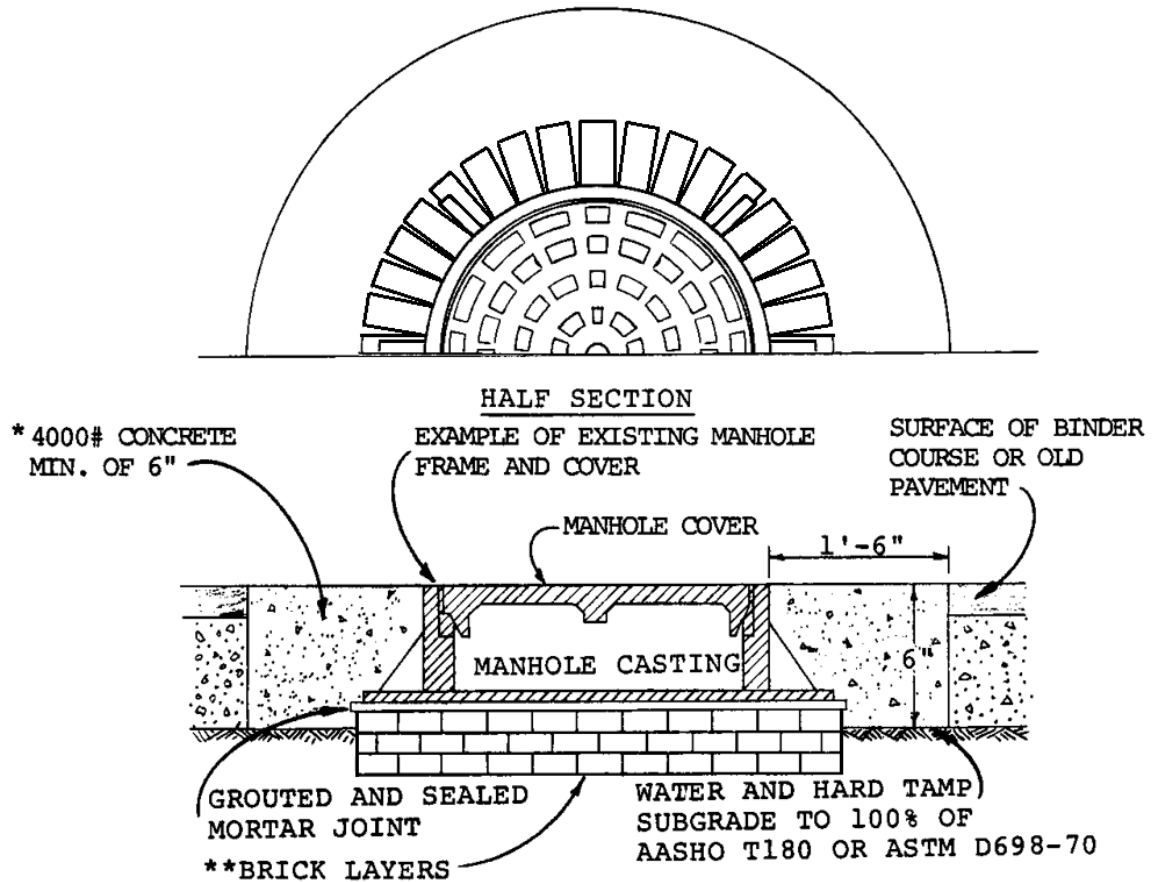


PLATE	DESCRIPTION	UNIT
FORM-PC	PILE CAPS	SQUARE FEET OF CONTACT AREA (SFCA)
FORM-SLAB	BOTTOM	
FORM-WALL	REGULAR WALL	
FORM-WC	WALLS WITH PILASTERED COLUMNS	
FORM TOP-1	ELEVATED FLAT PLATE SLAB	
FORM TOP-2	ELEVATED TWO-WAY BEAM & SLAB	
FORM-CURB	TRANSFORMER VAULT ACCESS CURB	

# ADJ-MH-T ADJ-MH-NT

## MANHOLE COVER ADJUSTMENTS FOR GRADE CHANGES



### MANHOLE ADJUSTMENT NOTES:

1. For all applications, 1' - 6" concrete poured-in-place collar is required.
2. \*\* Call for plate "ADD-BRICK" if additional courses of brick are required to adjust manhole cover to grade. Brick courses should not exceed 9".
3. No alterations to the brick shall be made that changes the Integrity of the brick.
4. If the Concrete poured-in-place collar is close enough to another Concrete poured-in-place collar the two may be combined into a rectangle pour.

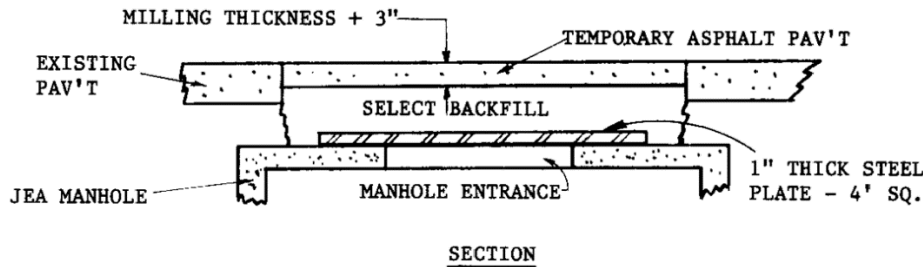
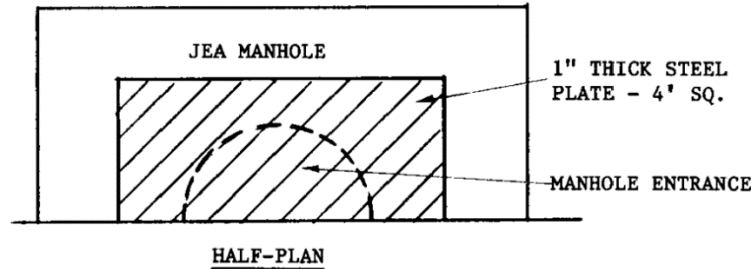
### RING EXTENSION OPTIONS

ITEM	DESCRIPTION
MANER001	RING, EXTENSION, GRADE, MANHOLE, 6" HEIGHT, 36" ID X 48" OD.
MANER002	RING, EXTENSION, GRADE, MANHOLE, 9" HEIGHT, 36" ID X 48" OD.
MANER003	RING, EXTENSION, GRADE, MANHOLE, 15" HEIGHT, 36" ID X 48" OD.

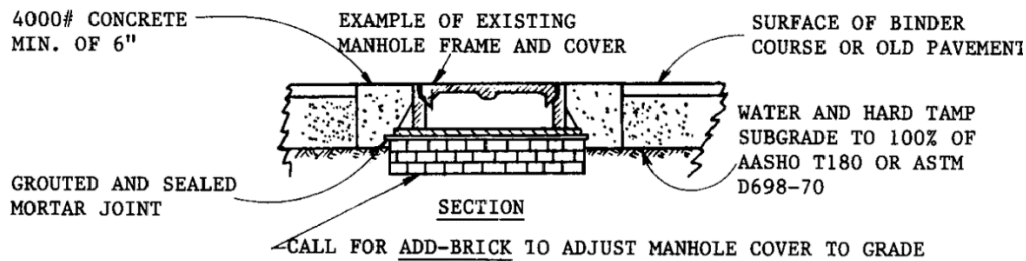
# ADJ-MH-MILL-A

# ADJ-MH-MILL-B

## MANHOLE COVER ADJUSTMENTS FOR PAV'T MILLING



**ADJ-MH-MILL-B** -BEFORE PAVEMENT MILLING - (PLATE INCLUDES MANHOLE COVER & NECK REMOVAL AND INSTALLATION OF STEEL PLATE)  
 NOTE: RETAIN FRAME, COVER & GRADE EXTENSION RING FOR LATER REINSTALLATION



**ADJ-MH-MILL-A** - AFTER PAVEMENT MILLING - (PLATE INCLUDES REMOVING STEEL PLATE, BUILDING NEW MANHOLE NECK, ADJUSTING MANHOLE COVER TO NEW STREET GRADE AND POURING CONCRETE COLAR)

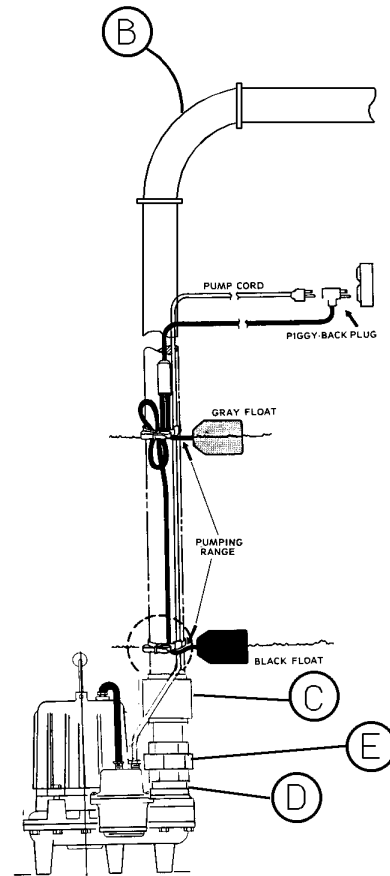
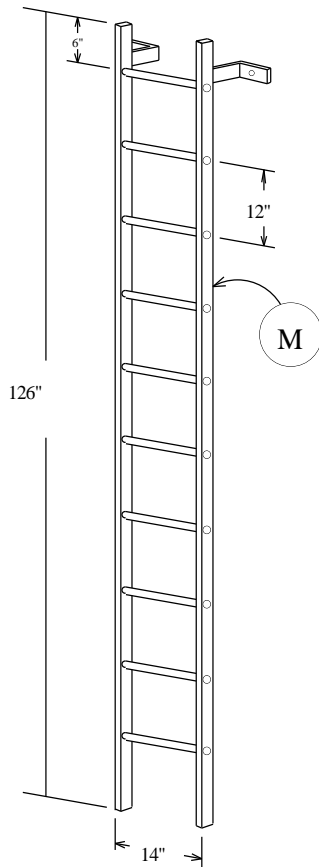
### ADJ-MH-MILL -A

DESCRIPTION	QTY
CEMENT, MORTAR, 96# BAG	1
BRICK, COMMON, 2"	42
CONCRETE, 4000PS1, CU.FT	11



# UDBP

## LADDER AND SUMP PUMP



### MANHOLE ACCESSORIES

#### UDBP

ITEM	QTY	DESCRIPTION
PPESC200	20	PIPE, PVC 2" SCHEDULE 40 WITH BELL END
B - FTGDH650	1	ELBOW, PVC 2" SCHEDULE 40 90°
C - VLVA640	1	CHECK VALVE, 2" THREADED BRONZE
D - FTGDF165	1	ADAPTER, 2" SCHEDULE 40 MALE THREAD/SLIP
E - PFCUA400	1	UNION, 2" PVC
FUSHO003	1	FUSE HOLDER, WATERPROOF IN-LINE
FUSUG046	1	FUSE, ONE TIME 20 AMP
CAIUF001	15	CABLE, STREET LIGHT *12/2 AWG
PUMSU001	1	PUMP, SUMP 1/2 HP 120VAC
PUMSU004	1	DOUBLE FLOAT PUMP SWITCH
M	1	LADDER, GALVANIZED STEEL 10' - 6"

Traffic Load Rating Comparison Chart					
Category	Application	Gross Vehicle Weight (lb.)	Max Wheel Load (lb.)	Design Load (lb.)	Test Load (lb.)
Light Duty/ Pedestrian Only	Areas with minimal pedestrian traffic and no vehicular traffic, which includes grass surrounds.	5000	2000	2000	3000
Medium Duty/ Non- Deliberate Traffic	Areas with pedestrian traffic and non-deliberate vehicular traffic limited to class 5 (1 ½ ton truck, Light duty truck) such as areas generally protected in a sidewalk, i.e., adjacent to street cabinet or poll.	19500	7800	8000	12000
Heavy Duty/ Non- Deliberate Traffic	Areas that can experience non-deliberate vehicular traffic limited to class 7 (2 ½ ton truck, Medium duty truck) that generally includes areas in a sidewalk, but not at a corner or driveway.	40000	16000	15000	22500
Heavy Duty/ Non- Deliberate Traffic	Areas subject to traffic up to and including tractor-trailer trucks (class 8, Heavy-duty truck) that can include parking lots and highway easements. These installations benefit from a concrete collar. <u>(H-20 / HS-20 start here)</u>	40000	16000	22500	33750
Designated Roadway Traffic	Areas subject to continuous traffic, Highways and streets. Require steel covers to meet rating standards. <u>(H-20 / HS-20)</u>	40000	16000	20800	45136

# CONCRETE ENCASED DUCT BANK

## I. GENERAL

### I.1. SCOPE

The work under this section is limited to the assembly of the spacers and ducts required to form the duct bank. Formwork, reinforcement and concrete placing specifications will be found in the Concrete and Piles section. Unless otherwise noted all downtown network concrete duct banks shall use 5000 PSI strength concrete.

### I.2. SPACERS

Interlocking PVC spacers to provide 1-1/2" spacing between ducts and 3" cover of concrete for the outer ducts, spaced 5 feet on centers will be used. Spacers will be assembled to form the duct bank specified. Concrete blocks shall be utilized to support the spacers and provide 3" of concrete between the reinforcing steel and the ground.

### I.3. REINFORCING STEEL

Rebar of the size specified in the Rebar Schedule will be placed in the duct bank, located as specified in the Construction Details. Longitudinal rebar will be tied to the spacers so as to provide as much space between the duct and the rebar as possible. Transverse rebar, as specified, will be tied to the longitudinal steel on centers specified in the Construction Details.

### I.4. DUCT

Direct burial PVC grade duct will be placed in the spacers, and joined with owner furnished PVC cement in accordance with the manufacturer's instructions.

### I.5. DUCT BANK ALIGNMENT

Any shorter radius bends must be accomplished with preformed sweeps. Five (5) degree bends will not be used in duct bank construction.

### I.6. EXISTING CABLE

In the event that existing cable(s) are to be placed in the duct being constructed, the duct shall be cut longitudinally so as to place it around the cable. After the cable is placed in the split duct another longitudinal section of duct will be glued to the duct to cover the split. Manufactured two (2) piece locking duct may be used if available.

### I.7. TERMINATION INTO STRUCTURE

The termination of the conduit into the structure must be water tight and capable of withstanding non-uniform loads without cracking or breaking.

Pre-cast manholes are to be constructed with the reinforcing steel continuous through the splay opening. The Builder shall completely cut this steel out of the splay opening. Manhole steel and duct bank steel shall not be tied. This will allow expansion and contraction of the duct bank due to temperature changes without damaging the manhole.

I.7.1. Longitudinal conduit steel shall extend within the structure wall so as to provide 1-1/2" cover of concrete between the finished inside surface of the structure and the reinforcing steel.

I.7.2. The concrete encasement of the conduit shall be enlarged by 1 inch on all sides for four (4) feet from where it enters a structure.

I.7.3. Bell-Ends shall be installed where feasible. In the event the duct enters at such an angle that bell-ends cannot be used, the edges of the duct shall be finished in such a manner that cable will not be damaged during pulling operations.

I.7.4. All voids between the ducts and the structure shall be filled with non-shrinking mortar applied to make a water tight joint. The inside surface of the manhole wall shall be finished flush with the bell-ends or duct ends.

**I.8. DUCT BANK INSPECTION**

Upon completion of duct bank construction prove duct satisfactory for use by pulling a mandrel 1/2" smaller than the conduit I.D. through each individual duct installed. Record and notify engineer of ducts that failed to pass the mandrel immediately. Leave a pull string in all acceptable ducts. Duct will not be accepted until this test is satisfactorily completed.

**I.9. ADDITIONAL PLATE(S)**

Listed below are plates not otherwise covered by a Construction Standard and Drawing.

PLATE	DESCRIPTION	UNIT
<b>MEAS-PL-TAPE</b>	To Install Measuring Pull Tape In Duct. One Foot (1') Measuring Pull Tape 1/4" Wide & 500 # Tensile Strength.	LF
<b>ROD-DUCT*<sub>-</sub></b>	To Include Cleaning Out Duct Suitable For Pulling Cable, Washing, Augering, Brushing and other necessary operations to clean out existing duct until proper mandrel or slug can be pulled through proving duct satisfactory for use. Leave pull string in duct proved satisfactory for use. (Contractor supplied rods & pull string) Available Options: ROD-DUCT *2, 3, 4, 6	LF
<b>SLUG-DUCT</b>	Pull correct size mandrel through duct proving duct satisfactory for use. Leave a pull string in all satisfactory duct.	LF
<b>MDB-2</b>	Install a 2" PVC conduit (Not Encased) in existing trench.	LF

**II. REMOVAL AND ABANDONMENT**

**II.1. REMOVAL**

Removing of existing facilities shall include the removal of the existing structure or conduit. The existing structure shall be removed from the job site. Any or all the existing ducts in and out of the structure to be removed, which are not themselves to be removed, shall be sealed, or as shown on the plans, connected to a new structure.

**II.2. ABANDONMENT REMOVAL**

Abandoning of existing facilities shall include the removal of that portion of the structure or conduit which is 30" below the proposed finished grade. Any or all ducts into the structure being abandoned shall be sealed. Any partially removed ducts in abandoned conduit shall be sealed. The remaining portion of an abandoned structure shall be filled with sand or other granular fill material and compacted to 100% of the maximum density as determined by the Modified Proctor ASTM 698. The abandonment shall be completed by backfilling and replacing the pavement as specified.

**II.3. SEALING DUCTS**

The sealing should be completed by placing rubble and cement grout for a distance of 18 inches minimum in the end of each duct and forming a waterproof seal. Where feasible, PVC duct may be sealed with an approved PVC end plug attached with PVC adhesive to form a waterproof seal.

**II.4. CASTINGS**

Cast iron castings, covers, frames, etc. shall be cleaned and delivered to the JEA Commonwealth Storeroom.

**II.5. ADDITIONAL PLATES**

Listed below are plates not otherwise covered by a Construction Standard and Drawing.

**II.5.1. Bulk Units for Removal and Abandonment**

**OPTIONS:**

- H - (HOT), CLASS II
- C - (COLD), CLASS I

PLATE	DESCRIPTION	UNIT
REM-CONC*OPTION	Remove Non-Reinforced Concrete	CF
REM-RECONC*OPTION	Remove Reinforced Concrete	CF

**EXAMPLE: REM-CONC \*H**

**II.5.2. Removal of Concrete Encased Duct**

**OPTIONS:**

- H - (HOT), CLASS II
- C - (COLD), CLASS I

PLATE	DESCRIPTION	UNIT
REM-4*OPTION	1-4 Ducts, Non-Reinforced Concrete	LF
REM-8*OPTION	5 - 8 Ducts, Non-Reinforced Concrete	LF
REM-12*OPTION	9 - 12 Ducts, Non-Reinforced Concrete	LF
REM-16*OPTION	13-16 Ducts, Non-Reinforced Concrete	LF
REM-20*OPTION	17-20 Ducts, Non-Reinforced Concrete	LF
REM-30*OPTION	21-30 Ducts, Non-Reinforced Concrete	LF
REM-R4*OPTION	1-4 Ducts, Reinforced Concrete	LF
REM-R8*OPTION	5-8 Ducts, Reinforced Concrete	LF
REM-R12*OPTION	9-12 Ducts, Reinforced Concrete	LF
REM-R16*OPTION	13-16 Ducts, Reinforced Concrete	LF
REM-R20*OPTION	17-20 Ducts, Reinforced Concrete	LF
REM-R30*OPTION	21-30 Ducts, Reinforced Concrete	LF

II.5.3. Additional Plates

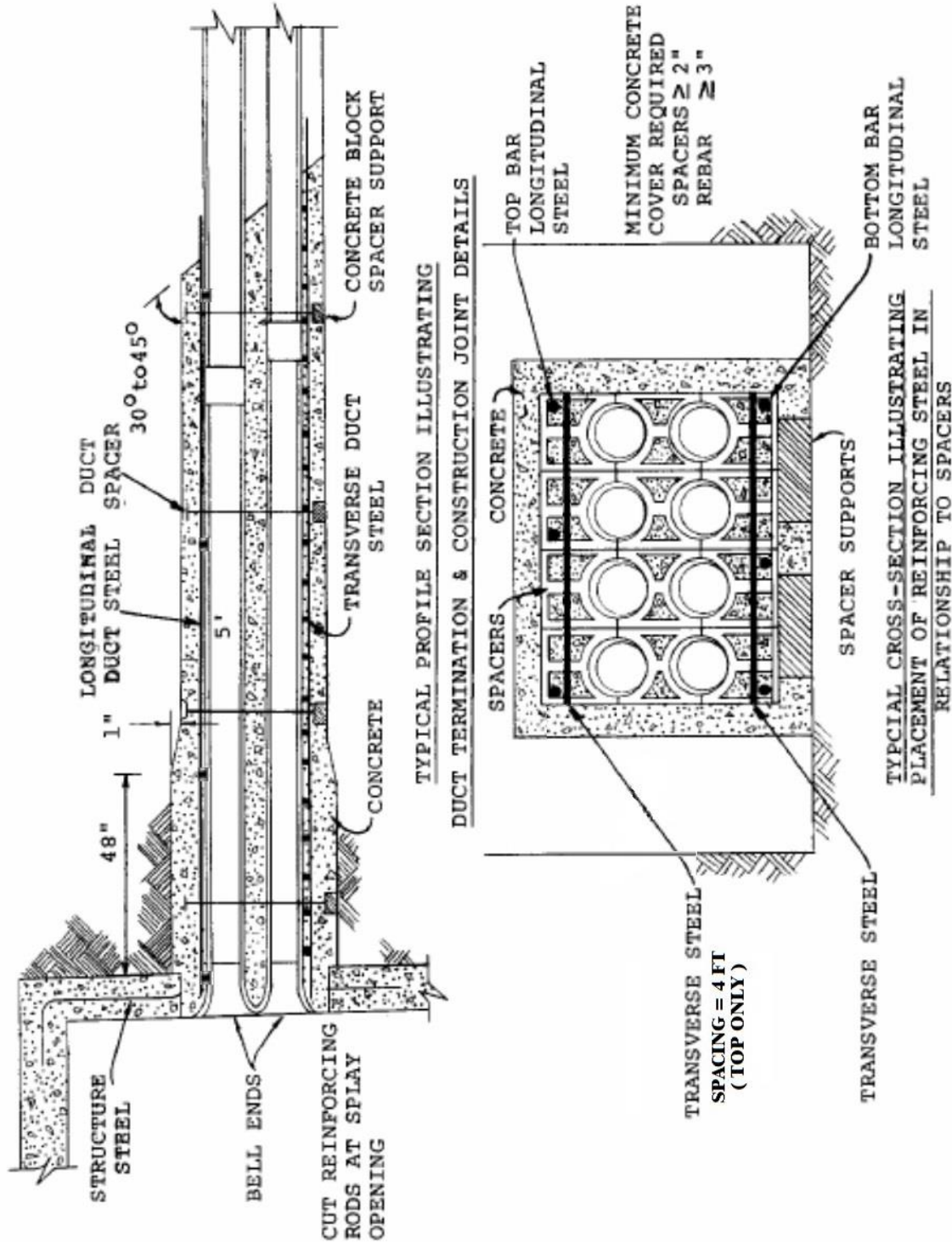
PLATE	DESCRIPTION	UNIT
REM-MOD-BRK	Remove modular brick structures	CF
SEAL-DUCT1	Seal duct / pipe up to 6" diameter	EA
SEAL-DUCT2	Seal duct/ pipe up to 18" diameter	EA
SEAL-DUCT3	Seal duct/ pipe up to 36" diameter	EA

II.5.4. Overburden

The following plates are designed for the replacement of the overburden in the removal, replacement and abandonment of concrete structures, to include backfill and compaction.

PLATE	DESCRIPTION	UNIT
BKFL	To place select uncompacted backfill.	CY
BKFL-COMP	To place and compact select backfill.	CY

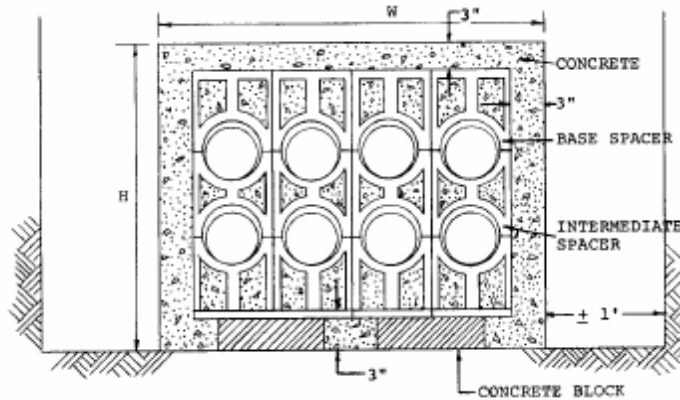
# TYPICAL - CONCRETE ENCASED DUCT BANK



## BLD- / -

### CONCRETE ENCASED DUCT BANK

#### 10 FOOT SECTION



OPTION	W	H	CONCRETE	CONDUIT	BASE	INT
			CF	CODPC030	SPAPC001	SPAPC002
BLD-2/2-4	17	23	23	40	8	4
BLD-2/3-4	25	23	34	60	12	6
BLD-2/4-4	30	23	40	80	16	8
BLD-2/5-4	35	23	47	100	20	10
BLD-3/3-4	25	30	44	90	12	12
BLD-3/4-4	30	27	37	120	16	16
BLD-4/3-4	25	33	47	120	12	18
BLD-4/4-4	30	33	54	160	16	24

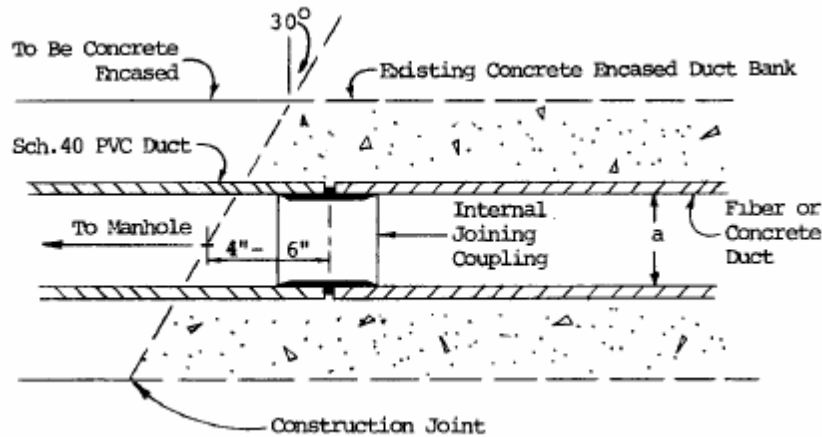
OPTION	W	H	CONCRETE	CODPC031	SPAPC003	SPAPC004
				CF	CF	CF
BLD-2/2-6	22	27	33	40	8	4
BLD-2/3-6	31	27	46	60	12	6
BLD-2/4-6	40	27	59	80	16	8
BLD-2/5-6	48	27	70	100	20	10
BLD-3/3-6	31	35	58	90	12	12
BLD-3/4-6	40	35	74	120	16	16
BLD-4/3-6	31	44	71	120	12	18
BLD-4/4-6	40	44	91	160	16	24

#### NOTES:

- PVC Cement must be itemized.
- Issue one (1) quart can, item I.ADCMI002, for each 500 lineal feet of conduit, or for each 25 conduit joints.



## COUPLE -3-1/2\* COUPLE -4\* COUPLING OF EXISTING DUCT BANK



### NOTES:

1. When a = 3.5 inches use 3-1/2 inch schedule 40 PVC duct and internal joining coupling for 3-1/2 inch I.D. duct.
2. When a=4.0 inches use 4 inch Schedule 40 PVC duct and internal joining coupling for 4 inch I.D. duct.
3. Use bell ends for 3-1/2 inch and 4 inch Schedule 40 PVC duct as required.
4. Special order Schedule 40 PVC duct and bell ends as required.
5. For split duct applications:
6. Saw cut Schedule 40 PVC duct into two halves or plate SPLT-DCT-\_\_
7. Place around existing cable.
8. Cover saw cut joints with 2 inch wide sealing tape.
9. Band the 2 halves together using plastic straps on 2 foot centers.

REQUIRED MATERIAL: (PER DUCT)	INSTALLATION OPTIONS:
Internal joining coupling - 1 each	*C – Cold - New Construction
PVC bell end - 1 each	*H – Hot - Around existing cables
Schedule 40 PVC duct - length as required	
Plastic straps - 1 each for every 2 feet of PVC split duct.	
Sealing tape 2 inch wide - as required.	

EXAMPLE: COUPLE-4\*H

# SPLT-DCT-\_\_

## SPLIT DUCT

**NOTE:**

Conduit may be assembled by application of PVC Cement along seams and by banding with tie wraps or tape.

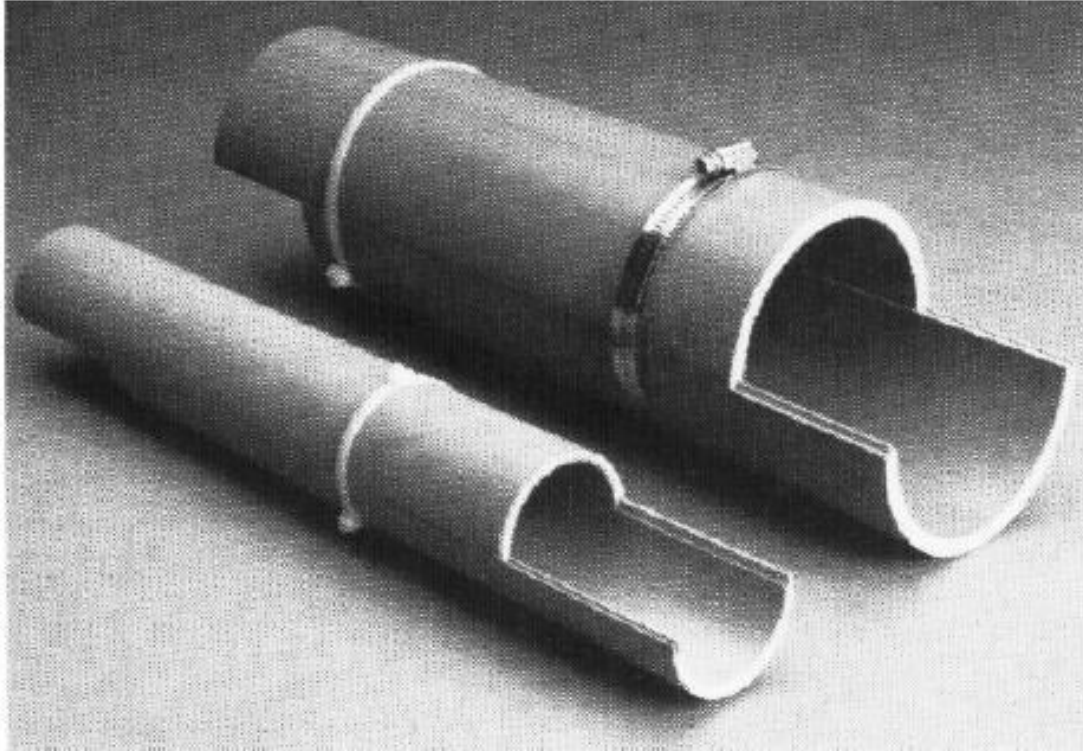


PLATE NAME	ITEM ID	QTY	DESCRIPTION
SPLT-DCT-2	CODPC014	1	Conduit, Polyvinyl Chloride, Split, SCH. 40, 2"
SPLT-DCT-3	CODPC015	1	Conduit, Polyvinyl Chloride, Split, SCH. 40, 3"
SPLT-DCT-4	CODPC012	1	Conduit, Polyvinyl Chloride, Split, SCH. 40, 4"
SPLT-DCT-6	CODPC013	1	Conduit, Polyvinyl Chloride, Split, SCH. 40, 6"

# DIRECT BURIED DUCT BANK

## CONSTRUCTION NOTES

### I. GENERAL

The work under this section consists of assembling single ducts or multiple duct conduit in spacers and backfilling and compacting the ducts to 6" above the top of the duct or duct bank.

### II. APPLICATION

Direct Buried Duct Bank

### III. MATERIAL

Four or six inch Schedule 40 Polyvinyl Chloride (PVC) conduit is required.

#### III.1. DUCT:

Four or six inch Schedule 40 Polyvinyl Chloride (PVC) conduit.

#### III.2. SPACERS:

Standard issue Duct Spacers, providing 1-1/2" inches clearance between ducts will be used.

#### III.3. BACKFILL:

Select backfill shall be used (optional Flo-fill)

### IV. DUCT LAYING

IV.1. Unless a base course is specified, duct shall be laid on a three (3) inch layer of compacted backfill or Flo-fill material. Individual ducts shall be fully surrounded by a minimum of three (3) inches of backfill or Flo-fill material on the bottom and sides and 6 inches on top. Ducts in multiple duct buried conduit shall be separated by 1-1/2 inches and be completely surrounded by backfill or Flo-fill material.

IV.2. Duct shall be joined in accordance with manufacturer's specifications. Joints for adjacent ducts in the same horizontal layer as well as joints in the vertical rows should be staggered by about six (6) inches.

### V. DUCT ALIGNMENT

Schedule 40 Polyvinyl Chloride (PVC) conduit is sufficiently flexible to allow it to conform to minor changes in trench direction or elevation. Any other bends shall be made using pre-formed sweeps. PVC 5 degree Bend couplings will not be used.

### VI. BACKFILLING

The backfill or Flo-fill surrounding the duct(s) shall be compacted in accordance with the manufacturer's recommendations. Such backfill shall extend to 6" above the top of the duct of ducts. Above that level backfill and compaction shall be carried out as specified under Excavation, Backfill, & Compaction Paragraphs, of the Earthwork Section.

**VII. MARKING TAPE**

Marking tape shall be installed on both sides of the bottom of the trench, on each side of each layer of duct and in the center and on each side of the trench six (6) inches below the surface or just below the pavement base.

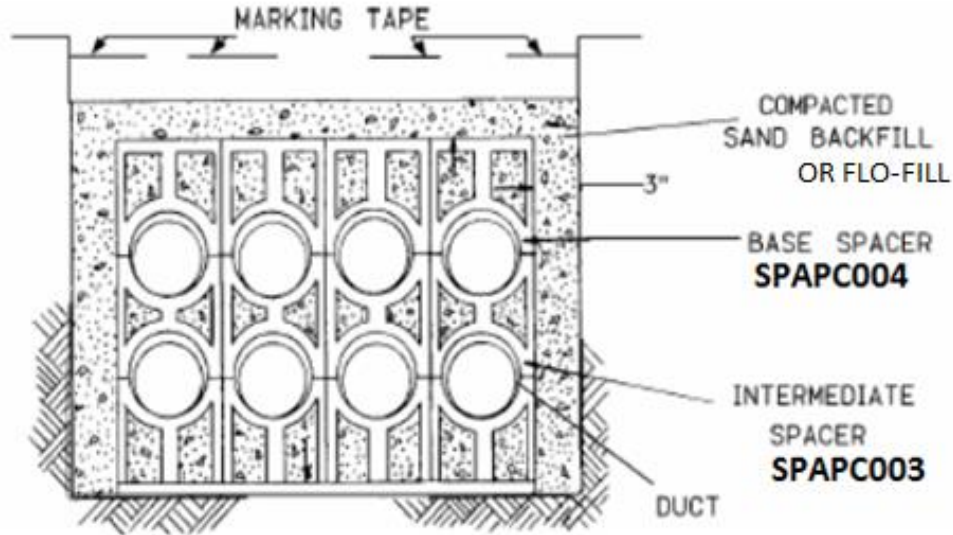
**VIII. MINIMUM COVER REQUIREMENTS**

In state Right-of-Ways the minimum vertical clearance is 36" below top of pavement or 30" below the existing ground. Not closer than two feet behind curb and if buried under sidewalk or bike path the minimum depth is 18 inches (NESC). The 18" minimum depth under sidewalk may be reduced 6" for each 2" of concrete or equivalent above the conductors. Areas subject to heavy vehicular traffic such as driveways or parking areas shall have a minimum cover of 24 inches.

**IX. PULL WIRE**

Pull wire is to be installed in each conduit. The pull wire is to be multi-stranded poly twine. Use of nylon twine is not allowed.

## DB- / - DIRECT BURIED DUCT BANK



EXAMPLE: DB-2/4-

### DIRECT BURIED DUCT BANK

PLATE	DESCRIPTION	DUCT SIZE	DUCTS HIGH	DUCTS WIDE
DB-2/4-4	DUCT BANK, DIRECT BURIED	4"	2	4
DB-2/5-4	DUCT BANK, DIRECT BURIED	4"	2	5
DB-2/3-4	DUCT BANK, DIRECT BURIED	4"	2	3
DB-2/2-4	DUCT BANK, DIRECT BURIED	4"	2	2
DB-3/3-4	DUCT BANK, DIRECT BURIED	4"	3	3
DB-2/4-6	DUCT BANK, DIRECT BURIED	6"	2	4
DB-2/5-6	DUCT BANK, DIRECT BURIED	6"	2	5
DB-2/3-6	DUCT BANK, DIRECT BURIED	6"	2	3
DB-2/2-6	DUCT BANK, DIRECT BURIED	6"	2	2
DB-3/3-6	DUCT BANK, DIRECT BURIED	6"	3	3

**NOTE:**

Unit of measure for this plate is 10 linear feet. Each plate provides all schedule 40 polyvinyl chloride (PVC) conduit and spacers to build 10 linear feet of the designated duct bank.

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## PADS

### CONSTRUCTION NOTES

Please see the JEA Rules and Regulations for clear working area clearances.

Front side of pad (side with splay openings) must have a minimum of 15-foot clear working area as designated by JEA for maintenance of equipment. All other sides shall have 36-inch minimum clearance.

Back of pad must be 36-inch minimum distance from building line, including any roof overhang.

Conduits shall not protrude above top of transformer pad. Splay openings shall remain open for future conduits.

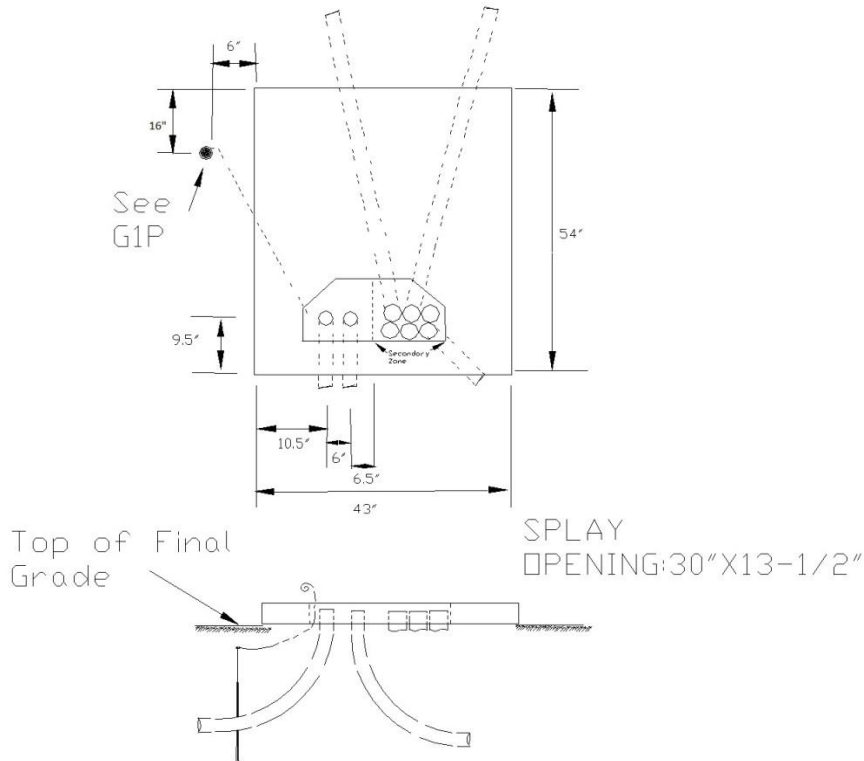
Compaction – Backfill placed under a transformer pad or mounting pit shall be compacted in 12" lifts to achieve 95% compaction. The area of uniform compaction shall be that under the pad or pit and extend 6" beyond all outside edges of the pad or pit.

Install minimum of three (3) ground rods at one location as shown. (25 ohms or less)

Install ells as required on an individual basis (see direct buried conduit section).

<b>Additional Plates</b>		
<b>Listed plates are not otherwise covered by a construction plate and drawing.</b>		
PLATE	DESCRIPTION	UNIT
PADADJ	Raise or lower equipment and pad as required	EA
PITADJ	Raise or lower equipment and pit as required	EA
I.PADCO006	Pre-cast 6' x 6' 3 Phase Transformer Pad	EA
I.PITME005	Pre-cast Primary Metering Pit	EA

## UPD1 \* \_ - \_ TRANSFORMER PAD SET-UP



ITEM	QTY	DESCRIPTION
CODCO003	2	COUPLING, CONDUIT 2 INCH PVC
CODCO__	-	GENERAL CODE FOR PVC COUPLING
CODEP002	2	ELBOW, PVC 2 INCH 90 DEGREE TYPE ELBOW
CODEP__	-	GENERAL CODE FOR 90 DEGREE ELBOW
PADCO001	1	PAD, CONCRETE TRANSFORMER, DMD-56

SECONDARY CONDUIT	AVAILABLE OPTIONS: Conduit locations to be detailed by the Engineer.
Conduit Size	Maximum Number Of Conduits
2"	12
3"	8
4"	6
6"	2

### PLATE EXAMPLE:

UPD1\*3-8 (Pad with 8 - 3" secondary conduit elbows.)

### NOTE:

No couplings allowed within the transformer splay opening.  
Conduit destination addresses shall be marked on all conduits.



## UPD2 (POURED BY CONTRACTOR PAD) UPD2P (PRE-CAST PAD) TYPICAL PAD FOR 75-500KVA THREE PHASE PADMOUNT TRANSFORMER

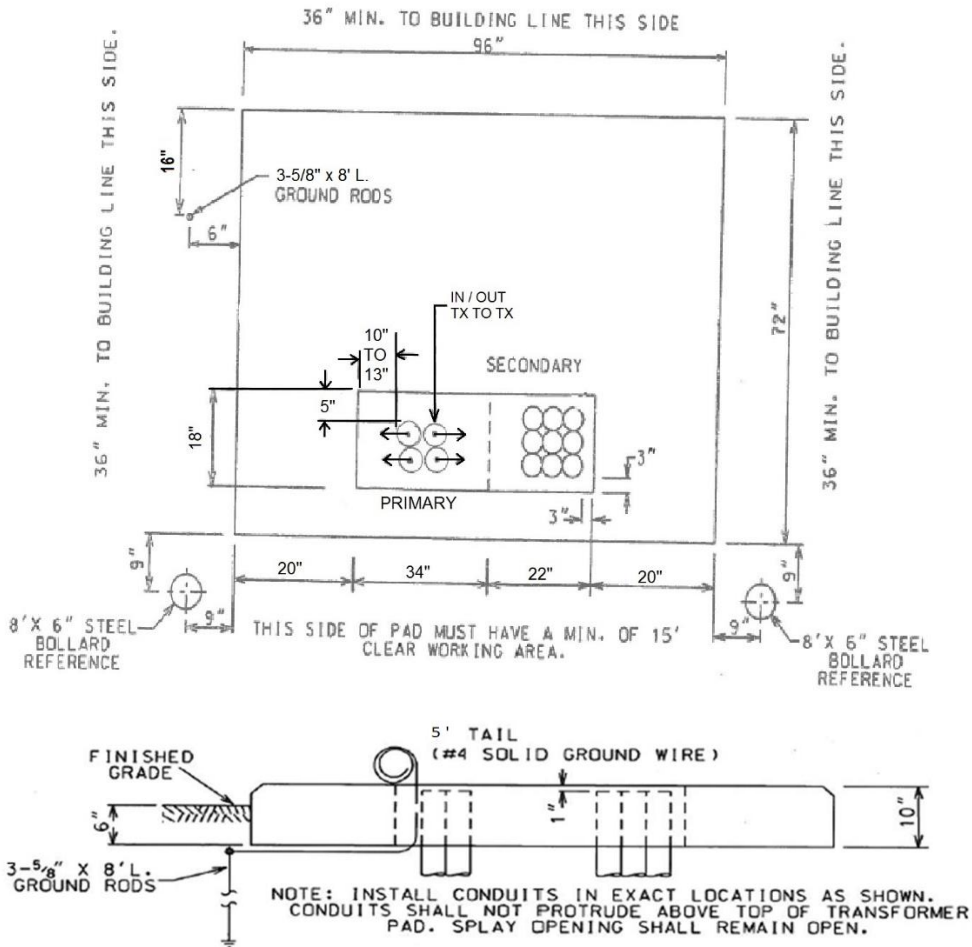
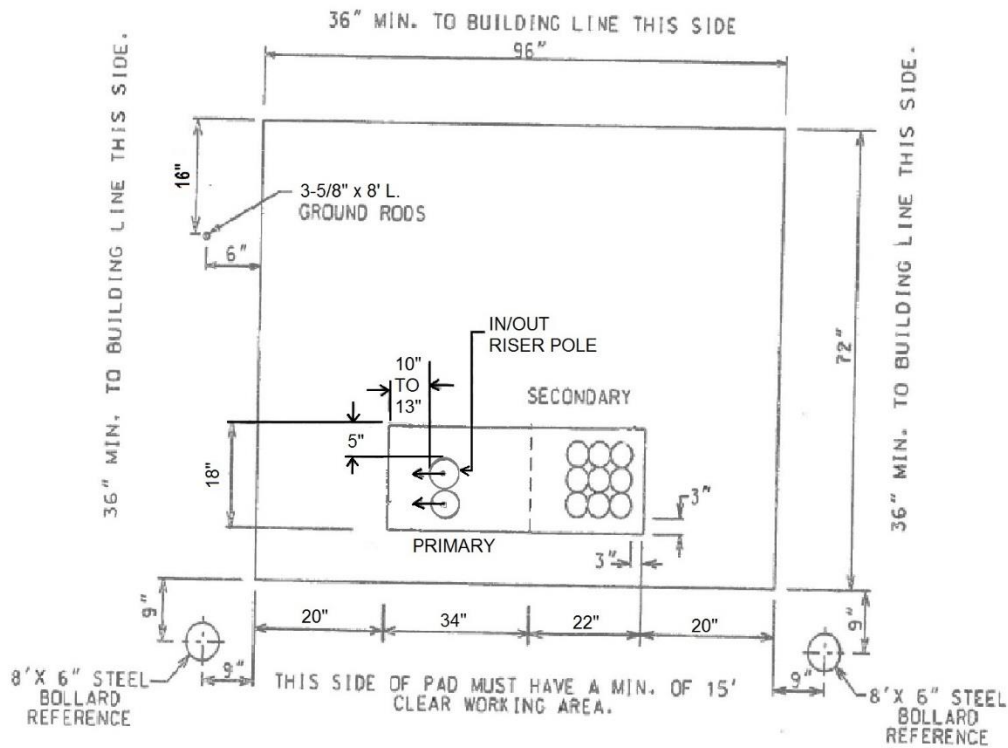
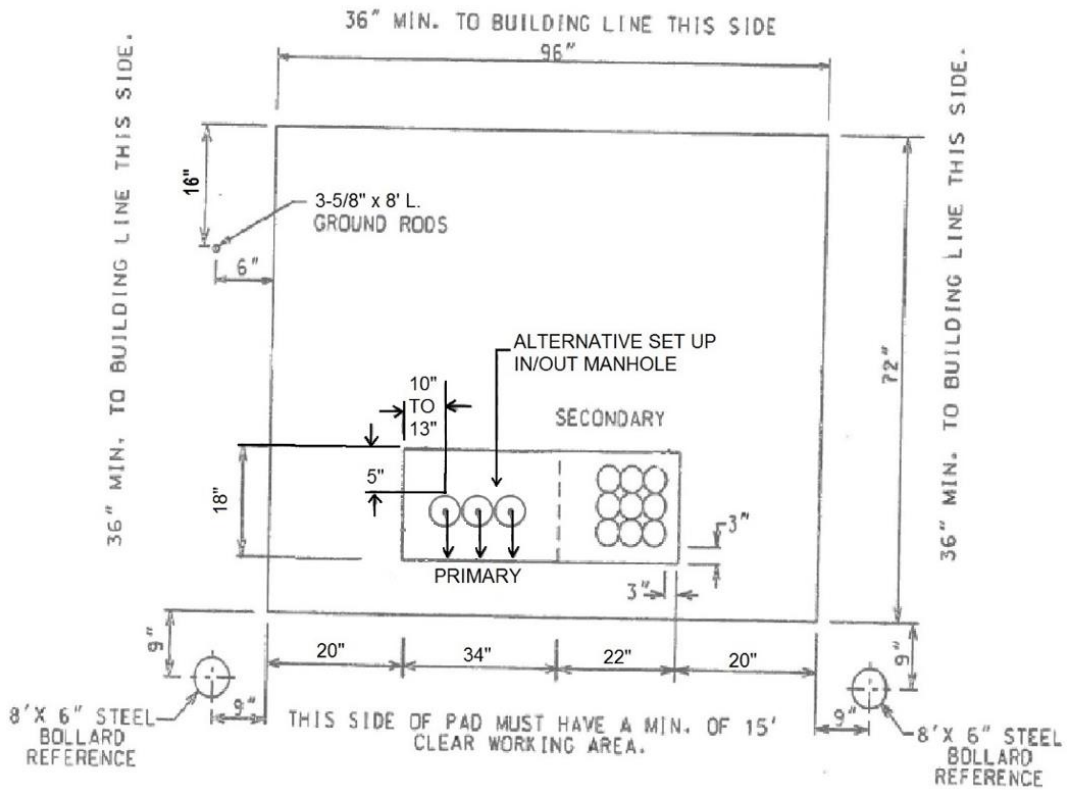


PLATE EXAMPLES	ITEM	QTY	DESCRIPTION
UPD2	XXXZZ011	1.5 YDS	CONCRETE, 3000 PSI
	XXXZZ009	96 FT	REINFORCING STEEL ROD, # 5
UPD2P	PADCO007	1	PAD, CONCRETE TRANSFORMER 72 x 96 x 10, DMD-78

### NOTES:

- Bumpers and Grounding material are not included with this plate. Please see the UPDB & G1P plates.
- See JEA Rules & Regulations for maximum number of conduits installed in a splay opening.
- See project drawing for required conduits.
- See JEA Rules & Regulations for clear working area.
- Call project engineer for inspection 24 hours before pouring a pad.



**ALTERNATIVE UPD2 SETUPS**

## UPD3 (POURED BY CONTRACTOR PAD) UPD3P (PRE-CAST PAD)

TYPICAL PAD FOR 750-3750KVA THREE PHASE PADMOUNT TRANSFORMERS

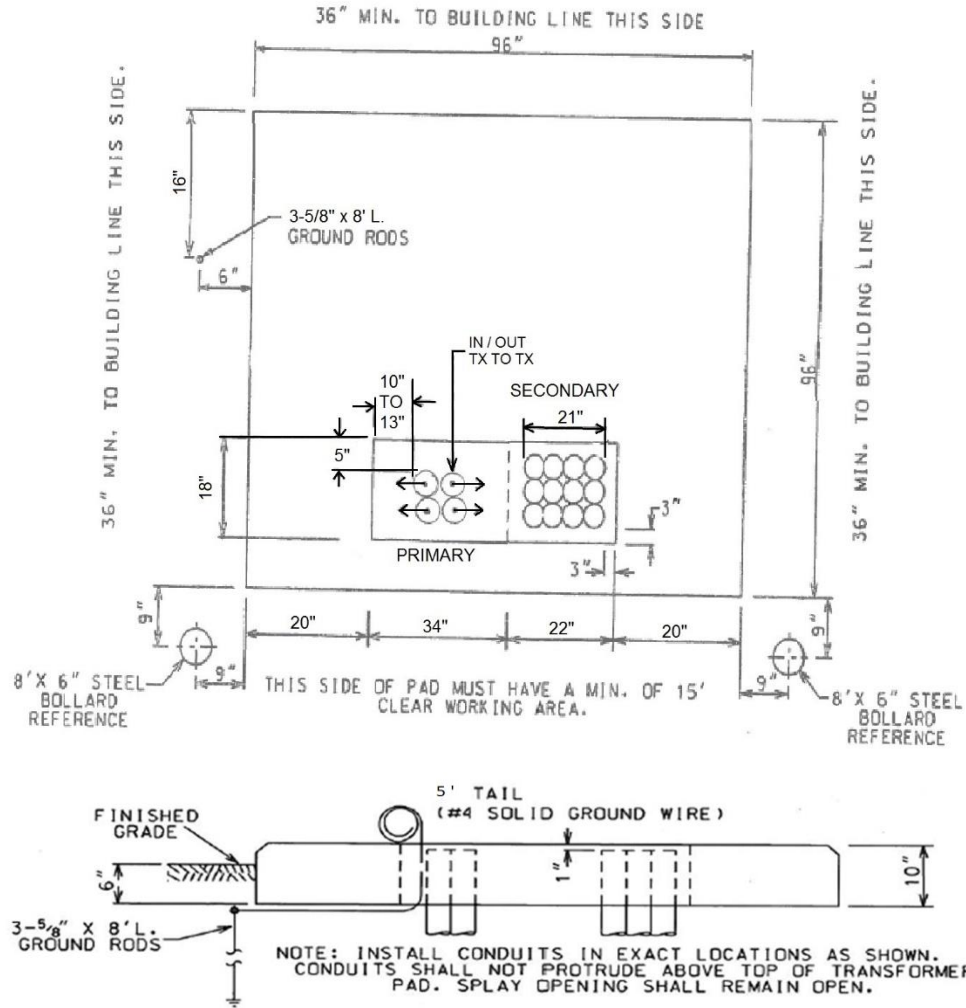
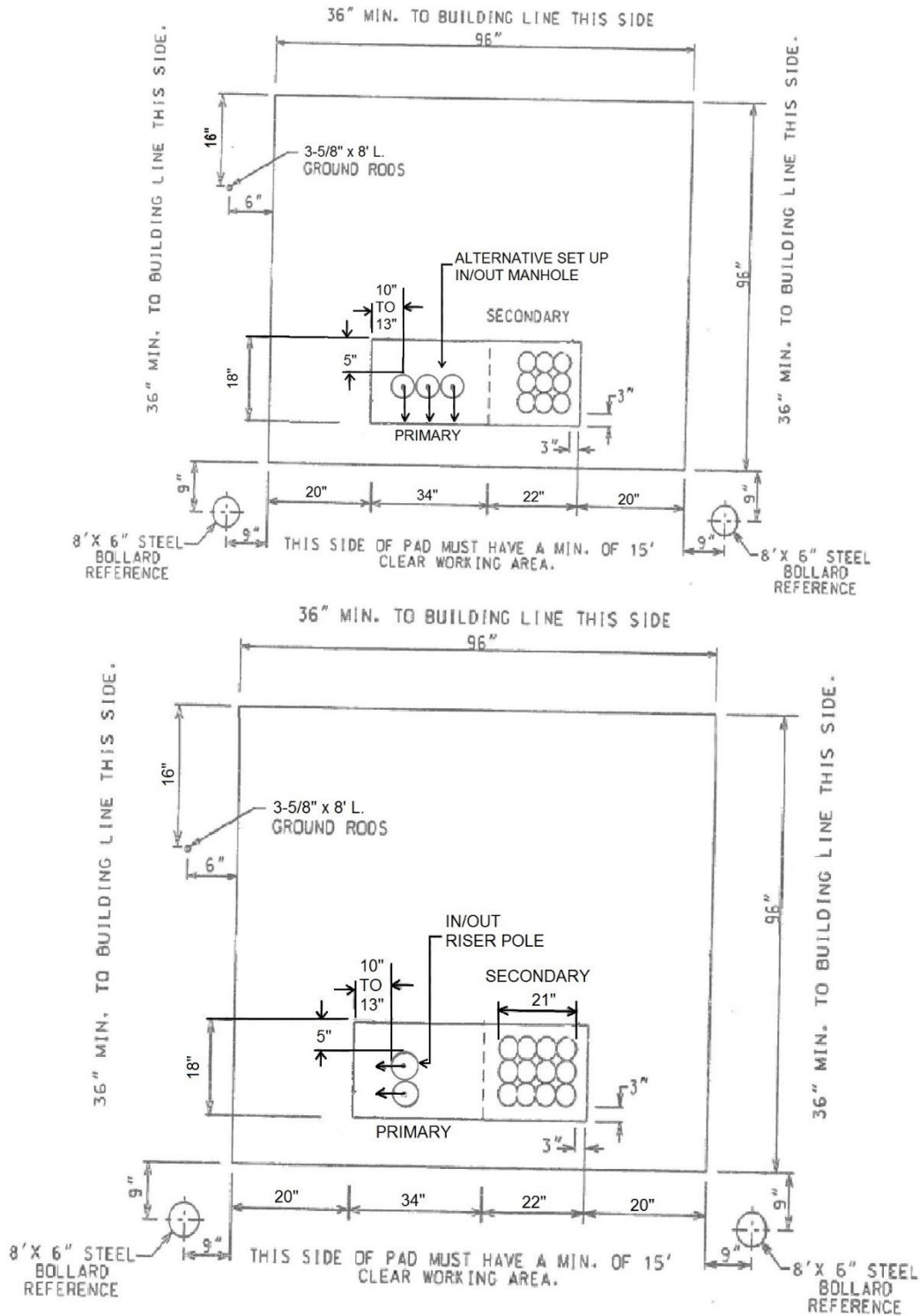


PLATE EXAMPLES	ITEM	QTY	DESCRIPTION
UPD3	XXXZZ011	1.5 YDS	CONCRETE, 3000 PSI
	XXXZZ009	96 FT	REINFORCING STEEL ROD, # 5
UPD3P	PADCO008	1	PAD, CONCRETE TRANSFORMER 96 x 96 x 10

**NOTES:**

1. Bumpers and Grounding material are not included with this plate. Please see the UPDB & G1P plates.
2. See JEA Rules & Regulations for maximum number of conduits installed in a splay opening.
3. See project drawing for required conduits.
4. See JEA Rules & Regulations for clear working area.

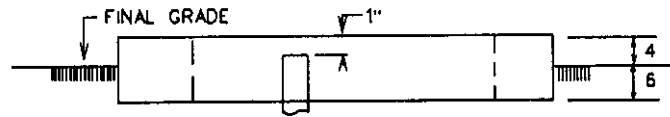
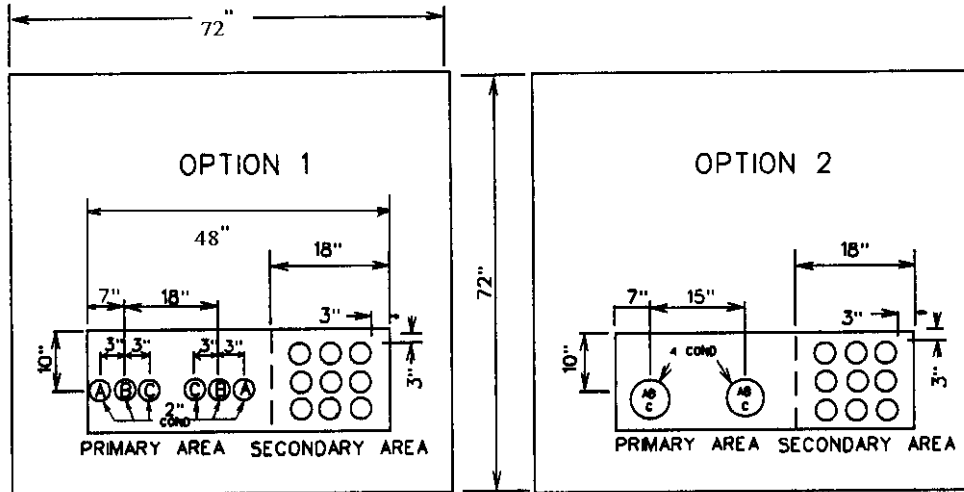
- Call project engineer for inspection 24 hours before pouring a pad.



**ALTERNATIVE UPD2 SETUPS**

## UPD4

### MAINTENANCE TRANSFORMER PAD FOR 75KVA



THREE PHASE TRANSFORMER PAD

NOTE: CONDUITS SHALL NOT PROTRUDE ABOVE TOP OF TRANSFORMER  
 PAD SPLAY OPENING SHALL REMAIN OPEN FOR FUTURE CONDUITS  
 TAP SPOIL BEFORE POURING/SETTING PAD

•INSTALL CONDUITS IN EXACT LOCATIONS SHOWN

ITEM	QTY	DESCRIPTION
PADCO006	1	PAD, CONCRETE TRANSFORMER, 72" x 72" x 10", DMD-87

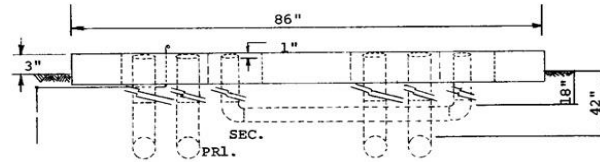
**NOTES:**

1. Bumpers and Grounding material are not included with this plate. Please see the UPDB & G1P plates.
2. See JEA Rules & Regulations for maximum number of conduits installed in a splay opening.
3. See project drawing for required conduits.
4. See JEA Rules & Regulations for clear working area.

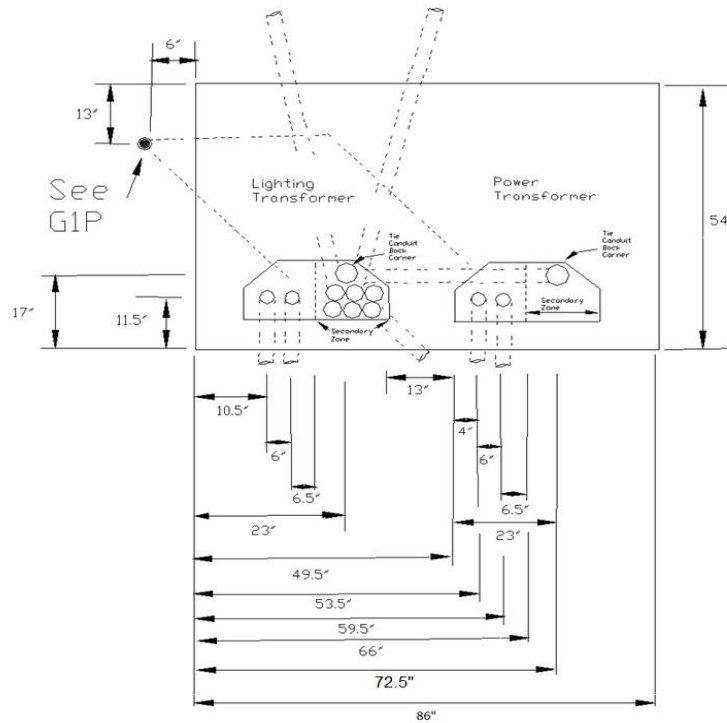
## UPD5

### SPECIAL OPEN DELTA PAD

### 240 / 120 VOLT – THREE PHASE 4 WIRE DELTA



Secondary Service



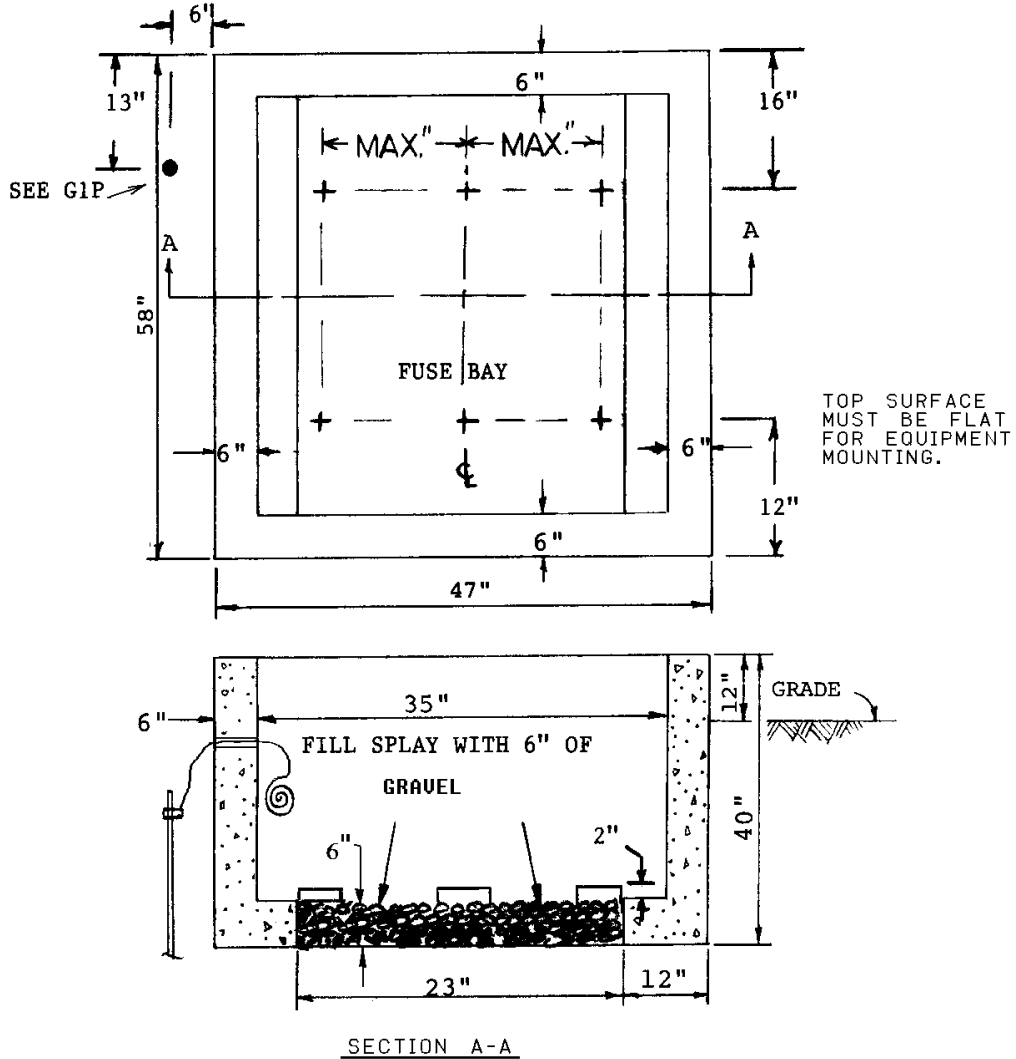
ITEM	QTY	DESCRIPTION
PADCO003	1	PAD, CONCRETE, DMD-73
CODEP026	2	ELBOW, PVC, 3" SCH 40, 13" RADIUS

**NOTES:**

1. Bumpers and Grounding material are not included with this plate. Please see the UPDB & G1P plates.
2. See JEA Rules & Regulations for maximum number of conduits installed in a splay opening.
3. See project drawing for required conduits.
4. See JEA Rules & Regulations for clear working area.

# UPD8

## THREE PHASE FUSING EQUIPMENT MOUNTING PIT



USED WITH FUSAS001  
 SPLAY OPENING: 23" X 46"

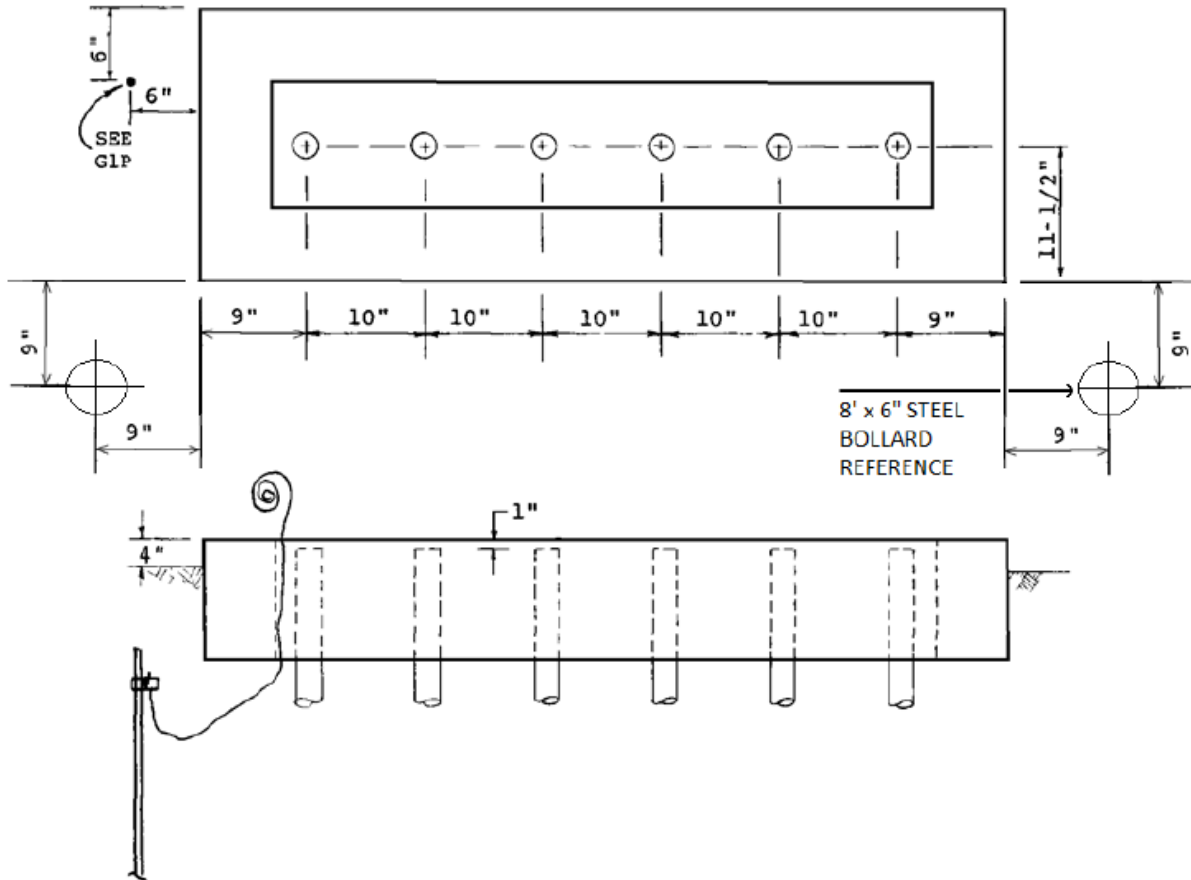
ITEM	QTY	DESCRIPTION
PITME003	1	PIT, CONCRETE, DMD-77

**NOTES:**

1. Install ells as required on an individual basis. (See Direct Buried Conduit section).
2. Conduit ends to extend 2" above gravel/base course.
3. Conduit locations to be detailed by the Engineer.

# UPD10

## THREE PHASE LIGHTNING ARRESTER PAD (MAINTENANCE ONLY)



ITEM	QTY	DESCRIPTION
PADCO004	1	PAD, CONCRETE, DMD-74

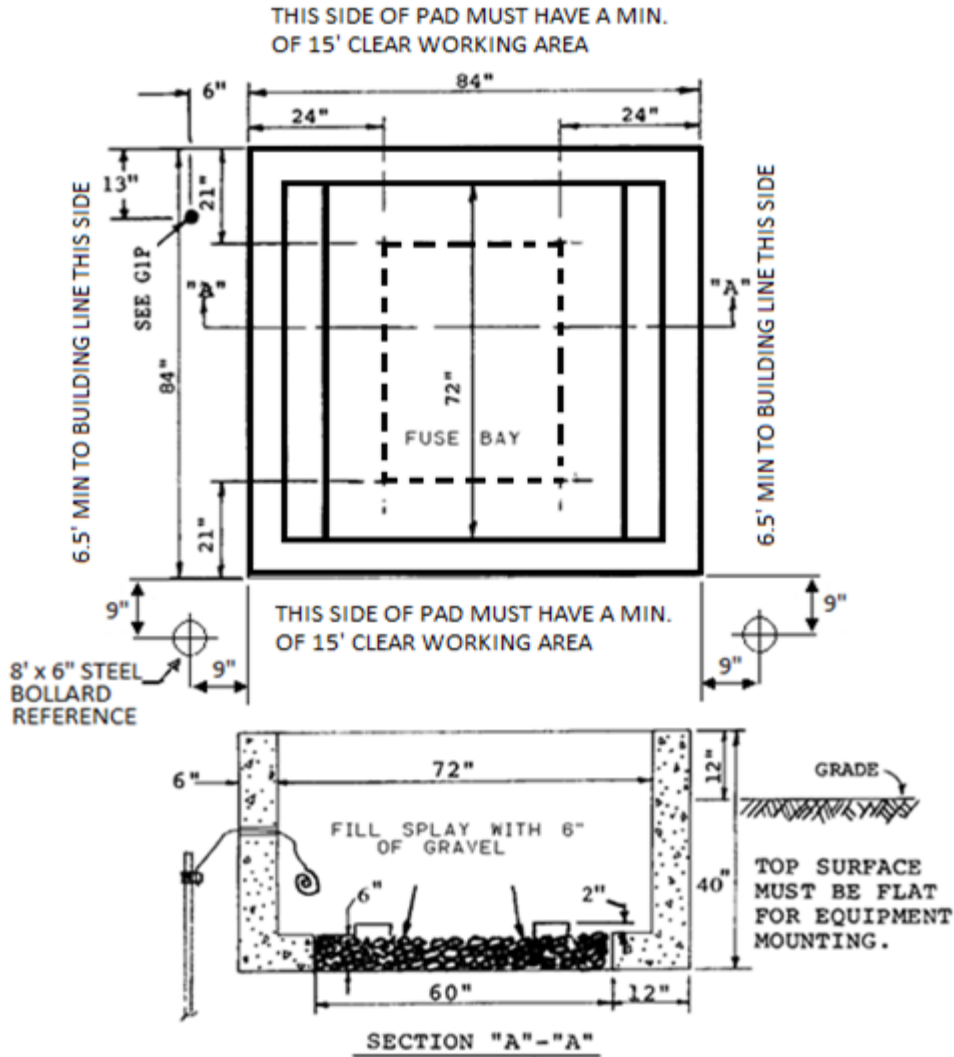
**NOTE:**

1. Bumpers and Grounding material are not included with this plate. Please see the UPDB & G1P plates.



## UPD11

### THREE PHASE SWITCH-GEAR EQUIPMENT MOUNTING PIT



Used With SWEPA001, 002, 003, 004, 008, 009

Splay Opening: 60" x 72"

ITEM	QTY	DESCRIPTION
PITME001	1	PIT, CONCRETE, DMD-76

**NOTES:**

1. Bumpers and Grounding material are not included with this plate. Please see the UPDB & G1P plates.
2. Install ells as required on an individual basis. (See Direct Buried Conduit section).
3. Conduit ends to extend 2" above base course/gravel.
4. Conduit locations to be detailed by the Engineer.

## UPD13

### PRIMARY METERING PIT DETAIL

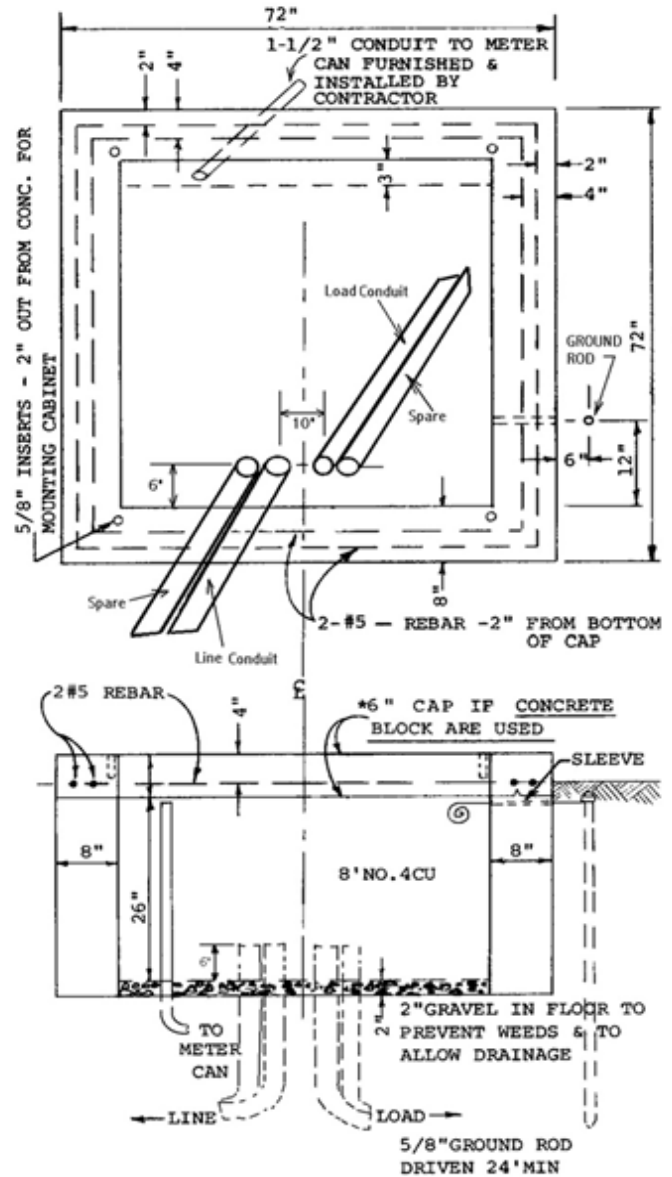
**NOTE:**

Plating UPD13 will issue a pre-cast pit (I.PITME005).

**NOTES:**

1. Meter can to be furnished by JEA & installed by contractor. Supporting structure for meter can to be furnished & installed by contractor. Approval of structure for & location of meter can must be given by JEA prior to installation. Contact Meter Department.
2. Grounding to be furnished and installed by contractor.
3. 8' x 6" steel post may be required for protection from vehicles depending on jobsite & will be specified by JEA.
4. Line conduit & spare to be 4" schedule 40 PVC. With PVC furnished & installed by contractor to designated JEA poles unless otherwise specified by JEA.
5. 20' x 20' easement is required from owner to allow JEA maintenance crew access to metering. Location to be determined by JEA.

Walls may be built of concrete block, poured inside with concrete, or formed & poured with concrete. If concrete block construction is used, a 6" cap the width of the block with 2 - # 5 rebar must be poured on top. See DMD-75.

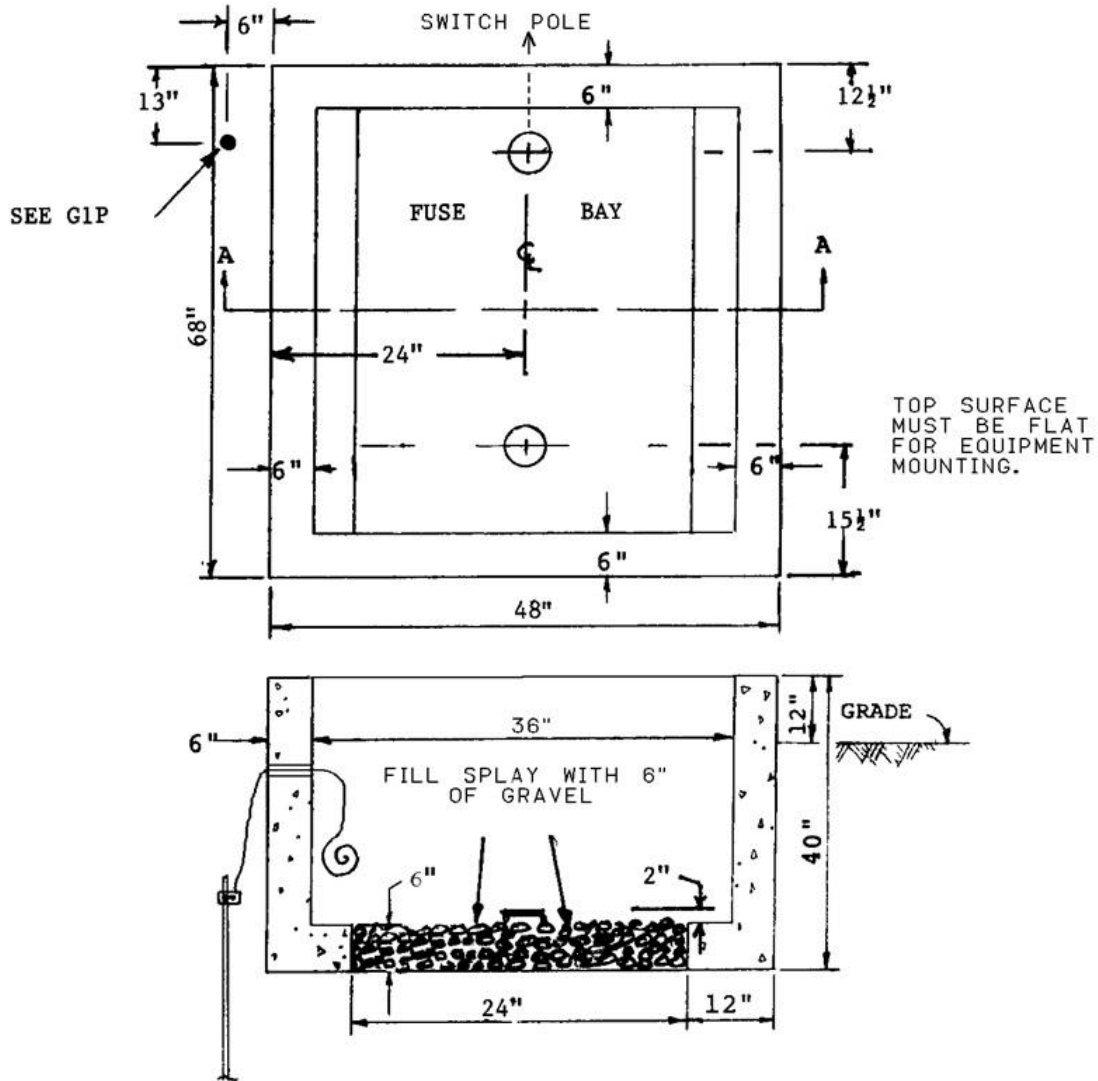


### Build in place Concrete Block Pit Shown

**Note:** See DMD-75A drawing for the dimensions of a pre-cast pit. Dimensions as follows:  
 Outside - 72" x 72" x 40"    Inside - 60" x 60" x 40"

## UPD15

### THREE PHASE EQUIPMENT MOUNTING PIT (ELECTRONIC FUSE)



This Pit Is Used With the SWEPA005 Item.  
 Splay Opening: 24" x 56"

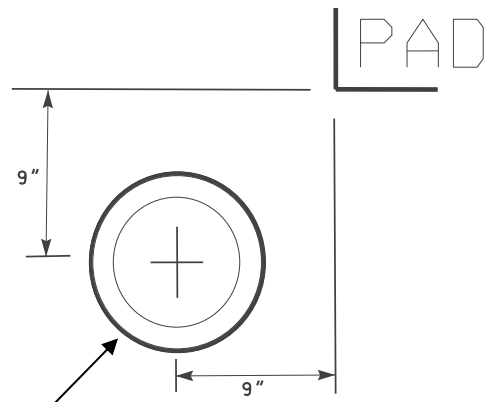
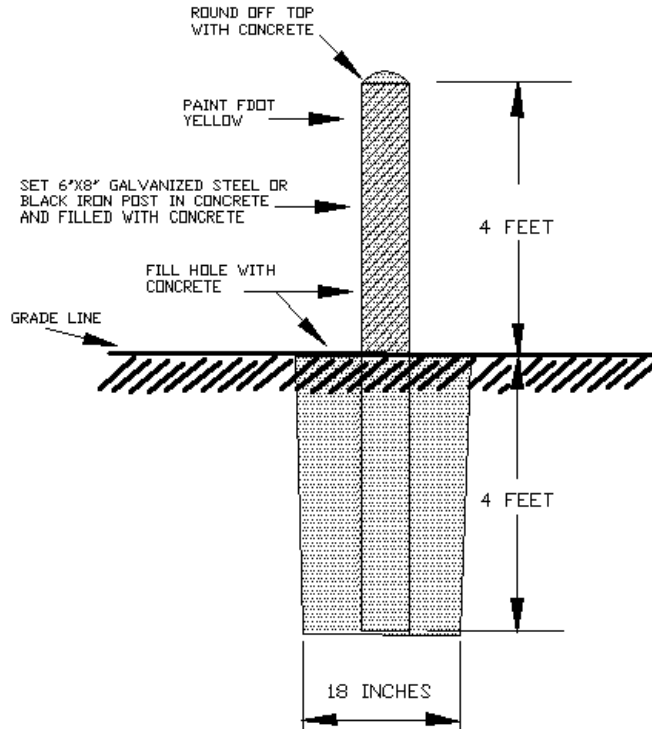
ITEM	QTY	DESCRIPTION
PITME004	1	PIT, CONCRETE, DMD-86

**NOTES:**

1. Install ells as required on an individual basis (See Direct Buried Conduit Section)
2. Conduit ends to extend 2" above base course / gravel.
3. Conduit locations to be detailed by the Engineer.

**UPDB  
EQUIPMENT BUMPER**

**8 foot (6 inch diameter) Steel Bumper – Concrete Filled**



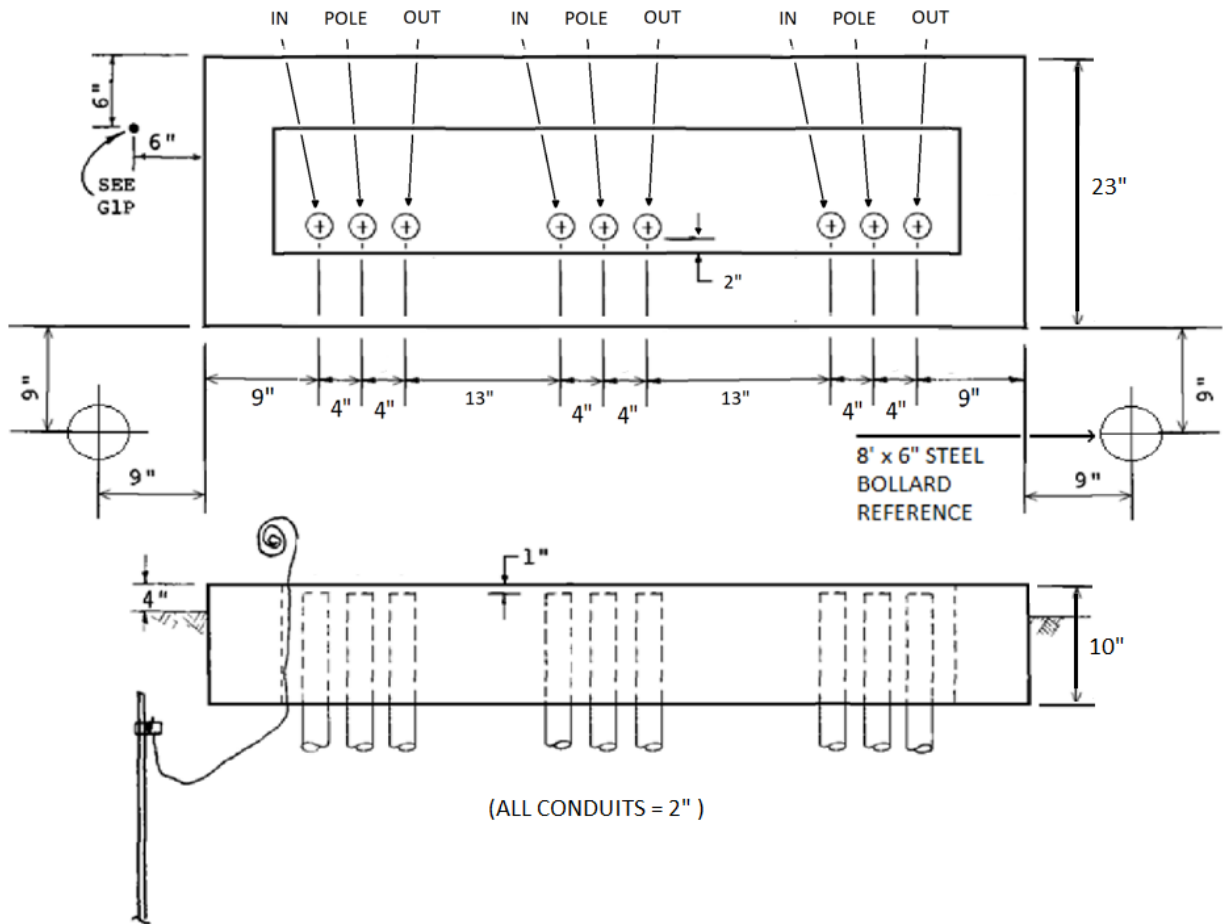
**8' x 6" Steel Bumper – Concrete Filled**

- Placed Around Equipment Adjacent to Roadways
- Appropriately Colored Bollard Sleeves are allowed to be used instead of paint.

ITEM	QTY	DESCRIPTION
<b>CODST010</b>	8	GALVANIZED STEEL CONDUIT, 8 FEET X 6 INCHES
<b>XXXZZ011</b>	1 YD	3000 PSI CONCRETE
<b>PACEN012</b>	3	CANS OF DOT YELLOW PAINT

# UPD16

## THREE PHASE JUNCTION ENCLOSURE PAD



ITEM	QTY	DESCRIPTION
PADCO004	1	PAD, CONCRETE, DMD-74

**NOTE:**

1. Bumpers and Grounding material are not included with this plate. Please see the UPDB & G1P plates.
2. This Pad for use with Three Phase Junction Enclosure – ENCOD004.
3. If used for the Two Phase Junction Enclosure ignore the center three conduits.
4. Only 2" conduits to be used in this application.

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## DIRECT BURIED CONDUIT

### I. CONSTRUCTION NOTES

- I.1. Install plug on all empty or temporary conduit openings. See identification section for conduit/cable marker plate.
- I.2. Markers should be installed at the ends of all conduit and ells.
- I.3. Call for plates UC on a “per foot” basis
- I.4. See cable section for conduit size to be used.
- I.5. All conduit in the same trench will be installed at the bottom of the trench arranged as shown in the standard for “Installation of Conduit in Trench”.
  - I.5.1. A standard 48” deep trench will be used when installing all conduits.
  - I.5.2. Other depths may be specified by the engineer on an individual basis.

#### ADDITIONAL PLATES

PLATE	DESCRIPTION	UNIT
FOAM-DUCT	EXPANDING FOAM TO SEAL AROUND CABLES	EA (LABOR ONLY)
PLUG-DUCT1	1 - 1” PVC CONDUIT CAP (CODPL005)	EA
PLUG-DUCT2	1 - 2” PVC CONDUIT PLUG (CODPL001)	EA
PLUG-DUCT3	1 - 3” PVC CONDUIT PLUG (CODPL002)	EA
PLUG-DUCT4	1 - 4” PVC CONDUIT PLUG (CODPL003)	EA
PLUG-DUCT6	1 - 6” PVC CONDUIT PLUG (CODPL004)	EA

PLATE	DESCRIPTION	UNIT
I.CODCO003	2” PVC SCH-40 LONG LINE COUPLING	EA
I.CODCO004	3” PVC SCH-40 LONG LINE COUPLING	EA
I.CODCO005	4” PVC SCH-40 LONG LINE COUPLING	EA
I.CODCO006	6” PVC SCH-40 LONG LINE COUPLING	EA
I.CODCO025	1” PVC SCH-40 LONG LINE COUPLING	EA

### II. GENERAL

The work under this section consists of installing Single Conduit or Multiple Conduit in Trench, backfilling and compacting.

#### II.1. MATERIAL

One, Two, Three, Four, or Six inch PVC Conduit or Galvanized Steel Conduit.

##### II.1.1. Conduit Material Specifications:

- II.1.1.1. One, Two, Three, Four, or Six inch Schedule 40 PVC Conduit or Schedule 40 Galvanized Steel Conduit. Different conduit may be specified for special applications. All conduit material shall meet the material specifications of JEA.

II.1.1.2. Do not install DB60 or DB120 PVC Conduit in direct buried systems.

II.2. ALIGNMENT

PVC is sufficiently flexible to allow it to conform to minor changes in trench direction or elevation. Any other bends shall be made using pre-formed sweeps. PVC 5 degree bend couplings will not be used.

II.3. BACKFILLING

The backfill surrounding the duct(s) shall be compacted in accordance with the manufacturer's recommendations. Such backfill shall extend to 6" above the top of the Conduit or conduits. Above that level backfill and compaction shall be carried out as specified under excavation, backfill, & compaction paragraphs of the Earthwork section.

II.4. MARKING TAPE

Marking tape shall be installed as specified on an individual basis (See UCT plate).

II.5. MINIMUM COVER REQUIREMENTS

Standard depth of trench will be 48" (to bottom of trench). Other depths may be specified on an individual basis.

II.6. PULL WIRE

Pull wire is to be installed in each conduit. The pull wire is to be multi-stranded poly twine. Use of nylon twine is not allowed.



## UC \* INSTALLATION OF CONDUIT IN TRENCH

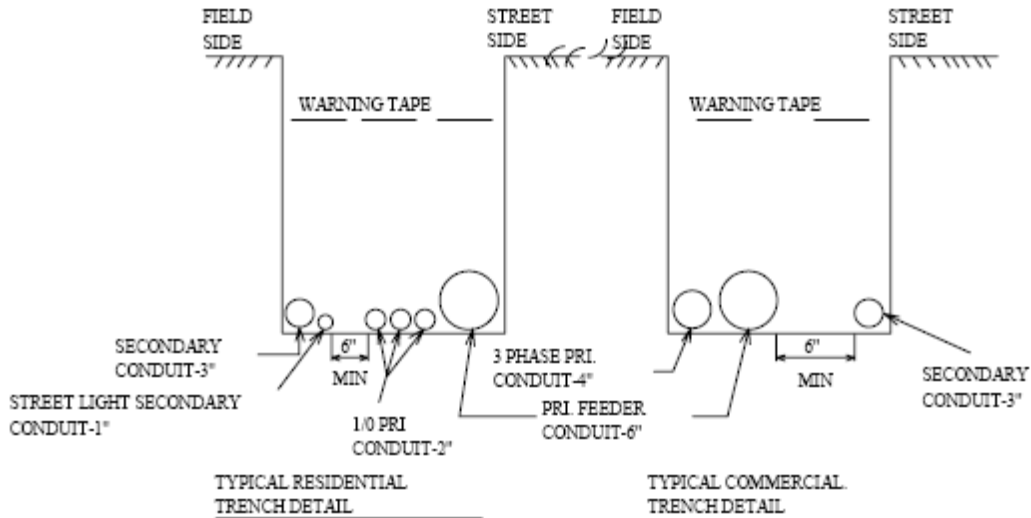


	PLATE	ITEM I.D.	SIZE
POLYVINYL CHLORIDE (PVC) SCHEDULE 40	UC*1	CODPC016	1"
	UC*2	CODPC019	2"
	UC*3	CODPC020	3"
	UC*4	CODPC003	4"
	UC*6	CODPC005	6"
GALVANIZED STEEL	UC*2S	CODST006	2"
	UC*3S	CODST008	3"
	UC*4S	CODST009	4"
	UC*6S	CODST010	6"

### NOTES:

1. PVC cement must be itemized. Issue one (1) quart can, item I.ADCMI002, for each 500 linear feet of conduit, or for each 25 conduit joints.
2. Install warning tape as specified on UCT plate.
3. Minimum separation of 2" between conduits carrying conductors of the same voltage. Minimum separation of 6" between conduits carrying conductors of different voltage.

## UCL4\* \_ AND UCL9\*\_ INSTALLATION OF CONDUIT ELL

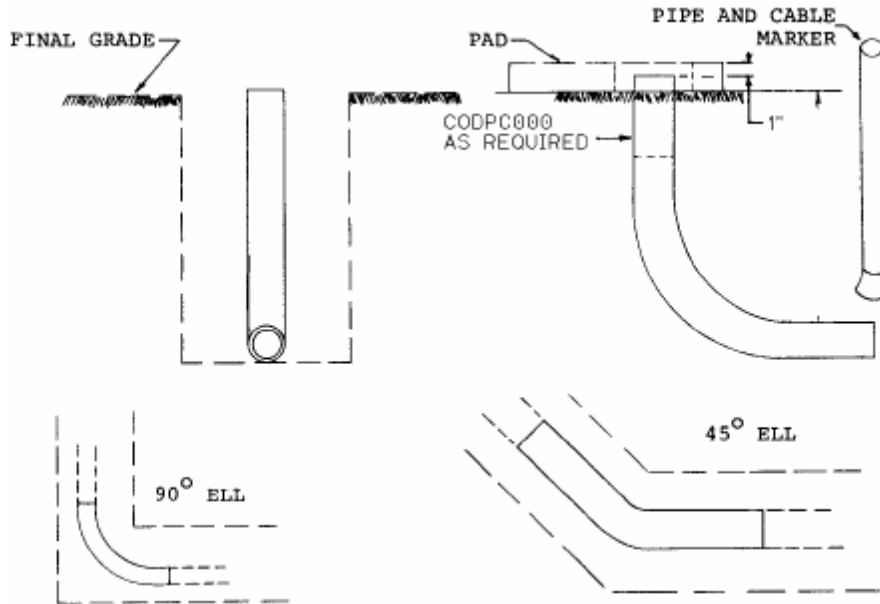


	PLATE	ITEM	DESCRIPTION	QTY	RADIUS
SCH 40 CONDUIT	UCL9*1	CODEP024	1"– 90°	1	18"
	UCL9*2	CODEP002	2"– 90°	1	48"
	UCL9*3	CODEP004	3"– 90°	1	36"
	UCL9*4	CODEP006	4"– 90°	1	36"
	UCL9*6	CODEP009	6"– 90°	1	48"
	UCL4*2	CODEP001	2"– 45°	1	36"
	UCL4*3	CODEP003	3"– 45°	1	36"
	UCL4*4	CODEP005	4"– 45°	1	36"
	UCL4*6	CODEP010	6"– 45°	1	48"
	UCL4*1	CODEP025	1"– 45°	1	18"
UCL9*7	CODEP013	6"– 90°	1	150"	
GALVANIZED STEEL	UCL9*2S	CODEP002	2"– 90°	1	9 3/4"
	UCL9*3S	CODEP004	3"– 90°	1	13"
	UCL9*4S	CODEP006	4"– 90°	1	36"
	UCL9*6S	CODEP007	6"– 90°	1	48"
SPECIAL DB-60 PVC	UCL4*7	CODEP008	6"-45°	1	150"

# CABLE

## I. CONSTRUCTION NOTES

- I.1. PLATE UVB:  
Call for this plate on a “per foot” basis. Separate neutral is NOT included with primary cable.
- I.2. Plate UVC:  
Call for this plate on a “per foot” basis.
- I.3. PLATE UVSS:  
When separate neutral is used, use secondary splice (USS Plate) for neutral cable.
- I.4. Single conductor 750 KCM Poly  
Has limited use in the system. It is not a standard cable, and is not covered by a plate. Maintenance work will be covered by itemizing.
- I.5. Additional Plates:  
Listed below are plates not otherwise covered by a Construction Standard and Drawing:

PLATE	DESCRIPTION	UNIT
<b>CBL-CAP1</b>	Install heat shrink cable end cap on cable.(#2 - 1/0 Poly)	EA
<b>CBL-CAP2</b>	Install heat shrink cable end cap on cable.(1/0 – 750 KCM Poly)	EA
<b>CBL-CAP3</b>	Install heat shrink cable end cap on cable (750 – 1000 KCM Poly)	EA
<b>CBL-REM1</b>	Remove primary cable from conduit and salvage. Includes up to three conductors per conduit. (Up to 1/0 AWG) DOWNTOWN ONLY	LF
<b>CBL-REM2</b>	Remove primary cable from conduit and salvage. Includes up to three conductors per conduit. (1/0awg – 400 KCM) DOWNTOWN ONLY	LF
<b>CBL-REM3</b>	Remove primary cable from conduit and salvage. Includes up to three conductors per conduit. (401 KCM and larger.) DOWNTOWN ONLY	LF

## II. INSTALLATION GUIDELINES

Cable to be installed in conduit according to the following guidelines:

- 1” conduit - # 12D secondary
- 2” conduit - 1/c – 1/0 AWG primary
- 3” conduit - all secondary cable
- 4” conduit - 3/c – 1/0 AWG primary
- 6” conduit - 3/c – 350 KCM, 750 KCM, 1000 KCM primary

**NOTE:**

Engineer may designate other installation guidelines. See Conduit Section for installation depths.

UVC\*\_  
 UWC\*\_  
 URC\*\_  
 \_

## INSTALLATION OF PRIMARY CABLE IN CONDUIT

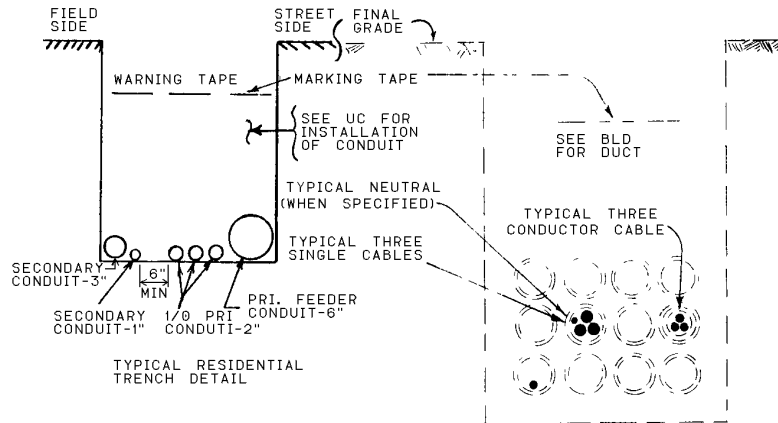
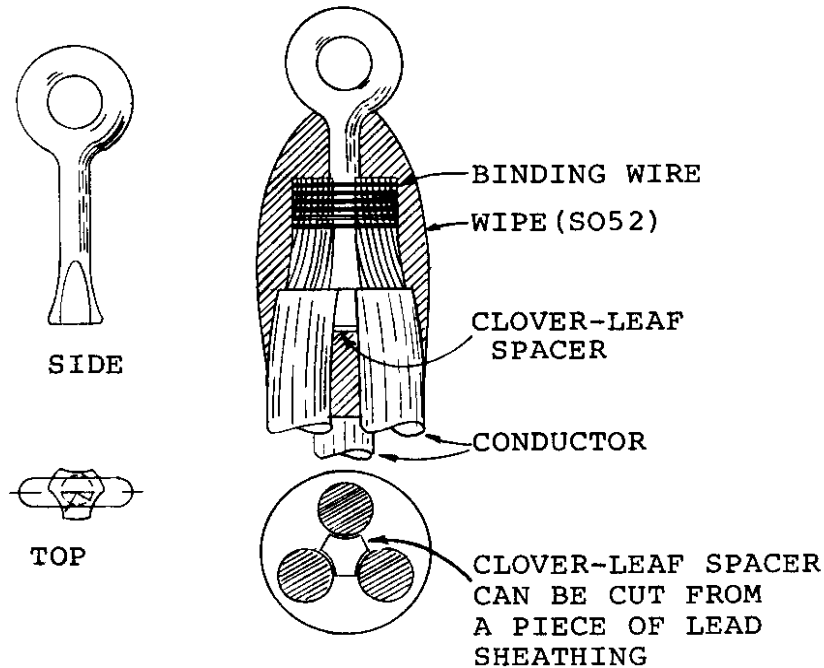


	PLATE & OPTION	ITEM	QTY	DESCRIPTION
25 KV	UVC*1/0	CAICL001	1	1/0AWG, SINGLE CONDUCTOR, AL, POLY
	UVC*1/0-2	CAICL001	2	1/0AWG, SINGLE CONDUCTORS, AL, POLY
	UVC*1/0-3	CAICL001	3	1/0AWG, SINGLE CONDUCTORS, AL, POLY
	UVC*1/0-T	CAICL002	1	1/0AWG, 3 PARALLEL CONDUCTORS, AL, POLY
	UVC*1/0-T-CU	CAICL020	1	1/0AWG, 3 PARALLEL CONDUCTORS, CU, POLY
	UVC*350-3	CAICL005	3	350KCM, SINGLE CONDUCTORS, AL, POLY
	UVC*1000-3	CAICL011	3	1000KCM, SINGLE CONDUCTORS, AL, POLY
	UVC*1000-3E	CAICL003	3	1000KCM, SINGLE CONDUCTORS, AL, EPR
13.2 KV	UWC*1/0L-3	CAIPI010	3	1/0AWG, SINGLE CONDUCTORS, CU, PILC
	UWC*1/0L	CAIPI001	1	1/0AWG, THREE CONDUCTOR, CU, PILC
	UWC*400L	CAIPI007	1	400KCM, THREE CONDUCTOR, CU, PILC
	UWC*400L-3	CAIPI015	3	400KCM, SINGLE CONDUCTOR, CU, PILC
	UWC*400P	CAICL006	1	400KCM, THREE CONDUCTOR, CU, POLY
	UWC*400P-3	CAICL009	3	400KCM, SINGLE CONDUCTOR, CU, POLY
	UWC*750L	CAIPI009	1	750KCM, THREE CONDUCTOR, CU, PILC
	UWC*750L-3	CAIPI012	3	750KCM, SINGLE CONDUCTOR, CU, PILC
	UWC*750P-3	CAICL013	3	750KCM, SINGLE CONDUCTOR, CU, POLY (FLAT STRAP NEUTRAL)
4 KV	URC*8	CAICL004	1	#8AWG, SINGLE CONDUCTOR, CU, POLY
	URC*750-3	CAICL012	3	750KCM, SINGLE CONDUCTOR, AL, POLY
NEUTRAL	UNC*4/0N	CAIRH005	1	4/0AWG, SINGLE CONDUCTOR, CU, POLY
	UNC*300N	COBCO035	1	300KCM, SINGLE CONDUCTOR, CU, BARE

# BLD-PULL-EYE

## BUILD CABLE PULLING EYE



EYE BOLT PULLING EYE

### INSTALLATION OF PULLING EYE ON 3 CONDUCTOR CABLE

NOTE: If pulling eyes are factory installed on new cable they should be retained for future re-use.

PLATE	ITEM	QTY	DESCRIPTION
BLD-PULL-EYE	SOLTL002	5	SOLDER, 40/60, 1.5LB BAR

CRIMP ON PULLING EYE (NO ILLUSTRATION)			
PLATE & OPTION	ITEM	QTY	DESCRIPTION
I.EYEP001	EYEP001	1	PULLING EYE, 2.402 ID, CONDUX PRESS
I.EYEP002	EYEP002	1	PULLING EYE, 2.995 ID, CONDUX PRESS
I.EYEP003	EYEP003	1	PULLING EYE, 2.152 ID, CONDUX PRESS
I.EYEP004	EYEP004	1	PULLING EYE, 5.120 ID, CONDUX PRESS

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# **SPLICES**

## **STRAIGHT TWO WAY JOINT 3/C, PAPER INSULATED, SHIELDED, LEAD COVERED CABLE**

### **I. INSTALLATION INSTRUCTIONS**

#### **I.1. PRECAUTIONS:**

- I.1.1. Expansion bends must be made in the cables to allow for cable movement while in service.
- I.1.2. Avoid bending the cable to a radius less than the minimum recommended by the cable manufacturer.
- I.1.3. The curvature of the cables, beyond the straight portion of the joint, must be such that the lead sleeve can be pushed back out of the way during the splicing operations.
- I.1.4. Keep splicing materials and tools at the surrounding temperature or above to prevent moisture from condensing on their surfaces.
- I.1.5. The insulating tape is to be wrapped as tight as possible to obtain a hard, solid splice. There should not be more than one tape break in any layer of tape.

### **II. INSTALLATION PROCEDURE:**

#### **II.1. PREPARING THE CABLE ENDS:**

- II.1.1. Train the cables into their final positions allowing the ends to overlap.
- II.1.2. If the cable has a protective jacket, remove it to expose the lead sheath for 4" beyond the indicated wipe.
- II.1.3. Make two circumferential reference marks on each cable sheath.
  - II.1.3.1. 1st: At the center of the joint.
  - II.1.3.2. 2nd: "A" inches from the first reference mark.
- II.1.4. Cut the cables at the first reference mark. The cables should butt together after cutting.
- II.1.5. Scrape both ends of the lead sleeve for 3" and apply stearine flux to the scraped portions.
- II.1.6. Clean the interior of the lead sleeve with solvent and clean, dry rags. Clean the surface of the cable sheath where the sleeve will rest during the splicing operations.
- II.1.7. Slip the sleeve over the cable so it rests on the clean portion of the sheath.
- II.1.8. Scrape the cable sheaths for 3" beyond the second reference mark and apply stearine flux to the scraped portion.
- II.1.9. Make a circumferential score not more than half way through the cable sheath at the second reference mark.
- II.1.10. Slit the cable sheath from the score to the cable end. Take care not to damage the underlying cable insulation.
- II.1.11. Remove the sheath by pulling the slit edge directly away from the cable axis. A small natural "bell" should form at the sheath edge.
- II.1.12. Remove any binder tapes and fillers to the end of the lead sheath.

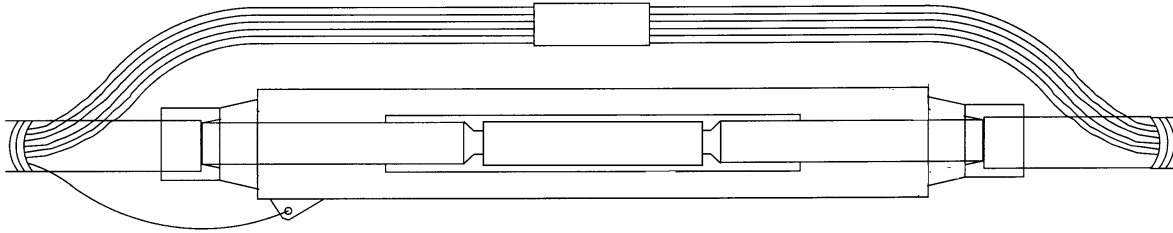
- II.1.13. Bind the conductors with cotton tape at the end of the lead sheath to prevent breaking of the insulation when the conductors are spread.
- II.2. APPLYING THE CONNECTOR:
  - II.2.1. Bind the cable insulation "E" plus 5/8" from the end of the cable.
  - II.2.2. Remove the cable insulation and any strand shielding, binder tapes or separator tapes down to the bare conductor strands for "E" plus 1/2" from the end of the cable.
- II.3. SOLDER CONNECTOR:
  - II.3.1. Clean the exposed conductor strands and apply soldering flux.
  - II.3.2. Clean the interior of the connector with solvent and clean, dry rags.
  - II.3.3. Slip the connector over the conductors with the slot up. Butt the conductors together at the center of the connector. Squeeze the ends of the connector onto the conductors.
  - II.3.4. Tightly wrap cotton tape around the connector at the ends of the connectors and over the adjacent insulation.
  - II.3.5. Apply the soldering flux in the slot of the connector. Tin the connector and conductor and solder the connector to the conductors. While the solder is still plastic, close the connector slot.
  - II.3.6. Remove the cotton tape and dress the connector and conductor. The connector surface must be smooth and free from burrs or projections.
- II.4. COMPRESSION CONNECTOR:
  - II.4.1. Slip the connector over the conductors. Butt the conductors together at the center of the connector.
  - II.4.2. Press the connector onto the conductor according to the press manufacturer's instructions.
  - II.4.3. Fill the connector indents with filler compound.
  - II.4.4. Trim the connector shield so it is 1/4" shorter than the straight section of the connector and overlaps slightly when wrapped around the connector.
  - II.4.5. Tightly wrap the shield around the connector. Solder the overlapped edge of the shield.
  - II.4.6. Dress the soldered edge of the shield.
  - II.4.7. Flush the connector with hot oil (230 degrees F).
  - II.4.8. Cover the connector with insulating tape until the insulation buildup is started.
- II.5. STEPPING THE INSULATION:
  - II.5.1. Count the tapes in the cable insulation using a piece of excess cable. Note any changes in thickness of the tapes. Determine the number of tapes to be removed per step by dividing the number of tapes by the number of steps.
  - II.5.2. Remove the cable shielding (metallic tape, metalized paper tape or carbon black) to the dimension shown on the drawing. Trim the shielding to form a smooth straight edge.
  - II.5.3. Mark the cable with twine where the stepping is to begin. Remove the number of tapes per step as determined above at the dimensions shown on the drawing. A piano wire with weights at the ends, looped around the cable will facilitate this operation. The tapes are torn against the wire.



- II.5.4. As each step is completed secure the insulation at the top of the step with twine and protect it with a serving of cotton tape.
- II.5.5. Applying The Tape:
- II.5.6. Remove the protective covering as the insulation is applied. Do not expose any more of the insulation than necessary for taping.
- II.5.7. Fill in the spaces at the ends of the connector with 3/4" wide insulating tape.
- II.5.8. Apply half-lapped layers of insulating tape over the stepping, the previously applied insulating tape and the connector up to the level of the cable insulation.
- II.5.9. Remove one layer of cable insulation to the cable shielding end.
- II.5.10. Apply half-lapped layers of insulating tape to the dimensions shown on the drawing to complete insulation of the joint.
- II.5.11. Cover the insulating tape with shielding braid. Apply the braid half-lapped on the tapered portions of the joint and butt-lapped on the cylindrical portion. Extend the braid over the cable shielding for 1/2".
- II.5.12. Solder the adjacent turns of braid together in three axial strips. Solder tack the braid to the cable shielding.
- II.5.13. Flush the shielding braid with hot oil (230 degrees F).
- II.5.14. Bind the conductors together at the center of the joint with saturated webbing.
- II.5.15. Assembling The Sleeve:
- II.5.16. Slip the lead sleeve into position and center it with respect to the joint.
- II.5.17. Beat down the ends of the sleeve to fit around the cable sheath.
- II.5.18. Limit the wipes by applying paper pasters to the cable sheath 1" from the sleeve and to the sleeve 1" from the tapered ends.
- II.5.19. Seal the sleeve to the cable sheath with a wiped joint at each end.
- II.5.20. Filling The Sleeve:
- II.5.21. Cut a "V" shaped filling hole 3" from each end of the sleeve.
- II.5.22. Heat the compound to temperature indicated on the tab label. Do not exceed this temperature.
- II.5.23. Fill the sleeve with compound. Allow the compound to cool and make a second filling.
- II.5.24. Beat down the filling holes and seal them with bar solder.

**UVSS  
UWSS  
URSS**

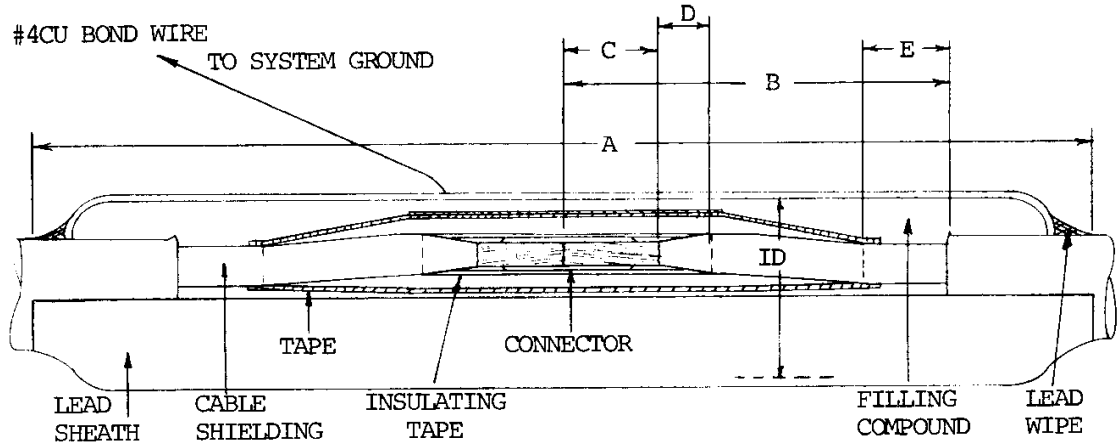
**STRAIGHT PREMOULDED SOLID DIELECTRIC SPLICE (MAINTENANCE)**



MATERIAL DESCRIPTION				
VOLTAGE	PLATE	SPLICE	NEUTRAL CONNECTOR	DESCRIPTION
25 kV	<b>UVSS*2</b>	SPLST005	CNNCP021	2-2AL STRAIGHT SPLICE
	<b>UVSS*2-1/0</b>	SPLST006	CNNCP021	2-1/0AL STRAIGHT SPLICE
	<b>UVSS*1/0</b>	SPLST007	CNNCP021	1/0-1/0AL STRAIGHT SPLICE
	<b>UVSS*350</b>	SPLST008	CNNCP021	350-350AL/CU STRAIGHT SPLICE
	<b>UVSS*1000</b>	SPLST010	CNNCP021	1000-1000AL/CU STRAIGHT SPLICE
13.2 kV	<b>UWSS*400</b>	SPLST004	CNNCP021	400-400CU STRAIGHT SPLICE
	<b>UWSS*750</b>	SPLST011	CNNCP021	750-750CU STRAIGHT SPLICE
4 kV	<b>URSS*750</b>	SPLST003	CNNCP021	400-400CU STRAIGHT SPLICE

## URSL

### LEAD SPLICE FOR PAPER CABLE, STRAIGHT



Dimensions						
CABLE SIZE	A	B	C	D	E	ID
400 KCM	24"	10"	1/2 Connector + 3/8"	1-1/2"	3"	4-1/2"

Option	Cable Size In	Cable Size Out	Voltage
URSL*400	400-3/C	400-3/C	4.16KV

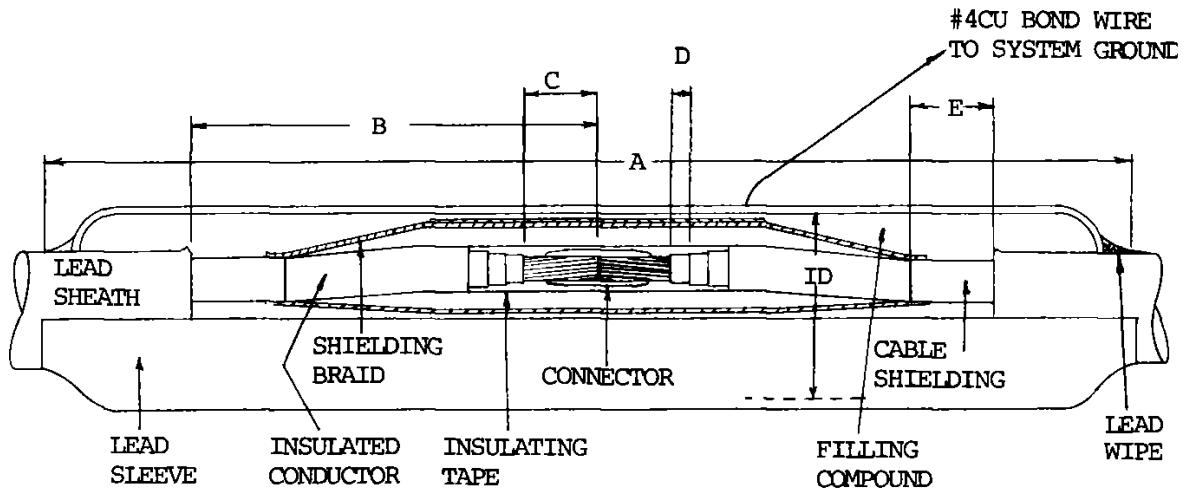
URSL*400		
ITEM	QUANTY	DESCRIPTION
COBCO028	5	CONDUCTOR BARE COPPER NO. 4 SOL SOFT DRAWN
ADCMIO10	1	COMPOUND INSULATING 2 GAL.
CNNSO013	3	CONNECTOR SPLIT SOLDER 400MCM CU
INSCA001	6	INSULATOR, CABLE RACK
PIPLE007	22	PIPE LEAD 4-1/2 IN. ID
SOLTL002	20	SOLDER 40/60 1.5 LB BAR
TAPEL003	4	TAPE FIBERMAT
TAPEL004	4	TAPE, ARC/FIRE PROOFING
TAPEL014	1	TAPE CU SHIELDING BRAID TINNED

OTHER OPTIONS:

URSL\* 2/0, URSL\* 4/0, URSL\* 500, URSL\* 500T

## UWSL

### LEAD SPLICE KIT FOR PAPER CABLE STRAIGHT

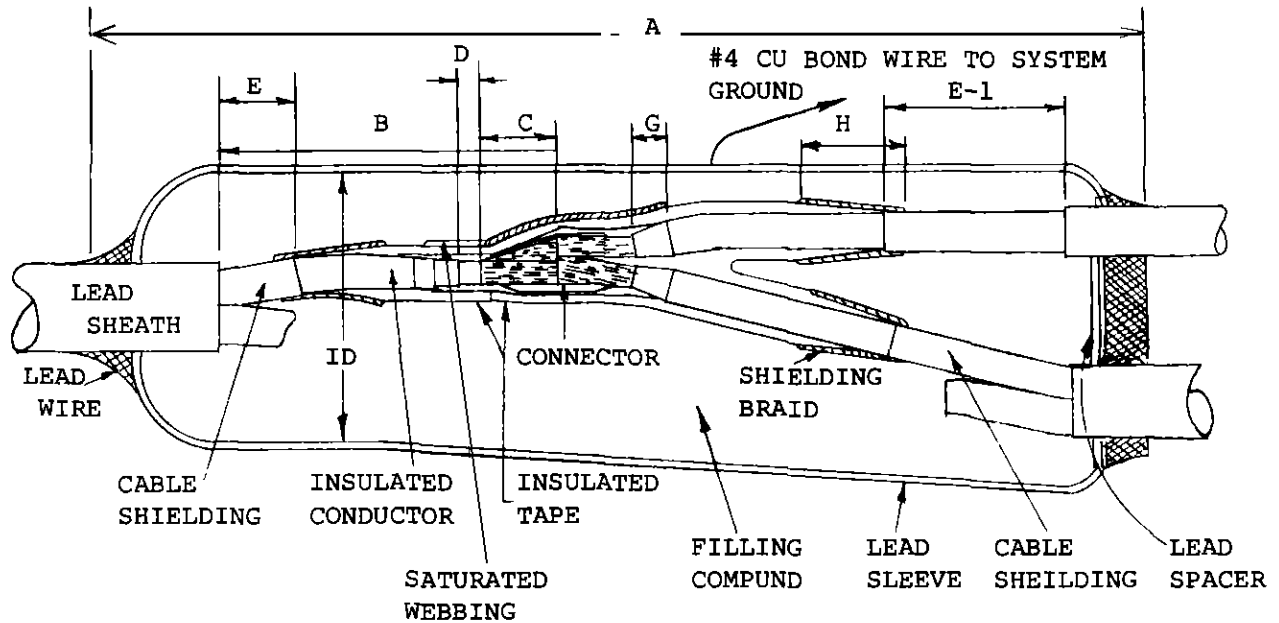


DIMENSIONS						
CABLE SIZE	A	B	C	D	E	ID
1/0AWG	24"	10"	1/2 Connector + 3/8"	3/4"	3"	4"
400KCM	24"	10"	1/2 Connector + 3/8"	3/4"	3"	5"
750KCM	28"	12"	1/2 Connector + 3/8"	3/4"	3"	6"

13.2 kV			
Option	Cable Size In	Cable Size Out	Voltage
UWSL1/0	1/0-3/C	1/0-3/C	13.2 kV
UWSL400	400-3/C	400-3/C	13.2 kV
UWSL750	750-3/C	750-3/C	13.2 kV

## UWSL

### LEAD SPLICE FOR PAPER CABLE, BRANCH OR Y



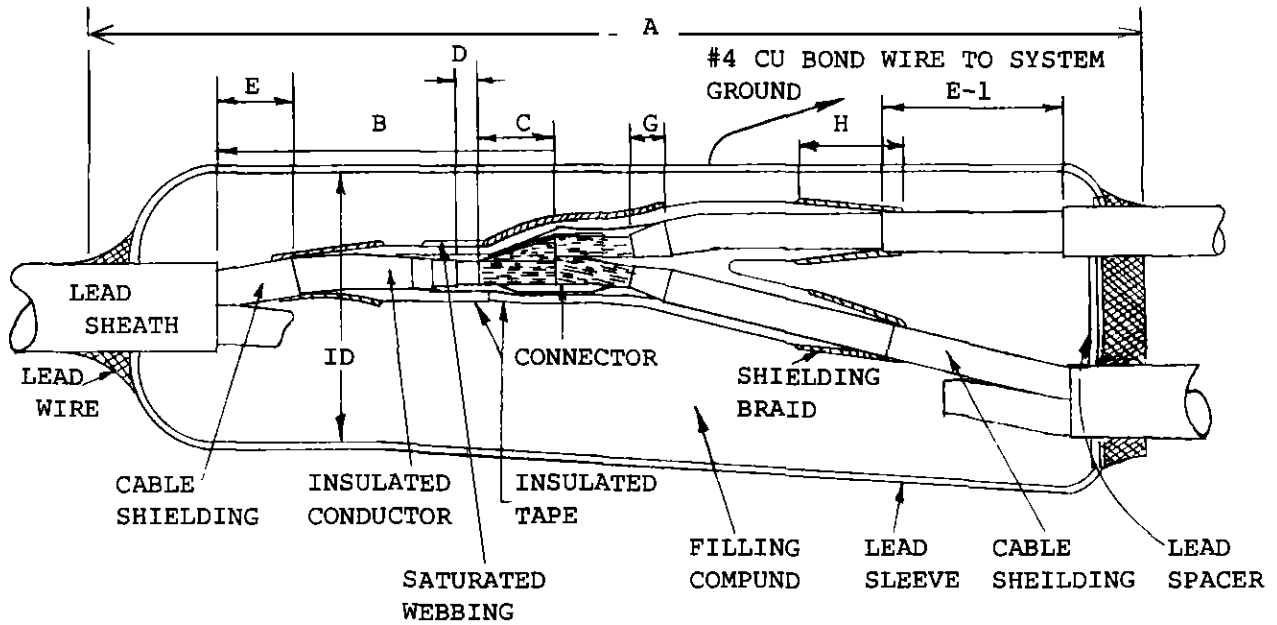
DIMENSIONS									
CABLE SIZE	A	B	C	D	E	E-1	G	H	ID
400KCM 400KCM B 1/0AWG	26"	10" & 12"	1/2 CONNECTOR + 3/8"	3/4"	3"	4"	1-1/2"	3"	5-1/2"
1/0AWG 1/0AWG Y 1/0AWG	26"	10" & 12"	1/2 CONNECTOR + 3/8"	3/4"	3"	4"	1-1/2"	3"	5-1/2"

OPTION	CABLE SIZE IN	CABLE SIZE OUT	TAP	TYPE OF SPLICE
UWSL1/0	400-3/C	400-3/C	1/0-3/C	BRANCH
UWSL400	750-3/C	750-3/C	400-3/C	BRANCH
UWSL750	1/0-3/C	1/0-3/C	1/0-3/C	Y
UWSL750	400-3/C	400-3/C	400-3/C	Y

13.2 kV			
PLATE	Item	QTY	Description
<b>UWSL*400B</b>	COBCO028	5	CONDUCTOR BARE COPPER NO.4 SOL SOFT DRAWN
	ADCMI010	1	COMPOUND INSULATING 2 GAL.
	CNNSO__	3	CONNECTOR HALF DUPLEX SOLDER 400-400-1/0
	INSCA001	6	INSULATOR, CABLE RACK
	PIPLE__	26	PIPE LEAD 5-1/2 IN. ID
	SOLTL002	25	SOLDER 40/60 1.5 LB. BAR
	TAPEL003	6	TAPE FIBERMAT
	TAPEL004	6	TAPE, ARC/FIRE PROOFING
	TAPEL014	1	TAPE CU SHIELDING BRAID TINNED
<b>UWSL*750B</b>	COBCO028	5	CONDUCTOR BARE COPPER NO. 4 SOL SOFT DRAWN
	ADCMI010	1	COMPOUND INSULATING 2 GAL.
	CNNSO__	3	CONNECTOR HALF DUPLEX SOLDER 750-750-400
	INSCA001	6	INSULATOR, CABLE RACK
	PIPLE__	30	PIPE LEAD 6-1/2 IN. ID
	SOLTL002	25	SOLDER 40/60 1.5 LB BAR
	TAPEL003	10	TAPE FIBERMAT
	TAPEL004	6	TAPE, ARC/FIRE PROOFING
	TAPEL014	1	TAPE CU SHIELDING BRAID TINNED
<b>UWSL*1/0Y</b>	COBCO028	5	CONDUCTOR BARE COPPER NO. 4 SOL SOFT DRAWN
	ADCMI010	1	COMPOUND INSULATING 2 GAL.
	CNNSO__	3	CONNECTOR HALF DUPLEX 1/0-1/0-1/0
	INSCA001	6	INSULATOR, CABLE RACK
	PIPLE__	26	PIPE LEAD 4-1/2 IN. ID
	SOLTL002	25	SOLDER 40/60 1.5 LB BAR
	TAPEL003	5	TAPE FIBERMAT
	TAPEL004	6	TAPE, ARC/FIRE PROOFING
	TAPEL014	1	TAPE CU SHIELDING BRAID TINNED
<b>UWSL*400Y</b>	COBCO028	5	CONDUCTOR BARE COPPER NO. 4 SOL SOFT DRAWN
	ADCMI010	1	COMPOUND INSULATING 2 GAL.
	CNNSO__	3	CONNECTOR HALF DUPLEX SOLDER 400-400-400
	INSCA001	6	INSULATOR, CABLE RACK
	PIPLE__	26	PIPE LEAD 4-1/2 IN. ID
	SOLTL002	25	SOLDER 40/60 1.5 LB BAR
	TAPEL003	5	TAPE FIBERMAT
	TAPEL004	6	TAPE, ARC/FIRE PROOFING
	TAPEL014	1	TAPE CU SHIELDING BRAID TINNED

## UWSL

### LEAD SPLICE FOR PAPER CABLE, 1 WAY / 4 WAY



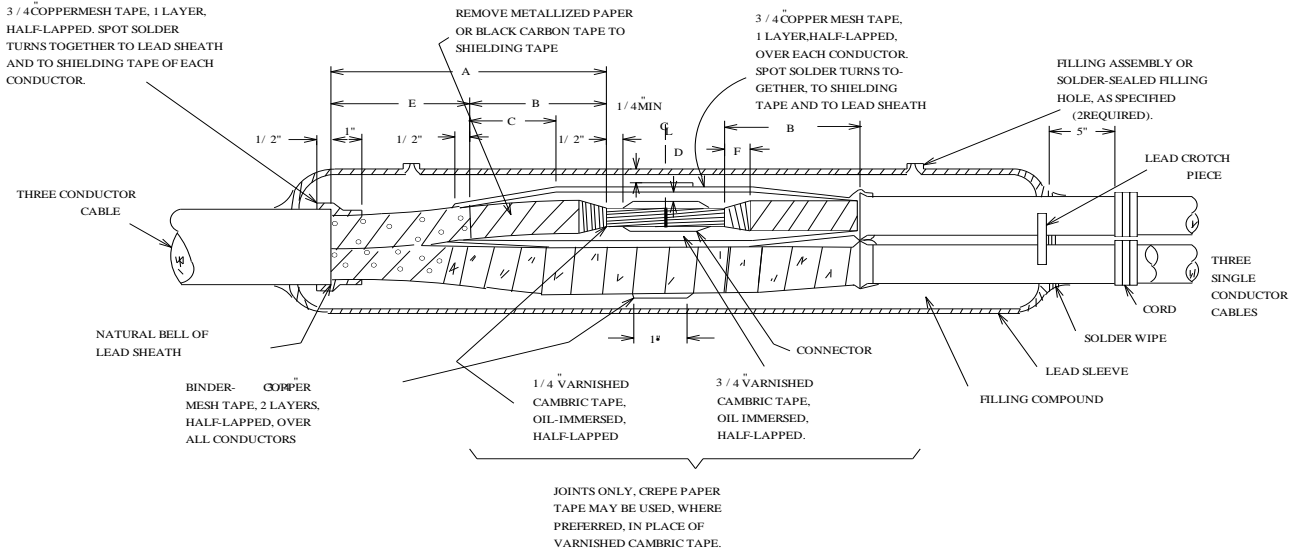
DIMENSIONS									
CABLE SIZE	A	B	C	D	E	E-1	G	H	ID
400KCM 400KCM B 1/0AWG	26"	10" & 12"	1/2 CONNECTOR + 3/8"	3/4"	3"	4"	1-1/2"	3"	5-1/2"
1/0AWG 1/0AWG Y 1/0AWG	26"	10" & 12"	1/2 CONNECTOR + 3/8"	3/4"	3"	4"	1-1/2"	3"	5-1/2"

OPTION	CABLE SIZE IN	CABLE SIZE OUT	TAP	TYPE OF SPLICE
UWSL*400W	400-3/C	400-3/C	3-1/0-1/C	1 WAY / 4 WAY
UWSL*1/0W	1/0-3/C	1/0-3/C	3-1/0-1/C	1 WAY / 4 WAY

13.2 kV			
PLATE	ITEM	QTY	DESCRIPTION
<b>UWSL*400W</b>	COBCO028	5	CONDUCTOR BARE COPPER NO. 4 SOL SOFT DRAWN
	ADCMI010	1	COMPOUND INSULATING 2 GAL.
	CNNSO___	3	CONNECTOR HALF DUPLEX 400-400-1/0
	INSCA001	6	INSULATOR, CABLE RACK
	PIPLE___	26	PIPE LEAD 4-1/2 IN. ID
	SOLTL002	25	SOLDER 40/60 1.5 LB BAR
	TAPEL003	6	TAPE FIBERMAT
	TAPEL004	6	TAPE, ARC/FIRE PROOFING
	TAPEL014	1	TAPE CU SHIELDING BRAID TINNED
<b>UWSL*1/0W</b>	COBCO028	5	CONDUCTOR BARE COPPER NO. 4 SOL SOFT DRAWN
	ADCMI010	1	COMPOUND INSULATING 2 GAL.
	CNNSO___	3	CONNECTOR HALF DUPLEX SOLDER 1/0-1/0-1/0
	INSCA001	6	INSULATOR, CABLE RACK
	PIPLE___	26	PIPE LEAD 5-1/2 IN. ID
	SOLTL002	25	SOLDER 40/60 1.5 LB BAR
	TAPEL003	5	TAPE FIBERMAT
	TAPEL004	6	TAPE, ARC/FIRE PROOFING
	TAPEL014	1	TAPE CU SHIELDING BRAID TINNED



## UWSL LEAD SPLICE FOR PAPER CABLE, TRIFURCATING



DIMENSIONS							
VOLTAGE RATING	A	B	C	D	D	E*	F
15 kV	9" - 11"	6"	3"	P 3/8"	VC 7/16"	3" - 5"	3/4"

"D" COLUMN: P – For Paper Insulated Cable  
VC – For Varnished Cambric Insulated Cable

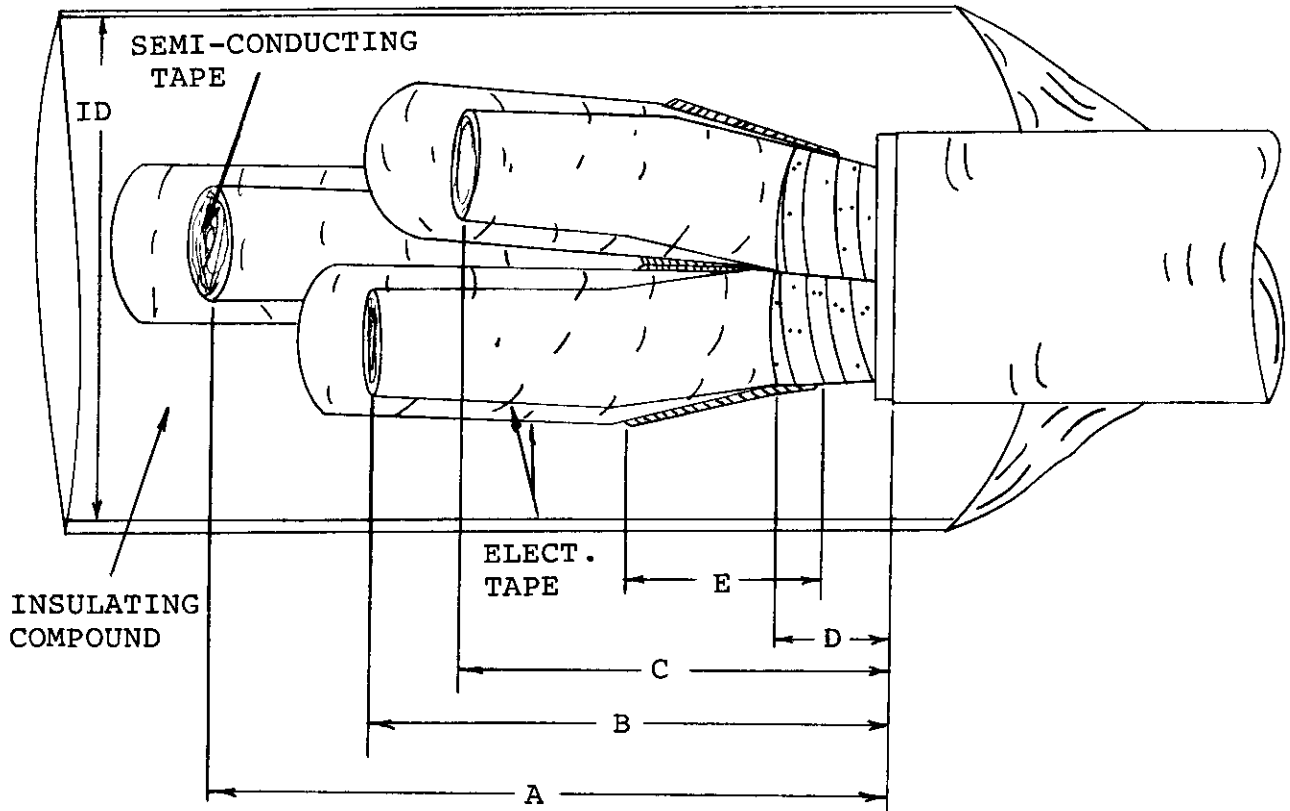
"e" COLUMN: The Upper Limit Applies To Larger Cables

OPTION	CABLE SIZE IN	CABLE SIZE OUT
UWSL*1/0T	1/0-3/C	(3) 1/0-1/C
UWSL*400T	400-3/C	(3) 400-1/C
UWSL*750T	750-3/C	(3) 750-1/C

13.2 KV			
PLATE	ITEM	QTY	DESCRIPTION
<b>UWSL*1/0T</b>	COBCO 028	5	CONDUCTOR BARE COPPER NO. 4 SOL SOFT DRAWN
	ADCMI 010	1	COMPOUND INSULATING 2 GAL.
	CNNSO ___	3	CONNECTOR SPLIT SOLDER 1/0 CU
	INSCA 001	6	INSULATOR, CABLE RACK
	PIPLE ___	26	PIPE LEAD 4 IN. ID
	SOLTL 002	25	SOLDER 40/60 1.5 LB BAR
	TAPEL 003	6	TAPE FIBERMAT
	TAPEL 004	6	TAPE, ARC/FIRE PROOFING
	TAPEL 014	1	TAPE CU SHIELDING BRAID TINNED
<b>UWSL*400T</b>	COBCO028	5	CONDUCTOR BARE COPPER NO. 4 SOL SOFT DRAWN
	ADCMI010	1	COMPOUND INSULATING 2 GAL.
	CNNSO ___	3	CONNECTOR SPLIT SOLDER 400CM CU
	INSCA001	6	INSULATOR, CABLE RACK
	PIPLE ___	26	PIPE LEAD 5-1/2 IN. ID
	SOLTL002	25	SOLDER 40/60 1.5 LB BAR
	TAPEL003	5	TAPE FIBERMAT
	TAPEL004	6	TAPE, ARC/FIRE PROOFING
	TAPEL014	5	TAPE CU SHIELDING BRAID TINNED
<b>UWSL*750T</b>	COBCO028	5	CONDUCTOR BARE COPPER NO. 4 SOL SOFT DRAWN
	ADCMI010	1	COMPOUND INSULATING 2 GAL.
	CNNSO ___	3	CONNECTOR SPLITSOLDER 750MCM CU
	INSCA001	6	INSULATOR, CABLE RACK
	PIPLE ___	26	PIPE LEAD 6-1/2 IN. ID
	SOLTL002	25	SOLDER 40/60 1.5 LB BAR
	TAPEL003	5	TAPE FIBERMAT
	TAPEL004	6	TAPE, ARC/FIRE PROOFING
	TAPEL014	1	TAPE CU SHIELDING BRAID TINNED

# UWSL

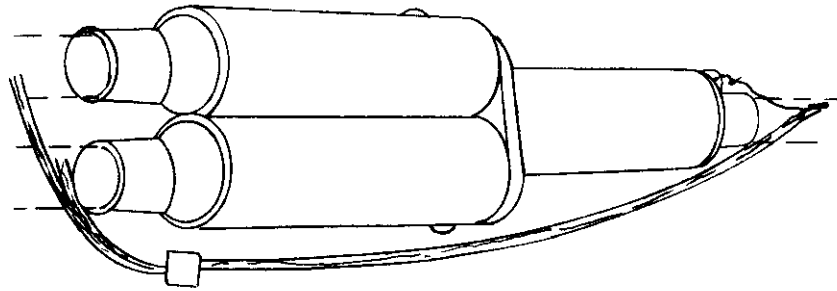
## LEAD SPLICE FOR PAPER CABLE HOT BUTT



DIMENSIONS						
CABLE SIZE	A	B	C	D	E	ID
1/0AWG	14"	12"	10"	3"	3"	4"
400KCM	14"	12"	10"	3"	3"	5"
750KCM	16"	14"	12"	3"	3"	6"

OPTION	CABLE SIZE IN
UWSL*1/0HB	1/0-3/C
UWSL*400HB	400-3/C
UWSL*750HB	750-3/C

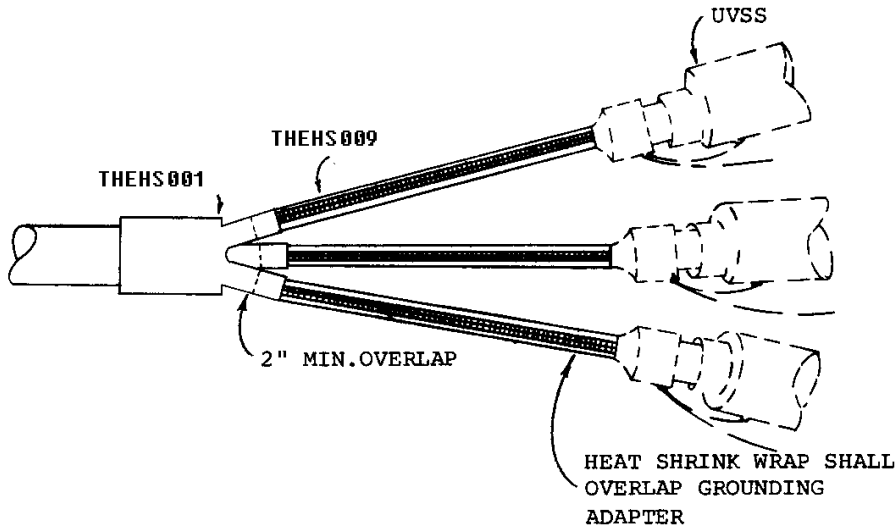
13.2 KV			
PLATE	ITEM	QTY	DESCRIPTION
<b>UWSL*1/0HB</b>	COBCO028	5	CONDUCTOR BARE COPPER NO. 4 SOL SOFT DRAWN
	ADDMI 010	1	COMPOUND INSULATING 2 GAL.
	PIPLE__	18	PIPE LEAD 3 IN. ID
	SOLTL 002	5	SOLDER 40/60 1.5 LB BAR
	TAPEL 003	3	TAPE FIBERMAT
<b>UWSL*400HB</b>	COBCO028	5	CONDUCTOR BARE COPPER NO. 4 SOL SOFT DRAWN
	ADDMI010	1	COMPOUND INSULATING 2 GAL.
	PIPLE__	18	PIPE LEAD 5 IN. ID
	SOLTL002	5	SOLDER 40/60 1.5 LB BAR
	TAPEL003	3	TAPE FIBERMAT
<b>UWSL*750HB</b>	COBCP028	5	CONDUCTOR BARE COPPER NO. 4 SOL SOFT DRAWN
	ADDMI010	1	COMPOUND INSULATING 2 GAL.
	PIPLE__	26	PIPE LEAD 6 IN. ID
	SOLTL002	25	SOLDER 40/60 1.5 LB BAR
	TAPEL003	5	TAPE FIBERMAT

**UVSY****PRIMARY WYE SPLICE 200 AMPS PREMOULDED UVSY, MAINTENANCE ONLY**

ITEM	QUANTITY	DESCRIPTION
SPLWY 002 (OBSOLETE)	1	ALUMINUM "Y" SPLICE 2AL/CU

# UVST

## PRIMARY SPLICE, BREAKOUT, PILC

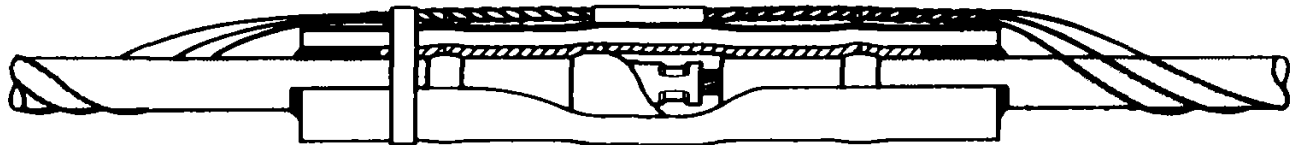


NOTE:  
 SPLICES (PLATE UVSS) TO BE  
 CALLED FOR IN ADDITION TO  
 THIS PLATE.

ITEM	QUANTITY	DESCRIPTION
THEHS 001	1	HEAT SHRINK BREAKOUT
THEHS 009	3	HEAT SHRINK WRAP

# UVSH

## PRIMARY SPLICE KIT, STRAIGHT, HEAT SHRINK



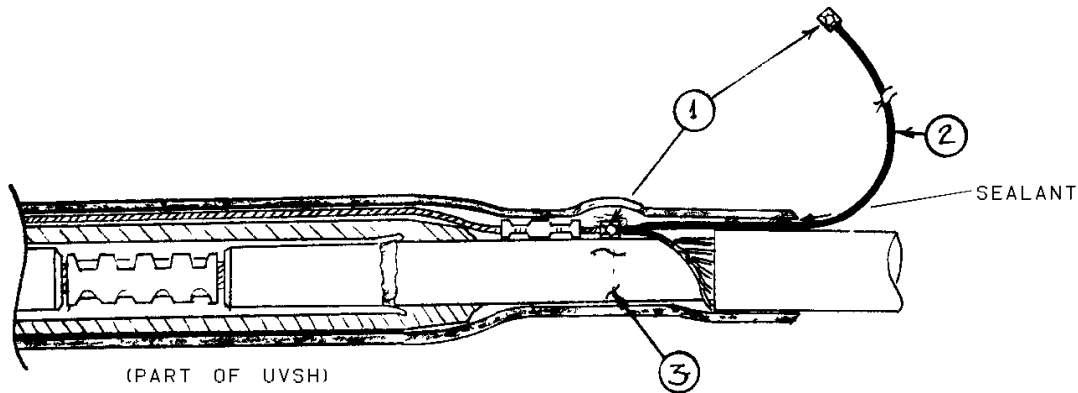
25KV CONCENTRIC NEUTRAL CABLE SPLICE		
OPTION	QUANTITY	SPLICE KIT
UVSH*1/0	1	SPLST007 with 2 THEHS008
UVSH*1/0-T	1	SPLTR101 with THEHS008
UVSH*350	1	SPLSH 003
UVSH*1000	1	SPLSH 004

15KV FLAT STRAP NEUTRAL CABLE SPLICE		
OPTION	QUANTITY	SPLICE KIT
UVSH*750	1	SPLIN001

# UVSH

## JACKETED HEAT SHRINK SPLICE GROUNDING

JACKETED HEAT SHRINK SPLICE  
GROUNDING INSTRUCTIONS



ITEM ID	QUANTITY	DESCRIPTION
CNSB001	2	SPLIT BOLT CONNECTOR, #6-#2
COBCO028	10	CONDUCTOR, BARE COPPER, NO. 4 SOL, SOFT DRAWN
TAPEL009	1	TAPE, VINYL
TAPHS003	1	TAPE, HEAT SHRINK, SEALANT

**INSTRUCTIONS:**

Before installing overall splice jacket, attach No.4 sol copper ground lead to twisted concentric wires with split bolt connector. Lay connector flat against the cable and wrap with vinyl tape to cover and protect splice jacket from any sharp edges. Apply sealant tape around No. 4 bare copper conductor in the area where cable jacket and splice jacket overlap. Shrink splice jacket. Connect second split bolt connector to manhole ground lead.

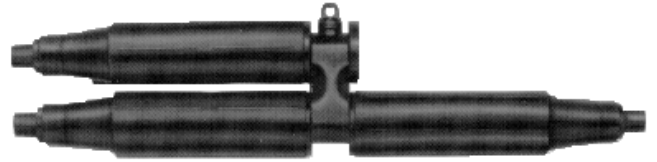


# UVSY-

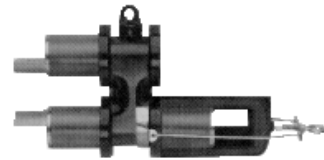
## 15\*1, 15\*2, 15\*3, 15\*5, 15\*6, 15\*7

PRIMARY 15KV WYE SPLICE 600 AMPS

**DEADBREAK  
SEPARABLE WYE  
SPLICE**



**SEPARABLE  
WYE-JOINT  
THREE - WAY  
SHOWN WITHOUT  
CABLE BOOTS**



INSULATED CAP SHOWN

PLATE EXAMPLE	ITEM ID	QTY	DESCRIPTION
UVSY-15*1	SPLWY003	1	15KV, 600 AMPS, 3 WAY INSULATED BUS BAR WITH TEST POINT. (750-750-1/0)
UVSY-15*2	SPLWY004	1	15KV, 600 AMPS, 3 WAY INSULATED BUS BAR WITH TEST POINT. (750-750-350)
UVSY-15*3	SPLWY008	1	15KV, 600 AMPS, 3 WAY INSULATED BUS BAR WITH TEST POINT. (1/0-1/0-1/0)
UVSY-15*5	SPLWY004	1	15KV 600 AMPS WYE SPLICE 750 FLAT STRAP
UVSY-15*6	SPLWY009	1	15KV, 600 AMPS, 3 WAY INSULATED BUS BAR WITH TEST POINT. (750-750-750)
UVSY-15*7	SPLWY007	1	15KV, 600 AMPS, 3 WAY INSULATED BUS BAR WITH TEST POINT. (750-1/0-1/0)

**NOTE:**

The operating accessory can be plated on an individual basis as needed:  
Insulated cap with bail: I.SPLWY005



INSULATED CAP WITH BAIL

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# TERMINATIONS

## CONSTRUCTION NOTES

Plates UVT1, UVT2, UVT3, UVT4 strap cable every 3' starting at ground level.

For fuse size lettering see FN in Identification Section. (Overhead Distribution Standards Manual)

Use TAPCON MAXI set screws on wood/concrete poles to fasten cable guard and conduit strap.

(I.ANCST003 C and I.ANCST04 W)

Top bolt of terminator bracket to be mounted 38 inches from bottom bolt of fuse cutout/arrestor bracket.

Bond mounting bracket and cable concentric to pole ground. See Overhead Grounding Section.

For Overhead Portion, see Riser Pole Section.

For Detailing Engineer:

OPTIONS	OPTIONS	OPTIONS
UVT1C*2	UVT3C*1/0T	UVT5 (1000 only)
UVT1W*2	UVT3 W*1/0T	UVT6*2
UVT1C*1/0	UVT3C*350	UVT6*1/0P
UVT1W*1/0	UVT3W*350	UVT6*1/0R
UVT2C*2	UVT4C*350	UVT6*350P
UVT2W*2	UVT4W*350	UVT6*350R
UVT2C*1/0	UVT4C*400	UVT6*1000P
UVT2W*1/0	UVT4W*400	UVT6*1000R
UVT3C*2	UVT4C*750	UVT7*2L (Loadbreak)
UVT3W*2	UVT4W*750	UVT7*1/0L (Loadbreak)
UVT3C*1/0	UVT4C*1000	UVT10C*1000
UVT3W*1/0	UVT4W*1000	UVT10W*1000

Options for Plate UVT8/UWT8 are as follows:

CABLE SIZE	OPTIONS PLUG 1	OPTIONS PLUG 2
350KCM, 28kV	CP, DF	CP, DM, AB
750KCM, 15kV	CP, DF	CP, DM, AB
1000KCM, 28KV	CP, DF	CP, DM, AB

Options for Plate UWPH\* for Poly Cable:

**OPTIONS:**

- UWPH\*400PP [PP-POLY (cable), PORCELAIN (termination)]
- UWPH\*750PP [PR-POLY (cable), RUBBER (termination)]
- UWPH\*400PR
- UWPH\*750PR

**NOTE:**

Rubber stress cones to be used in enclosure(s) and on appropriate overhead brackets where specified.

Options for UWPH\*LEAD CABLE terminations:

SINGLE CONDUCTOR	THREE CONDUCTOR
UWPH*400	UWPH*400-3
UWPH*750	UWPH*750-3

For Fault Indicator Installation, see Plate UVF5 (System Protection Section) for application guidelines.

Riser Plug Kits (CODKT001) are included in plates UVT1, UVT2, UVT3, and UVT4.

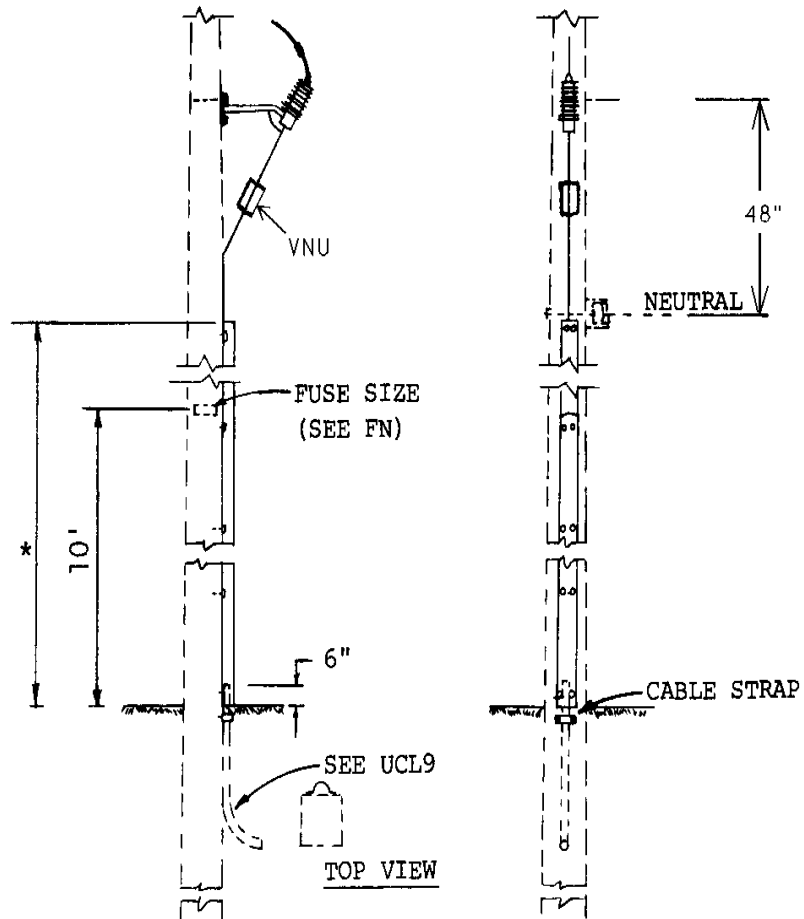
To extend the cable guard 40" above the point at which BellSouth connects on existing riser poles, call for the following Additional Plates:

ADDITIONAL PLATES	
PLATE	DESCRIPTION
GUARDC * 2	20' of 2" cable guard with anchors for concrete poles.
GUARDC * 5	20' of 5" cable guard with anchors for concrete poles.
GUARDW * 2	20' of 2" cable guard with staples for wood poles.
GUARDW * 5	20' of 5" cable guard with staples for wood poles.

**UVT1C\*** \_ (Concrete Option)

**UVT1W\*** \_ (Wood Option)

**RISER POLE, ONE CABLE**



See Construction Notes for options.

\*See Construction Note 13.

**UVT1 BASIC**

ITEM	QTY	DESCRIPTION
BKTEM001	1	BRACKET, CUTOFF/ ARRESTER SINGLE
BKTEM002	1	BRACKET, MOUNTING FOR TERMINATOR
BOLMS020	1	BOLT, MACHINE SQ. HEAD 5/8 X 14 INCH
CAIRH010	3	CABLE, NO. 4 COVERED S.D. COPPER, FT
CNNT001	1	CONNECTOR, CU. COMP. SIDE-BY 2-1/0 2-1/0 STR.
CNNVG004	2	CONNECTOR, 2 SOL-2/0 / TAP 2SOL-2/0 VISE GRIP PARALLEL, BRONZE
CODKT001	1	KIT, RISER PLUG
GUACA001	3	GUARD, PLASTIC CABLE 2 INCH X 10 FT SCH. 40 PVC.
NUTPG300	30	NUT, 1/4"-20, HEX, PLATED GD 8
NUTSL003	1	LOCKNUT, SQ. M-F 5/8 INCH
STPST001	10	STRAP, CONDUIT 1 HOLE 1 INCH
WASRD002	30	WASHER, ROUND 1 DIA. FOR 3/8 INCH BOLT
WASSF003	1	WASHER, SQ. FLAT 2-1/4 SQ. X 3/16 INCH FOR 5/8 INCH BOLT

**UVT1C\*1/0**

ITEM	QTY	DESCRIPTION
ANCST003	1	TAPCON MAXI SET SCREW ANCHOR, 1/4" X 1 3/4" (Concrete)
CAICL001	40	CABLE, 1/0, 28 KV, SINGLE CONDUCTOR, AL.
TRMCA015	1	TERMINATOR, CABLE, 35-KV, 1/0-AWG

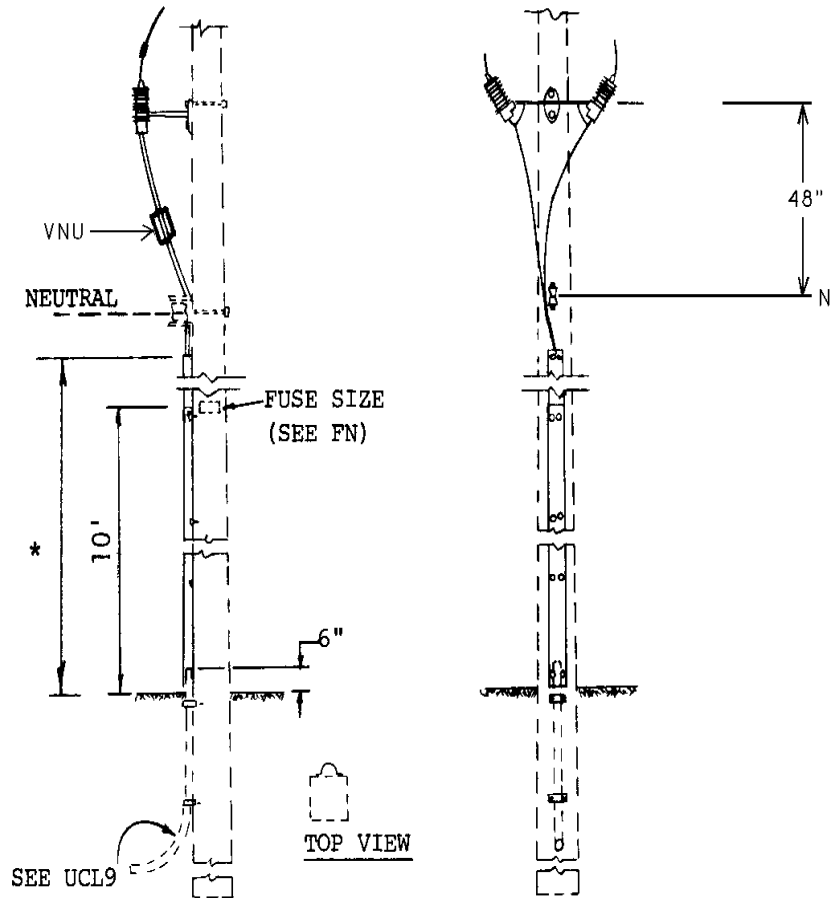
**UVT1W\*1/0**

ITEM	QTY	DESCRIPTION
ANCST004	1	TAPCON MAXI SET SCREW ANCHORS, 1/4" X 2 1/4" (Wood)
CAICL001	40	CABLE, 1/0, 28 KV, SINGLE CONDUCTOR, AL.
TRMCA015	1	TERMINATOR, CABLE, 35-KV, 1/0-AWG

**UVT2C\*** \_ (Concrete Option)

**UVT2W\*** \_ (Wood Option)

**RISER POLE, TWO CABLES**



See Construction Notes for options.

\*See Construction Note 13.

## UVT2 BASIC

ITEM	QTY	DESCRIPTION
BOLMS020	1	BOLT, MACHINE SQ. HEAD 5/8 X 14 INCH
BKTEM001	1	BRACKET, CUTOUT/ ARRESTER SINGLE
BKTEM003	1	BRACKET, TERMINATOR/ POTHEAD MOUNTING TRIPLE
CAIRH010	6	CABLE, NO. 4 COVERED S.D. COPPER, FT
CNNT001	2	CONNECTOR, CU. COMP. SIDE-BY 2-1/0 2-1/0 STR.
CNNVG004	2	CONNECTOR, 2 SOL-2/0 / TAP 2SOL-2/0 VISE GRIP PARALLEL, BRONZE
CODKT001	1	KIT, RISER PLUG
GUACA002	3	GUARD, PLASTIC CABLE 5-INCH X 10 FT SCH. 40 PVC.
NUTPG300	30	NUT, 1/4"-20, HEX, PLATED GD 8
NUTSL003	1	LOCKNUT, SQ. M-F 5/8 INCH
STPST001	20	STRAP, CONDUIT 1 HOLE 1 INCH
WASRD002	30	WASHER, ROUND 1 DIA. FOR 3/8 INCH BOLT
WASSF002	1	WASHER, SQUARE FLAT, 2 1/4" SQ X 3/16", 5/8" BOLT SIZE, GALVANIZED

## UVT2C\*1/0

ITEM	QTY	DESCRIPTION
ANCST003	1	TAPCON MAXI SET SCREW ANCHOR, 1/4" X 1 3/4" (Concrete)
CAICL001	90	CABLE, 1/0, 28 KV, SINGLE CONDUCTOR, AL.
TRMCA015	2	TERMINATOR, CABLE, 35-KV, 1/0-AWG

## UVT2W\*1/0

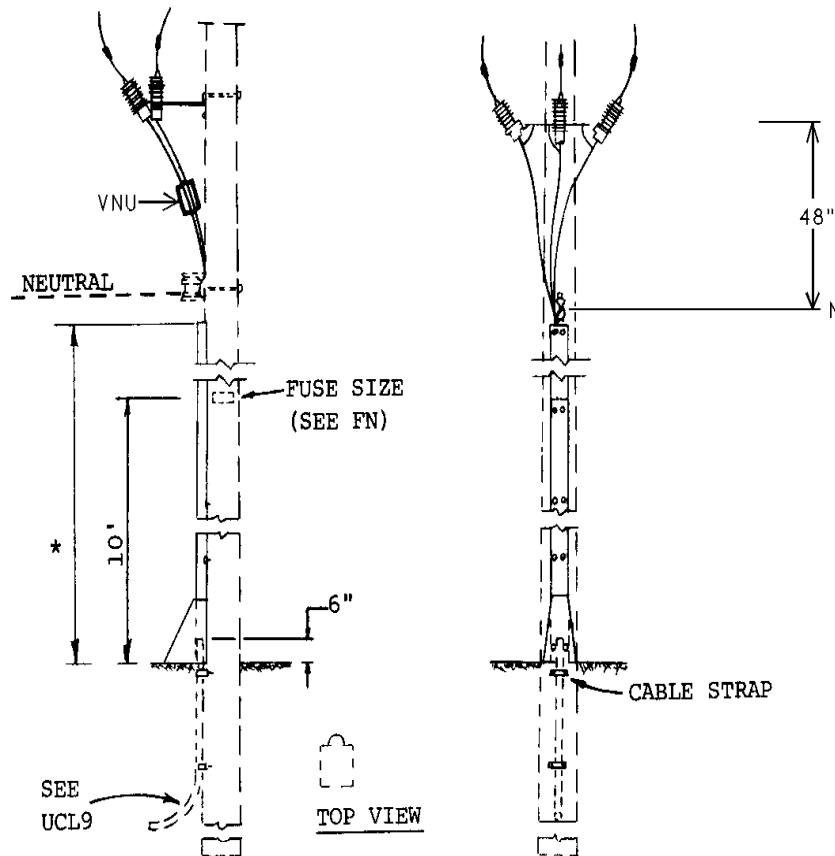
ITEM	QTY	DESCRIPTION
ANCST004	1	TAPCON MAXI SET SCREW ANCHORS, 1/4" X 2 1/4" (Wood)
CAICL001	90	CABLE, 1/0, 28 KV, SINGLE CONDUCTOR, AL.
TRMCA015	2	TERMINATOR, CABLE, 35-KV, 1/0-AWG



**UVT3C \* \_ (Concrete Option)**

**UVT3 W \* \_ (Wood Option)**

**RISER POLE, THREE CABLES**



See Construction Notes for options.  
 \*See Construction Note 13.

## UVT3 BASIC

ITEM	QTY	DESCRIPTION
BOLMS020	2	BOLT, MACHINE SQ. HEAD 5/8 X 14 INCH
BKTEM001	1	BRACKET, CUTOUT/ ARRESTER SINGLE
BKTEM003	1	BRACKET, TERMINATOR/ POTHEAD MOUNTING TRIPLE
CAIRH010	4	CABLE, NO. 4 COVERED S.D. COPPER, FT
CNNT001	2	CONNECTOR, CU. COMP. SIDE-BY 2-1/0 2-1/0 STR.
CNNVG006	2	CONNECTOR, 1/0-4/0 / 10 SOL-4/0, VISE- GRIP PARALLEL, BRONZE
COBCO028	9	CONDUCTOR, #4 SOLID, SOFT DRAWN, BARE COPPER
CODKT001	1	KIT, RISER PLUG
GUACA002	3	GUARD, PLASTIC CABLE 5-INCH X 10 FT SCH. 40 PVC.
NUTPG300	30	NUT, 1/4"-20, HEX, PLATED GD 8
NUTSL003	1	LOCKNUT, SQ. M-F 5/8 INCH
STPST005	10	STRAP, CONDUIT 1 HOLE 2 INCH
WASRD002	30	WASHER, ROUND 1 DIA. FOR 3/8 INCH BOLT
WASSF003	1	WASHER, SQ. FLAT 2-1/4 SQ. X 3/16 INCH FOR 5/8 INCH BOLT

## UVT3C\*1/0

ANCST003	1	TAPCON MAXI SET SCREW ANCHOR, 1/4" X 1 3/4" (Concrete)
CAICL001	135	CABLE, 1/0, 28 KV, SINGLE CONDUCTOR, AL.
TRMCA015	3	TERMINATOR, CABLE, 35-KV, 1/0-AWG

## UVT3W\*1/0

ANCST004	1	TAPCON MAXI SET SCREW ANCHORS, 1/4" X 2 1/4" (Wood)
CAICL001	135	CABLE, 1/0, 28 KV, SINGLE CONDUCTOR, AL.
TRMCA015	3	TERMINATOR, CABLE, 35-KV, 1/0-AWG

## UVT3C\*1/0T

ANCST003	1	TAPCON MAXI SET SCREW ANCHOR, 1/4" X 1 3/4" (Concrete)
CAICL002	45	CABLE, 1/0, 28 KV, THREE CONDUCTOR, AL
TRMCA015	3	TERMINATOR, CABLE, 35-KV, 1/0-AWG

## UVT3W\*1/0T

ANCST004	1	TAPCON MAXI SET SCREW ANCHORS, 1/4" X 2 1/4" (Wood)
CAICL002	45	CABLE, 1/0, 28 KV, THREE CONDUCTOR, AL
TRMCA015	3	TERMINATOR, CABLE, 35-KV, 1/0-AWG

## UVT3C\*350

ANCST003	1	TAPCON MAXI SET SCREW ANCHOR, 1/4" X 1 3/4" (Concrete)
CAICL005	135	CABLE, 350 KCM 28 KV, SINGLE CONDUCTOR, AL
TRMCA016	3	TERMINATOR, CABLE, 35-KV, 350-KCM

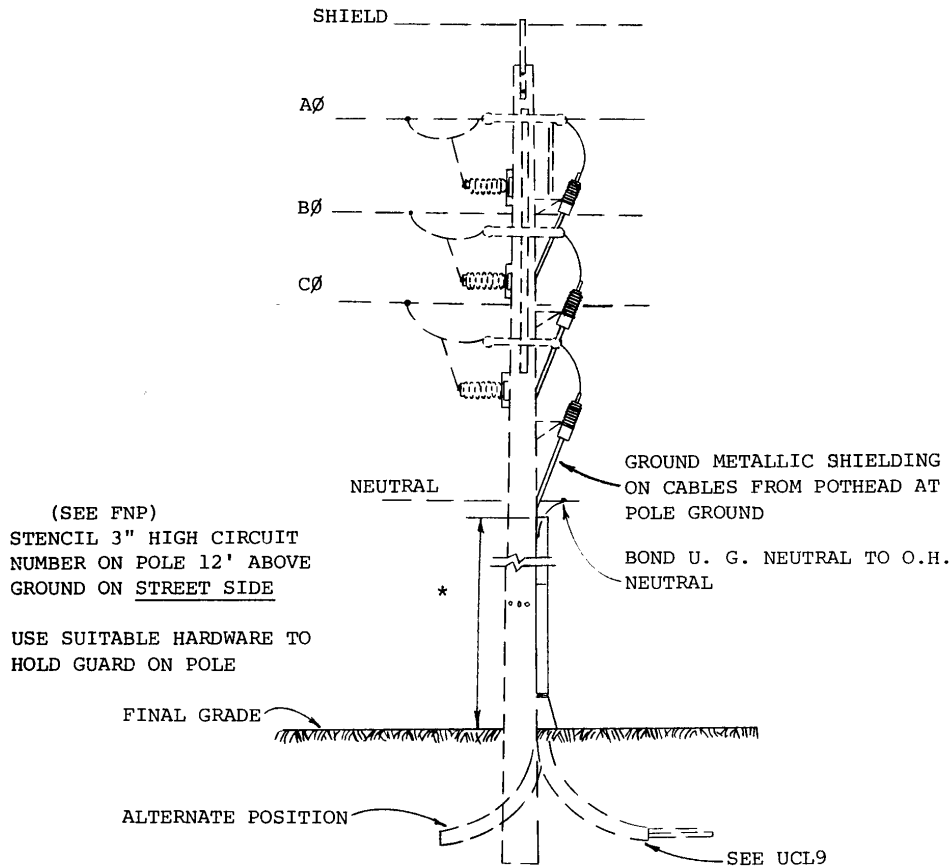
## UVT3W\*350

ANCST004	1	TAPCON MAXI SET SCREW ANCHORS, 1/4" X 2 1/4" (Wood)
CAICL005	135	CABLE, 350 KCM 28 KV, SINGLE CONDUCTOR, AL
TRMCA016	3	TERMINATOR, CABLE, 35-KV, 350-KCM

**UVT4C \* \_ (Concrete Option)**

**UVT4W \* \_ (Wood Option)**

**RISER POLE, THREE CABLES, FEEDER**



[\\*See Construction Note 13.](#)

ITEM	QTY	DESCRIPTION
BOLMS020	6	BOLT, MACHINE, 5/8" X 14", SQUARE HEAD GALVANIZED STEEL
CNNCP001	3	CONNECTOR, #1, 6-4 MAIN, 6-4 TAP, PARALLEL TAP, ALUMINUM
CNNVG004	7	CONNECTOR, VISE TYPE 2 SOL-1/0
COBCO039	30	CONDUCTOR, 500 KCM, 37 STRAND, HARD DRAWN, BARE COPPER
CODKT001	1	KIT, RISER PLUG
GUACA003	3	GUARD, PLASTIC CABLE 6-INCH X 10 FT SCH. 40 PVC.
NUTSL003	6	LOCKNUT, SQ. M-F 5/8 INCH
STPST005	4	STRAP, CONDUIT 2- HOLE 2 INCH
STPST008	5	STRAP, CONDUIT 2-HOLE 4 INCH
WASRD002	50	WASHER, ROUND 1 DIA. FOR 3/8 INCH BOLT
WASSF002	6	WASHER, SQ. FLAT 2-1/4 SQ. X 3/16 INCH FOR 5/8 BOLT

### UVT4C\*350 / UVT4W\*350

ANCST003	1	TAPCON MAXI SET SCREW ANCHOR, 1/4" X 1 3/4" (Concrete)
ANCST004	1	TAPCON MAXI SET SCREW ANCHORS, 1/4" X 2 1/4" (Wood)
BKTEM001	3	BRACKET, EQUIPMENT MOUNT, SINGLE
BKTEM002	3	BRACKET, EQUIPMENT MOUNT, ADAPTER PLATE
CAICL005	120	CABLE, 350 KCM 28 KV, SINGLE CONDUCTOR, AL., POLY
TRMCA016	3	TERMINATOR, CABLE, 35-KV, 350-KCM

### UVT4C\*400 / UVT4W\*400

ANCST003	1	TAPCON MAXI SET SCREW ANCHOR, 1/4" X 1 3/4" (Concrete)
ANCST004	1	TAPCON MAXI SET SCREW ANCHORS, 1/4" X 2 1/4" (Wood)
BKTEM001	3	BRACKET, EQUIPMENT MOUNT, SINGLE
BKTEM002	3	BRACKET, EQUIPMENT MOUNT, ADAPTER PLATE

### UVT4C\*750 / UVT4W\*750

ANCST003	1	TAPCON MAXI SET SCREW ANCHOR, 1/4" X 1 3/4" (Concrete)
ANCST004	1	TAPCON MAXI SET SCREW ANCHORS, 1/4" X 2 1/4" (Wood)
BKTEM001	3	BRACKET, EQUIPMENT MOUNT, SINGLE
BKTEM002	3	BRACKET, EQUIPMENT MOUNT, ADAPTER PLATE
CAICL012	120	CABLE, 350 KCM 28 KV, SINGLE CONDUCTOR, AL
CAIRH005	40	CABLE, 4/0, 19 STRAND, COPPER
TRMCA003	3	TERMINATOR, CABLE, 750 KCM

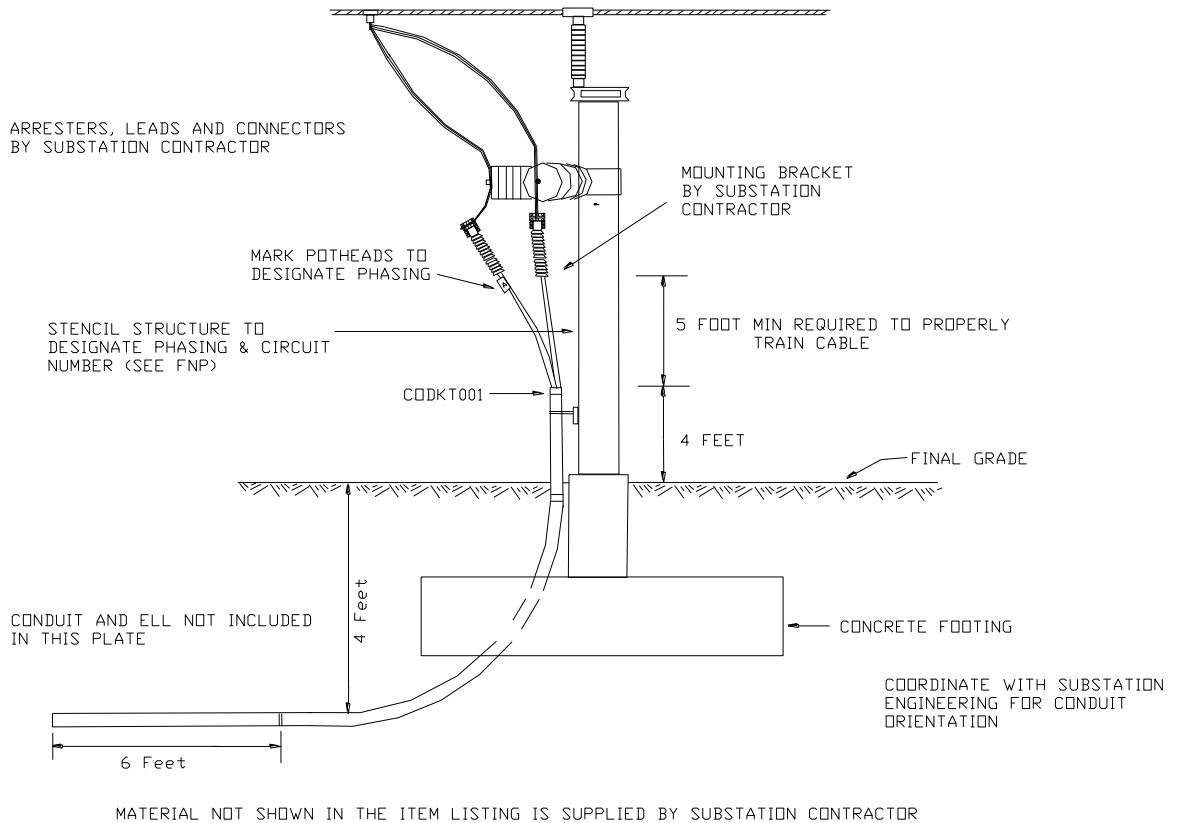
### UVT4C\*1000 / UVT4W\*1000

ANCST003	1	TAPCON MAXI SET SCREW ANCHOR, 1/4" X 1 3/4" (Concrete)
ANCST004	1	TAPCON MAXI SET SCREW ANCHORS, 1/4" X 2 1/4" (Wood)
BKTEM001	3	BRACKET, EQUIPMENT MOUNT, SINGLE
BKTEM002	3	BRACKET, EQUIPMENT MOUNT, ADAPTER PLATE
CAICL011	120	CABLE, 1000 KCM, 28 KV, SINGLE CONDUCTOR AL., POLY
CAIRH005	40	CABLE, 4/0, 19 STRAND, COPPER
TRMCA017	3	TERMINATOR, CABLE, 35-KV, 1000-KCM

## UVT5 (POLY CABLE)

## UVT5E (EPR CABLE)

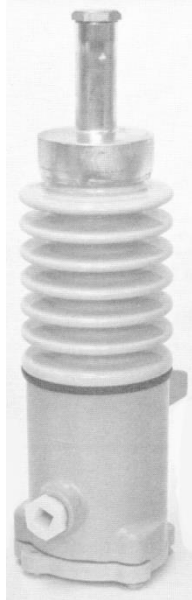
### RISER, SUBSTATION STRUCTURE THREE CABLES, FEEDER



See construction notes for options.

ITEM	QTY	DESCRIPTION
BOLMH008	15	BOLT, MACHINE, 1/2" X 2" HEX HEAD TIN PLATED BRONZE
CAICL011	25	CABLE, 1000 KCM, 28 KV, SINGLE CONDUCTOR AL., POLY
CAIRH005	15	CABLE, 4/0, 19 STRAND, COPPER
CNNCP026	3	STUD CONNECTOR, THREADED
CNNVG004	2	CONNECTOR, 2 SOL-2/0 / TAP 2SOL-2/0 VISE GRIP PARALLEL, BRONZE
CODKT001	1	KIT, RISER PLUG
GRICA001	3	GRIP, CABLE
INSTB002	6	INSULATOR, DOUBLE PLASTIC FOR TERMINATOR
LUGAR001	3	LUG, AERIAL
NUTPG500	15	NUT, 1/2"-13, HEX
SCWHG517	15	SCREW, 1/2"-13 X 2", HEX HEAD CAP
TRMCA017	3	TERMINATOR, CABLE, 35-KV, 1000-KCM

# UVT6\* EQUIPMENT TERMINATOR



**Porcelain Terminator**  
(TRM CA009) (Maintenance only)



**Rubber Terminator (Pre-Molded)**  
(TRMCA002)

15 kV MANHOLE DUCTBANK AERIAL LUG APPLICATION			
PLATE	ITEM	QTY	DESCRIPTION
UVT6*750R	TRMCA003	1	TERMINATOR; FLAT STRAP CU 750MCM 15KV
	ADPCA040	1	ADAPTER; CABLE GROUND, 4/0,28KV
	COBCO039	5	CONDUCTOR; BARE CU 500MCM 37 STR MHD

15 kV MANHOLE DUCTBANK 2-HOLE NEMA PAD APPLICATION			
PLATE	ITEM	QTY	DESCRIPTION
UVT6*750P	TRMCA021	1	TERMINATOR; FLAT STRAP CU 750MCM 15KV
	ADPCA040	1	ADAPTER; CABLE GROUND, 4/0,28KV
	COBCO039	5	CONDUCTOR; BARE CU 500MCM 37 STR MHD

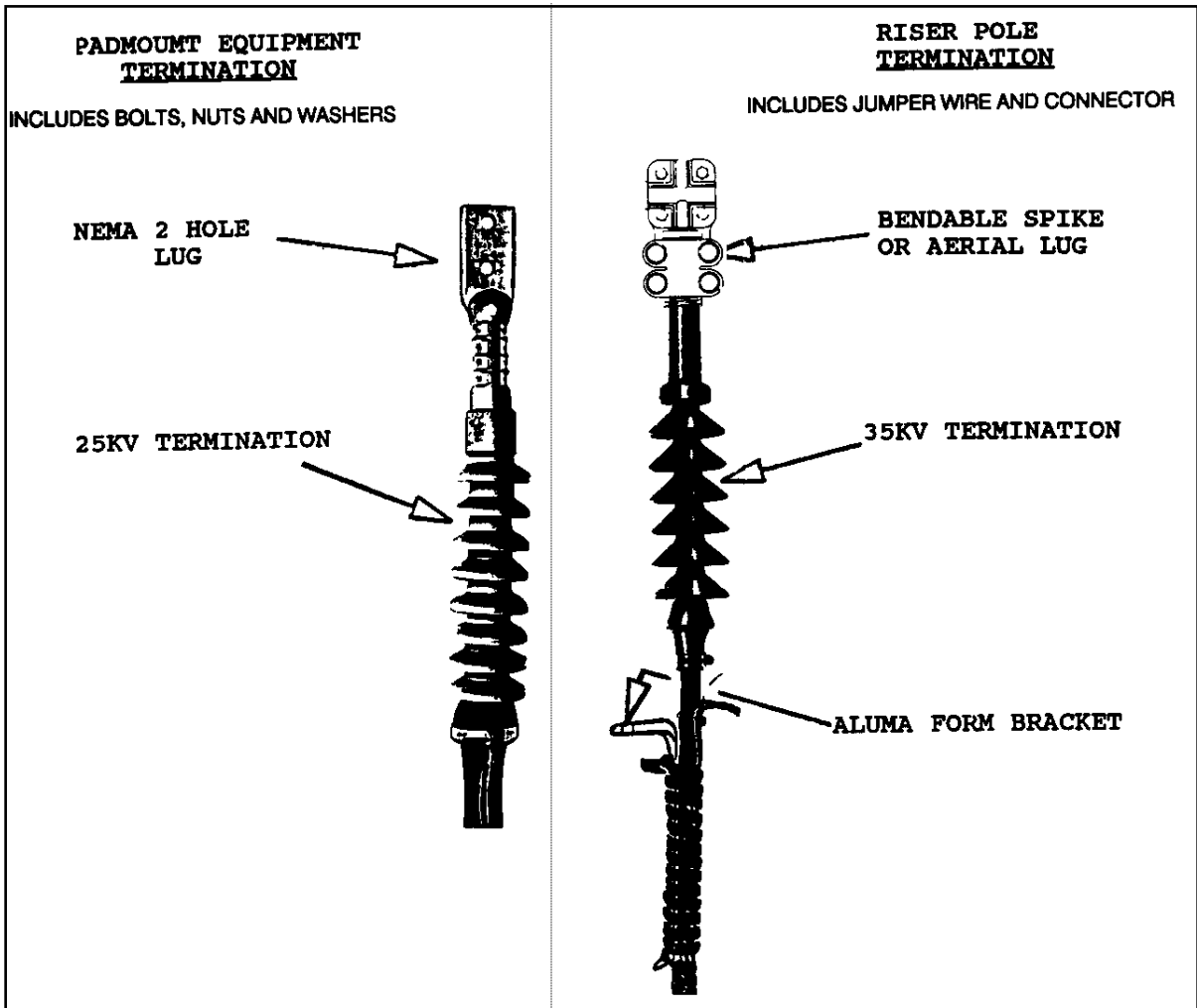
**NOTES:**

If porcelain terminators are required, remove the rubber terminators from the material and itemize in the porcelain terminator and bracket.

TRMCA009 – TERMINATOR, PORCELAIN, 15KV, 750KCM AL CABLE

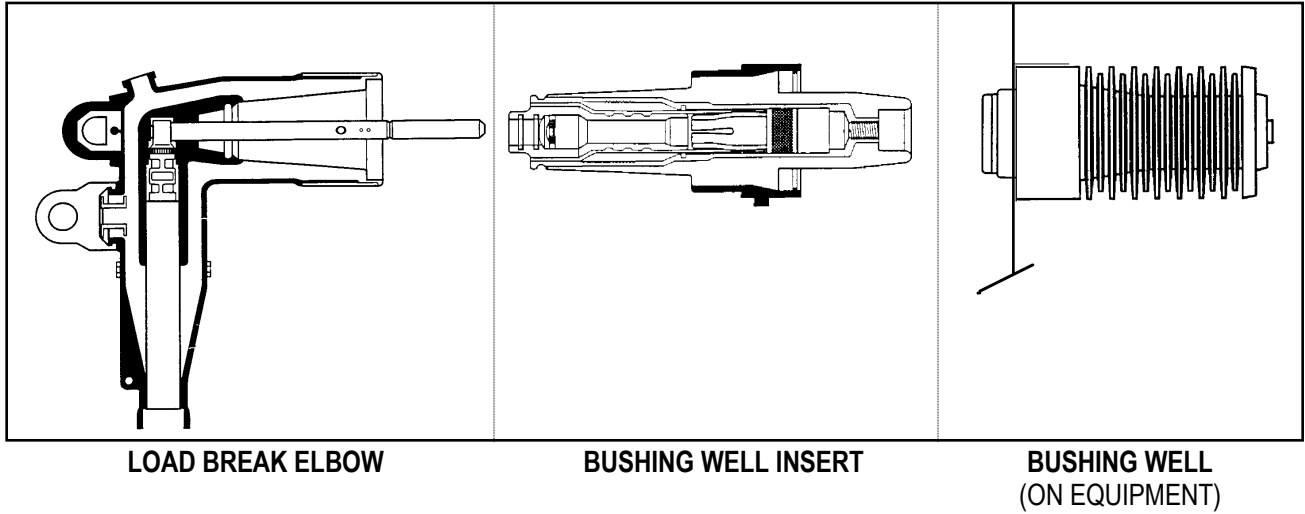
BKTCT001 – BRACKET, CABLE TERMINAL, SINGLE TERMINATOR

# UVT6\* EQUIPMENT AND RISER TERMINATIONS



APPLICATION	PLATE NAME	ITEM ID	QTY	DESCRIPTION
PADMOUNT	UVT6*1/0P	TRMCA018	1	TERMINATOR KIT, 1/0 25KV
	UVT6*350P	TRMCA019	1	TERMINATOR KIT, 350KCM 25KV
	UVT6*1000P	TRMCA020	1	TERMINATOR KIT, 1000KCM 25KV
RISER POLE	UVT6*1/0R	TRMCA015	1	TERMINATOR KIT, 1/0 35KV
	UVT6*350R	TRMCA016	1	TERMINATOR KIT, 350KCM 35KV
	UVT6*1000R	TRMCA017	1	TERMINATOR KIT, 1000KCM 35KV

**UVT7\***  
**DEAD FRONT TERMINATION ELBOW TYPE`**  
**200 AMP LOAD BREAK**

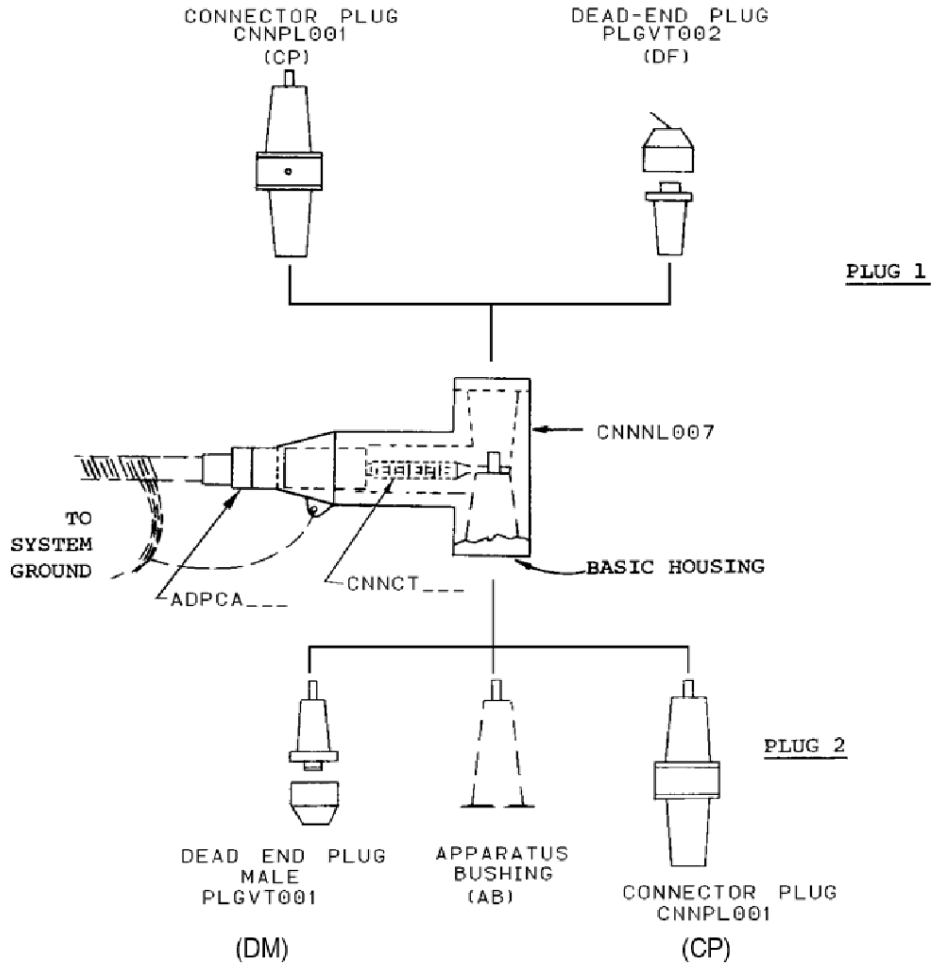


**PLATE OPTIONS:**  
 UVT7\*2L – # 2 AWG CABLE  
 UVT7\*1/0L – 1/0 AWG CABLE

ITEM	QTY	DESCRIPTION
CNNLB001	1	CONNECTOR LOAD BREAK ELBOW, 1/0 AWG



## UVT8\* - - - UWT8\* - - - PRIMARY TEE ASSEMBLY



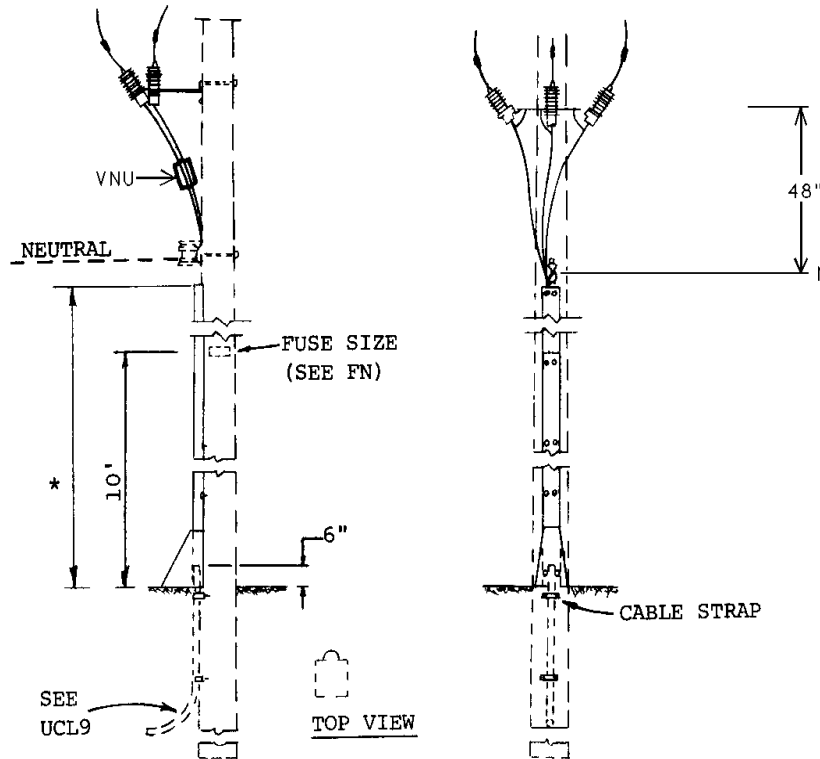
See construction notes for options.

ITEM	QTY	DESCRIPTION
ADPCA	1	ADAPTOR, CABLE GENERAL CODE
C>NNCT	1	CONTACT, CONDUCTOR GENERAL CODE
C>NNL001	1	CONNECTOR, ELBOW 600A
C>NNPL001	2	PLUG, CONNECTING 25 KV600 AMP PLUG #1 AND #2
PLGVT002	1	PLUG, DEADEND 25 KV W/ TEST CAP PLUG #1 Female
PLGVT001	1	PLUG, INSULATING 25 KV W/ TEST CAP PLUG #2 Male

## UVT10C \*1000 (Concrete Option)

## UVT10W \*1000 (Wood Option)

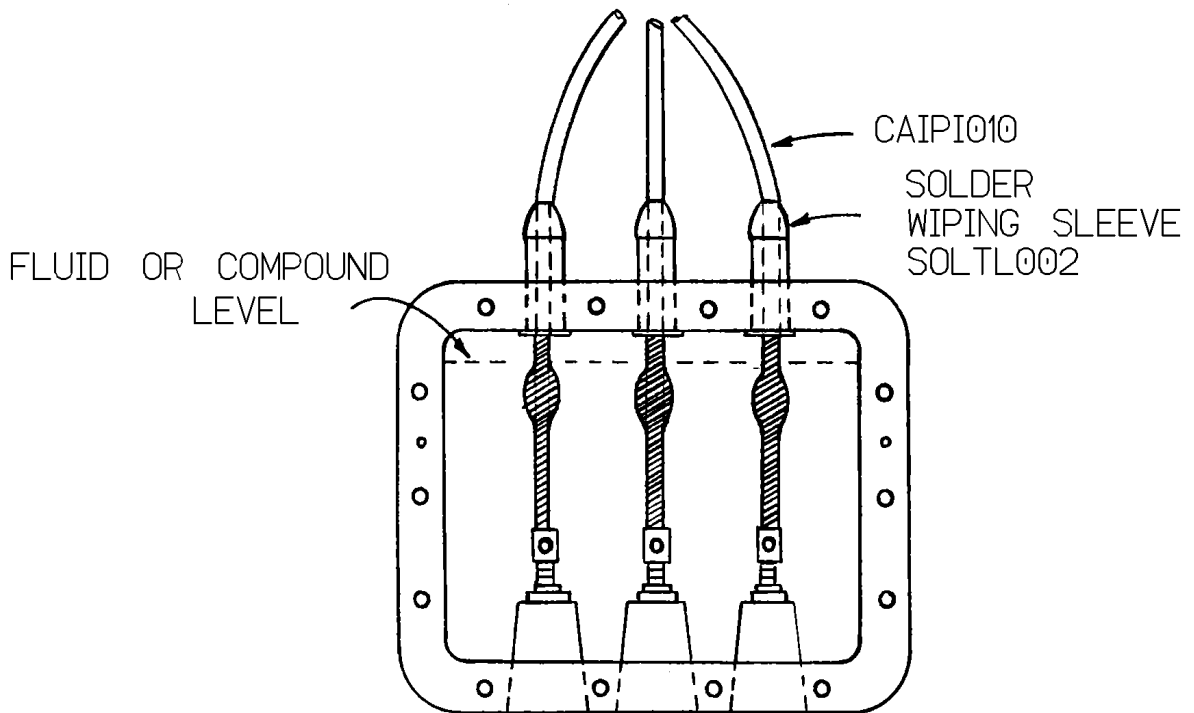
### RISER POLE, THREE CABLES 1000 KCM



ITEM	QTY	DESCRIPTION
ANCST003	1	TAPCON MAXI SET SCREW ANCHOR, 1/4" X 1 3/4" (Concrete)
ANCST004	1	TAPCON MAXI SET SCREW ANCHORS, 1/4" X 2 1/4" (Wood)
BKTEM002	3	BRACKET, EQUIPMENT MOUNT, ADAPTER PLATE
BOLMS020	6	BOLT, MACHINE, 5/8" X 14", SQUARE HEAD GALVANIZED STEEL
CAICL011	120	CABLE, 1000 KCM, 28 KV, SINGLE CONDUCTOR AL., POLY
CAIRH005	40	CABLE, 4/0, 19 STRAND, COPPER
CNNCP001	3	CONNECTOR, #1, 6-4 MAIN, 6-4 TAP, PARALLEL TAP, ALUMINUM
CNNVG004	7	CONNECTOR, VISE TYPE 2 SOL-1/0
COBCO039	30	CONDUCTOR, 500 KCM, 37 STRAND, HARD DRAWN, BARE COPPER
CODKT001	1	KIT, RISER PLUG
GUACA003	3	GUARD, PLASTIC CABLE 6-INCH X 10 FT SCH. 40 PVC.
NUTSL003	6	LOCKNUT, SQ. M-F 5/8 INCH
STPST005	4	STRAP, CONDUIT 2- HOLE 2 INCH
STPST008	5	STRAP, CONDUIT 2-HOLE 4 INCH
TRMCA017	3	TERMINATOR, CABLE, 35-KV, 1000-KCM
WASRD002	50	WASHER, ROUND 1 DIA. FOR 3/8 INCH BOLT
WASSF002	6	WASHER, SQ. FLAT 2-1/4 SQ. X 3/16 INCH FOR 5/8 BOLT

# UWT10

## NETWORK TRANSFORMER PRIMARY TERMINATION



PRIMARY JUNCTION BOX

Manufacturer Drawings will be supplied for Spot Network Applications.

ITEM	QTY	DESCRIPTION
CAIPI010	75	CABLE, PILC 27KV 1/0 CU 1/C
ADCMI010	25	COMPOUND, INSULATING (PETROLATUM)
ADCSP013	1	PASTE, SOLDER
SOLT002	10	SOLDER, 40/60 1.5 LB. BAR
TAPEL003	12	TAP, FIBERMAT
TAPEL014	3	TAPE, TINNED COPPER CONDUCTOR SHIELDING

## UWPH\* POTHEAD TERMINATOR SINGLE CONDUCTOR

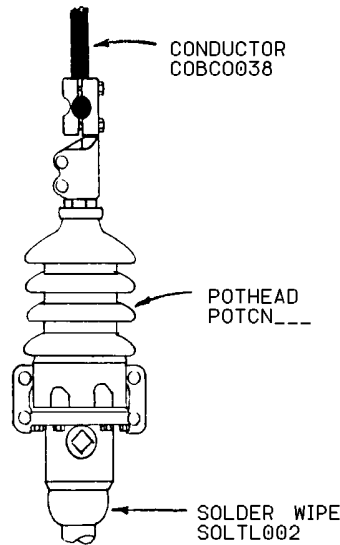
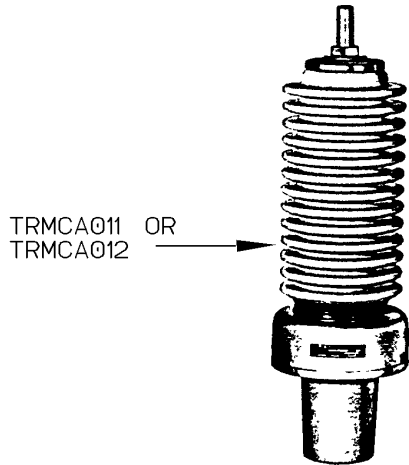


PLATE	ITEM	QTY	DESCRIPTION
UWPH*1/0	COBCO038	5	CONDUCTOR, BARE CU 500 MCM
	ADCMI010	1	COMPOUND, INSULATING 2 GAL
	INSTB001	1	INSULATOR, SINGLE PLASTIC
	POTCN_---	1	POTHEAD, SINGLE CONDUCTOR 1/0, 15KV
	SOLTL002	10	SOLDER, 40/60 1.5 LB. BAR
	TAPEL003	2	TAPE, FIBERMAT
	TAPEL004	2	TAPE, ARC/ FIRE PROOFING
	TAPEL014	1	TAPE, CU SHIELDING BRAID TINNED
UWPH*400	COBCO038	5	CONDUCTOR, BARE CU 500 MCM
	ADCMI010	1	COMPOUND, INSULATING 2 GAL
	INSTB001	1	INSULATOR, SINGLE PLASTIC
	POTCN_---	1	POTHEAD, SINGLE CONDUCTOR 500 MCM
	SOLTL002	10	SOLDER, 40/60 1.5 LB. BAR
	TAPEL003	2	TAPE, FIBERMAT
	TAPEL004	2	TAPE, ARC/ FIRE PROOFING
	TAPEL014	1	TAPE, CU SHIELDING BRAID TINNED
UWPH*750	COBCO038	5	CONDUCTOR, BARE CU 500 MCM
	ADCMI010	1	COMPOUND, INSULATING 2 GAL
	INSTB001	1	INSULATOR, SINGLE PLASTIC
	POTCN_---	1	POTHEAD, SINGLE CONDUCTOR 750 MCM
	SOLTL002	10	SOLDER, 40/60 1.5 LB. BAR
	TAPEL003	2	TAPE, FIBERMAT
	TAPEL004	2	TAPE, ARC/ FIRE PROOFING
	TAPEL014	1	TAPE, CU SHIELDING BRAID TINNED

# UWPH\*<sub>—</sub>

## POTHEAD TERMINATOR, SINGLE CONDUCTOR, POLY



**Porcelain Terminator**



**Rubber Terminator**

PLATE	ITEM	QTY	DESCRIPTION
UWPH*400PR	COBCO035	5	CONDUCTOR, BARE CU 300 MCM STR SOFT DRAWN
	TRMCA001	1	TERMINATOR, CABLE 400 MCM CU 15 KV RUBBER
UWPH*750PR	COBCO039	5	CONDUCTOR, BARE CU 500 MCM STR HARD DRAWN
	TRMCA003	1	TERMINATOR, CABLE 750 MCM CU 15 KV RUBBER
UWPH*1000PR	COBCO039	5	CONDUCTOR, BARE CU 500 MCM STR HARD DRAWN
	TRMCA006	1	TERMINATOR, CABLE 1000 MCM CU 15 KV RUBBER
UWPH*400PP	BKTCT001	1	BRACKET, CABLE TERMINAL SINGLE TERMINATOR
	COBCO035	5	CONDUCTOR, BARE CU 300 MCM STR SOFT DRAWN
	TRMCA011	1	TERMINATOR, CABLE 400 MCM CU 15 KV PORCELAIN
UWPH*750PP	BKTCT001	1	BRACKET, CABLE TERMINAL SINGLE TERMINATOR
	COBCO039	5	CONDUCTOR, BARE CU 500 MCM STR HARD DRAWN
	TRMCA012	1	TERMINATOR, CABLE 750 MCM CU 15 KV PORCELAIN

# UWPH\* \_

## POTHEAD TERMINATOR THREE CONDUCTOR

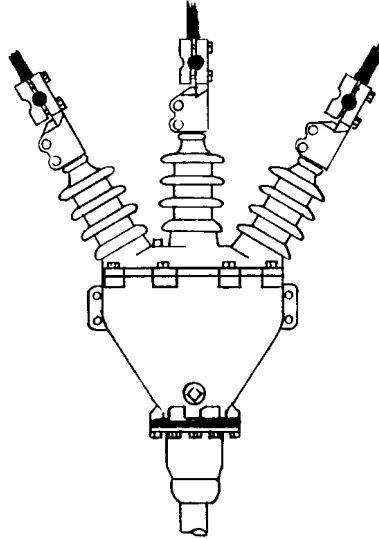


PLATE	ITEM	QTY	DESCRIPTION
UWPH*400-3	CLAIC001	1	CLAMP, MAPLE WOOD MOUNTING
	COBCO028	5	CONDUCTOR, BARE CU #4 SOL SOFT DRAWN
	ADCMIO10	2	COMPOUND, INSULATING 2 GAL
	POTCN_ _ _	1	POTHEAD, THREE CONDUCTOR 500 MCM 15 KV
	SOLTL002	15	SOLDER, 40/60 1.5 LB. BAR
	TAPEL003	6	TAPE, FIBERMAT
	TAPEL004	3	TAPE, ARC/ FIRE PROOFING
	TAPEL014	1	TAPE, CU SHIELDING BRAID TINNED
UWPH*750-3	CLAIC001	1	CLAMP, MAPLE WOOD MOUNTING
	COBCO028	5	CONDUCTOR, BARE CU #4 SOL SOFT DRAWN
	ADCMIO10	2	COMPOUND, INSULATING 2 GAL
	POTCN_ _ _	1	POTHEAD, THREE CONDUCTOR 750 MCM 15 KV
	SOLTL002	15	SOLDER, 40/60 1.5 LB. BAR
	TAPEL003	6	TAPE, FIBERMAT
	TAPEL004	3	TAPE, ARC/ FIRE PROOFING
	TAPEL014	1	TAPE, CU SHIELDING BRAID TINNED

# TRANSFORMERS

## CONSTRUCTION NOTES

Underground tags and labels are located in the Identification Section.

For Pit or Pad Details, see Pads Section.

For Installation of Pipe Barricades, see Pad Details.

For Primary Termination of Transformer, see Termination Section.

For Secondary Termination of Transformer, see Secondary Section.

For Detailing Engineer: The following is a list showing the appropriate Network Protector corresponding with the appropriate Network Transformer.

AMP RATING	NETWORK PROTECTOR ITEM ID.	NETWORK TRANSFORMER PLATE
1875	PROTR001 (SUB)	UWGNT * 500 / 216
2500	PROTR002 (SUB)	UWGNT * 750 / 216
1875	PROTR003 (NON-SUB)	UWGNT * 1000 / 1500
2825	PROTR004 (NON-SUB)	UWGNT * 1500 / 2250
1875	PROTR006 (SUB)	UWGNT * 1000 and UWGNT * 1500
2825	PROTR007 (SUB)	UWGNT * 2000

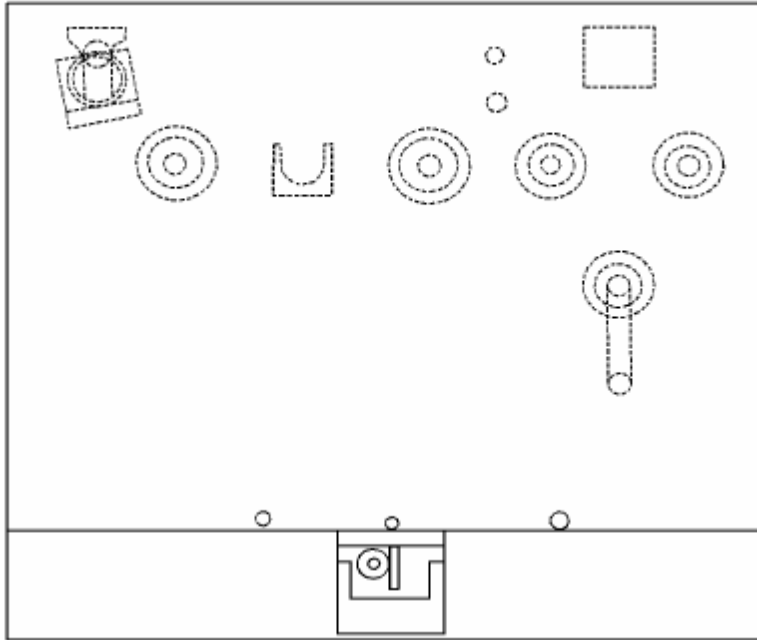
## ADDITIONAL PLATES

### TRANSFORMER / EQUIPMENT PAINTING

Contractor shall furnish all labor and materials except the paint for the finish coat. All loose paint, scale dirt, concrete and other debris shall be removed prior to painting. All bare metal shall be primed with a JEA approved commercial grade primer. The entire surface to be painted shall be sanded (wire brushed). Just prior to painting, the entire surface shall be thoroughly cleaned with a commercial finish cleaner / reducer.

PLATE	DESCRIPTION	UNIT
PAINT-1	PAINT 1PH XFMR / EQUIP.	EA
PAINT-3	PAINT 3PH XFMR / EQUIP.	EA

**UVGA\*  
 UWGA\*  
 URGA\*  
 SINGLE PHASE PADMOUNT**



OPTIONS:	
<b>VOLTAGE:</b>	V = 25,565 / 14,706V
	W = 13,200 / 7620V
	R = 4160 / 2400V
<b>SIZES:</b>	25, 50, 75, 100, 167
<b>EXAMPLES:</b>	UVGA*75
	UWGA*50
	URGA*167

**NOTES:**

1. Plates include secondary connector kits.
2. No livefront or mini-pad transformer will be returned to service after removed from the system.



## ALL PLATES

PLATE	ITEM	QTY	DESCRIPTION
All Plates Include	BOLMS015	2	BOLT, MACHINE, SQ. HEAD 5/8" X 2"
	CLATG001	1	CLAMP, TRANSFORMER TANK GROUND
	CNNVG004	2	CONNECTOR, VISE GRIP PARALLEL
	COBCO028	5	CONDUCTOR, BARE COPPER #4 S.D.
	INDCF004	1	INDICATOR, CABLE FAULT, 400 AMP
	LOCPA001	1	PADLOCK, BRASS 1-3/4" SHANK

## UVGA

SINGLE PHASE PADMOUNT – 25,565/14,706 V			
PLATE	ITEM	QTY	DESCRIPTION
UVGA * 25	TRAMP014	1	TRANSFORMER, PADMOUNT 1 PHASE 25KVA
UVGA * 50	TRAMP009	1	TRANSFORMER, PADMOUNT 1 PHASE 50KVA
UVGA * 75	TRAMP010	1	TRANSFORMER, PADMOUNT 1 PHASE 75KVA
UVGA * 100	TRAMP011	1	TRANSFORMER, PADMOUNT 1 PHASE 100KVA
UVGA * 167	TRAMP012	1	TRANSFORMER, PADMOUNT 1 PHASE 67KVA

## UWGA

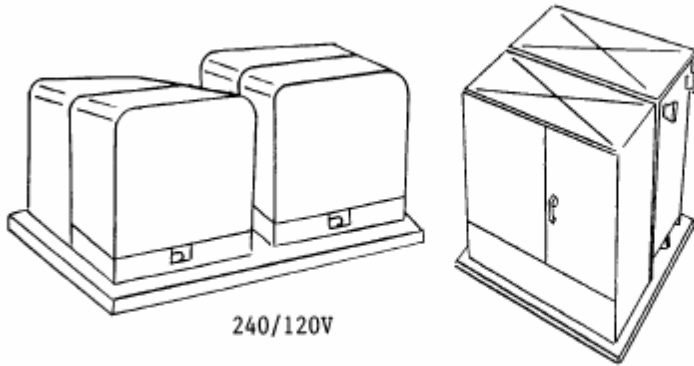
SINGLE PHASE PADMOUNT – 13,200/7,620 V			
PLATE	ITEM	QTY	DESCRIPTION
UWGA * 25	TRAMP013	1	TRANSFORMER, PADMOUNT 1 PHASE 25KVA
UWGA * 50	TRAMP005	1	TRANSFORMER, PADMOUNT 1 PHASE 50KVA
UWGA * 75	TRAMP006	1	TRANSFORMER, PADMOUNT 1 PHASE 75KVA
UWGA * 100	TRAMP007	1	TRANSFORMER, PADMOUNT 1 PHASE 100KVA
UWGA * 167	TRAMP008	1	TRANSFORMER, PADMOUNT 1 PHASE 167KVA

## URGA

SINGLE PHASE PADMOUNT – 4,160/2,400 V			
PLATE	ITEM	QTY	DESCRIPTION
URGA * 25	TRAMP000	1	TRANSFORMER, PADMOUNT 1 PHASE 25KVA
URGA * 50	TRAMP001	1	TRANSFORMER, PADMOUNT 1 PHASE 50KVA
URGA * 75	TRAMP002	1	TRANSFORMER, PADMOUNT 1 PHASE 75KVA
URGA * 100	TRAMP003	1	TRANSFORMER, PADMOUNT 1 PHASE 100KVA
URGA * 167	TRAMP004	1	TRANSFORMER, PADMOUNT 1 PHASE 167KVA

# UVGB

## THREE PHASE PADMOUNT OPEN DELTA



FOR REMOVAL ONLY  
 240/120V  
 100/25 KVA  
 100/100 KVA

OPTIONS:			
<b>VOLTAGE:</b>	25,565 / 14760 V		
	13,200 / 7620 V		
	4160 / 2400 V		
<b>SIZES:</b>	SINGLE UNIT	26 kV	UVGB*100 / 25 and UVGB*100 / 100 (REMOVAL ONLY)
	TWO SINGLE PHASE UNIT	26 kV	50, 75, 100, 167 kVA
		13 kV	50, 75, 100, 167 kVA
		4 kV	50, 75, 100, 167 kVA
<b>EXAMPLE:</b>	UVGB*100 / 25 (REMOVAL ONLY)		

**NOTE:**

When using single phase transformers to build an open delta bank, plate using single phase plates.

**EXAMPLE:**

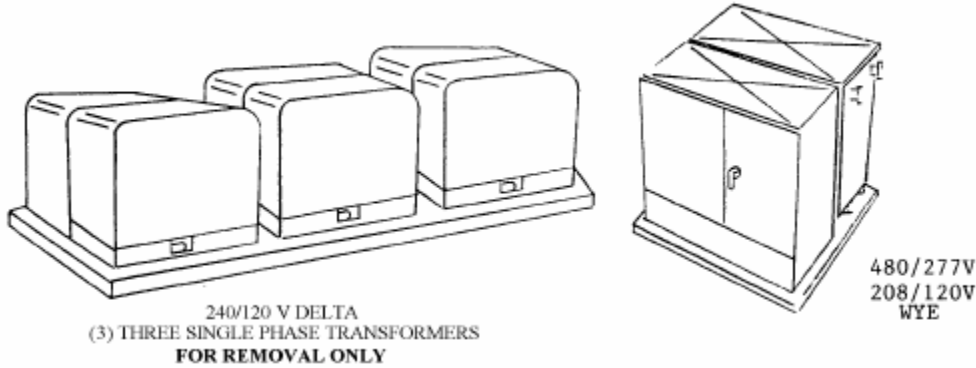
For a 26 kV, 100 / 75 open delta plate one UVGA\*100 and one UVGA\*75

THREE PHASE PADMOUNT – OPEN DELTA – 25,565/14,706 V			
PLATE	ITEM	QTY	DESCRIPTION
<b>UVGB * 100 / 25 (REMOVAL ONLY)</b>	BM22	2	BOLT, MACHINE, SQ. HEAD 5/8" X 2"
	BN01	16	BOLT, MACHINE, HEX. HEAD 1/2" X 1-1/2"
	CC21	1	CONNECTOR, TRANSF. TANK GRND. #6-#1 S
	CL12	5	CONDUCTOR, BARE COPPER #4 SOFT DRAWN
	TS42	1	TRANSFORMER, PADMOUNT DPLX
	PA12	1	PADLOCK, BRASS 1-3/4" SHANK
	WE03	16	WASHER, SHAKE PROOF LOCK 1/2"
<b>UVGB * 100 / 100 (REMOVAL ONLY)</b>	BM22	2	BOLT, MACHINE, SQ. HEAD 5/8" X 2"
	BN01	16	BOLT, MACHINE, HEX. HEAD 1/2" X 1-1/2"
	CC21	1	CONNECTOR, TRANSF. TANK GRND. #6-#1 S
	CL12	5	CONDUCTOR, BARE COPPER #4 SOFT DRAWN
	TS42	1	TRANSFORMER, PADMOUNT DPLX
	PA12	1	PADLOCK, BRASS 1-3/4" SHANK
	WE03	16	WASHER, SHAKE PROOF LOCK 1/2"

**NOTE:**

Plate all new open delta installations using two (2) single phase transformer plates.

**UVGC\* \_**  
**UWGC\* \_**  
**URGC\* \_**  
**THREE PHASE PADMOUNT**



OPTIONS:			
<b>VOLTAGE:</b>	V = 25,565 / 14,760 V		
	W = 13,200 / 7620 V		
	R = 4160 / 2400 V		
<b>WYE SIZES:</b>	26 kV	208 / 120 V	75, 150, 300, 500, 750, 1000, 1500
	13 kV	480/277 V	75, 150, 225, 300, 500, 750, 1000, 1500, 2500, 3750
	4 kV	208 / 120 V	75, 150, 225, 300, 500, 750, 1000
		480/277 V	75, 150, 225, 300, 500, 750, 1000, 1500, 2500
		208 / 120 & 480 / 277 V	75, 150, 300, 500, 750
<b>EXAMPLES:</b>		UVGC*2500 / 480 UWGC*1000 / 208	
<b>DELTA SIZES: (REMOVAL ONLY)</b>	All kV, 240/120 V (3 Single Phase Per Bank) 50, 75, 100, 167		
	<b>EXAMPLE:</b> 50 kVA, 26 kV, 3 Phase Delta: Plate 3 Single Phase – UVGA*50		

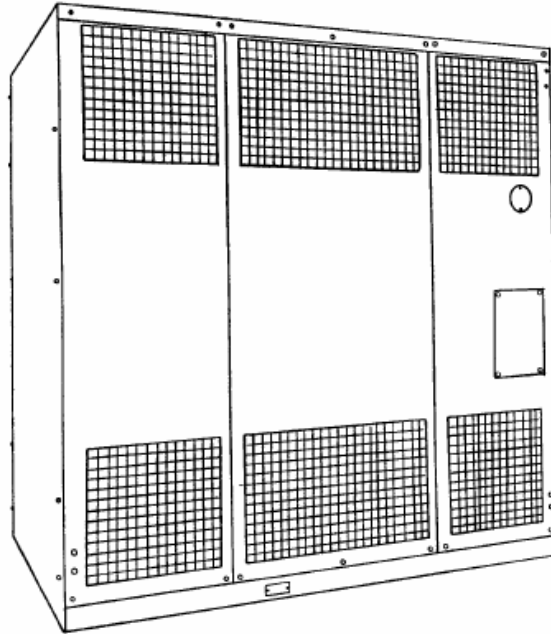
**NOTE:**  
 All Three Phase Plates Include Secondary Connector Kits.

<b>THREE PHASE PADMOUNT – 25,565 / 14,706 V</b>			
<b>PLATE</b>	<b>ITEM</b>	<b>QTY</b>	<b>DESCRIPTION</b>
<b>All Plates Include</b>	BOLMS015	2	BOLT, MACHINE, SQ. HEAD 5/8" X 2"
	BOLTE001	24	BOLT, TERMINAL KIT
	CLATG001	1	CONNECTOR, TRANSF. TANK GRND. #6-#8
	CNNTS004	1	KIT, CONNECTOR, TRANSF. SECONDARY
	CNNVG004	3	CONNECTOR, VISE GRIP PARALLEL
	COBCO028	5	CONDUCTOR, BARE COPPER #4 S.D.
	INDCF004	3	INDICATOR, CABLE FAULT, 400 AMP
	LOCPA001	1	PADLOCK, BRASS 1-3/4" SHANK
<b>UVGC * 75 / 208</b>	TRAPC000	1	TRANSFORMER, PADMOUNT 3 PHASE 75KVA
<b>UVGC * 150 / 208</b>	TRAPC001	1	TRANSFORMER, PADMOUNT 3 PHASE 150KVA
<b>UVGC * 300 / 208</b>	TRAPC002	1	TRANSFORMER, PADMOUNT 3 PHASE 300KVA
<b>UVGC * 500 / 208</b>	TRAPC003	1	TRANSFORMER, PADMOUNT 3 PHASE 500KVA
<b>UVGC * 750 / 208</b>	TRAPC004	1	TRANSFORMER, PADMOUNT 3 PHASE 750KVA
<b>UVGC * 1000 / 208</b>	TRAPC005	1	TRANSFORMER, PADMOUNT 3 PHASE 1000KVA
<b>UVGC * 1500 / 208</b>	TRAPC006	1	TRANSFORMER, PADMOUNT 3 PHASE 1500KVA
<b>UVGC * 75 / 480</b>	TRAPC015	1	TRANSFORMER, PADMOUNT 3 PHASE 75KVA
<b>UVGC * 150 / 480</b>	TRAPC007	1	TRANSFORMER, PADMOUNT 3 PHASE 150KVA
<b>UVGC * 300 / 480</b>	TRAPC009	1	TRANSFORMER, PADMOUNT 3 PHASE 300KVA
<b>UVGC * 500 / 480</b>	TRAPC010	1	TRANSFORMER, PADMOUNT 3 PHASE 500KVA
<b>UVGC * 750 / 480</b>	TRAPC011	1	TRANSFORMER, PADMOUNT 3 PHASE 750KVA
<b>UVGC * 1000 / 480</b>	TRAPC012	1	TRANSFORMER, PADMOUNT 3 PHASE 1000KVA
<b>UVGC * 1500 / 480</b>	TRAPC013	1	TRANSFORMER, PADMOUNT 3 PHASE 1500KVA
<b>UVGC * 2000 / 480</b>	TRAPC029	1	TRANSFORMER, PADMOUNT 3 PHASE 2000KVA
<b>UVGC * 2500 / 480</b>	TRAPC014	1	TRANSFORMER, PADMOUNT 3 PHASE 2500KVA
<b>UVGC * 3750 / 480</b>	TRAPC016	1	TRANSFORMER, PADMOUNT 3 PHASE 3750KVA

<b>THREE PHASE PADMOUNT – 13,200 / 7,620 V</b>			
<b>PLATE</b>	<b>ITEM</b>	<b>QTY</b>	<b>DESCRIPTION</b>
<b>All Plates Include</b>	BOLMS015	2	BOLT, MACHINE, SQ. HEAD 5/8" X 2"
	BOLTE001	24	BOLT, TERMINAL KIT
	CLATG001	1	CONNECTOR, TRANSF. TANK GRND. #6-#8
	CNNTS004	1	KIT, CONNECTOR, TRANSF. SECONDARY
	CNNVG004	3	CONNECTOR, VISE GRIP PARALLEL
	COBCO028	5	CONDUCTOR, BARE COPPER #4 S.D.
	INDCF004	3	INDICATOR, CABLE FAULT, 400 AMP
	LOCPA001	1	PADLOCK, BRASS 1-3/4" SHANK
<b>UWGC * 75 / 208</b>	TRAPB000	1	TRANSFORMER, PADMOUNT 3 PHASE 75KVA
<b>UWGC * 150 / 208</b>	TRAPB001	1	TRANSFORMER, PADMOUNT 3 PHASE 150KVA
<b>UWGC * 225 / 208</b>	TRAPB002	1	TRANSFORMER, PADMOUNT 3 PHASE 225KVA
<b>UWGC * 300 / 208</b>	TRAPB003	1	TRANSFORMER, PADMOUNT 3 PHASE 300KVA
<b>UWGC * 500 / 208</b>	TRAPB004	1	TRANSFORMER, PADMOUNT 3 PHASE 500KVA
<b>UWGC * 750 / 208</b>	TRAPB005	1	TRANSFORMER, PADMOUNT 3 PHASE 750KVA
<b>UWGC * 1000 / 208</b>	TRAPB006	1	TRANSFORMER, PADMOUNT 3 PHASE 1000KVA
<b>UWGC * 75 / 480</b>	TRAPB015	1	TRANSFORMER, PADMOUNT 3 PHASE 75KVA
<b>UWGC * 150 / 480</b>	TRAPB007	1	TRANSFORMER, PADMOUNT 3 PHASE 150KVA
<b>UWGC * 225 / 480</b>	TRAPB008	1	TRANSFORMER, PADMOUNT 3 PHASE 225KVA
<b>UWGC * 300 / 480</b>	TRAPB009	1	TRANSFORMER, PADMOUNT 3 PHASE 300KVA
<b>UWGC * 500 / 480</b>	TRAPB010	1	TRANSFORMER, PADMOUNT 3 PHASE 500KVA
<b>UWGC * 750 / 480</b>	TRAPB011	1	TRANSFORMER, PADMOUNT 3 PHASE 750KVA
<b>UWGC * 1000 / 480</b>	TRAPB012	1	TRANSFORMER, PADMOUNT 3 PHASE 1000KVA
<b>UWGC * 1500 / 480</b>	TRAPB013	1	TRANSFORMER, PADMOUNT 3 PHASE 1500KVA
<b>UWGC * 2000 / 480</b>	TRAPB017	1	TRANSFORMER, PADMOUNT 3 PHASE 2000KVA
<b>UWGC * 2500 / 480</b>	TRAPB014	1	TRANSFORMER, PADMOUNT 3 PHASE 2500KVA

THREE PHASE PADMOUNT – 4,160 / 2,400 V			
PLATE	ITEM	QTY	DESCRIPTION
<b>All Plates Include</b>	BOLMS015	2	BOLT, MACHINE, SQ. HEAD 5/8" X 2"
	BOLTE001	24	BOLT, TERMINAL KIT
	CLATG001	1	CONNECTOR, TRANSF. TANK GRND. #6-#8
	CNNTS004	1	KIT, CONNECTOR, TRANSF. SECONDARY
	CNNVG004	3	CONNECTOR, VISE GRIP PARALLEL
	COBCO028	5	CONDUCTOR, BARE COPPER #4 S.D.
	INDCF004	3	INDICATOR, CABLE FAULT, 400 AMP
	LOCPA001	1	PADLOCK, BRASS 1-3/4" SHANK
<b>URGC * 75 / 208</b>	TRAPA000	1	TRANSFORMER, PADMOUNT 3 PHASE 75KVA
<b>URGC * 150 / 208</b>	TRAPA001	1	TRANSFORMER, PADMOUNT 3 PHASE 150KVA
<b>URGC * 300 / 208</b>	TRAPA002	1	TRANSFORMER, PADMOUNT 3 PHASE 300KVA
<b>URGC * 500 / 208</b>	TRAPA003	1	TRANSFORMER, PADMOUNT 3 PHASE 500KVA
<b>URGC * 750 / 208</b>	TRAPA004	1	TRANSFORMER, PADMOUNT 3 PHASE 750KVA
<b>URGC * 75 / 480</b>	TRAPA009	1	TRANSFORMER, PADMOUNT 3 PHASE 75KVA
<b>URGC * 150 / 480</b>	TRAPA005	1	TRANSFORMER, PADMOUNT 3 PHASE 150KVA
<b>URGC * 300 / 480</b>	TRAPA006	1	TRANSFORMER, PADMOUNT 3 PHASE 300KVA
<b>URGC * 500 / 480</b>	TRAPA007	1	TRANSFORMER, PADMOUNT 3 PHASE 500KVA
<b>URGC * 750 / 480</b>	TRAPA008	1	TRANSFORMER, PADMOUNT 3 PHASE 750KVA

# UWGNT\* THREE PHASE SPOT 13.2KV PRIMARY



**THREE PHASE SPOT NETWORK**

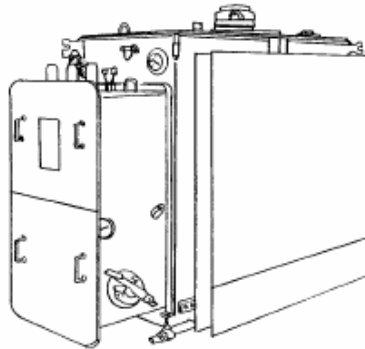
PLATE	ITEM	QTY	DESCRIPTION
UWGNT*1000 / 1500	TRALC001	1	TRANSFORMER, CAST COIL 1000 / 1500KVA
	PROTR004	1	PROTECTOR, 480Y / 277 2825A DUST TIGHT
	CNNTL034	18	TERMINAL LUG, COPPER COMPRESSION 500 MCM
UWGNT*1500 / 2250	TRALC002	1	TRANSFORMER, CAST COIL 1500 / 2250KVA
	PROTR004	1	PROTECTOR, 480Y / 277 2825A DUST TIGHT
	CNNTL034	24	TERMINAL LUG, COPPER COMPRESSION 500 MCM

**SUBMERSIBLE DRY TYPE THREE PHASE SPOT NETWORK**

PLATE	ITEM	QTY	DESCRIPTION
UWGNT*1000	TRALC003	1	TRANSFORMER, DRY TYPE SUBMERSIBLE, 1000KVA
	PROTR006	1	PROTECTOR 480Y/ 277 1875A SUBMERSIBLE
	CNNTL034	18	TERMINAL LUG, COPPER COMPRESSION 500 MCM
UWGNT*1500	TRALC004	1	TRANSFORMER, DRY TYPE SUBMERSIBLE, 1500KVA
	PROTR006	1	PROTECTOR 480Y/ 277 1875A SUBMERSIBLE
	CNNTL034	18	TERMINAL LUG, COPPER COMPRESSION 500 MCM
UWGNT*2000	TRALC005	1	TRANSFORMER, DRY TYPE SUBMERSIBLE, 2000KVA
	PROTR007	1	PROTECTOR 480Y/ 277 2825A SUBMERSIBLE
	CNNTL034	24	TERMINAL LUG, COPPER COMPRESSION 500 MCM



**UWGNT\***  
**THREE PHASE NETWORK 13.2KV PRIMARY**

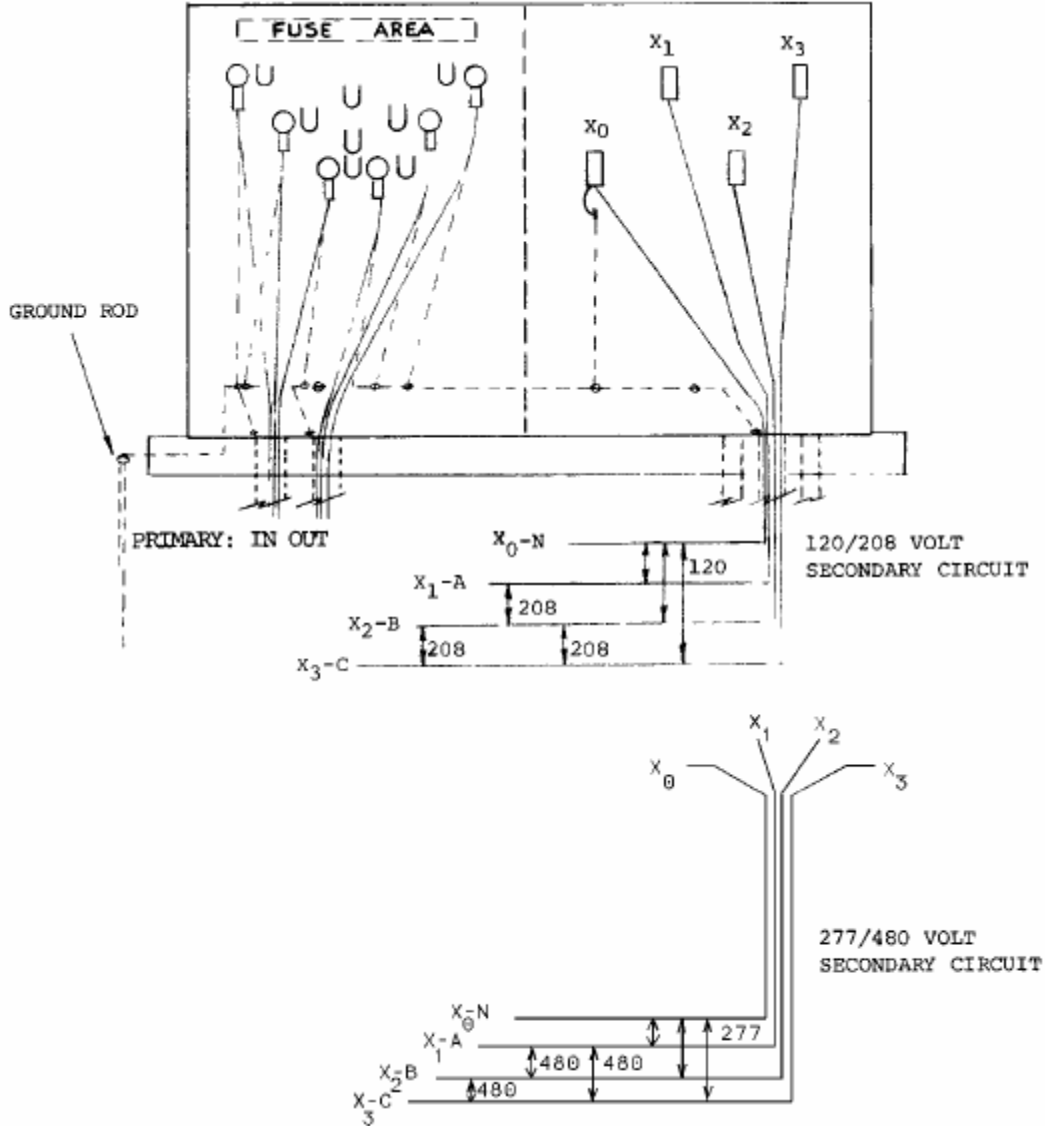


**THREE PHASE SUBMERSIBLE NETWORK**

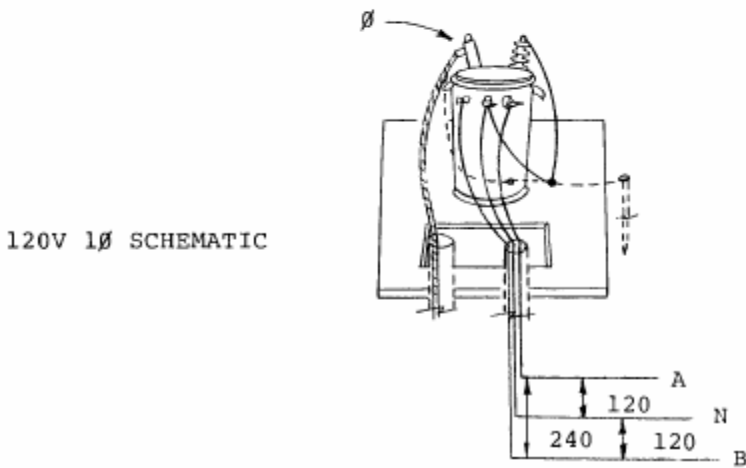
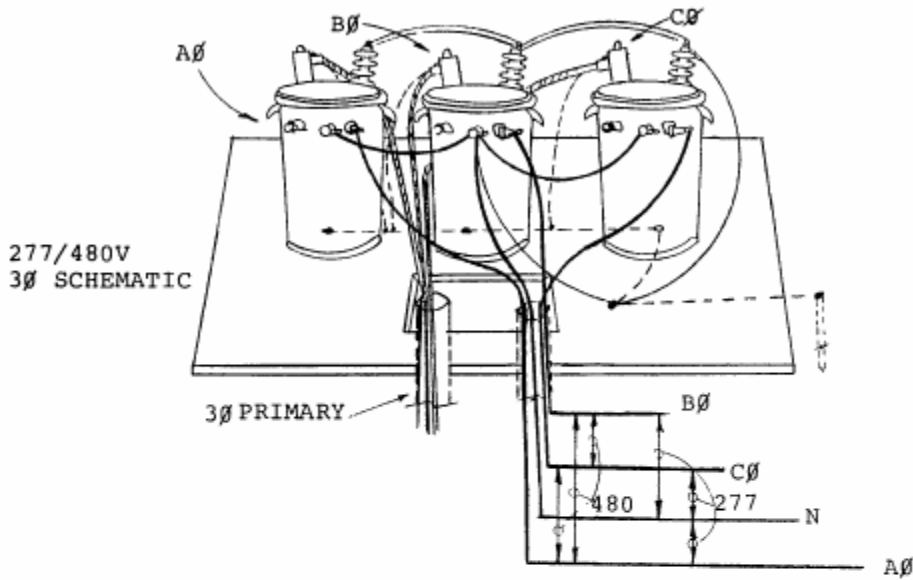
PLATE	ITEM	QTY	DESCRIPTION
<b>UWGNT*500 / 216</b>	TRANS001	1	TRANSFORMER, SUBMERSIBLE 500KVA
	PROTR001	1	PROTECTOR, 216Y / 125V 1875A SUBMERSIBLE
	ANCKY002	1	CONCRETE POLE KEY
	ADPSM001	3	MOLE ADAPTER, 1-1/2 TO 3 INCH
<b>UWGNT*750 / 216</b>	TRANS002	1	TRANSFORMER, SUBMERSIBLE 750KVA
	PROTR002	1	PROTECTOR, 216 / 125V 2500A SUBMERSIBLE
	ANCKY002	1	CONCRETE POLE KEY



# PADMOUNTED 3 PHASE TRANSFORMER CONFIGURATION



# POLE TRANSFORMERS SET ON PAD CONFIGURATION



## SWITCHING

### CONSTRUCTION NOTES

TO CALL FOR EQUIPMENT MOUNTING PIT, SEE PAD SECTION.

SWITCH/FUSE ASSEMBLY OPTIONS:

UVS*6/6	UVSA*12	UVSF*6/6	UVSD*6/6	UVPS	UVSRT2
UVS*9/3	UVSA*5	UVSF*9/3	UVSD*9/3	UVSR*3	
UVS*12	UVSDA*6/6	UVSF*12	UVSD*12	UVSRT	

Detailing Engineer: When ordering Manhole for Vacpac Switchgear (SWELO001), specify Vacpac Switch Compartment to be installed on side wall of Manhole Vault. See UVPS plate in this section and Manhole Section.

See PULL-BOX Plate, Secondary Section, for details of Switch Handle Boxes to be used for Vacpac Switch Gear.

For Primary Termination of Vacpac Switchgear, see Plate UVT8 in Termination Section.

Sump Pump to be installed in Manhole with Vacpac Switch. See UDBP Plate in Manhole Section.

For Fusing, see System Protection Section.

For Auto Transfer Switch or other requirements, consult with Standards.

<b>UG SYSTEM SWITCH RATINGS CAPABILITIES AND OPERATING GUIDELINES</b>					
MANUFACTURER	kV			AMPERES, RMS LIVE SWITCHING	
	NOM.	MAX.	BIL	CONT.	LOAD
<b>LOAD INTERRUPTER SWITCHES (GROUP)</b>					
<b>JEA TECHNICAL SPECIFICATION</b>	25	27	125	600	400
<b>S&amp;C WITH MINI-RUPTER (PMH GEAR)</b>	25	29	125	600	400
<b>EEI AUTO - JET II (PSI GEAR)</b>	25	27	125	600	600
<b>COOPER VFI (PADMOUNT GEAR)</b>	25	27	125	600	600
<b>KEARNY (VACPAC)</b>	15	15.5	95	600	600
<b>JOSYLN TRANSFER</b>	25	27	125	600	600
<b>INTEGRAL LOAD BREAK FUSES (HOOK)</b>					
<b>JEA TECHNICAL SPECIFICATION</b>	25	27	125	200	200
<b>S&amp;C UNI-RUPTER (FOR THE SML-4Z)</b>	25	29	125	200	200
<b>S&amp;C UNI-RUPTER (FOR THE FAULT FITER)</b>	25	29	125	600	200
<b>EEI SM-4 (FOR THE S&amp;C SML-4Z)</b>	25	27	125	200	200
<p>The above list represents certified manufacturer ratings. These are the ratings they performed ANSI certification test and recommend for our use. However, the Cooper gear is certified at 27 kV and Cooper's opinion is that their gear would pass the certification test required for a 29 kV rating. When operating a switch, Standards recommends following the certified ratings located on the cabinet name plate.</p>					

## UVS\* PRIMARY PADMOUNT SWITCH / FUSE ASSEMBLY

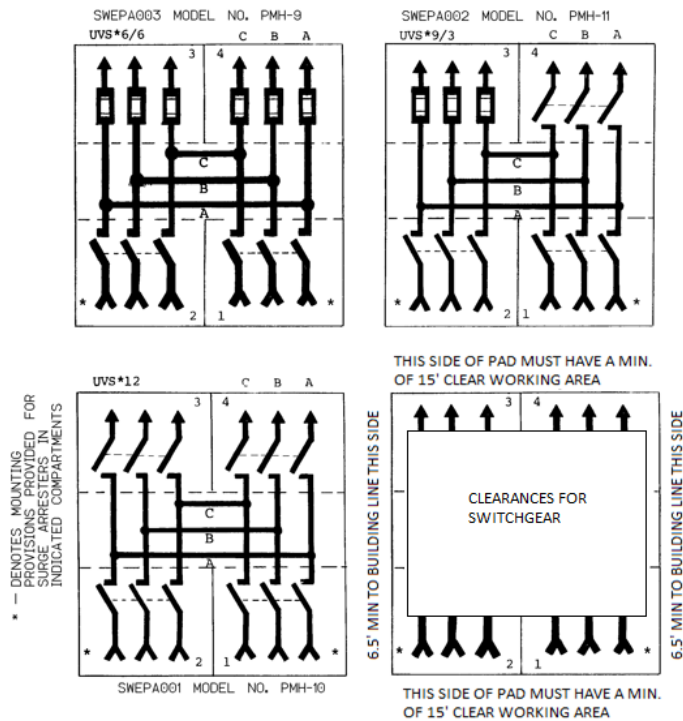


PLATE	ITEM	QTY	DESCRIPTION
All Include	ADCFO500	2	FOAM SEALANT, QUICK SEAL EXPANDING FOAM
	ADCSE140	2	SILICONE SEALANT
	ADCWS500	2	WEATHER SEAL W/ ADHESIVE BACKING.
	ARRLI013	6	ARRESTER, SURGE 21KV
	CODPL003	2	PLUG, CONDUIT, PVC, 4" ID, TYPE EB
	CODPL004	2	PLUG, CONDUIT, PVC, 6" ID, TYPE EB
	SIGSH002	1	SHRUB LABEL
UVS*6/6	INDCF012	3	FAULT INDICATOR
	LOCPA001	4	PADLOCK ALL BRASS 1-3/4 IN SHANK OPENING
	SWEPA003	1	SWITCHGEAR, PADMOUNT 25KV 2-200A TAP
UVS*9/3	INDCF012	9	FAULT INDICATOR
	LOCPA001	5	PADLOCK ALL BRASS 1-3/4 IN SHANK OPENING
	SWEPA002	1	SWITCHGEAR, PADMOUNT 25KV 1-200A TAP
UVS*12	INDCF012	12	FAULT INDICATOR
	LOCPA001	6	PADLOCK ALL BRASS 1-3/4 IN SHANK OPENING
	SWEPA001	1	SWITCHGEAR, PADMOUNT 25KV 4-WAY

### NOTES:

- The 21 kV surge arresters are included in the plate. The 21kV arresters are used on the 26.4 kV system. The 4 kV system requires a 3 kV arrester and the 13.2 kV system requires a 10 kV arrester. Item out the 21 kV arresters and item in the required arresters.  
Use item ARRLI009 for 3 kV and ARRLI010 for 10 kV.
- Install Fault Indicators on the Group switch compartments.

## UVSA\* SPECIAL APPLICATION PRIMARY PADMOUNT SWITCH, FUSE ASSEMBLY (FAULT FITER)

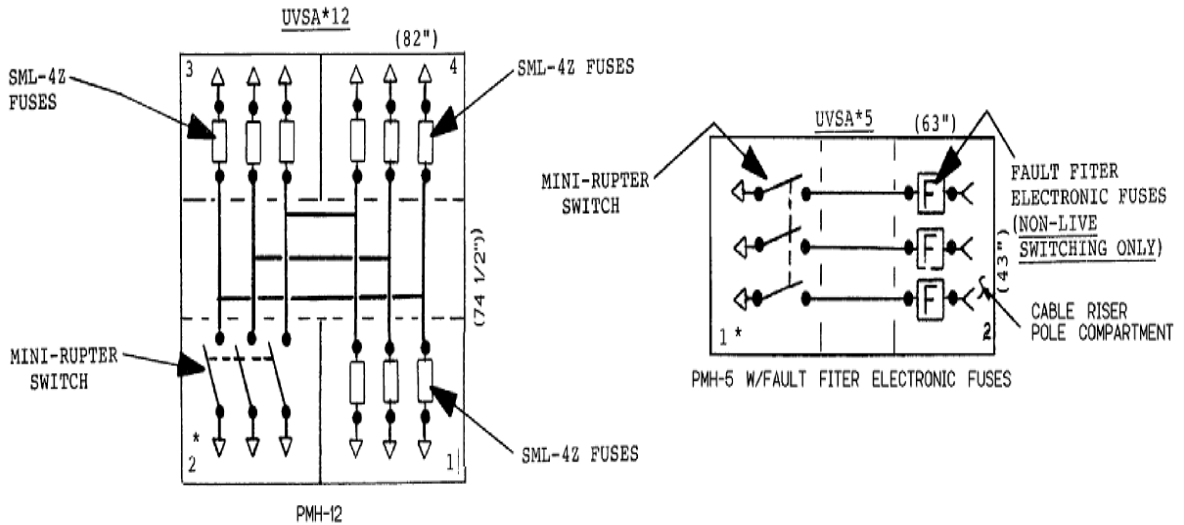


PLATE	ITEM ID	QTY	DESCRIPTION
All Include	ADCFO500	2	FOAM SEALANT, QUICK SEAL EXPANDING FOAM
	ADCSE140	2	SILICONE SEALANT
	ADCWS500	2	WEATHER SEAL W/ ADHESIVE BACKING.
	ARRLI013	3	ARRESTER, SURGE 21KV
	CODPL003	2	PLUG, CONDUIT, PVC, 4" ID, TYPE EB
	CODPL004	2	PLUG, CONDUIT, PVC, 6" ID, TYPE EB
	INDCF012	3	FAULT INDICATOR
	LOCPA001	3	PADLOCK, BRASS, 1 3/4" SHANK
SIGSH002	1	SHRUB LABEL	
UVSA*12	SWEPA004	1	SWITCHGEAR, PADMOUNT, 25KV, SPECIAL APPLICATION
Use Pit Plate UPD11			
UVSA*5	SWEPA005	1	SWITCHGEAR, PADMOUNT, 25KV, SPECIAL APPLICATION
Use Pit Plate UPD15			

\*Denotes mounting provisions provided for surge arresters in indicated compartments.

### NOTES:

- The 21 kV surge arresters are included in the plate. The 21kV arresters are used on the 26.4 kV system. The 4 kV system requires a 3 kV arrester and the 13.2 kV system requires a 10 kV arrester. Item out the 21 kV arresters and item in the required arresters.  
Use item ARRLI009 for 3 kV and ARRLI010 for 10 kV.
- Install Fault Indicators on the Group switch compartments.

## UVSF\*

### PRIMARY PADMOUNT DEAD FRONT SWITCH / FUSE ASSEMBLY

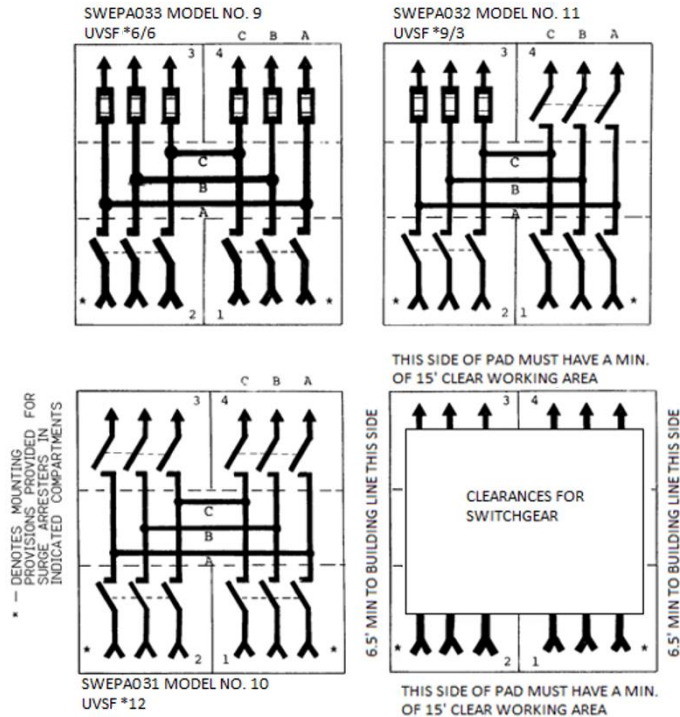


PLATE	ITEM	QTY	DESCRIPTION
All Include	ADCF0500	2	FOAM SEALANT, QUICK SEAL EXPANDING FOAM
	ADCSE140	2	SILICONE SEALANT
	ADCWS500	2	WEATHER SEAL W/ ADHESIVE BACKING.
	ARRLI013	6	ARRESTER, SURGE 21KV
	CODPL003	2	PLUG, CONDUIT, PVC, 4" ID, TYPE EB
	CODPL004	2	PLUG, CONDUIT, PVC, 6" ID, TYPE EB
	SIGSH002	1	SHRUB LABEL
UVSF*6/6	INDCF012	3	FAULT INDICATOR
	LOCPA001	4	PADLOCK ALL BRASS 1-3/4 IN SHANK OPENING
	SWEPA033	1	SWITCHGEAR, PADMT. DEADFRONT 25KV 2-200A
UVSF*9/3	INDCF012	9	FAULT INDICATOR
	LOCPA001	5	PADLOCK ALL BRASS 1-3/4 IN SHANK OPENING
	SWEPA032	1	SWITCHGEAR, PADMT. DEADFRONT 25KV 1-200A
UVSF*12	INDCF012	12	FAULT INDICATOR
	LOCPA001	6	PADLOCK ALL BRASS 1-3/4 IN SHANK OPENING
	SWEPA031	1	SWITCHGEAR, PADMT. DEADFRONT 25KV 4-WAY

#### NOTES:

- The 21 kV surge arresters are included in the plate. The 21kV arresters are used on the 26.4 kV system. The 4 kV system requires a 3 kV arrester and the 13.2 kV system requires a 10 kV arrester. Item out the 21 kV arresters and item in the required arresters. Use item ARRLI009 for 3 kV and ARRLI010 for 10 kV.
- Install Fault Indicators on the Group switch compartments.



## UVSD\* G&W PRIMARY PADMOUNT DEAD FRONT SWITCH / FUSE ASSEMBLY

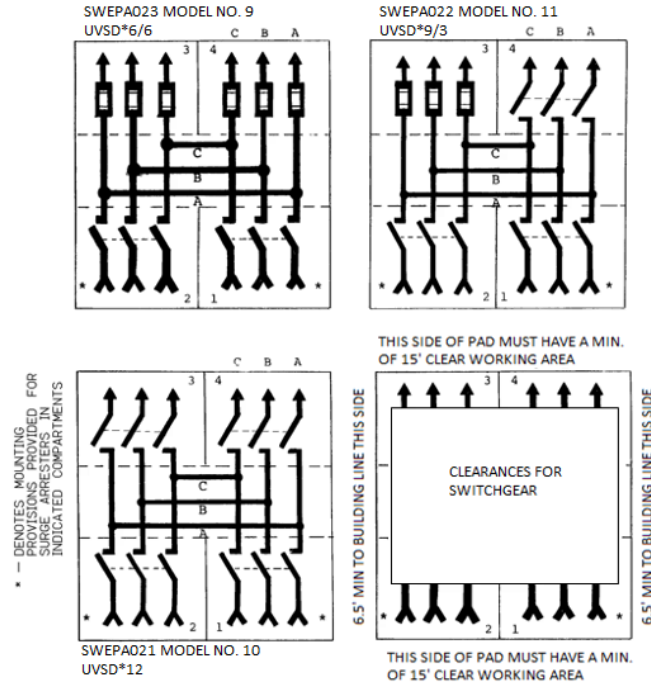


PLATE	ITEM	QTY	DESCRIPTION
All Include	ADCF0500	2	FOAM SEALANT, QUICK SEAL EXPANDING FOAM
	ADCSE140	2	SILICONE SEALANT
	ADCWS500	2	WEATHER SEAL W/ ADHESIVE BACKING.
	ARRLI013	6	ARRESTER, SURGE 21KV
	CODPL003	2	PLUG, CONDUIT, PVC, 4" ID, TYPE EB
	CODPL004	2	PLUG, CONDUIT, PVC, 6" ID, TYPE EB
	SIGSH002	1	SHRUB LABEL
UVSD*6/6	INDCF012	3	FAULT INDICATOR
	LOCPA001	4	PADLOCK ALL BRASS 1-3/4 IN SHANK OPENING
	SWEPA023	1	SWITCHGEAR, PADMT. DEADFRONT 25KV 2-200A
UVSD*9/3	INDCF012	9	FAULT INDICATOR
	LOCPA001	5	PADLOCK ALL BRASS 1-3/4 IN SHANK OPENING
	SWEPA022	1	SWITCHGEAR, PADMT. DEADFRONT 25KV 1-200A
UVSD*12	INDCF012	12	FAULT INDICATOR
	LOCPA001	6	PADLOCK ALL BRASS 1-3/4 IN SHANK OPENING
	SWEPA021	1	SWITCHGEAR, PADMT. DEADFRONT 25KV 4-WAY

### NOTES:

- The 21 kV surge arresters are included in the plate. The 21kV arresters are used on the 26.4 kV system. The 4 kV system requires a 3 kV arrester and the 13.2 kV system requires a 10 kV arrester. Item out the 21 kV arresters and item in the required arresters. Use item ARRLI009 for 3 kV and ARRLI010 for 10 kV.
- Install Fault Indicators on the Group switch compartments.

## UVSDA\* SPECIAL APPLICATION PRIMARY PADMOUNT DEADFRONT SWITCH, FUSE ASSEMBLY MODEL 9 WITH ALL WAYS 600A

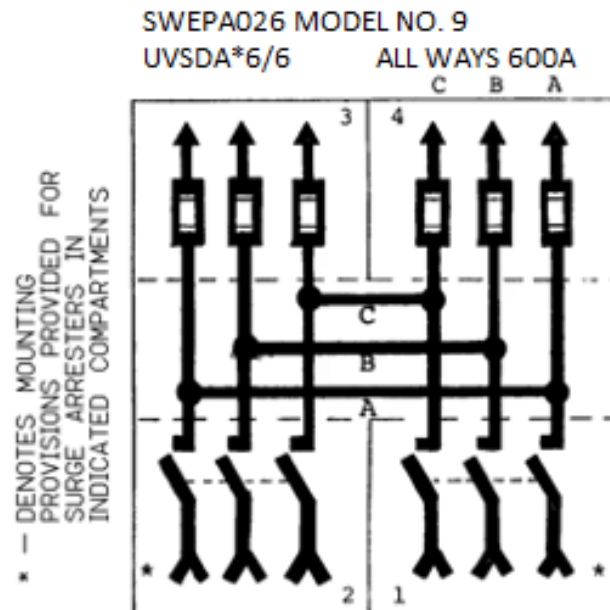


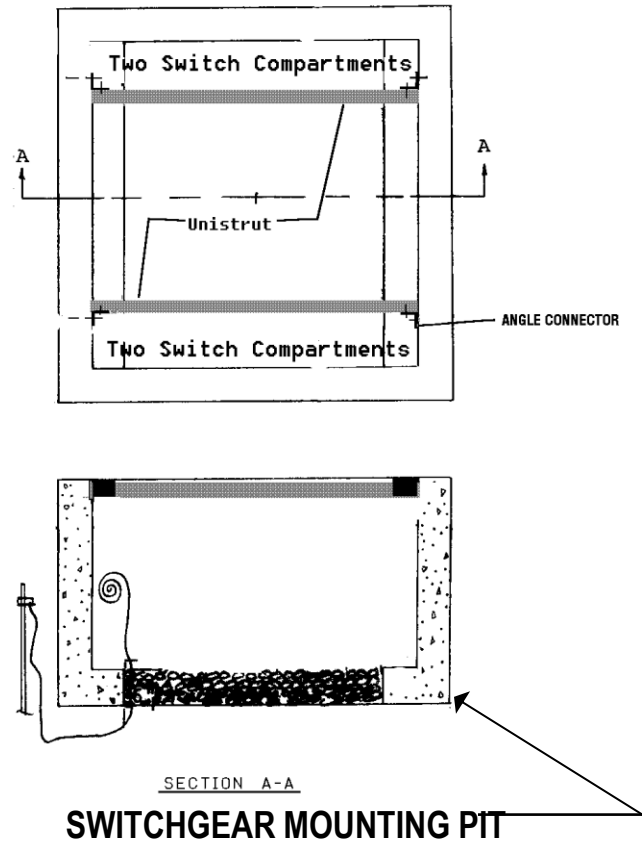
PLATE	ITEM ID	QTY	DESCRIPTION
All Include	ADCFO500	2	FOAM SEALANT, QUICK SEAL EXPANDING FOAM
	ADCSE140	2	SILICONE SEALANT
	ADCWS500	2	WEATHER SEAL W/ ADHESIVE BACKING.
	ARRLI013	6	ARRESTER, SURGE 21KV
	CODPL003	2	PLUG, CONDUIT, PVC, 4" ID, TYPE EB
	CODPL004	2	PLUG, CONDUIT, PVC, 6" ID, TYPE EB
	SIGSH002	1	SHRUB LABEL
UVSDA*6/6	INDCF012	3	FAULT INDICATOR
	LOCPA001	4	PADLOCK ALL BRASS 1-3/4 IN SHANK OPENING
	SWEPA026	1	SWITCHGEAR, PADMT. DEADFRONT 25KV 4-600A MODEL 9

### NOTES:

- The 21 kV surge arresters are included in the plate. The 21kV arresters are used on the 26.4 kV system. The 4 kV system requires a 3 kV arrester and the 13.2 kV system requires a 10 kV arrester. Item out the 21 kV arresters and item in the required arresters. Use item ARRLI009 for 3 kV and ARRLI010 for 10 kV.
- Install Fault Indicators on the Group switch compartments.

# CBLX

## CABLE AND TERMINATION SUPPORT



CABLE AND TERMINATION SUPPORT  
FOR ENCLOSED PIT MOUNTED SWITCHGEAR

**APPLICATION:**

For one or two switch compartments which contain 1000kCM cable terminations. Plate one (1) CBLX plate which will provide the material to support and align the cables directly below the terminations in two switch compartments.

PLATE	ITEM	QTY	DESCRIPTION
CBLX	RAICH001	1	RAIL, CHANNEL, UNISTRUT
	RAICA001	2	ANGLE CONNECTOR
	TIECA001	6	CABLE TIES
	BOLMH007	2	BOLT, 1/2" X 1-1/2"
	BOLMH009	2	BOLT, 1/2" X 2-1/2"

# UVSR\*3

## PRIMARY PADMOUNT REMOTE CONTROL SWITCH

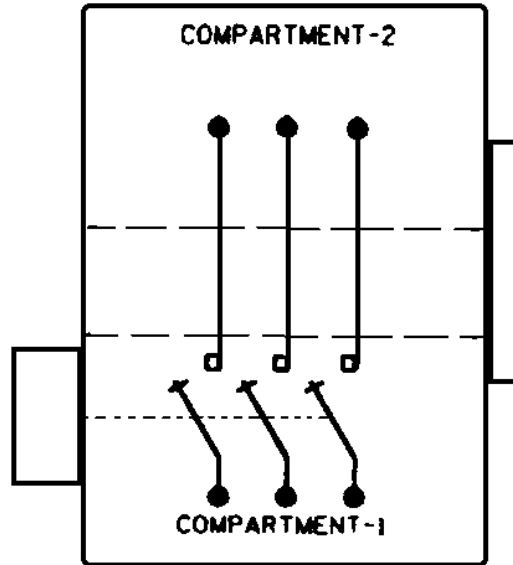


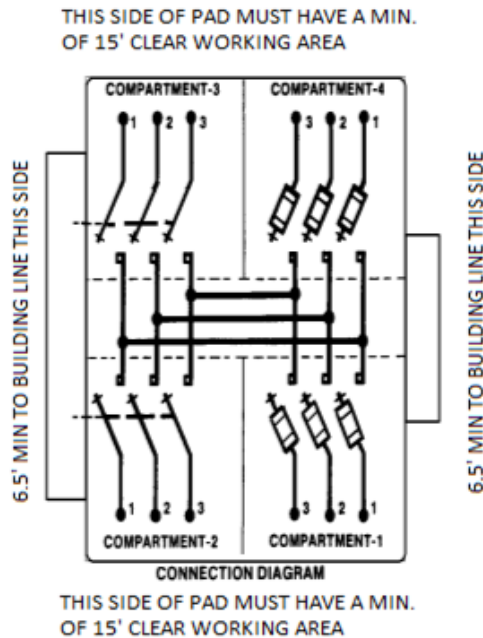
PLATE	ITEM	QTY	DESCRIPTION
UVSR*3	ADCFO500	2	FOAM SEALANT, QUICK SEAL EXPANDING FOAM
	ADCSE140	2	SILICONE SEALANT
	ARRLI013	3	ARRESTER, SURGE 21KV
	ADCWS500	2	WEATHER SEAL W/ ADHESIVE BACKING.
	CODPL003	2	PLUG, CONDUIT, PVC, 4" ID, TYPE EB
	CODPL004	2	PLUG, CONDUIT, PVC, 6" ID, TYPE EB
	LOCPA001	4	PADLOCK ALL BRASS 1-3/4 IN SHANK OPENING
	INDCF012	3	FAULT INDICATOR
	SIGSH002	1	LABEL; SHRUB; FOR SWITCHGEAR
	SWEPA010	1	SWITCHGEAR, PADMOUNT 25KV Radio Control

**NOTES:**

1. The 21 kV surge arresters are included in the plate. The 21 kV arresters are used on the 26.4 kV system. The 4 kV system requires a 3 kV arrester and the 13.2 kV system requires a 10 kV arrester. Item out the 21 kV arresters and item in the required arresters. Use item ARRLI009 for 3 kV and ARRLI010 for 10 kV.
2. Install Fault Indicators on the Group switch compartment.

## UVSRT

### PRIMARY PADMOUNT REMOTE CONTROL AUTOMATIC TRANSFER SWITCH (S&C AIR INSULATED)



FACTORY SETTINGS		
Loss of Source: 85 Volts	Return of Source: 105 Volts	Switch Operation Time: .25 seconds
Loss of Source Delay: 2 seconds	Return of Source Delay: Manual	
<b>Transfer Time</b> = Loss of Source Delay + Switch Operation Time		
<b>Example: Transfer Time</b> = 2 seconds + .25 seconds = 2.25 seconds		

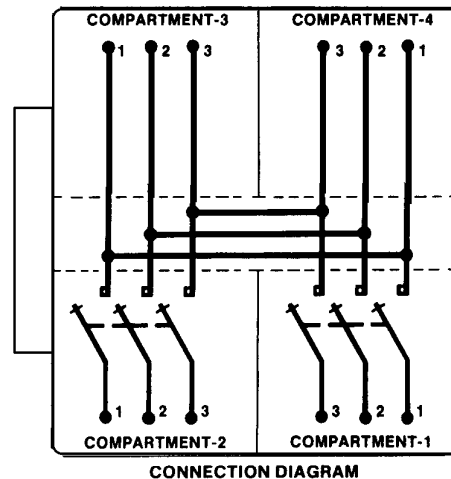
PLATE	ITEM	QTY	DESCRIPTION
<b>UVSRT</b>	LOCPA001	4	PADLOCK ALL BRASS 1-3/4 IN SHANK OPENING
	SWEPA009	1	SWITCHGEAR, PADMOUNT 25KV Radio Control ATS
	ARRLI013	6	ARRESTER, SURGE 21KV
	SIGSH002	1	LABEL; SHRUB; FOR SWITCHGEAR

**NOTES:**

1. The 21 kV surge arresters are included in the plate. The 21kV arresters are used on the 26.4 kV system. The 4 kV system requires a 3 kV arrester and the 13.2 kV system requires a 10 kV arrester. Item out the 21 kV arresters and item in the required arresters. Use item ARRLI009 for 3 kV and ARRLI010 for 10 kV.
2. Install Fault Indicators on the Group switch compartments.
3. Construction Crews will record the magnitude, phase, & the phase location (A, B, C) of the (3) VTs & (6) CTs installed. This information will be stored in the low voltage compartment (i.e. radio compartment).
4. Requires engineer to design a By-Pass circuit.

## UVSRT2

### PRIMARY PADMOUNT REMOTE CONTROL AUTOMATIC TRANSFER SWITCH (CANADA POWER SF6 INSULATED)



CONNECTION DIAGRAM

FACTORY SETTINGS:		
Loss of Source: 85 Volts	Return of Source: 105 Volts	Switch Operation Time: 16 seconds
Loss of Source Delay: 2 seconds	Return of Source Delay: 3 Min	
Transfer Time = Loss of Source Delay + Switch Operation Time		
Example: Transfer Time = 2 seconds + 16seconds = 18 seconds		

PLATE	ITEM	QTY	DESCRIPTION
UVSRT	LOCPA001	4	PADLOCK ALL BRASS 1-3/4 IN SHANK OPENING
	SWEPA008	1	SWITCHGEAR, PADMOUNT 25KV Radio Control ATS
	SIGSH002	1	LABEL; SHRUB; FOR SWITCHGEAR

**NOTES:**

1. This is a 200 Amp Dead Front gear requiring load break elbow terminations. Plate UVT7\*1/0L to terminate load & source cables. See page TE-10 of the standards book.
2. Requires engineer to design a by-pass circuit.
3. Requires engineer to design a 120 volt secondary supply for the controls.

# SWCAB-SEAL

## MATERIAL TO SEAL SWITCH CABINETS

PLATE	ITEM	QTY	DESCRIPTION
SWCAB-SEAL	ADCFO500	2	FOAM SEALANT, QUICK SEAL EXPANDING FOAM
	ADCSE140	2	SILICONE SEALANT
	ADCWS500	2	WEATHER SEAL W/ ADHESIVE BACKING (GASKET)
	CODPL003	2	PLUG, CONDUIT, PVC, 4" ID, TYPE EB
	CODPL004	2	PLUG, CONDUIT, PVC, 6" ID, TYPE EB

### INSTRUCTIONS TO SEAL SWITCH CABINETS (FOR SNAKE MITIGATION)

1. Install spray foam into both pit ground wire holes if they sit above final grade to seal those openings.
2. Install a gasket onto the cabinet door top edge and on the non-hinged side of the doors vertical edge.
3. Install a gasket into the cabinets' lower door channel where the doors bottom edge meets the cabinet.
4. Install silicone sealant where the cabinet bottom edge meets the pit top sealing up any gaps between them.
5. Install duct plugs with pull strings tied on into all empty conduits inside the switch pit.

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# SYSTEM PROTECTION

## I. FUSE COORDINATION

### I.1. GENERAL

- I.1.1. The purpose of protective coordination is to provide isolation of a fault as close to the fault as possible so that a minimum of customers will be affected. The workhorse of the JEA protection scheme is the fuse. By following the fuse tables given in this section, the fuse closest to a fault will melt first providing proper coordination and fault isolation.
- I.1.2. The fuse tables are divided into three major groups:
  - I.1.2.1. GROUP A Lateral Fusing  
This shows the required fuses for the fusing of laterals and sub-laterals. Tables for overhead and underground laterals behind substation breakers and reclosers are given for each system voltage.
  - I.1.2.2. GROUP B: Equipment Protection Fusing  
This provides the fuse sizes for the protection of transformers and capacitors.
  - I.1.2.3. GROUP C: Fuse Coordination  
This has various tables for coordinating one type of fuse link behind another type of fuse link.
- I.1.3. In order to maintain a properly functioning fuse coordination system, the fuse tables presented in this section must be followed in both system design and maintenance. Any suspected mis-coordination events should be reported to System Analysis for investigation.
- I.1.4. If an installed fuse will not hold the connected load and a larger fuse is installed, the party installing the larger size fuse shall notify the USC System Analysis Process of (1) the location, (2) the old fuse size, and (3) the new fuse size.
- I.1.5. If a fuse is replaced with a different size fuse because the required size was not available, the party installing the different size fuse shall notify the Systems Operation Control Center so the proper size fuse can be reinstalled.

## II. GROUP A: LATERAL FUSING

### II.1. GENERAL COMMENTS

#### II.1.1. Underground Laterals:

Fuse the lateral at the tap with the correct size lateral fuse if the lateral meets ANY of the following conditions:

- II.1.1.1. The tap occurs in an underground fusing cabinet.
- II.1.1.2. The transformer served is equipped with bay-o-net fuses.
- II.1.1.3. More than one transformer is served.
- II.1.1.4. There are provisions for extending the lateral.

### II.2. FUSING BEHIND SECTIONALIZERS:

Sectionalizers do not have time-current characteristics and therefore do not affect coordination between a fuse and an upstream breaker or recloser. When selecting fuses behind a sectionalizer, the presence of the sectionalizer should be ignored.

## III. GROUP A: LATERAL FUSING -- 15.2/26.4KV DISTRIBUTION SYSTEM

### III.1. NOTES:

- III.1.1. In the event that the tap off the main line fuse or sublateral fuse does not provide adequate current carrying capacity, notify the USC System Analysis Process.
- III.1.2. A “\*” denotes single phase hydraulic reclosers taken over as part of “Okefenokee” takeover and are being temporarily used on JEA’s system. For coordination purposes, ignore the existence of these reclosers.

**TABLE 1: OVERHEAD LATERAL & CABLE POLE FUSING (T-LINK)**  
26.4 kV System Behind Station Breaker

CONDUCTOR SIZE	TAP OFF MAIN LINE
1/0 AL. or 2 CU. or 2 AL.	100T
4 CU.	80T
4 AL. OR 6 CU. or Smaller	65T
CABLE POLE 1/0 AL. CABLE or Smaller	100T

**TABLE 2: UNDERGROUND LATERAL FUSING (E-LINK)**  
26.4 kV System Behind Station Breaker

CABLE SIZE	TAP OFF MAIN LINE	1ST SUB-LATERAL FUSE	2ND SUB-LATERAL FUSE
1/0 AL. OR SMALLER	150E	100E	50E

## IV. GROUP B: EQUIPMENT PROTECTION FUSING

TABLE 1: LINE CAPACITOR BANK FUSING

3-PHASE BANK KVAR	SYSTEM VOLTAGE 2.4/4.16 kV	SYSTEM VOLTAGE 15.2/26.4 kV
150	25T	-
300	50T	-
600	100T	15T
1200	-	25T

TABLE 2: TRANSFORMER FUSING -- 15.2/26.4 K

TRANSFORMER			FUSE LINKS – OVERHEAD (1)				BAY-O-NET FUSES UNDERGROUND	
KVA 1-PHASE OH/UG	KVA 3 PHASE PADS	FULL LOAD AMPS	JEA ITEM ID	CHANCE TYPE	KEARNEY TYPE	COOPER TYPE	JEA ITEM ID	RTE TYPE
5	-	.33	FUS OH 019	0.4 SF	1/2 X	-	-	-
10	-	.66	FUS OH 020	0.7 SF	1 X	-	-	-
15	-	.99	FUS OH 021	1.0 SF	1-1/2 X	-	-	-
25	-	1.65	FUS OH 022	1.6 SF	2-1/2 X	-	FUS UG 021	C3
37.5	-	2.47	FUS OH 023	2.1 SF	3-1/2 X	-	-	-
50	-	3.29	FUS OH 024	3.1 SF	4 X	-	FUS UG 022	C5
75	-	4.93	FUS OH 026	5.2 SF	7 X	-	FUS UG 022	C5
100	-	6.58	FUS OH 027	7.0 SF	10 X	-	FUS UG 023	C8
167	-	10.98	FUS OH 028	10.4 SF	15 X	-	FUS UG 023	C8
250	-	16.45	FUS OH 029	14 SF	25 KS	25 S	FUS UG 024	C10
-	75	1.64	-	-	-	-	FUS UG 021	C3
-	150	3.28	-	-	-	-	FUS UG 022	C5
-	225	4.92	-	-	-	-	FUS UG 022	C5
-	300	6.56	-	-	-	-	FUS UG 023	C8
-	500	10.94	-	-	-	-	FUS UG 024	C10
-	750	16.40	-	-	-	-	FUS UG 024	C10
-	1000	21.87	-	-	-	-	FUS UG 024	C10
-	1500	32.80	-	-	-	-	FUS UG 025	C12
-	2500	54.67	-	-	-	-	FUS UG 026	C14
-	3750	82.00	-	-	-	-	FUS UG 048	C17

(1) **FUSE LINKS** – Overhead applies to pole mounted transformers as well as padmounted transformers not equipped with BAY-O-NET fuses that are fused at the cable pole. See Group A General Comments on underground laterals.

**TABLE 3: TRANSFORMER FUSING -- 7.6/13.2 kV**

TRANSFORMER			FUSE LINKS - OVERHEAD (1)				BAY-O-NET FUSES	
KVA 1 PHASE	KVA 3 PHASE PADS	FULL LOAD AMPS	JEA ITEM ID	CHANCE TYPE	KEARNEY TYPE	COOPER TYPE	JEA ITEM ID	RTE TYP E
5	-	.66	FUS OH 020	0.7 SF	1 X	-	-	-
10	-	1.31	FUS OH 022	1.6 SF	2-1/2 X	-	-	-
15	-	1.97	FUS OH 023	2.1 SF	3-1/2 X	-	-	-
25	-	3.28	FUS OH 024	3.1 SF	4 X	-	-	-
37.5	-	4.92	FUS OH 026	5.2 SF	7 X	-	-	-
50	150	6.56	FUS OH 027	7.0 SF	10 X	-	FUS UG 023	C8
75	225	9.84	FUS OH 028	10.4 SF	15 X	-	FUS UG 023	C8
100	300	13.12	FUS OH 029	14 SF	25 KS	25 S	FUS UG 024	C10
167	500	21.92	FUS OH 030	21 SF	30 KS	30 S	FUS UG 024	C10
250	750	32.80	FUS OH 031	32 SF	50 KS	50 S	FUS UG 025	C12
333	1000	43.70	FUS OH 032	46 SF	65 KS	65 S	FUS UG 025	C12
500	1500	65.60	FUS OH 033	100 MS	100 KS	100 S	FUS UG 026	C14

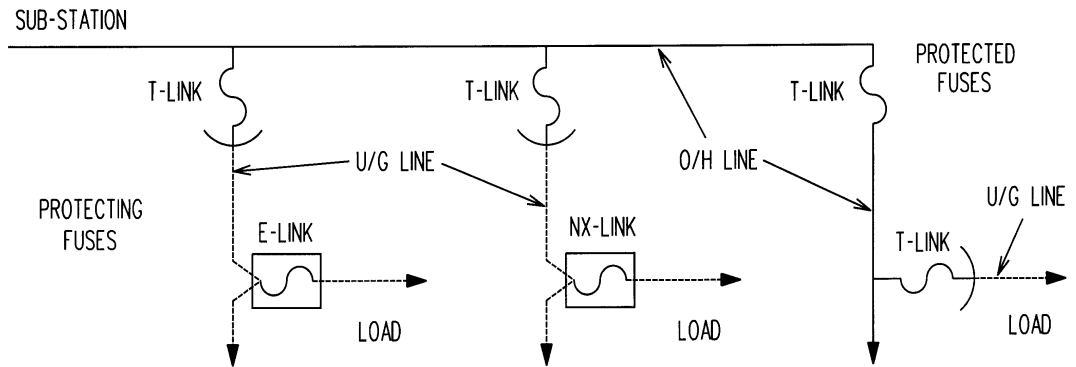
(1) **FUSE LINKS** – Overhead applies to pole mounted transformers as well as padmounted transformers not equipped with BAY-O-NET fuses that are fused at the cable pole. See Group A general comments on underground laterals.

**TABLE 4: TRANSFORMER FUSING -- 2.4/4.16kV**

TRANSFORMER		FUSE LINKS - OVERHEAD			
KVA 1 PHASE	FULL LOAD AMPS	JEA ITEM ID	CHANCE TYPE	KEARNEY TYPE	COOPER TYPE
3	1.25	FUS OH 022	1.6 SF	2-1/2 X	--
5	2.08	FUS OH 023	2.1 SF	3-1/2 X	--
7.5	3.13	FUS OH 024	3.1 SF	4 X	--
10	4.17	FUS OH 025	4.2 SF	5-1/2 X	
15	6.25	FUS OH 027	7.0 SF	10 X	--
25	10.42	FUS OH 028	10.4 SF	15 X	--
37.5	15.60	FUS OH 029	14 SF	25 KS	25 S
50	20.80	FUS OH 030	21 SF	30 KS	30 S
75	31.30	FUS OH 031	32 SF	50 KS	50 S
100	41.70	FUS OH 032	46 SF	65 KS	65 S
167	69.60	FUS OH 033	100 MS	100 KS	100 S
250	104.00	FUS OH 034	125 MS	125 KS	125 S
333	139.00	FUS OH 035	150 MS	150 KS	150 S
500	208.00	FUS OH 036	200 MS	200 KS	200 S

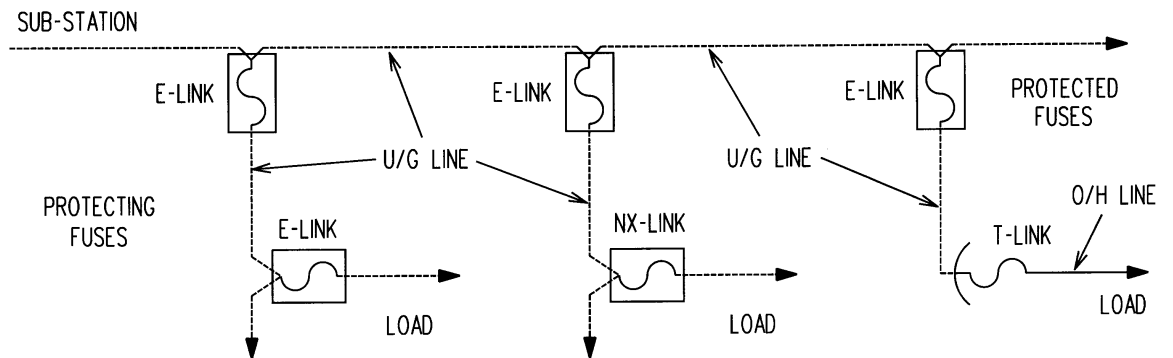
## V. GROUP C: FUSE COORDINATION

**TABLE 1: LATERAL FUSING OFF OF FUSED OVERHEAD LATERALS**



PROTECTING FUSE	PROTECTED FUSE (T-LINK)							
	100T	80T	65T	50T	40T	30T	25T	20T
E-LINK (3-PHASE)	80	65	50	40	30	25	20	15
NX-LINK (1-PHASE)	50	40	30	25	20	12	12	10
T-LINK	50	40	30	25	20	12	12	10

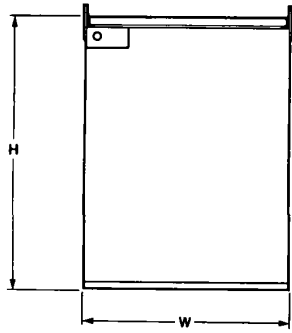
**TABLE 2: LATERAL FUSING OFF OF FUSED UNDERGROUND LATERALS**



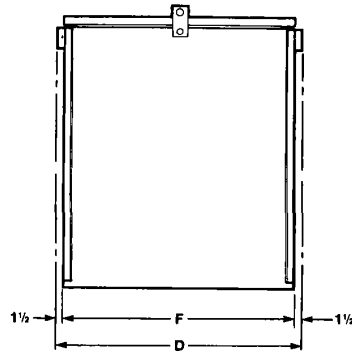
PROTECTING FUSE	PROTECTED FUSE (E-LINK)								
	150E	100E	80E	65E	50E	40E	30E	25E	20E
E-LINK (3-PHASE)	100	50	50	40	25	20	20	15	15
NX-LINK (1-PHASE)	65	30	25	25	20	12	12	10	10
T-LINK	65	40	30	25	20	15	12	10	8

# UVF4

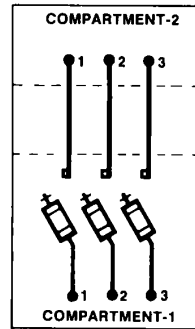
## THREE PHASE FUSING ASSEMBLY LIVE FRONT



FRONT VIEW



SIDE VIEW



CONNECTION DIAGRAM

**DIMENSIONS:**

- h – 55"
- W – 43"
- F – 56-3/4"
- D – 59-3/4"

ITEM	QTY	DESCRIPTION
FUSAS001	1	FUSE ASSEMBLY, PADMOUNT THREE PHASE IN / OUT
LOCPA001	2	PADLOCK, BRASS 1-3/4 IN. SHANK OPENING

**NOTE:** Plate CBLX to install cable support unistruts.

## UVF5 \* CABLE FAULT INDICATOR



**Elbow Mount**



**Remote Fiber Optic**



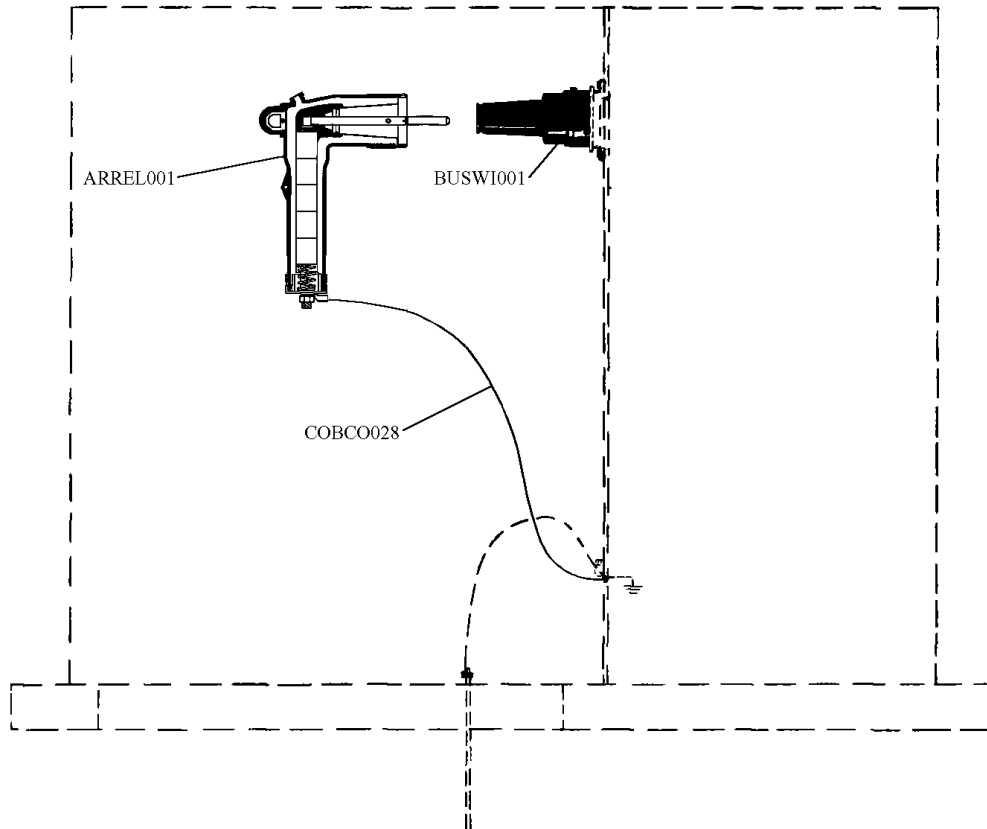
**Large Core**

PLATE	ITEM ID	QTY	TRIP	RESET	MAXIMUM CABLE DIAMETER	APPLICATION
UVF5*1/0-1	INDCF004	1	280AMP	1.0AMP	2.0"	1 PHASE 1/0AWG
UVF5-1000	INDCF012	1	840AMP	3.0AMP	2.2"	1 PHASE 1000/350KCM
UVF5*1000/3	INDCF012	1	840AMP	3.0AMP	2.0"	3 PHASE 1000KCM

**NOTES:**

1. All automatic reset fault indicators have a 32 second inrush restraint time delay and a 7.5 min. reset time delay.
2. Fault indicators are to be installed as follows:
  - a. Preferred: Install fault indicator below the terminator stress cone and above the concentric neutral basket. Fault indicator core must be under the drain wire.
  - b. Alternate: Install fault indicator over the concentric neutral basket where the neutrals are bent back and bound.

**UVF6  
UWF6  
URF6  
ELBOW ARRESTOR**



**NOTE:**

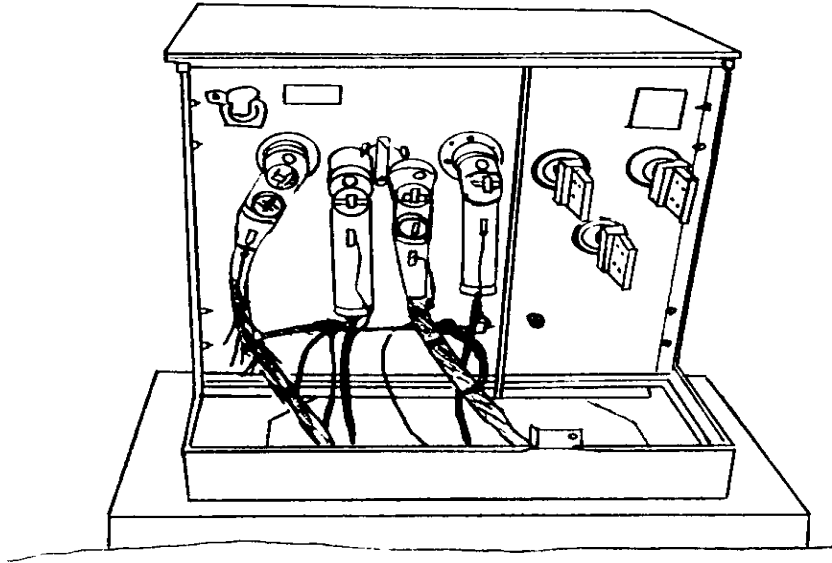
Plate UVF6 for 26.4 kV, UWF6 for 13.2 kV, and URF6 for 4.16 kV

ITEM	QTY	DESCRIPTION
ARREL---	1	ARRESTOR, ELBOW, METAL OXIDE VARRISTER
BUSWI001	1	BUSHING, PLUG INSERT 25KV LOADBREAKER 200 AMP
COBCO028	5	CONDUCTOR, BARE CU, #4AWG SOL SOFT DRAW



**UVF7**

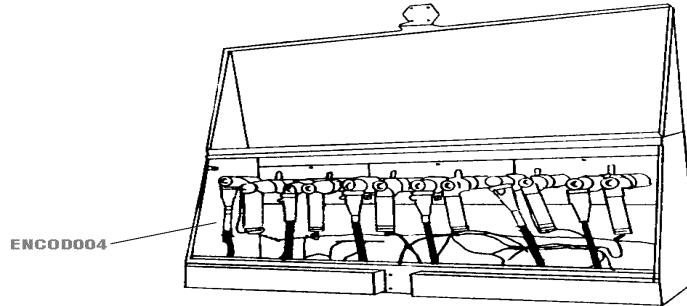
**SECTIONALIZER – ARRESTER TRANSFORMER**



ITEM	QTY	DESCRIPTION
ARREL001	2	ARRESTER, ELBOW METAL OXIDE VARRISTER
COBCO028	3	CONDUCTOR, BARE CU, #4AWG SOL SOFT DRAW
CNNVG003	2	CONNECTOR, SPLIT BOLT 2 - 1/0 CU
RECPA004	1	RECEPTACLE, FEED THRU 25KV LOADBREAK

# UVF8

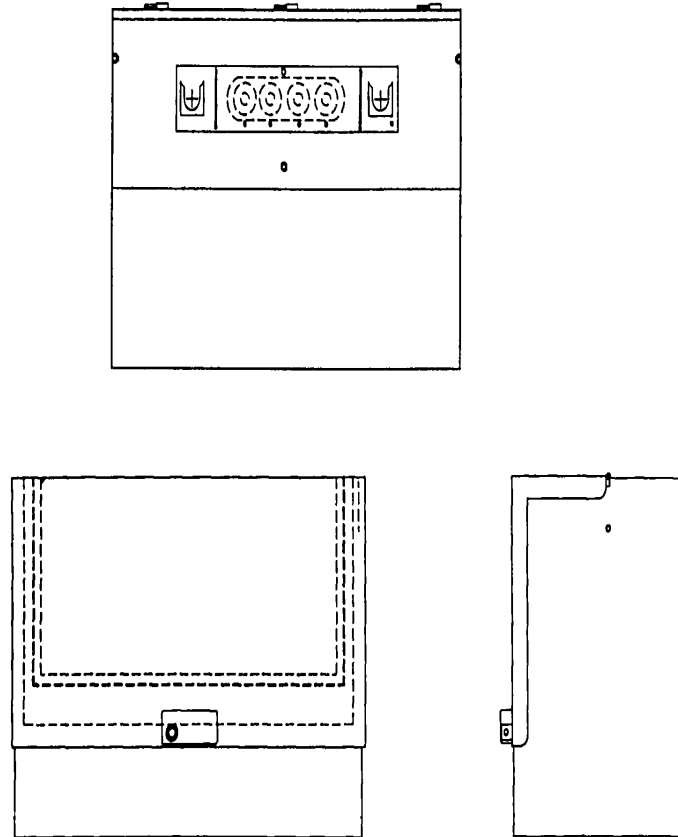
## THREE PHASE LIGHTNING ARRESTER CABINET



ITEM	QTY	DESCRIPTION
ARREL001	6	ARRESTER, ELBOW METAL OXIDE VARRISTER
BOLMS017	4	BOLT, MACHINE SQ. HEAD 5/8 X 8 IN.
CLATG001	5	CONNECTOR, TRANSFORMER TANK GROUND
CLAHL001	6	CLAMP, HOTLINE #6 SOL. - 1/0 STR.
COBCO029	20	CONDUCTOR, BARE CU, #2AWG SOL HARD DRAW
ENCOD004	1	ENCLOSURE, THREE PHASE JUNCTION/ ARRESTER
LOCPA001	1	PADLOCK, ALL BRASS 1 - 3/4 IN SHANK OPENING
RECPA004	6	RECEPTACLE, FEED THRU 25KV LOADBREAKER
WASSF003	4	WASHER, SQ. FLAT FOR 5/8 OR 3/4 IN. BOLT

# UVF9

## SINGLE PHASE JUNCTION ENCLOSURE



**NOTES:**

1. Enclosure comes equipped with two (2) parking stand mounting plates and one (1) universal junction module mounting plate.
2. Itemize the accessories you wish to mount in the enclosure.

**EXAMPLES:**

FEED-THRU BUSHING      I.RECPA004  
 3 POINT JUNCTION MODULE      I.JUNLOXXX  
 4 POINT JUNCTION MODULE      I.JUNLOXXX

3. Use pad plate – UPD1 \*

ITEM	QTY	DESCRIPTION
ANCSD001	4	ANCHOR, CONCRETE
ENCOD007	1	ENCLOSURE, SINGLE PHASE JUNCTION
LOCPA001	1	PADLOCK, ALL BRASS 1 - 3/4 IN SHANK OPENING
RECPA004	1	BUSHING, FEED-THRU

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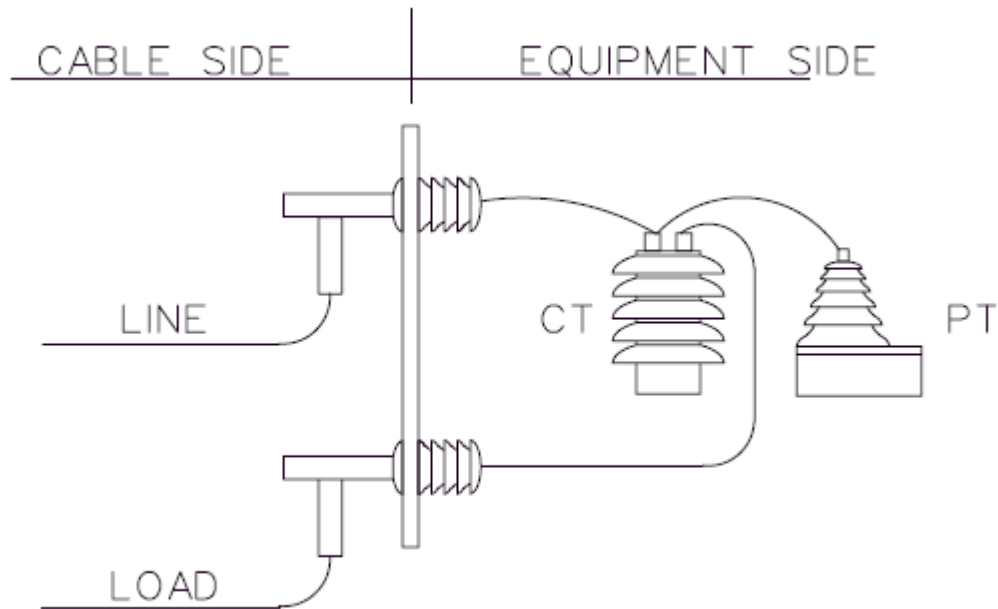
# PRIMARY METERING ENCLOSURE

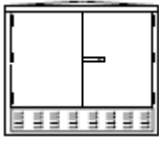
## I. CONSTRUCTION NOTES

- I.1. Metering transformer enclosure furnished and installed by JEA.
- I.2. Line cables furnished and installed by JEA.
- I.3. Meter enclosure furnished by JEA, installed by customer.
- I.4. Load cables and terminators furnished and installed by customer.
- I.5. 1" conduit for potential wires furnished and installed by customer.
- I.6. Metering pit furnished and installed by customer.
- I.7. For metering equipment, notify Meter Services.
- I.8. All connections to JEA equipment shall be made by JEA.

**NOTE:**

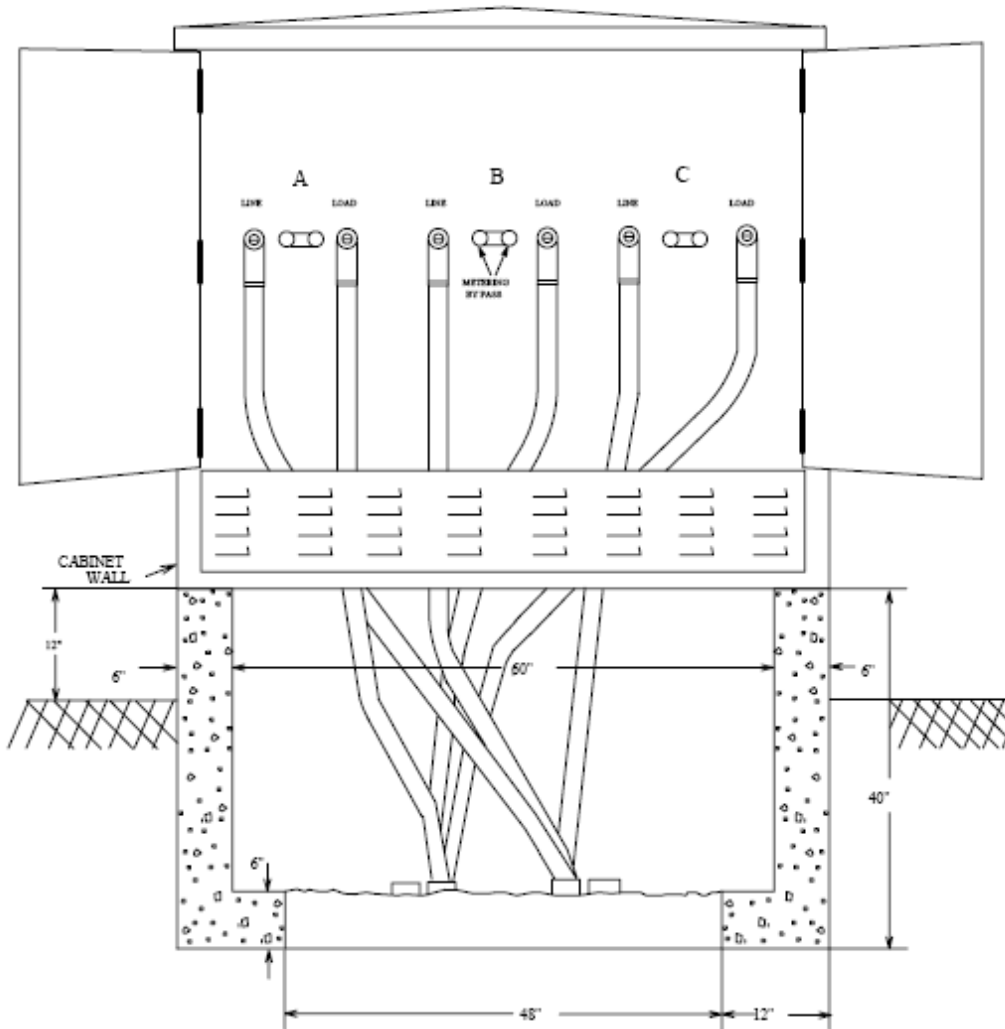
All new primary metering enclosure installations shall be wired per the diagram below. If an existing (old) enclosure needs maintenance where an outage is required, it shall be rewired at that time.



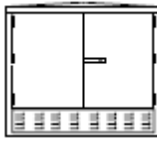


# UM1-200 & UM1-600 PADMOUNT PRIMARY METERING ENCLOSURE

BACK

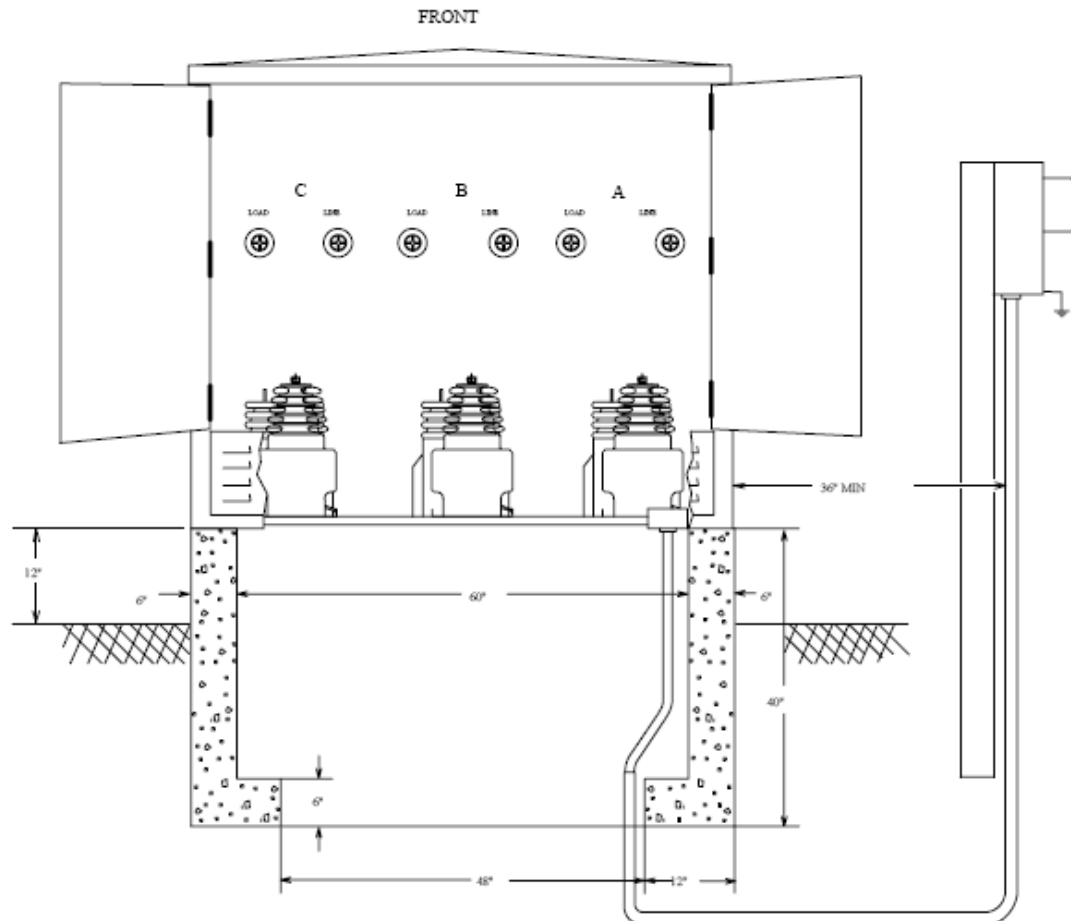


REAR VIEW



# UM1-200 & UM1-600

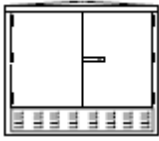
## PADMOUNT PRIMARY METERING ENCLOSURE



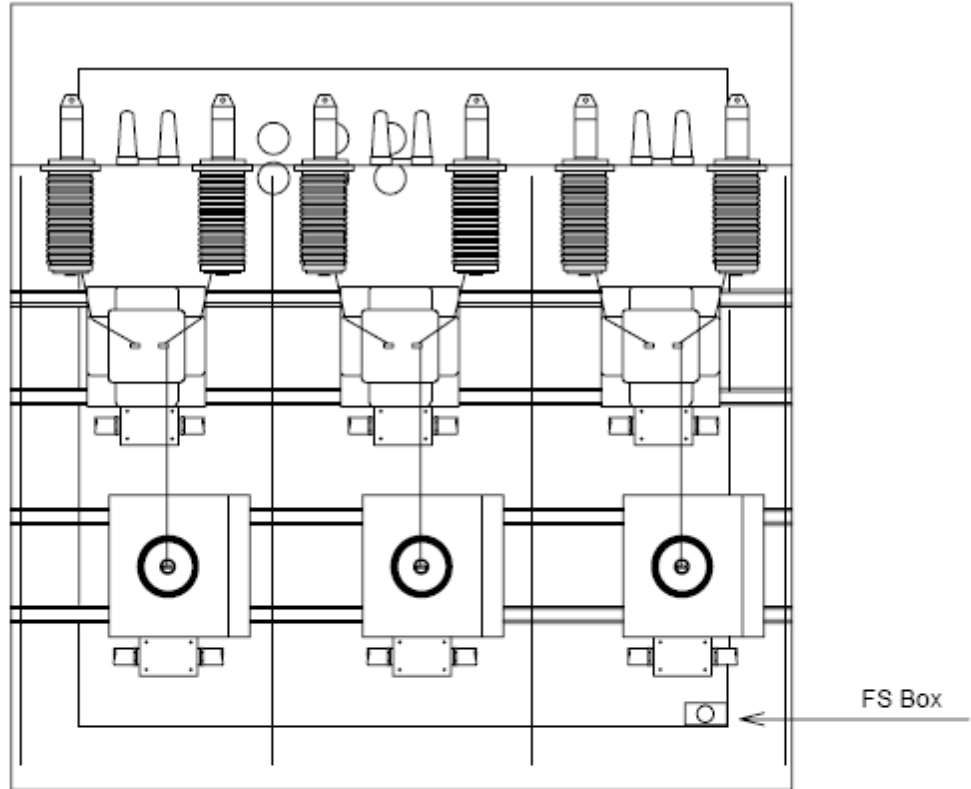
FRONT VIEW

**NOTES:**

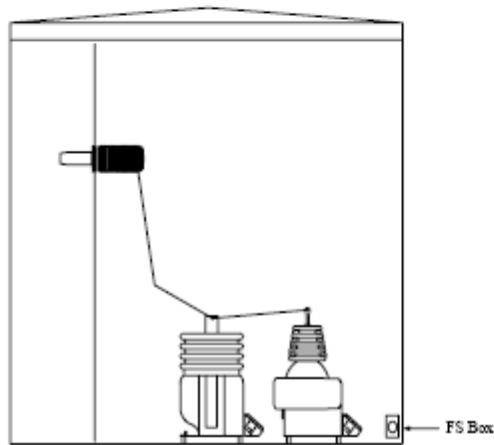
1. The meter enclosure must be grounded with a #4 bare solid copper conductor.
2. Raceways are 1 inch rigid conduit.



# UM1-200 & UM1-600 PADMOUNT PRIMARY METERING ENCLOSURE

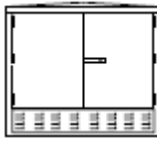


TOP VIEW



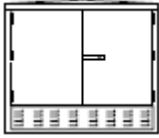
SIDE VIEW





## UM1-200 & UM1-600 PADMOUNT PRIMARY METERING ENCLOSURE

ITEM	QTY	DESCRIPTION
ANCSD001	4	ANCHOR, SELF - DRILLING CONCRETE
BOLMS001	18	BOLT, MACHINE, SQUARE HEAD
BOLMH001	4	BOLT, MACHINE, HEAD
BUS_ _ _ _ _	6	BUSHING, WELL GENERAL CODE (200/600AMP)
BUSWI_ _ _	3	BUSHING PLUG INSERT GENERAL CODE (200AMP)
COBCO028	15 Ft	CONDUCTOR, BARE COPPER, #6
COBCO033	6 Ft	CONDUCTOR, BARE COPPER, #4/0
CNNLB001	3	CONNECTOR, ELBOW
CNNVG006	3	CONNECTOR, VICE TYPE
CNNTL013	9	CONNECTOR, ALUMINUM TERMINAL
CNNTTE039	2	CONNECTOR, TERMINAL
ENCOD008	1	ENCLOSURE, OUTDOOR, PRIMARY MEETING W/ FRAME
LOCPA002	2	PADLOCK, ALL BRASS
COEST002	6	STRESS RELIEF CONE
TAPEL010	2	TAPE, SELF FUSING SILICON RUBBER ELECTRICAL
WASRD003	4	WASHER, ROUND
METCT_ _	3	CURRENT TRANSFORMER GENERAL CODE
METVT_ _	3	POTENTIAL TRANSFORMER GENERAL CODE
METEN002	1	THREE (3) GANG METER CAN WITH ADAPTERS
METEN001	1	SINGLE (1) GANG METER CAN
CXANO002	2	CONCRETE POST
----N/A----	1	CONCRETE 40LB BAG
CODPC016	30 Ft	CONDUIT, 1" SCHEDULE 40 PVC
CODEP024	2	90 DEGREE SWEEP, 1" SCHEDULE 40 PVC
CODCO025	8	COUPLING, 1" SCHEDULE 40 PVC
----N/A-----	2	CONNECTOR, FEMALE TO MALE SCHEDULE 40 PVC
NUTSL006	2	LOCK NUTS, 1" CONNECTORS
METFS001	1	FS BOX (4 OPENINGS)
RAICA001	24	KENDORF RAIL CONNECTORS
SCWHQ415	24	3/8" X 1-1/2" BOLTS
WASRD002	24	3/8" WASHERS
CNNVG002	6	CONNECTORS, #7 VISE GRIP KEARNEYS
COBCO028	60	COPPER WIRE, SOFT DRAWN #4 SOLID
CODPC017	10	NON-METALIC 1" CONDUIT (1" CARFLEX LIQUID TIGHT)
CNNME002	12	STRAIGHT 1" SEAL-TIGHT CONNECTORS
CNNME004	1	90 DEGREE ELBOW 1" SEAL-TIGHT CONNECTORS
----N/A-----	3	PLUGS, 1" BLANK WORK BOX
COIBW004	40 Ft	RED, #12 SOLID AWG WIRE
COIBW009	40	BROWM, #12 SOLID AWG WIRE
COIBW006	40	PURPLE, #12 SOLID AWG WIRE
COIBW005	40	WHITE, #12 SOLID AWG WIRE
COIBW010	40	YELLOW, #12 SOLID AWG WIRE
COIBW007	40	ORANGE, #12 SOLID AWG WIRE
COIBW008	40	BLUE, #12 SOLID AWG WIRE
COIBW003	40	BLACK, #12 SOLID AWG WIRE
ADCMI002	1	CEMENT, PVC



## UM1-200 & UM1-600 PADMOUNT PRIMARY METERING ENCLOSURE

**BUSHINGS 200/600**  
(SEE PLATE EXAMPLE BELOW)

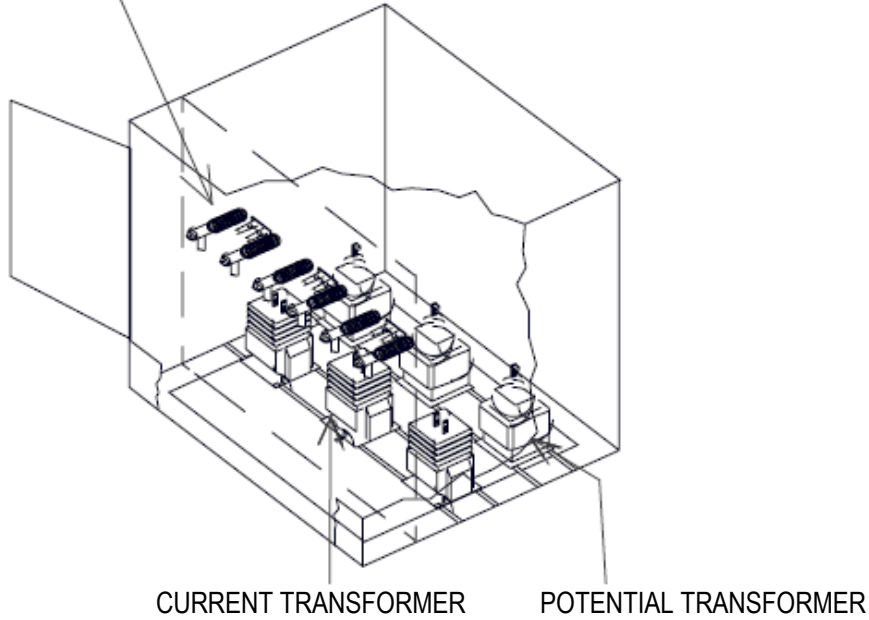


PLATE EXAMPLES:	
<b>UM1-200</b>	This is for 200 Amp systems.
	Additional plates UVT7*1/0L (6). (See page TE-10 of Standards Book.)
<b>UM1-600</b>	This is for 600 Amp systems.
	Additional plates UVT8*350-DF-AB (6). (See pages TE-1 & TE-11 of Standards Book.)

# SECONDARY

## I. CONSTRUCTION NOTES

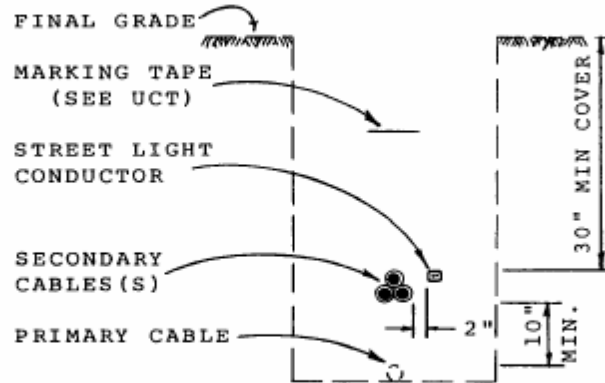
- I.1. 1. Plate(s) to be called for on a "per foot" basis:  
USB\*OPTION  
USC\*OPTION
- I.2. 2. Plate UST\*OPTION calls for compression connectors. To be called for on a "per leg" basis.
- I.3. 3. Plate UST-1 provides for connector labor for padmount transformers and meter cans. Call for separate plate on each leg and on neutral.
- I.4. 4. Plate UST-2 – See Plate USP for conduit layout.
- I.5. 5. Plate USMT – Cable end termination only. Mole not included. Call for one USMT Plate per each set of 3 - 500 MCM network secondary cable. If over 25% of outlets are left vacant, call for required Item-MOLPL001 to plug outlets, as extra item.
- I.6. 6. Plate USF1 – Mole not included. Call for one per set of 3 – 500 MCM network secondary.
- I.7. 7. Plate BLD-MOLE \* Option – Network application includes, mole, hook, rack and related hardware for installation.
- I.8. 8. SERV-BOX - (P, C or D)\*C or H – To set non-traffic bearing polymer concrete service box – To include necessary excavation required to install service box to grade. Unit of issue – each.
- I.9. 9. PULL-BOX - \*C or H – To set traffic bearing pull box – To include necessary excavation required to install pull box to grade. Unit of issue – each.
- I.10. 10. ADDITIONAL PLATES

Listed below are plates not otherwise covered by a Construction Standard and Drawing.

PLATE	DESCRIPTION	UNIT
CBL-REMS	Remove secondary cable 500 kCM and smaller from conduit. Includes up to three (3) conductors per conduit.	LF

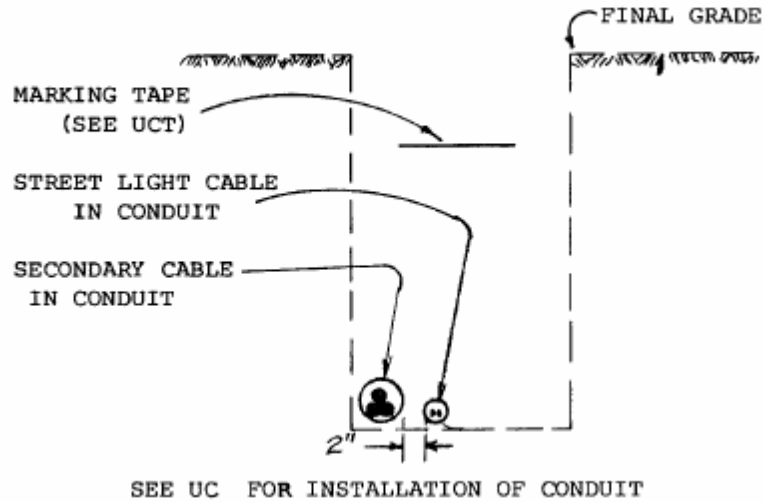
# USB\*

## SECONDARY CABLE(S) IN EXISTING TRENCH – (MAINTENANCE ONLY)



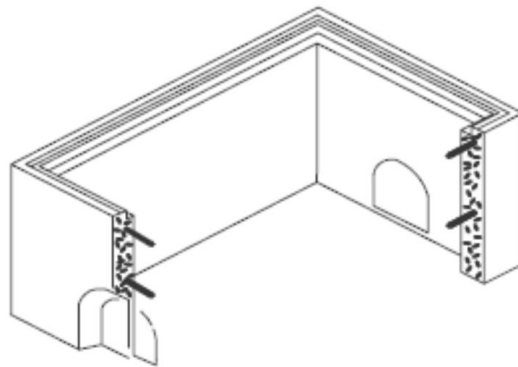
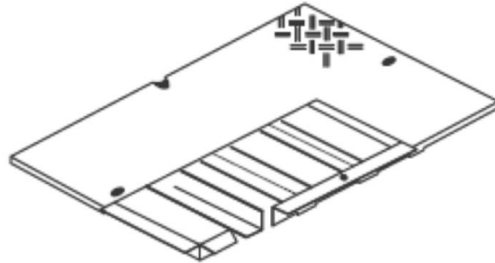
OPTION	ITEM	DESCRIPTION
USB*2/OT	CAIUS002	2/0 AL U.S.E. TRIPLEX
USB*4/OT	CAIUS001	4/0 AL U.S.E. TRIPLEX
USB*350T	CAIUS003	350 KCM AL U.S.E. TRIPLEX
USB*12D	CAIUF001	#12 CU DUPLEX (ST. LT.)

## USC\* SECONDARY CABLE(S) IN EXISTING CONDUIT



OPTION	ITEM	QTY	DESCRIPTION
USC*2/0T	CAIUS002	1	2/0 AL U.S.E. TRIPLEX
USC*4/0T	CAIUS001	1	4/0 AL U.S.E. TRIPLEX
USC*350T	CAIUS003	1	350 MCM AL U.S.E. TRIPLEX
USC*12D	CAIUF001	1	#12 CU DUPLEX (ST. LT.)
USC*500-3N	CAIRH007	3	500 MCM CU RHW/U.S.E. (1/C)
	COBCO035	1	300 MCM CU BARE NEUTRAL
USC*500-3	CAIRH007	3	500 MCM CU RHW/U.S.E. (1/C)
USC*500	CAIRH007	1	500 MCM CU RHW/U.S.E. (1/C)
USC*500-3NC	CAIRH012	3	500 MCM CU RHW/U.S.E., COLORED (3/C)
	COBCO035	1	300 MCM CU BARE NEUTRAL
USC*500-3C	CAIRH012	3	500 MCM CU RHW/U.S.E., COLORED (3/C)
USC*300-3N	CAIRH006	3	300 MCM CU RHW/U.S.E (1/C)
	COBCO035	1	300 MCM CU BARE NEUTRAL
USC*300-3	CAIRH006	3	300 MCM CU RHW/U.S.E. (1/C)
USC*300	CAIRH006	1	300 MCM CU RHW/U.S.E. (1/C)
USC*4/0	CAIRH005	1	4/0 CU RHWN/U.S.E. (1/C)
USC*2/0	CAIRH004	1	2/0 CU RHWN/U.S.E. (1/C)
USC *2	CAIRH002	1	#2 CU U.S.E. (1/C)

# PULL-BOX\* CONCRETE SPLICE BOX



### MPULL-BOX OPTIONS

Installation Conditions:

- C – Cold-New Construction
  - H – Hot-Construction around Existing Cables
- EXAMPLE: MPULL-BOX\*C

### PULL-BOX OPTIONS

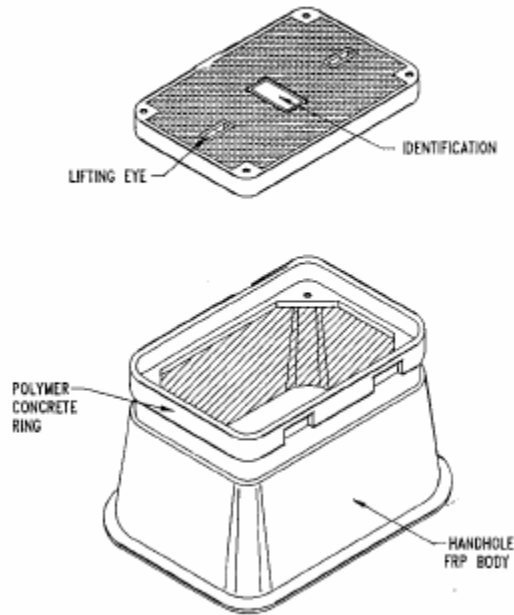
Installation Conditions:

- U - New Undeveloped Area
  - D - Existing Developed Area
- EXAMPLE: PULL-BOX\*D

ITEM	QTY	DESCRIPTION
BOXSP002	1	PULL BOX, CONCRETE ,TRAFFIC BEARING, STEEL COVER Inside Dimensions – 16”W X 24”L X 24”Deep
BOXSP003	1	PULL BOX, CONCRETE ,TRAFFIC BEARING, STEEL COVER Inside Dimensions – 24”W X 24”L X 24”Deep

# SERV\_BOX-\_\*

## POLYMER CONCRETE SERVICE BOX



### MSERV-BOX OPTIONS

Installation Conditions:

- C – Cold-New Construction
  - H – Hot-Construction around Existing Cables
- EXAMPLE: MSERV-BOX-P\*C

### SERV-BOX OPTIONS

Installation Conditions:

- U – New Undeveloped Area
  - D – Existing Developed Area
- EXAMPLE: SERV-BOX-C\*D

PLATE	QTY	DESCRIPTION	# OF SERVICES (Assume 3-inch in to box)
SERV-BOX-P*_	1	13"x24"x18" / Dead end	3 STREET LIGHTS
		13"x24"x18" / Continuous	3-inch out to next box + 2 Lights
SERV-BOX-C*_	1	17"x30"x18" / Dead end	2 House services + 1 Light
		17"x30"x18" / Continuous	3-inch out to next box + 1 House + 1 Light
SERV-BOX-D*_	1	24"x36"x18" / Dead end	2 House service + 2 Lights
		24"x36"x18" / Continuous	3-inch out to next box + 2 House + 2 Light

**USS\*  
SECONDARY SPLICE**

**SECONDARY STRAIGHT SPLICE**



**BUSS CONNECTORS**



<b>STRAIGHT SPLICE</b>			
<b>PLATE</b>	<b>ITEM</b>	<b>QTY</b>	<b>DESCRIPTION</b>
USS*1	SPLKT001	1	SPLICE/REPAIR KIT, SEC, #1 AL/CU
USS*2/0	SPLKT002	1	SPLICE/REPAIR KIT, SEC, #2/0 AL/CU
USS*4/0	SPLKT003	1	SPLICE/REPAIR KIT, SEC, #4/0 AL/CU
USS*350	SPLKT004	1	SPLICE/REPAIR KIT, SEC, 350KCM AL/CU
USS*500	SPLKT005	1	SPLICE/REPAIR KIT, SEC, 500KCM AL/CU
USS*6/350	SPLKT006	1	SPLICE/REPAIR KIT, SEC, RANGE #6- 350KCM AL/CU

<b>BUSS CONNECTORS</b>			
<b>PLATE</b>	<b>ITEM</b>	<b>QTY</b>	<b>DESCRIPTION</b>
USS*500B	CNNSP001	1	BUSS CONNECTOR, 4 OUTLET, #6-500KCM AL/CU
USS*750B	CNNSP002	1	BUSS CONNECTOR, 6 OUTLET, #2-750KCM AL/CU



## USS-1\* SECONDARY SPLICE - TAPE HAND APPLIED (COPPER CABLE ONLY)

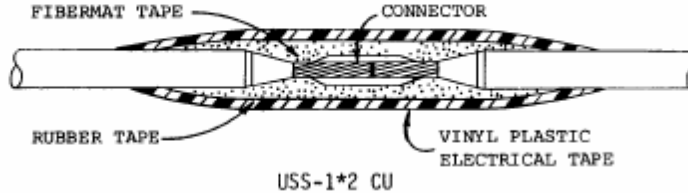


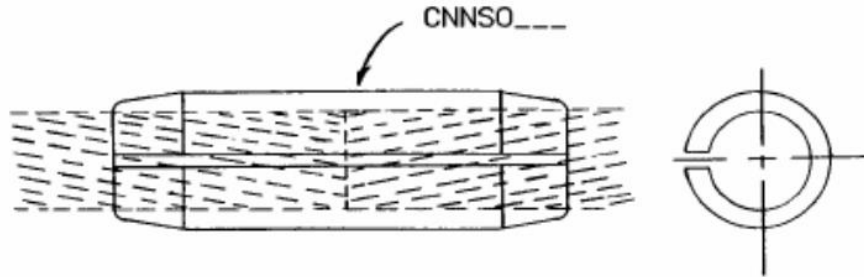
PLATE	ITEM	QTY	DESCRIPTION
USS-1*2 CU	CNNSO008	1	CONNECTOR, SPLIT SOLDER #2 STR CU.
	SOLTL002	1	SOLDER, 40/60 1.5LB BAR
	TAPEL003	1	TAPE, RUBBER
	TAPEL006	1	TAPE, VINYL PLASTIC ELECTRICAL
	TAPEL009	1	TAPE, ADHESIVE BACKED FIBERGLASS
USS-1*2/0 CU	CNNSO010	1	CONNECTOR, SPLIT SOLDER 2/0 CU
	SOLTL002	1	SOLDER, 40/60 1.5LB BAR
	TAPEL003	1	TAPE, RUBBER
	TAPEL0006	1	TAPE, VINYL PLASTIC ELECTRICAL
	TAPEL009	1	TAPE, ADHESIVE BACKED FIBERGLASS
USS-1*4/0 CU	CNNSO011	1	CONNECTOR, SPLIT SOLDER 4/0 CU
	SOLTL002	1	SOLDER, 40/60 1.5LB BAR
	TAPEL003	1	TAPE, RUBBER
	TAPEL0006	1	TAPE, VINYL PLASTIC ELECTRICAL
	TAPEL009	1	TAPE, ADHESIVE BACKED FIBERGLASS
USS-1*300 CU	CNNSO012	1	CONNECTOR, SPLIT SOLDER 300 MCM CU
	SOLTL002	1	SOLDER, 40/60 1.5LB BAR
	TAPEL003	1	TAPE, RUBBER
	TAPEL0006	1	TAPE, VINYL PLASTIC ELECTRICAL
	TAPEL009	1	TAPE, ADHESIVE BACKED FIBERGLASS
USS-1*500CU	CNNSO014	1	CONNECTOR, SPLIT SOLDER 500 MCM CU
	SOLTL002	1	SOLDER, 40/60 1.5LB BAR
	TAPEL003	1	TAPE, RUBBER
	TAPEL0006	1	TAPE, VINYL PLASTIC ELECTRICAL
	TAPEL009	1	TAPE, ADHESIVE BACKED FIBERGLASS
USS-1*300Y	CNNSO002	1	CONNECTOR, HALF DUPLEX SOLDER, SPLIT 300-300-300
	SOLTL002	1	SOLDER, 40/60 1.5LB BAR
	TAPEL003	1	TAPE, FIBERMAT
	TAPEL0006	1	TAPE, RUBBER
	TAPEL009	1	TAPE, VINYL PLASTIC ELECTRICAL
USS-1*500Y	CNNSO005	1	CONNECTOR, HALF DUPLEX SOLDER, SPLIT 500-500-500
	SOLTL002	1	SOLDER, 40/60 1.5LB BAR
	TAPEL003	1	TAPE, FIBERMAT
	TAPEL0006	1	TAPE, RUBBER
	TAPEL009	1	TAPE, VINYL PLASTIC ELECTRICAL

**USN\*300**

**USN\*4/0**

**USN\*4/0I**

**SPLICE**



**USN\*300 Bare copper neutral (for Network Only)**

ITEM	QTY	DESCRIPTION
ADCSP013	1	PASTE SOLDER
CNNSO012	1	CONNECTOR, 300 MCM, SOLDER, SPLIT SOLDER TINNED DIPPED COPPER
SOLTL002	1	SOLDER BAR 40/60

**USN\*4/0 Bare copper neutral (for Network Only)**

ITEM	QTY	DESCRIPTION
ADCSP013	1	PASTE SOLDER
CNNSO011	1	CONNECTOR, 4/0 STR, SOLDER, SPLIT SOLDER TINNED DIPPED COPPER
SOLTL002	1	SOLDER BAR 40/60

**USN\*4/0I Insulated copper neutral**

ITEM	QTY	DESCRIPTION
SLEJ001	1	SLEEVE, 4/0 COPER JUMPER, COMPRESSION, NON-TENSION ONLY

# UST\* SECONDARY TERMINATION LUGS



OPTION	ITEM	DESCRIPTION
UST*1	CNNTL012	#1 SINGLE HOLE LUG
UST*1/0	CNNTL013	SINGLE HOLE LUG
UST*2/0	CNNTL014	SINGLE HOLE LUG
UST*3/0	CNNTL015	SINGLE HOLE LUG
UST*4/0	CNNTL016	#4/0 SINGLE HOLE LUG
UST*350	CNNTL017	#350 SINGLE HOLE LUG
UST*500	CNNTL018	#500 SINGLE HOLE LUG
UST*4/0T	CNNTL001	#4/0T STACKING TOP LUG
UST4/0B	CNNTL002	#4/0B STACK BOTTOM LUG
UST*250T	CNNTL003	#250 STACKING TOP LUG
UST*250B	CNNTL004	#250 STACKING BOTTOM LUG
UST*350T	CNNTL005	#350 STACKING TOP LUG
UST*350B	CNNTL006	#350 STACKING BOTTOM LUG
UST*500B	CNNTL008	#500 STACKING BOTTOM LUG
UST*600B	CNNTL009	#600 STACKING BOTTOM LUG
UST*750B	CNNTL010	#750 STACKING BOTTOM LUG

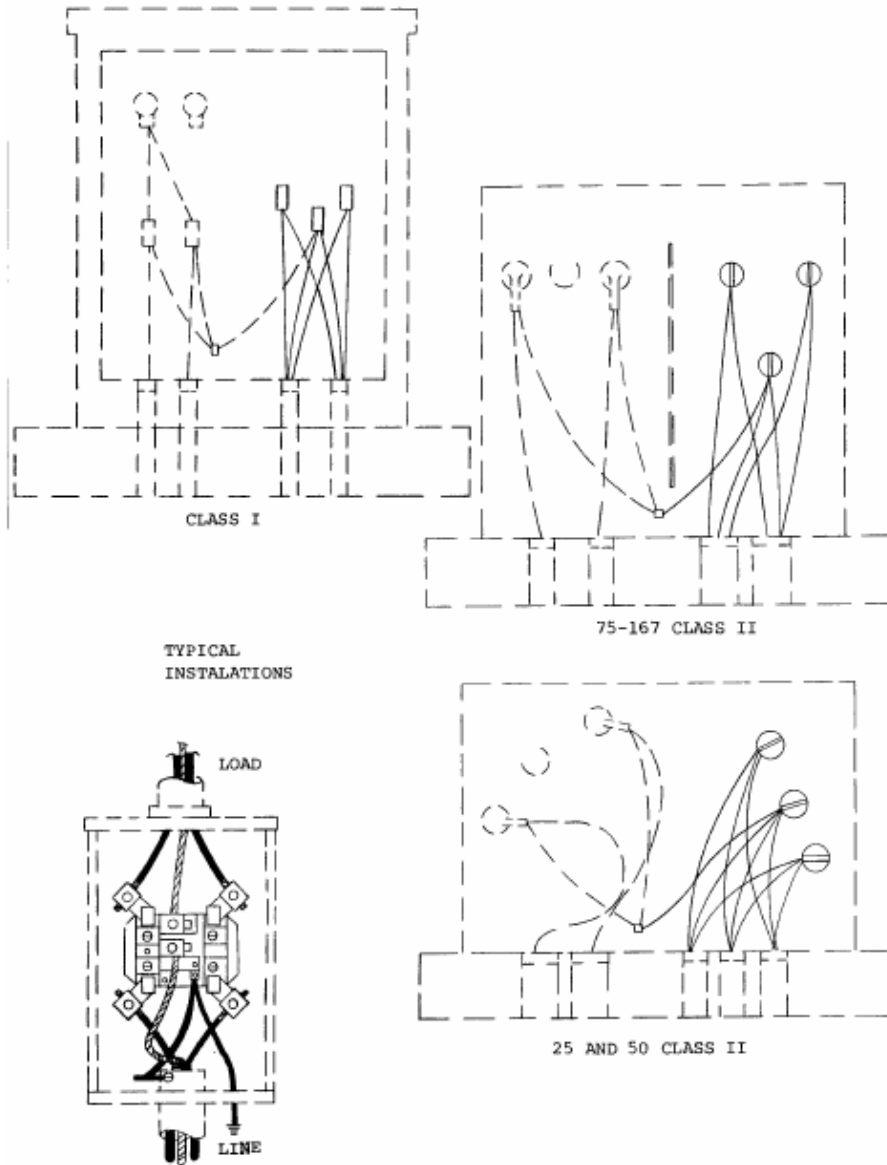
**NOTE:**

Each plate includes the connector and the following material to bolt the connector to the transformer spade:

ITEM	QTY	DESCRIPTION
BOLTMH007	2	BOLT, MACHINE HEX HEAD 1/2 X 1-1/2 INCH BRONZE
NUTBC500	2	NUT, HEX 1/2 INCH TIN PLATED SILICON - BRONZE
WASLO023	2	WASHER, SHAKE PROOF LOCK 1/2 INCH

# UST-1

## SECONDARY CONNECTIONS



(EXISTING LUGS AND METER CANS – LABOR ONLY)

**UST-2\***  
**SECONDARY CONNECTIONS**  
**SECONDARY PEDESTALS**

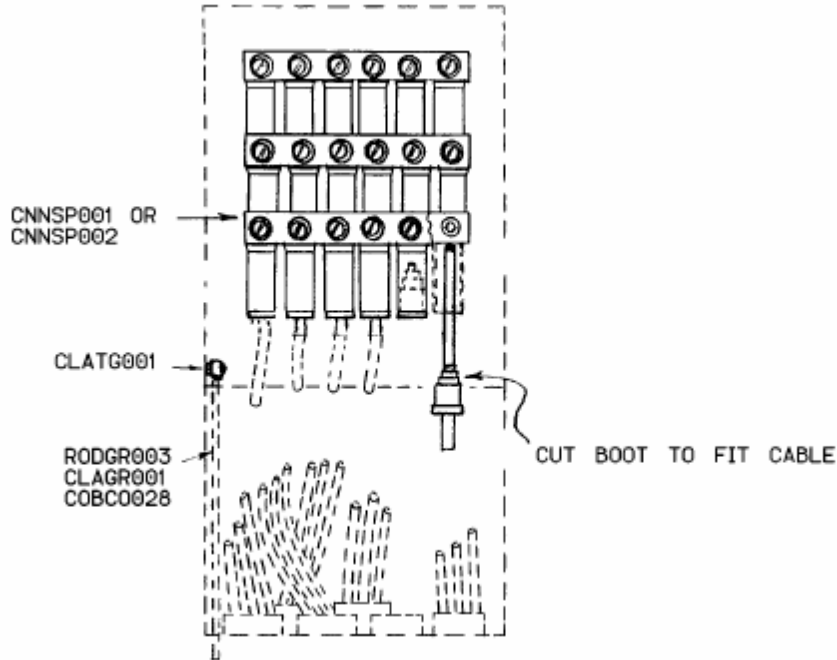


PLATE	ITEM	QTY	DESCRIPTION
UST - 2 * 750	CLATG001	1	CONNECTOR, TRANSFORMER TANK GROUND 6 SOL-1STR
	COBC0028	2	CONDUCTOR, BARE CU #4 SOL SOFT DRAWN
	CNNSP002	3	CONNECTOR, SECONDARY PED., 6 OUTLETS, RANGE #2 - 750KCM
UST - 2 * 500	CLATG001	1	CONNECTOR, TRANSFORMER, TANK GROUND 6 SOL - 1STR
	COBC0028	2	CONDUCTOR, BARE CU #4 SOL SOFT DRAWN
	CNNSP001	3	CONNECTOR, SECONDARY PED., 4 OUTLETS, RANGE #6 - 500KCM

\*Grounding Material Included In Plate

ITEM	QTY	DESCRIPTION
RODGR003	1	OD, GROUND, 5/8"
CLAGR001	1	CLAMP, GROUND ROD

**NOTE:**  
 See USP plate for conduit layout

# USP-     SECONDARY PEDESTAL

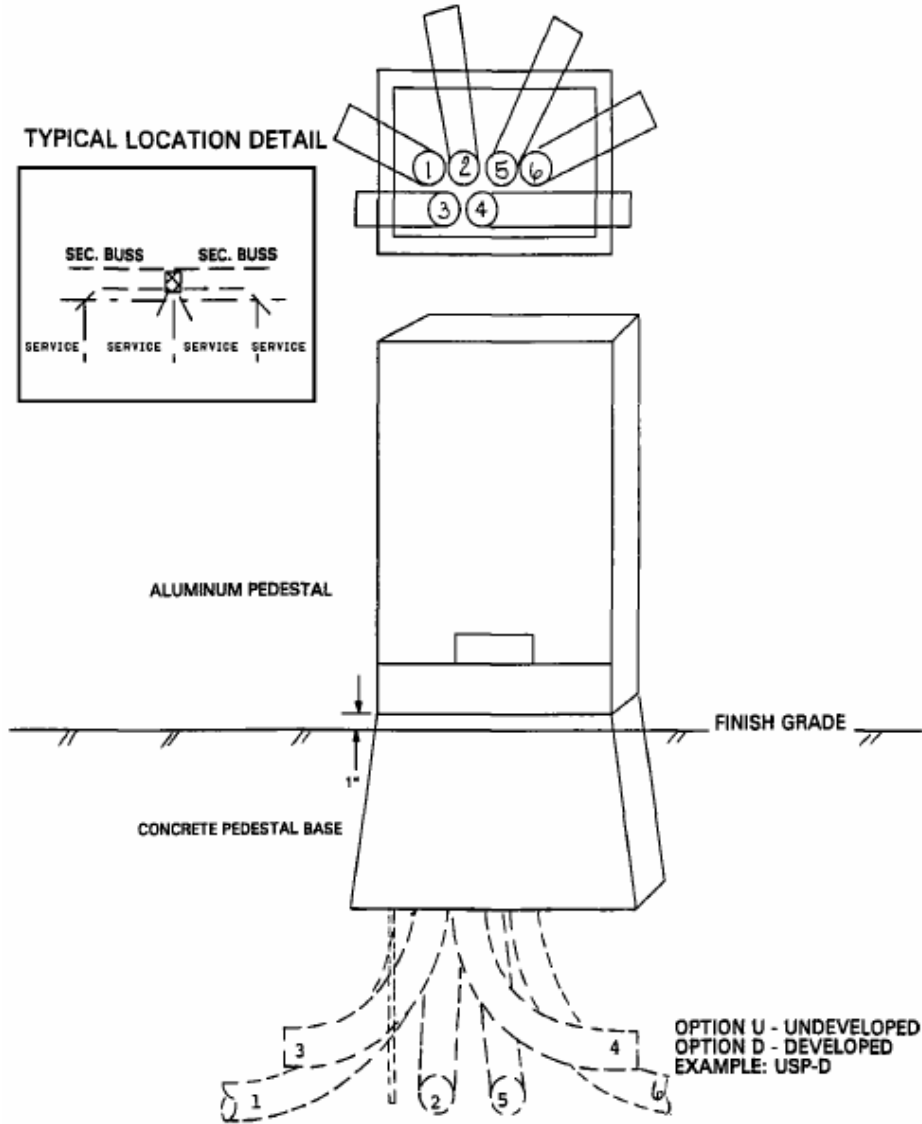


PLATE EXAMPLE:  
USP\*D

ITEM	QTY	DESCRIPTION
PEDSE001	1	SECONDARY PEDESTAL
PEDSE100	1	PEDESTAL BASE, CONCRETE

## USS-SL\* SECONDARY SPLICE WITH STREET LIGHT CONNECTION

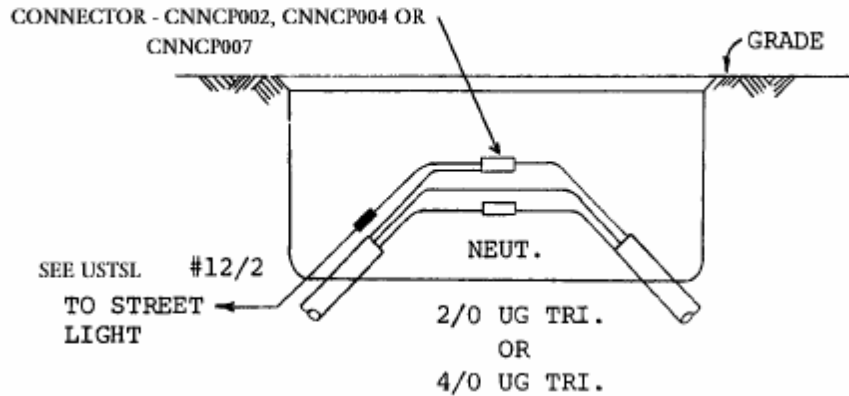
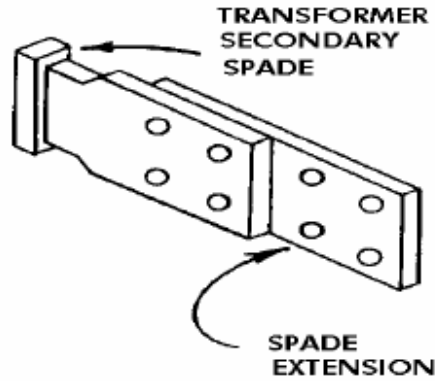


PLATE	ITEM	QTY	DESCRIPTION
USS-SL*2/0	CNNCP002	1	CONNECTOR, AL. COMP. SIDE-BY 6-2 2-1/0
	CNNCP004	1	CONNECTOR, AL. COMP. SIDE-BY 1/0-2/0 1/0-3/0
	PADHA001	2	PAD, VINYL MASTIC (INSULATING)
	TAPEL009	1	TAPE, VINYL PLASTIC ELECTRICAL
USS-SL*4/0	CNNCP004	1	CONNECTOR, AL COMP. SIDE-BY 1/0-2/0 1/0-3/0
	CNNCP007	1	CONNECTOR, AL. COMP SIDE-BY 3/0-4/0 3/0-4/0
	PADMA001	2	PAD, VINYL MASTIC (INSULATING)
	TAPEL009	1	TAPE, VINYL PLASTIC ELECTRICAL

**USX\*  
SPADE EXTENSION**



OPTION	ITEM	DESCRIPTION
USX*1/2	SPDEX001	1/2 WIDTH, 1250 AMPS.

PLATE	ITEM	QTY	DESCRIPTION
USX*1/2	BOLMH007	8	BOLT, MACHINE, HEX HEAD BRONZE 1/2 X 1-1/2 INCH
	NUTHH030	8	NUT, HEX 1/2 INCH TIN PLATED SILICON - BRONZE
	SPDEX001	1	SPADE EXTENSION, PADMOUNT TRANSF. 1/2 W 1250 AMPS
	WASL0023	8	WASHER, SHAKE PROOF LOCK, BRONZE 1/2 INCH BOLT SIZE



**BLD-MOLE\*\_\_**  
**MOLE**

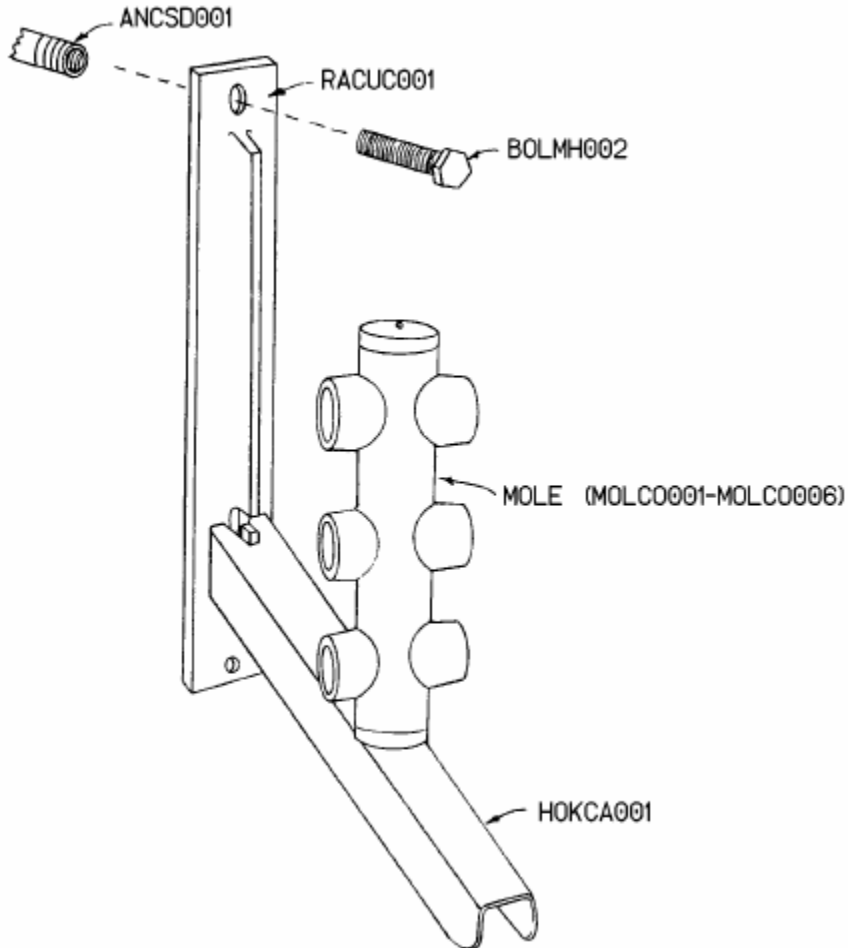


PLATE	ITEM	QTY	DESCRIPTION
BLD-MOLE*__	ANCSD001	2	ANCHOR, SELF DRILLING 1/2 X 2 INCH
	BOLMH002	2	BOLT, MACHINE HEX HEAD 1/2 X 2 INCH
	HOKCA001	1	HOOK, CABLE
	RACUC001	1	RACK, SECONDARY MOLE
	MOLCO***	1	MOLE COMNNECTOR

For Mole-call for PLATE\*OPTION

**OPTIONS AVAILABLE:**  
 8, 10, 12, 14, 20, 24

**EXAMPLE:**  
 BLD-MOLE\*8 (MOLE CONNECTOR, 8 WAY, 2500 AMP)

**USM\***  
**MOLE, STUD CONNECTOR**  
**NETWORK CABLE TERMINATIONS**

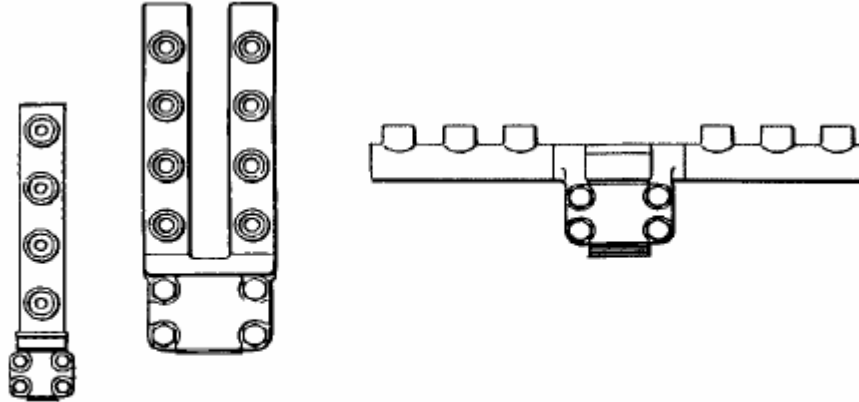
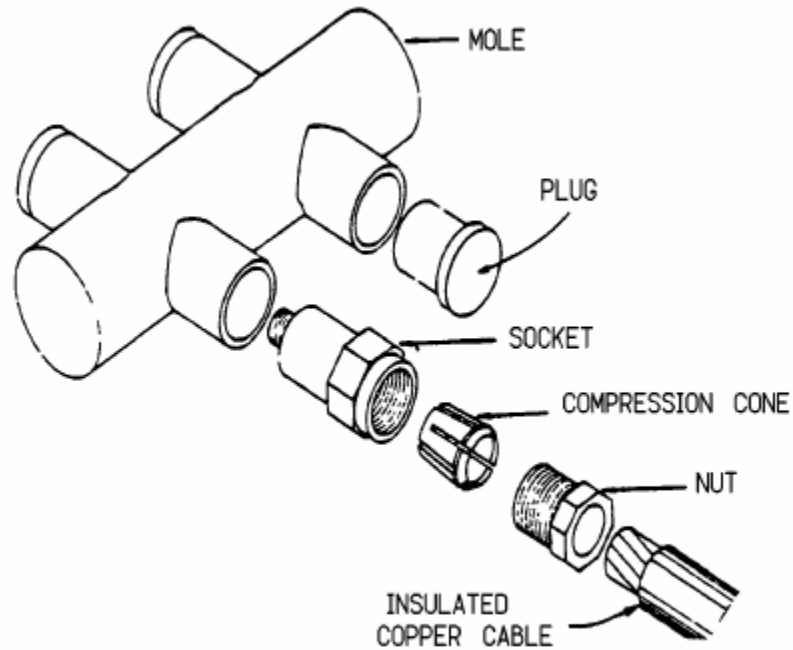


PLATE	ITEM	QTY	DESCRIPTION
USM*8U	MOLSC004	3	MOLE STUD CONNECTOR, U OR DOUBLE VERTICAL, 8 OUTLETS
	TAPEL003	6	TAPE, FIBERMAT
	TAPEL006	3	TAPE, RUBBER
	TAPEL009	2	TAPE, VINYL PLASTIC ELECTRICAL
USM*5V	MOLSC002	3	MOLE STUD CONNECTOR, VERTICAL, 5 OUTLETS
	TAPEL003	6	TAPE, FIBERMAT
	TAPEL006	3	TAPE, RUBBER
	TAPEL009	2	TAPE, VINYL PLASTIC ELECTRICAL
USM*6V	MOLSC003	3	MOLE STUD CONNECTOR, VERTICAL, 6 OUTLETS
	TAPEL003	6	TAPE, FIBERMAT
	TAPEL006	3	TAPE, RUBBER
	TAPEL009	2	TAPE, VINYL PLASTIC ELECTRICAL
USM*6H	MOLSC001	3	MOLE STUD CONNECTOR, HORIZONTAL, 6 OUTLETS
	TAPEL003	6	TAPE, FIBERMAT
	TAPEL006	3	TAPE, RUBBER
	TAPEL009	2	TAPE, VINYL PLASTIC ELECTRICAL

**USMT\***  
**NETWORK CABLE**  
**TERMINATIONS INTO MOLES**



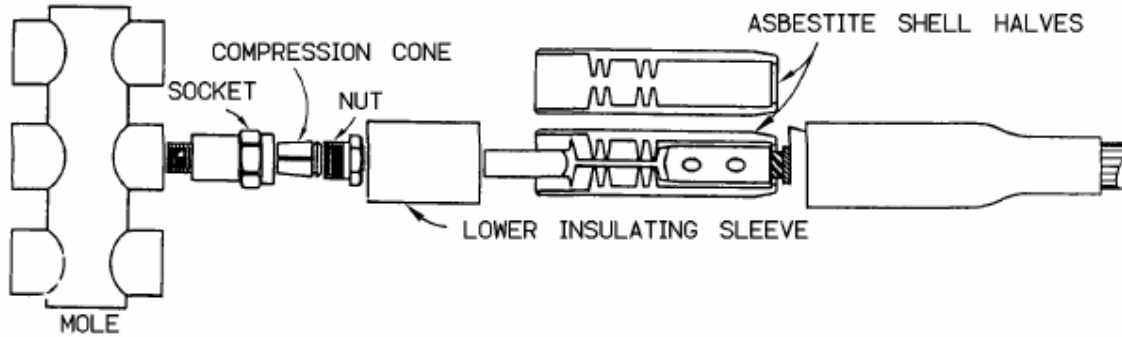
ITEM	QTY	DESCRIPTION
MOLCO007	3	CONE, COMPRESSION 500 MCM
MOLCS001	3	MOLE COLD SHRINK INSULATOR 9"
SLEMO001	3	SLEEVE, INSULATING
SOCNA001	3	SOCKET AND NUT ASSEMBLY
TAPEL009	1	TAPE, ELECTRICAL VINYL PLASTIC, 0.75"
TAPEL013	1	TAPE, ELECTRICAL LINERLESS RUBBER 1.5"

**OPTIONS AVAILABLE:**  
 500kCM Cable, USMT\*500

**NOTE:**  
 Mole is not included – See BLD-MOLE\* plate

# USF1

## MOLIMETER, ASSEMBLY INSTALLATION

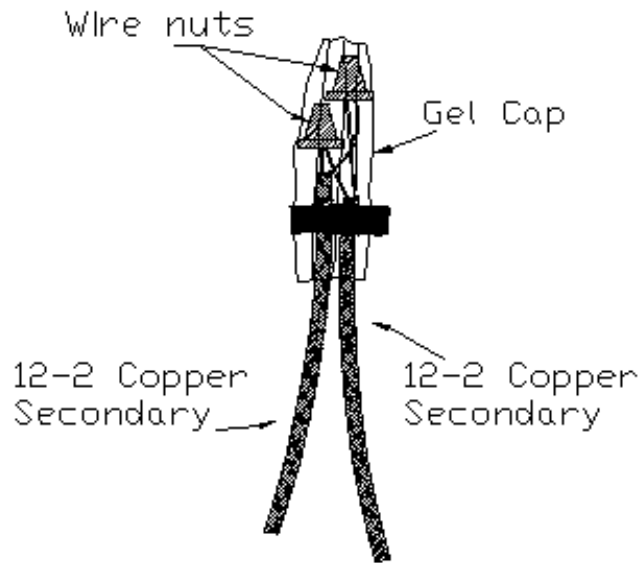


**NOTE:**  
 Cable Termination and Mole not included.  
 (See BLD-MOLE and USMT)

PLATE	ITEM	QTY	DESCRIPTION
USF1	MOLAS002	3	MOLIMETER, ASSEMBLY, 500 MCM
	MOLCO007	3	CONE, COMPRESSION 500 MCM
	MOLCS002	3	MOLE COLD SHRINK INSULATOR 16"
	SOCNA001	3	SOCKET AND NUT ASSEMBLY
	TAPEL009	1	TAPE, ELECTRICAL VINYL PLASTIC 0.75"
	TAPEL013	1	TAPE, ELECTRICAL LINERLESS RUBBER 1.5"

# USS-SL1

## SECONDARY SPLICE FOR 12/2 UF-B CABLE WITHOUT GROUND

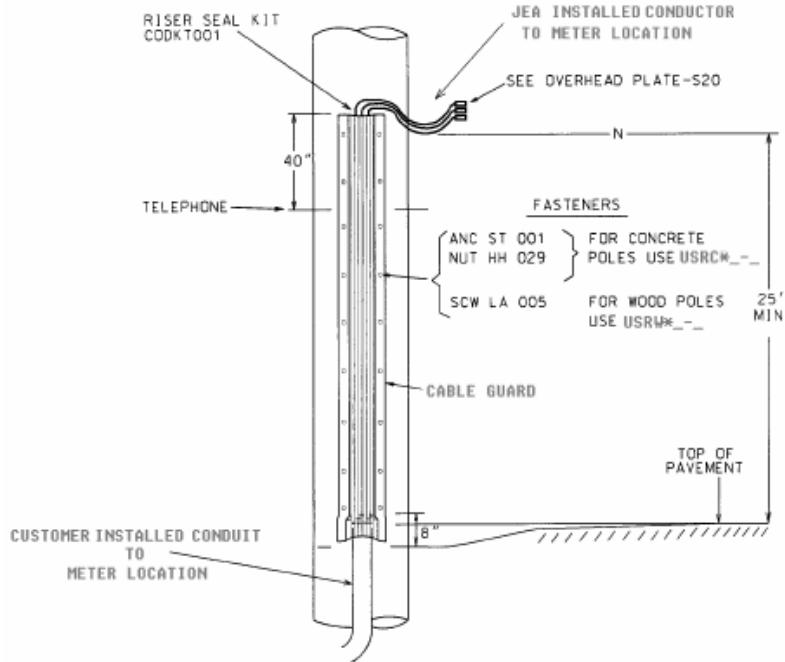


ITEM	QTY	DESCRIPTION
COVSP001	1	COVER, SPLICE GEL CAP WITH 2 WIRE NUTS, 12-2 CABLE

**USRC\* \_**

**USRW\* \_**

**UNDERGROUND RESIDENTIAL SERVICE FROM OVERHEAD POLE  
600AMP/600V MAX**



ITEM	QTY	DESCRIPTION
ANCST001	20	CONC. ANCHOR STUD ( CONC. OPTION )
CAIRH000	135/180	GENERAL CODE FOR CONDUCTOR (3LEG/ 4 LEG)
CAIUS000	45	GENERAL CODE FOR ALUM. TRIPLEX
CODKT001	1	RISER SEAL KIT
GUACA000	3	GENERAL CODE FOR CABLE GUARD, 10' LENGTH
NUTHH029	20	NUT, HEX HEAD ( CONC. OPTION )
SCWLA005	20	SCREW, LAG ( WOOD OPTION )

**AVAILABLE CONDUCTORS:**

Copper – (AWG or kCM): 2, 4, 1/0, 2/0Q, 4/0Q, 500, 500Q  
Aluminum – (AWG or kCM): 2/0, 4/0, 350

**EXAMPLE:**

USRXC\*4/0

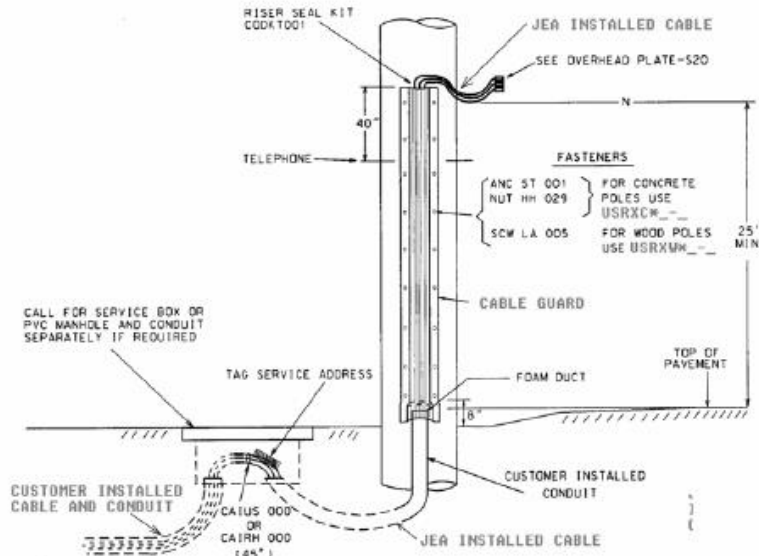
**NOTE:**

Plate options 4/0Q, 350Q, & 500Q include the material listed in plate USRB\* \_.

## USRXC\*\_ USRXW\*\_ \_

### UNDERGROUND SERVICE FROM OVERHEAD POLE (1400AMP/600V MAX)

New commercial services larger than 100 amps and existing underground relocations.



ITEM	QTY	DESCRIPTION
ANCST001	20	CONC. ANCHOR STUD ( CONC. OPTION )
CAIRH000	135/180	GENERAL CODE FOR CONDUCTOR (3LEG/ 4 LEG)
CAIUS000	45	GENERAL CODE FOR ALUM. TRIPLEX
CODKT001	1	RISER SEAL KIT
GUACA000	3	GENERAL CODE FOR CABLE GUARD, 10' LENGTH
NUTHH029	20	NUT, HEX HEAD ( CONC. OPTION )
SCWLA005	20	SCREW, LAG ( WOOD OPTION )
TAGHO002	1	HOLDER, TAG
TIETH001	2	TIE, TAG

#### AVAILABLE CONDUCTORS:

Copper - (AWG or kCM): 2, 4, 1/0, 2/0Q, 4/0Q, 500, 500Q

Aluminum - (AWG or kCM): 2/0, 4/0, 350

#### EXAMPLE:

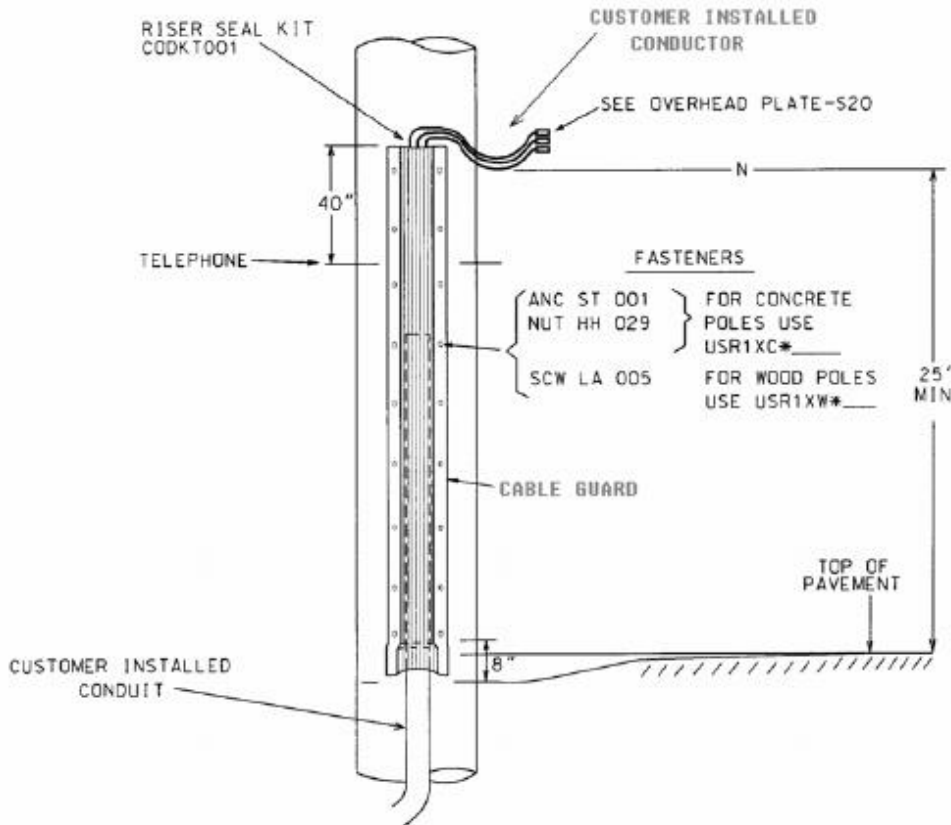
USRXC\*350

#### NOTE:

Plate options 4/0Q, 350Q, & 500Q include the material listed in plate USRB\*\_\_.

## USR1XC\* USR1XW\*

UNDERGROUND COMMERCIAL SERVICE FROM OVERHEAD POLE  
100 AMP / 600V MAX



ITEM	QTY	DESCRIPTION
ANCST001	20	CONC. ANCHOR STUD (CONC. OPTION )
CODKT001	1	RISER SEAL KIT
GUACA000	3	GUARD; PLASTIC CABLE SCHEDULE 40 PVC GENERAL CODE
NUTHH029	20	NUT, HEX HEAD ( CONC. OPTION )
SCWLA005	20	SCREW, LAG (WOOD OPTION )

**GUARD OPTIONS (INCH):** 2 & 3  
**EXAMPLE:**  
USR1XW\*2

This plate is for CATV, SBT, & other small commercial services.



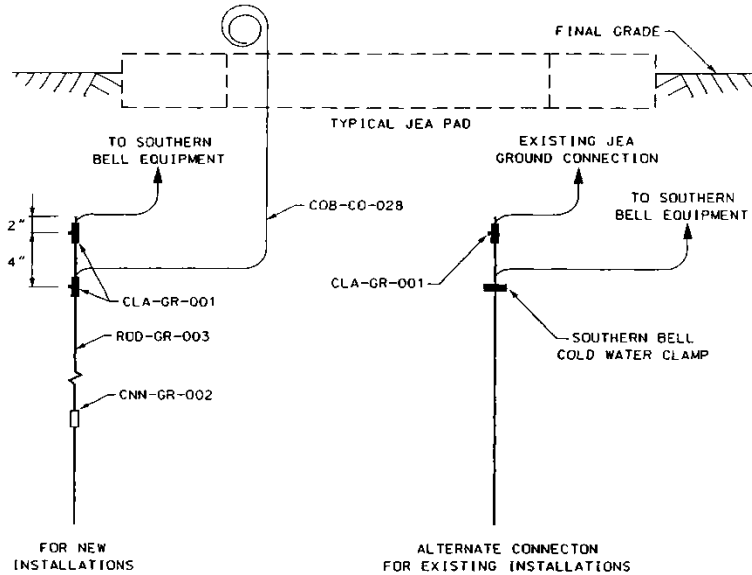
# GROUNDING

## I. GROUNDING NOTES

- I.1. The items included in this section are for the purpose of installing adequate grounds on the underground distribution system. These grounds are vital to achieve optimum system performance, protection and safety. All installations are to include testing with an ohm meter or meggar. A reading of twenty-five (25) ohms or less is required between the ground rod and "ground". If a 25 ohm reading is not achieved by the installation of three ground rods, continue to add and check the ground rods till achieved or a max of 8 ground rods is used. If 8 grounds are used and the reading is still not 25 ohm, record the location and the meter reading and notify the Project Inspector.
- I.2. ADDITIONAL PLATES:  
Listed below are plates not otherwise covered by a construction standard plate and drawing:

PLATE	DESCRIPTION	UNIT
<b>GXP MGXP</b>	<b>Installation of each additional ground rod, coupling and required wire beyond the initial three (3) rods.</b>	<b>EA</b>
<b>GRW50 MGRW50</b>	Installation of a fifty foot (50') deep ground rod well. Includes all required labor, equipment and material to install the well and the installation of ground rods, couplings, wire and connectors	EA
<b>GRW+1 MGRW+1</b>	Installation of ground rod well beyond fifty foot (50') deep. Includes all labor, equipment and material as described in initial ground rod well plate.	LF
<b>GREM MGREM</b>	Includes the removal of a ground rod assembly.	EA

## G1P GROUND ROD ASSEMBLY

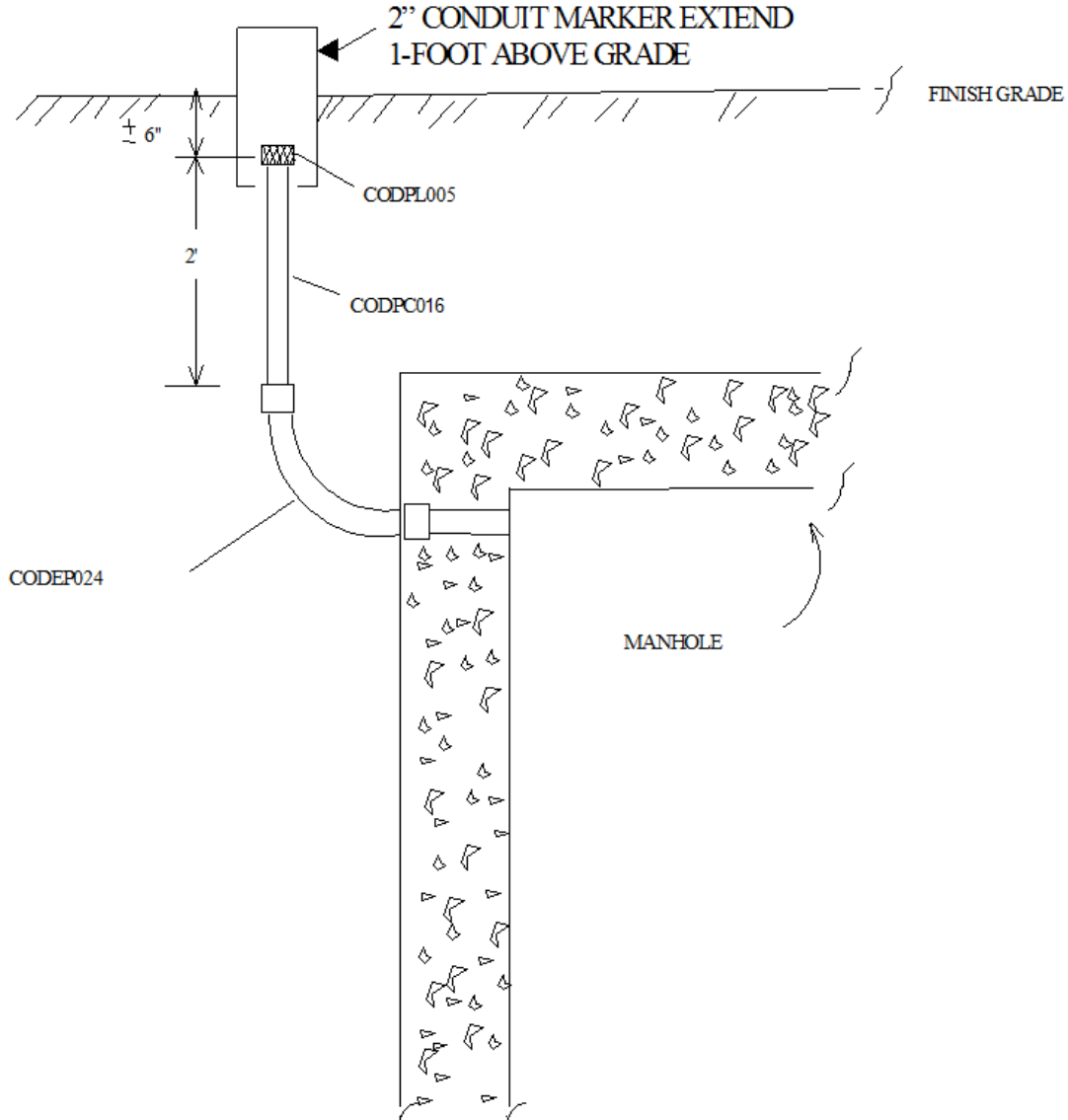


APPROVED GROUND ROD CLAMPS:			
BLACKBURN	J-AB58H	KNIGHT	C58
CAROLINA	CPH58	MCGRAW EDISON	WDN13G5
COPPERWELD	AB58H	PENN UNION	CAB-2
DOSSERT	GN-62	UTM	910-023-03
JOSLYN	J8492AB	WEAVER	WB5/8H
WILCOR	WAG 5/8	APACHE	GRH58
(CLA-GR-001) TO BE USED BY BELLSOUTH			

ITEM	QTY	DESCRIPTION
CLAGR001	1	CLAMP, GROUND ROD #8, SOL-1/0 STR CU TO 5/8 INCH ROD
COBCO028	10	CONDUCTOR, BARE COPPER #4 SOL SOFT DRAWN
CNNGR002	2	COUPLING, GROUND ROD 5/8 INCH ROD
RODGR003	3	ROD, GROUND 5/8 INCH X 8 FT ROD SECTION

OPTIONS:  
G1P, MGIP

**G2P-C  
MANHOLE GROUNDING PROVISIONS**

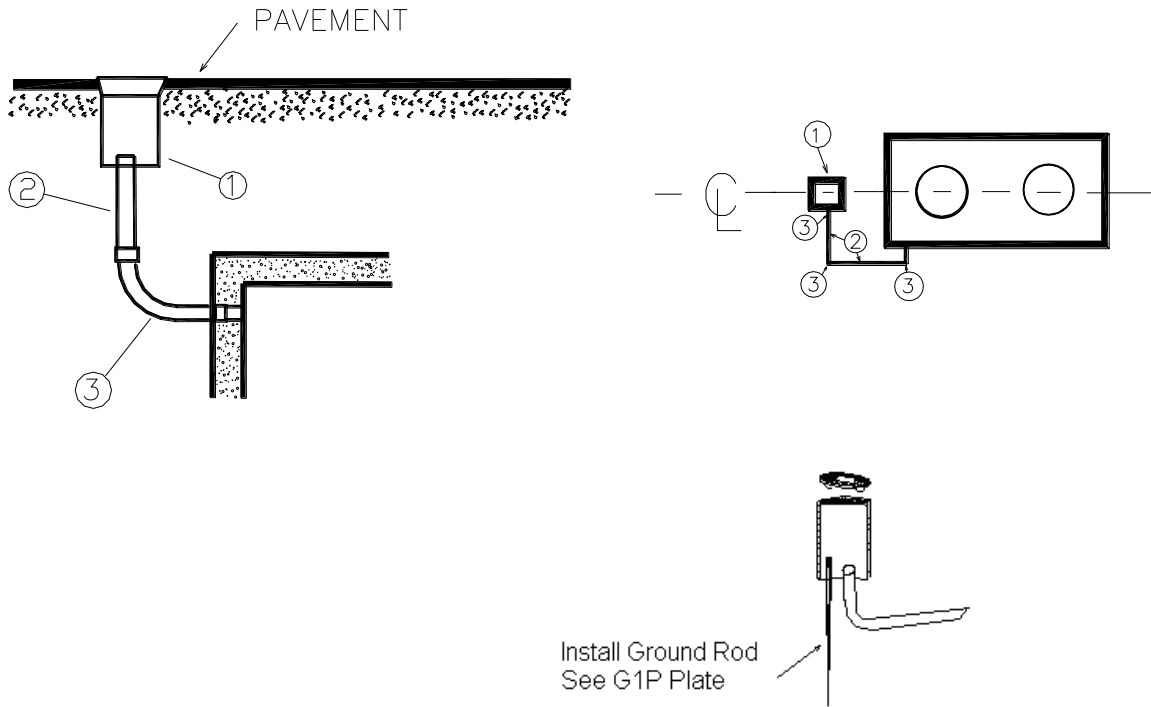


ITEM	QTY	DESCRIPTION
CODEP024	1	ELBOW, 1" PVC SCH 40, 90 DEG., 18"RAD.
CODPC016	2FT	CONDUIT, 1" PVC SCH-40
CODPL005	1	PLUG, CONDUIT, 1" PVC
MARCC001	1	CABLE/CONDUIT MARKER, PVC

**NOTE:**  
This material is issued with all SET-X Manhole plates.

# G2P-CT

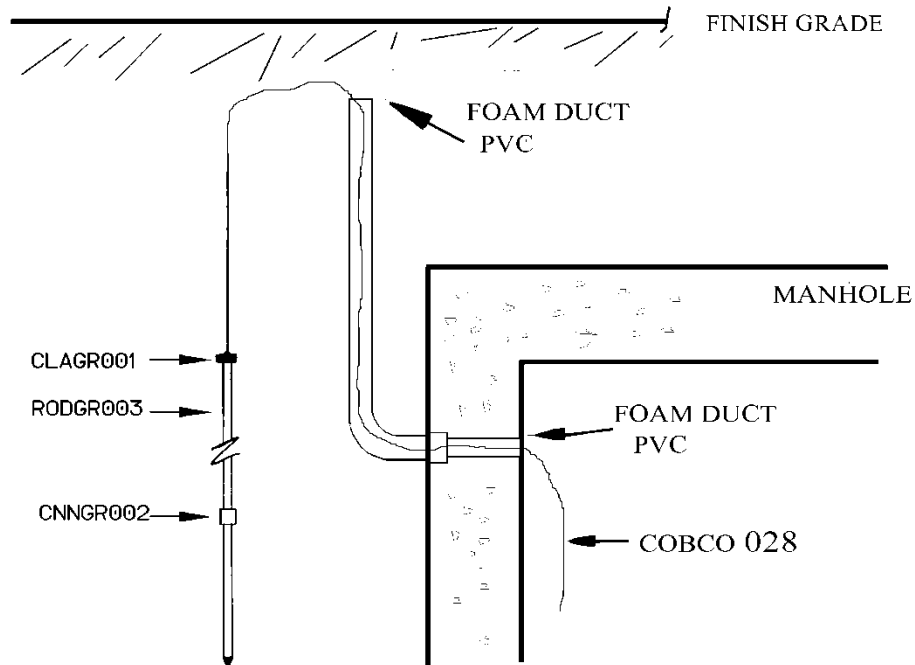
## MANHOLE GROUNDING PROVISIONS (PAVEMENT AREAS)



**PULL BOX DETAIL**

NO.	ITEM	QTY	DESCRIPTION
1	BOXSP004	1	PULL BOX, GROUNDING, TRAFFIC BEARING, STEEL COVER
2	CODPC016	10 FT	CONDUIT, 1" PVC SCH-40
3	CODEP024	3	ELBOW, 1" PVC SCH 40, 90 DEG., 18"RAD.
4	CODPL005	1	PLUG, CONDUIT, 1" PVC
5	FRAMC004	1	RING, LOCKING GRADE, 1 INCH RISER, CAST

**G2P  
MANHOLE GROUND**

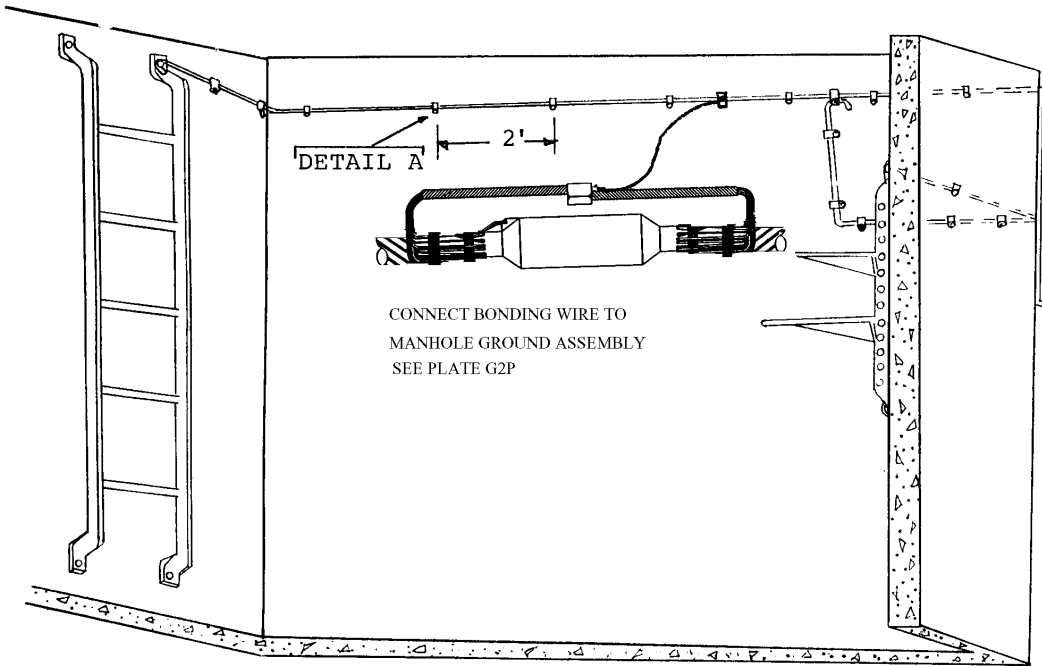


ITEM	QTY	DESCRIPTION
CLAGR001	1	CLAMP, BRONZE 5/8 INCH
CNNGR002	2	COUPLING, GROUND ROD 5/8 INCH
COBCO028	20	CONDUCTOR, BARE COPPER #4 SOL SOFT DRAWN
RODGR003	3	ROD, GROUND 5/8 INCH X 8FT ROD SECTION

**OPTIONS:**  
G2P, MG2P

# G3P

## MANHOLE BONDING GROUND ASSEMBLY



ITEM	QTY	DESCRIPTION
CNNVG003	2	CONNECTOR VISE TYPE 6-2 SOL 10-2 SOL
COBCO028	20	CONDUCTOR, BARE COPPER #4 SOL SOFT DRAWN
WASRD001	2	GENERAL CODE FOR ROUND WASHER GALVANIZE

**NOTES:**

1. Wrap #4 CU between washer and ladder or rack before tightening anchor bolt. Bond all equipment to common ground.
2. Bond all splice neutrals, shields to this ground.

**OPTIONS:**

G3P, MG3P

# IDENTIFICATION

## IDENTIFICATION NOTES

All tags with Item IDs shown with asterisks, eg. TAGYX\*\*\* , indicate that the tag is a truck stock item.

### ADDITIONAL PLATES:

Listed below are plates not otherwise covered by a construction plate and drawing.

PLATE	DESCRIPTION	UNIT
LOCATE1	Locate conduit/cable with an electronic marker locator which can locate the JEA standard electronic marker.	EA
LOCATE2	Locate conduit/cable by hand digging up to five feet (5') deep.	EA
UCMD-REM MUCMD-REM	Remove electronic marker, wash and return to storeroom.	EA

**UCM**  
**UCMD**  
**CONDUIT/CABLE MARKER**

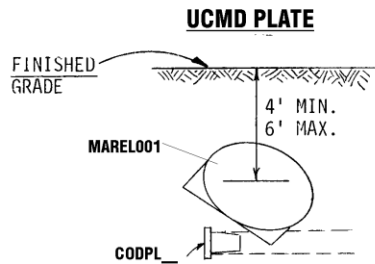
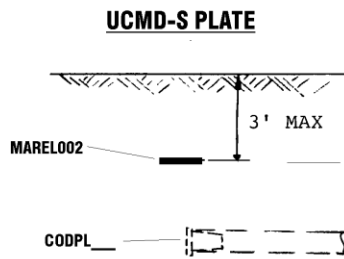
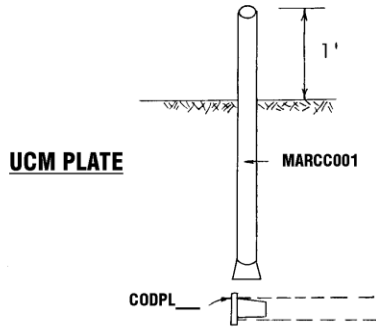


PLATE	ITEM	QTY	DESCRIPTION
UCM	MARCC001	1	CABLE/ CONDUIT MARKER, PVC
	CODPL_ _ _	—	GENERAL CODE PVC CONDUIT PLUG
UCMD-S	MAREL002	1	CABLE/CONDUIT MARKER ELECTRONIC, SMALL
	CODPL_ _ _	—	GENERAL CODE PVC CONDUIT PLUG
UCMD	MAREL001	1	CABLE/ CONDUIT MARKER, ELECTRONIC
	CODPL_ _ _	—	GENERAL CODE PVC CONDUIT PLUG



**VNU  
UNP  
TRANSFORMER OR  
EQUIPMENT MARKING**

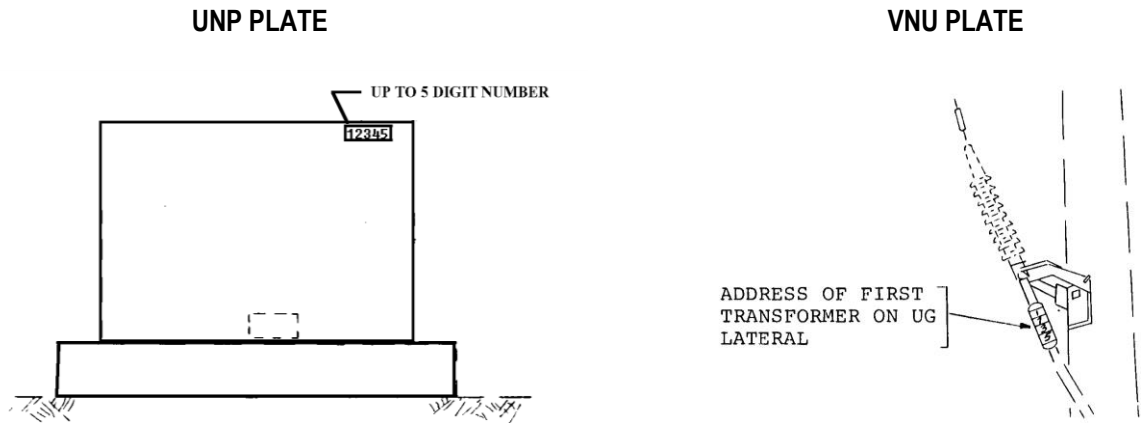


PLATE	ITEM	QTY	DESCRIPTION
VNU (Transformer Address)	TAGRU***	5	TAG, REFLECTIVE, ADHESIVE BACKED, 2-7/8"
UNP (Equipment Address)	TAGRU***	5	TAG, REFLECTIVE, ADHESIVE BACKED, 2-7/8"

**NOTE:**

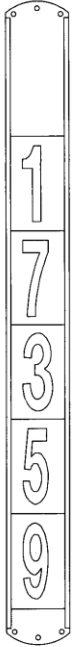
Plate also includes drawing conduit locations with their respective destinations on the underside of transformer/equipment door with indelible marker.  
Please note the final equipment destination (transformer, riser pole, switch cabinet, etc.) on these drawings

# UVN

# UFN

TRANSFORMER ADDRESS

FUSE SIZE



UVN PLATE



UFN PLATE

PLATE	ITEM	QTY	DESCRIPTION
UVN (Transformer Address)	TAGNA002	2	NAIL, ALUMINUM
	TAGYX***	7	TAG, POLY
	TAGHO001	1	TAG, HOLDER 6 CHARACTER
UFN (Fuse Size)	TAGNA002	2	NAIL, ALUMINUM
	TAGYX***	3	TAG, POLY
	TAGYX007	2	TAG, POLY LETTER "T"
	TAGYX023	2	TAG, POLY LETTER "F"
	TAGHO001	1	TAG, HOLDER 6 CHARACTER

NOTE:

Mounting height – refer to the OH Standards Identification Section.

# LCRN

# UTSCN

CIRCUIT NUMBER

TIE SWITCH CIRCUIT NUMBER

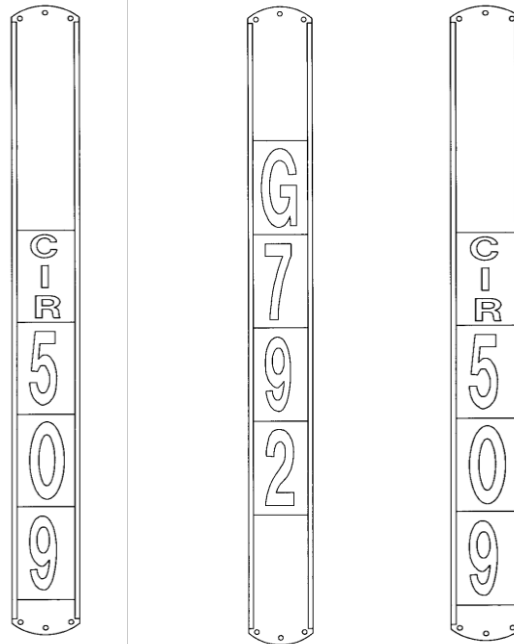


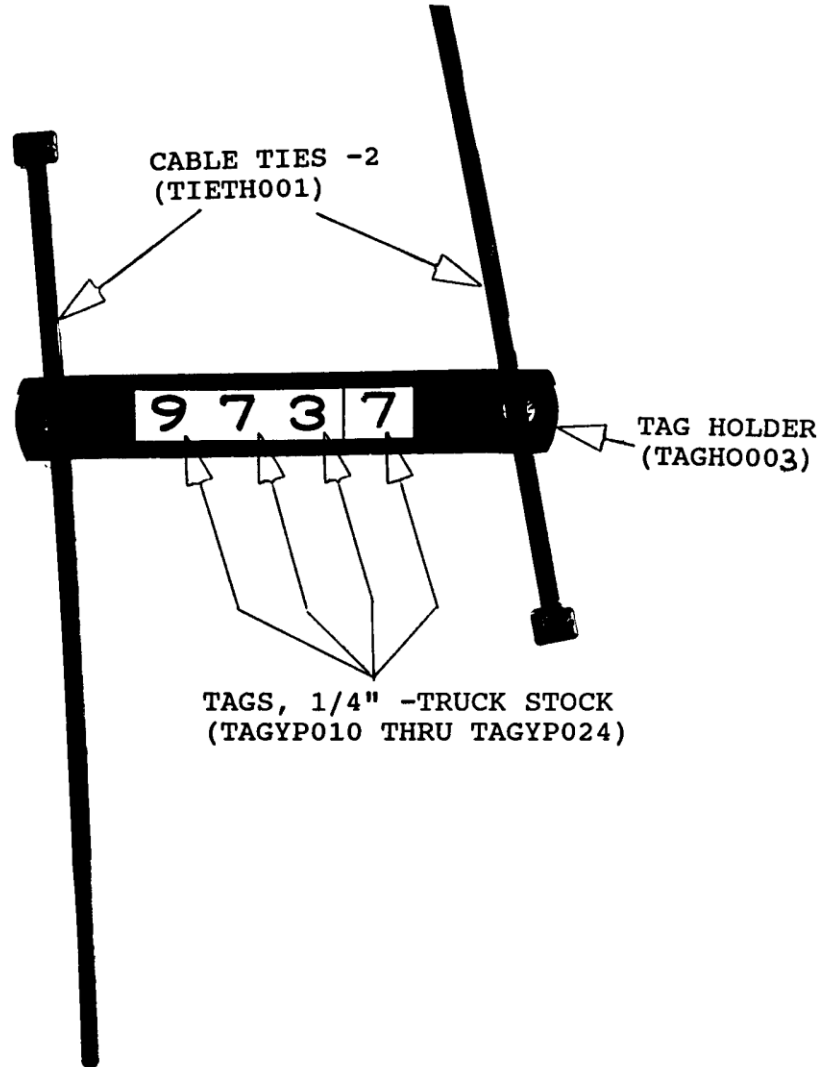
PLATE	ITEM	QTY	DESCRIPTION
<b>UCRN</b> (Circuit Number)	TAGNA002	6	NAIL, ALUMINUM
	TAGYX***	3	TAG, POLY.
	TAGYX010	1	TAG, POLY. "CIR" - (CUSTOM) CHAR
	TAGHO001	1	TAG HOLDER, 6 CHARACTER
<b>UTSCN</b> (Tie Switch Circuit Number)	TAGNA002	18	NAIL, ALUMINUM
	TAGYX ***	10	TAG, POLY.
	TAGYX009	2	TAG, POLY., ARROW
	TAGYX010	2	TAG, POLY. "CIR" - (CUSTOM) CHAR
	TAGHO001	3	TAG HOLDER, 6 CHARACTER

**NOTE:**

Mounting height – refer to the OH Standards Identification Section.

# LCN

## CABLE DESTINATION ADDRESS



ITEM	QTY	DESCRIPTION
TAGH0002	1	HOLDER, TAG
TIETH001	2	TIE, TAG HOLDER
TAGYP***	6	TAG, 1/4" GENERAL CODE

**NOTE:**

Tags should be plated to identify destination of primary and secondary cable or wire. They may be used in transformers, switchgear, enclosures, manholes, service boxes etc.

**UDFS  
DANGER SIGN**



ITEM	QTY	DESCRIPTION
TIETH001	2	TIE, TAG, 3" DIAMETER
SIGDA001	1	SIGN DANGER "DANGER FEEDBACK"

**NOTE:**  
Mounting height – refer to the OH Standards Identification Section.

**LDBSH**  
**DANGER SIGN**



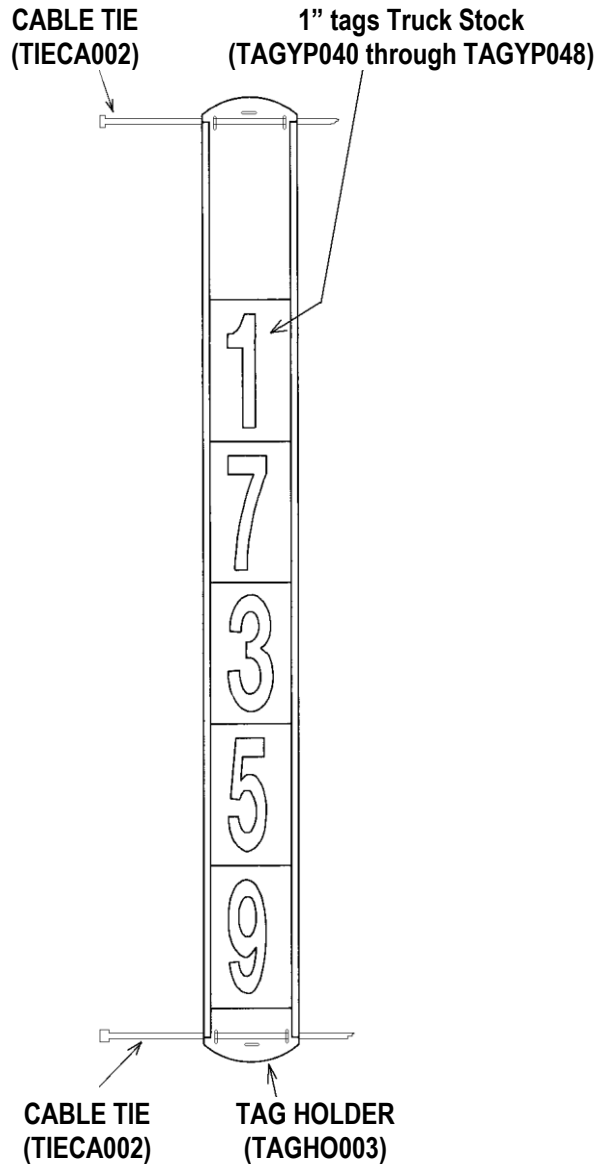
ITEM	QTY	DESCRIPTION
TIETH001	2	TIE, TAG, 3" DIAMETER
SIGDA002	1	SIGN DANGER "DANGER BOTH SIDES HOT"

**NOTE:**

Mounting height – refer to the OH Standards Identification Section.

# UCN1

## LOW PROFILE AND COMMERCIAL LOW PROFILE STREET LIGHT ADDRESSES



ITEM	QTY	DESCRIPTION
TAGHO003	1	HOLDER, TAG
TAGYP04*	6	TAG, 1" VERTICAL STYLE GENERAL CODE
TIECA002	2	TIE, TAG HOLDER 24" x .19" BLACK WHEATHER RESISTANT

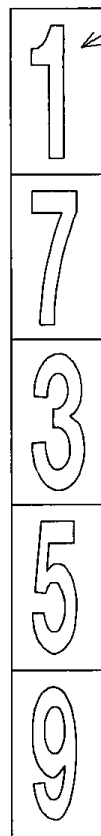
**NOTE:**

Mounting height – refer to the OH Standards Identification Section.

# UCP

## ALUMINUM POLE STREET LIGHT ADDRESSES

2-7/8" tags Truck Stock  
(TAGRU000 through TAGYP008)



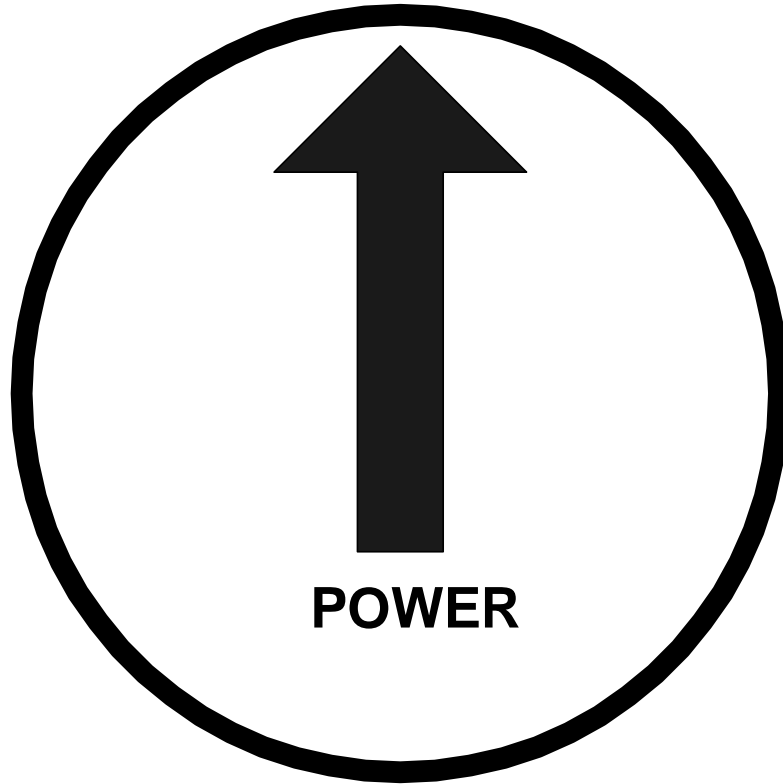
ITEM	QTY	DESCRIPTION
TAGRU***	5	TAG, 2-7/8" REFLECTIVE ADHESIVE BACKED GENERAL CODE

NOTE:

Mounting height – refer to the OH Standards Identification Section.



**UCC**  
CURB MARKER



**APPLICATION:**

Contractors are required to mark manholes and hand-hole boxes. A 2-1/2" adhesive curb marker shall be installed on the curb directly in front of each manhole or in the street side of a sidewalk where no curb is available. In the event neither curb nor sidewalk is available, the contractor shall install the marker in the asphalt paving directly in front of each manhole.

PLATE	ITEM	QTY	DESCRIPTION
UCC	MARCB001	1	MARKER, CURB 2-1/2" CIRCLES BLACK ON RED LABELED "POWER".

**NOTE:**

The markers are installed with adhesive (JEA item ADCAD002). One tube of adhesive is required for 5 markers. This item will be stored as truck stock.

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# PAVING

## I. PAVEMENT REMOVAL AND REPLACEMENT

### I.1. GENERAL:

Pavement will be removed and replaced in accordance with the provisions of the City Standard Specifications for City of Jacksonville, Florida or with the FDOT "Standard Specifications for Road and Bridge Construction", whichever may be applicable.

### I.2. REMOVAL:

Pavement removal, as specified in the above, shall be as follows:

#### I.2.1. Asphalt:

Bituminous pavement shall be removed to clean straight line via saw cutting of edges. Where bituminous pavement adjoins a trench, the edge adjacent to the trench shall be trimmed in a neat straight line,

#### I.2.2. Concrete:

Concrete pavement shall be removed to neatly sawed edges. Saw cuts shall be made to a minimum depth of 1-1/2 inches. If a saw cut in concrete pavement falls within 3 feet of a construction joint, contraction joint, expansion joint or edge, the concrete shall be removed to the joint or edge.

I.2.3. If the edges of the existing concrete pavement adjacent to trenches were damaged, the pavement subsequent to saw cutting of the pavement shall again be saw cut in neat straight lines for the purpose of removing the damaged pavement areas. Such saw cuts shall be parallel to the original saw cuts or shall be cut on an angle which departs from the original saw cut not more than one inch in each six inches.

### I.3. ASPHALT OVERLAY:

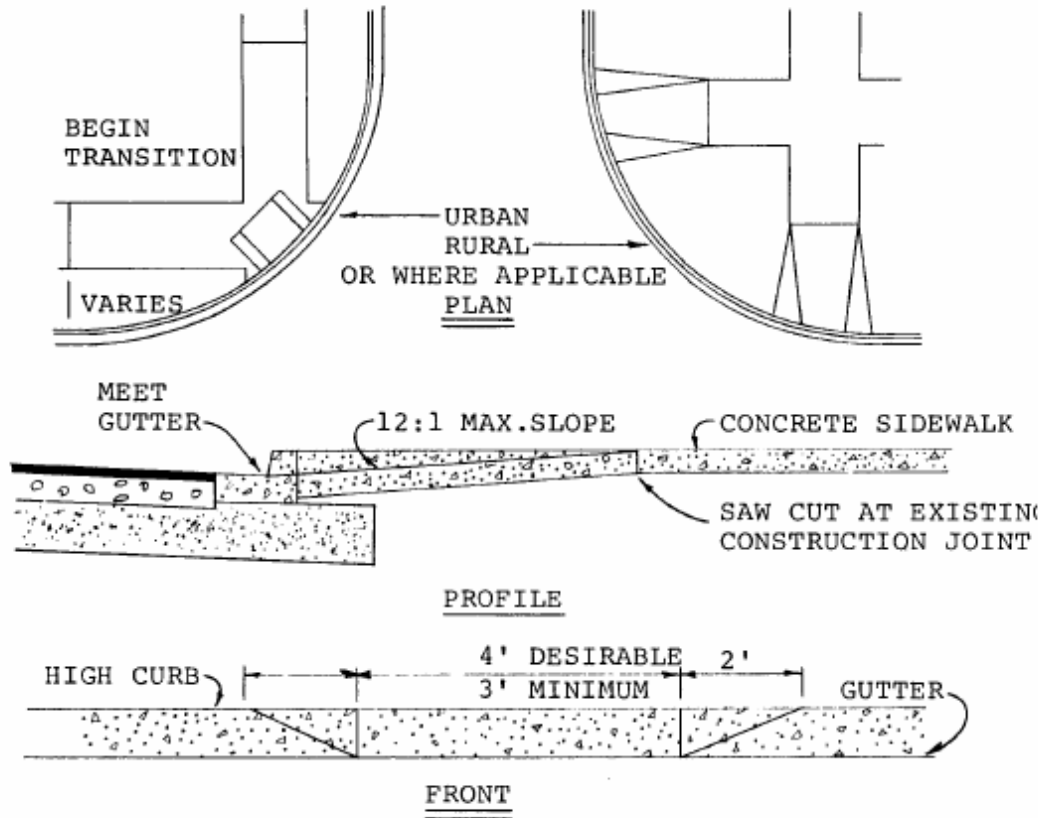
In the event that asphalt overlay is specified, such overlay shall be applied in accordance with FDOT Standard Specifications for "Road and Bridge Construction and City Public Works Department - Standard Paving Repair Detail P-46."

I.4. ADDITIONAL PLATES:

Listed below are plates not otherwise covered by a Construction Standard and Drawing.

PLATE	DESCRIPTION	UNIT
REM-ASPH	Removal of Asphalt Pavement	CF
BLD-ASPH	Replacement of Asphalt Pavement	SF
BLD-OVERLAY	Asphalt Overlay	SF
REM-SW-6	Remove Concrete, 6" Thick and Under	SF
REM-SW+6	Remove Concrete over 6" Thick	CF
BLD-MOD	Build Modular Pavement	SF
REM-MOD	Remove Modular Pavement	SF
BLD-4SW	Build 4" Sidewalk	SF
BLD-5SW	Build 5" Sidewalk	SF
BLD-6SW	Build 6" Sidewalk	SF
REM-CURB	Remove Concrete Curb & Gutter	LF
BLD-CURB	Build Concrete Curb & Gutter	LF
SAW-CONC	Saw Concrete Pavement	LF
SAW-ASPH	Saw Asphalt Pavement	LF
MREM-ASPH	Removal of Asphalt Pavement	CF
MBLD-ASPH	Replacement of Asphalt Pavement	SF
MBLD-OVERLAY	Asphalt Overlay	SF
MREM-SW-6	Remove Concrete, 6" Thick and Under	SF
MREM-SW+6	Remove Concrete over 6" Thick	CF
MBLD-MOD	Build Modular Pavement	SF
MREM-MOD	Remove Modular Pavement	SF
MBLD-4SW	Build 4" Sidewalk	SF
MBLD-5SW	Build 5" Sidewalk	SF
MBLD-6SW	Build 6" Sidewalk	SF
MREM-CURB	Remove Concrete Curb & Gutter	LF
MREM-GCURB	Remove and Retain/Return Granite Curb	LF
MBLD-CURB	Build Concrete Curb & Gutter	LF
MSAW-CONC	Saw Concrete Pavement	LF
MSAW-ASPH	Saw Asphalt Pavement	LF

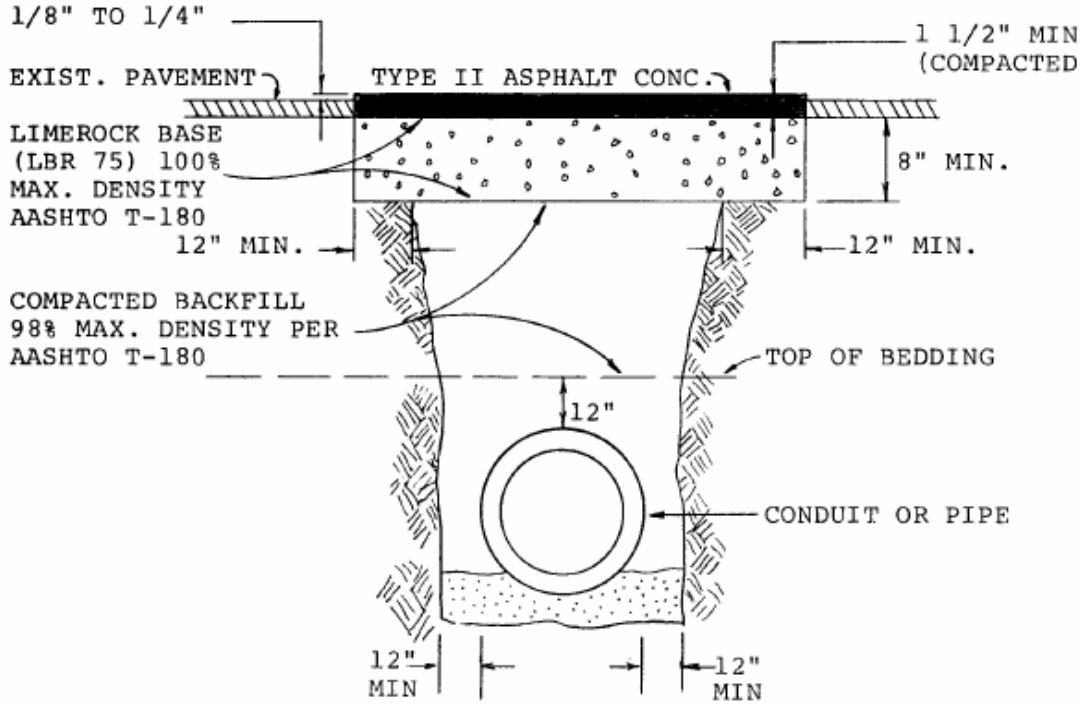
**P-10**  
**CITY STANDARDS**



**NOTES:**

1. Ramp surface to be constructed to conform to section 522-7.2 FDOT specs.
2. Basis of payment: contract unit price established in the proposal for sidewalk.
3. This standard is not intended to be absolute. Final determinations to be made in field.
4. Miami curb within limits of wheel chair ramp to be "low curb" to accommodate 12:1 maximum rate from gutter to end of transition.

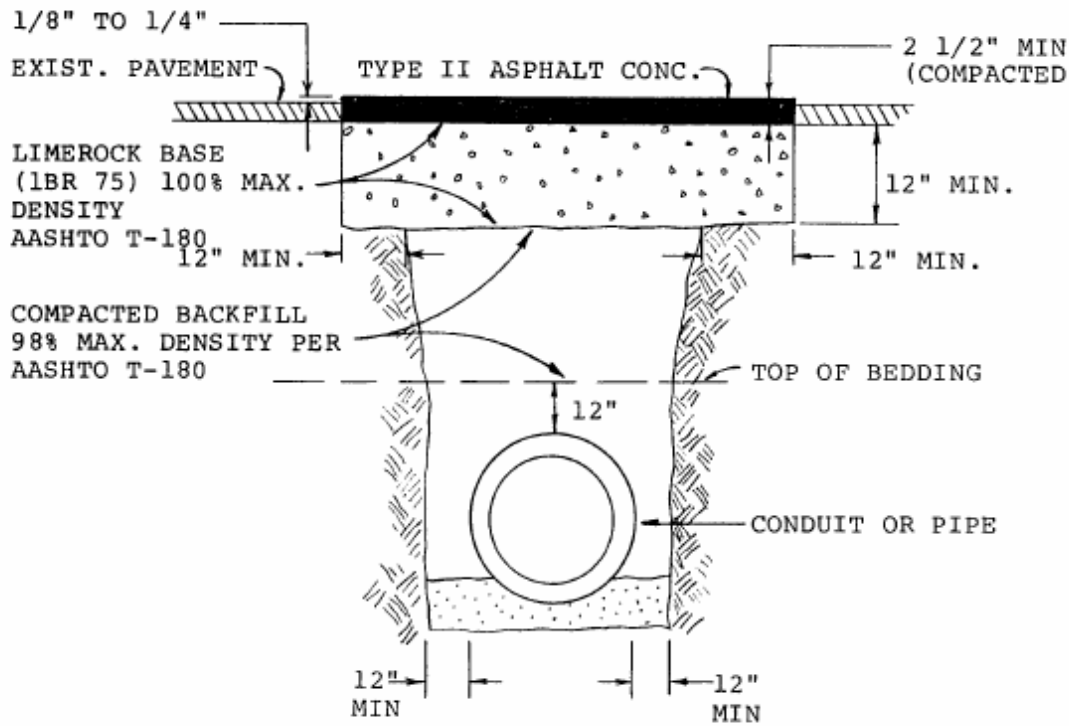
**P-40**  
**CITY STANDARD**



**NOTE:**

Method and materials of repair subject to City of Jacksonville construction requirements for new pavement Type II asphalt.

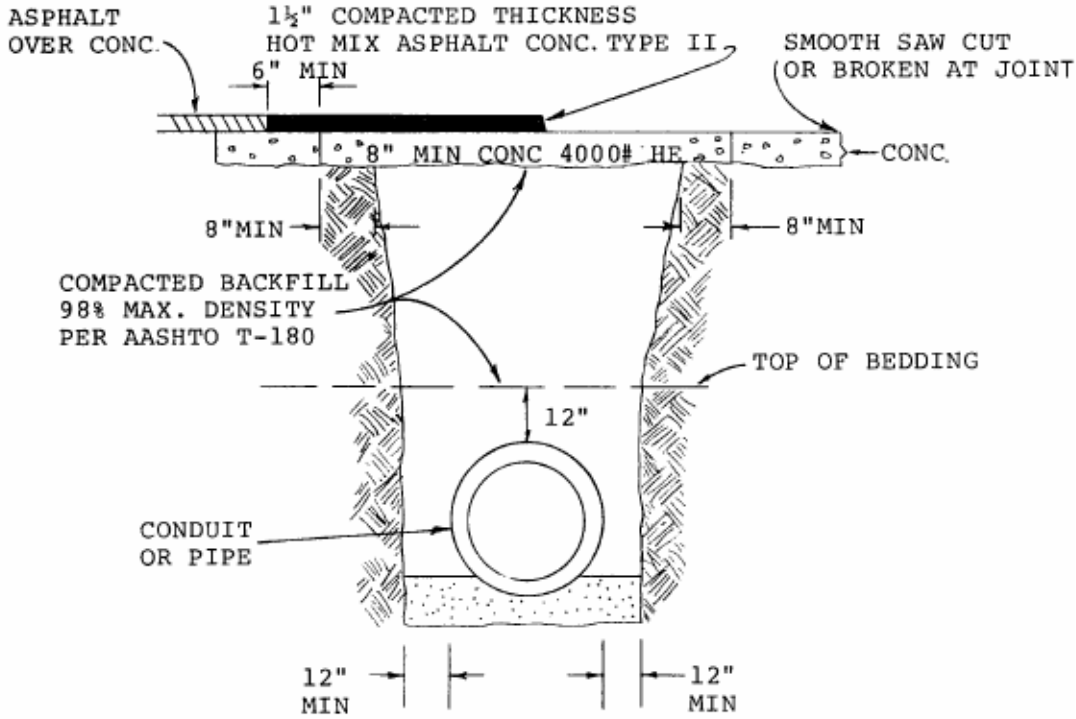
**P-41**  
**CITY STANDARD**



**NOTE:**

Method and materials of repair subject to City of Jacksonville construction requirements for new pavement Type II asphalt.

**P-42**  
**CITY STANDARD**

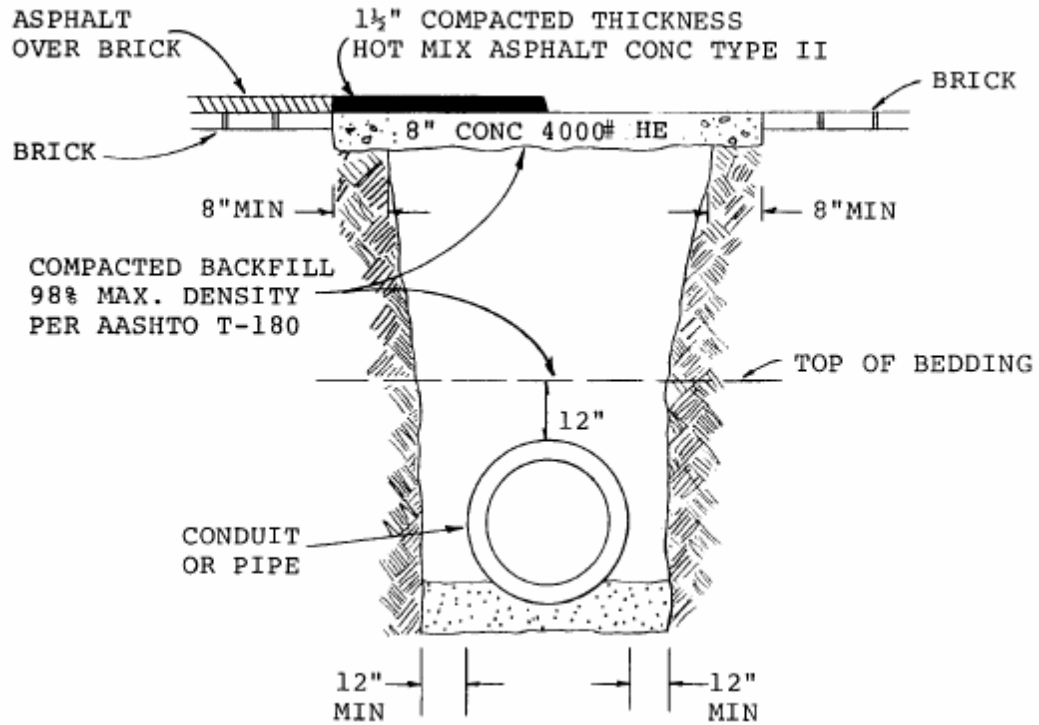


**NOTE:**

Method and materials of repair subject to City of Jacksonville construction requirements for new pavement Type II asphalt.

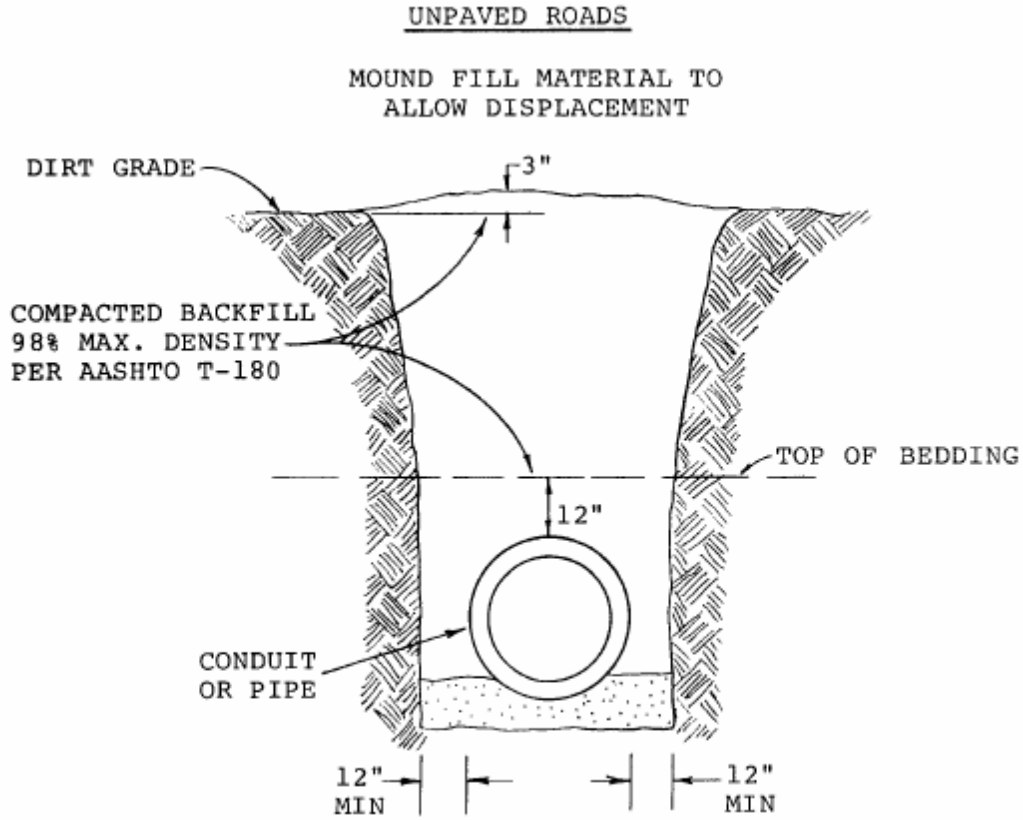


**P-43**  
**CITY STANDARD**



**NOTE:**  
 Method and materials of repair subject to City of Jacksonville construction requirements for new pavement Type II asphalt.

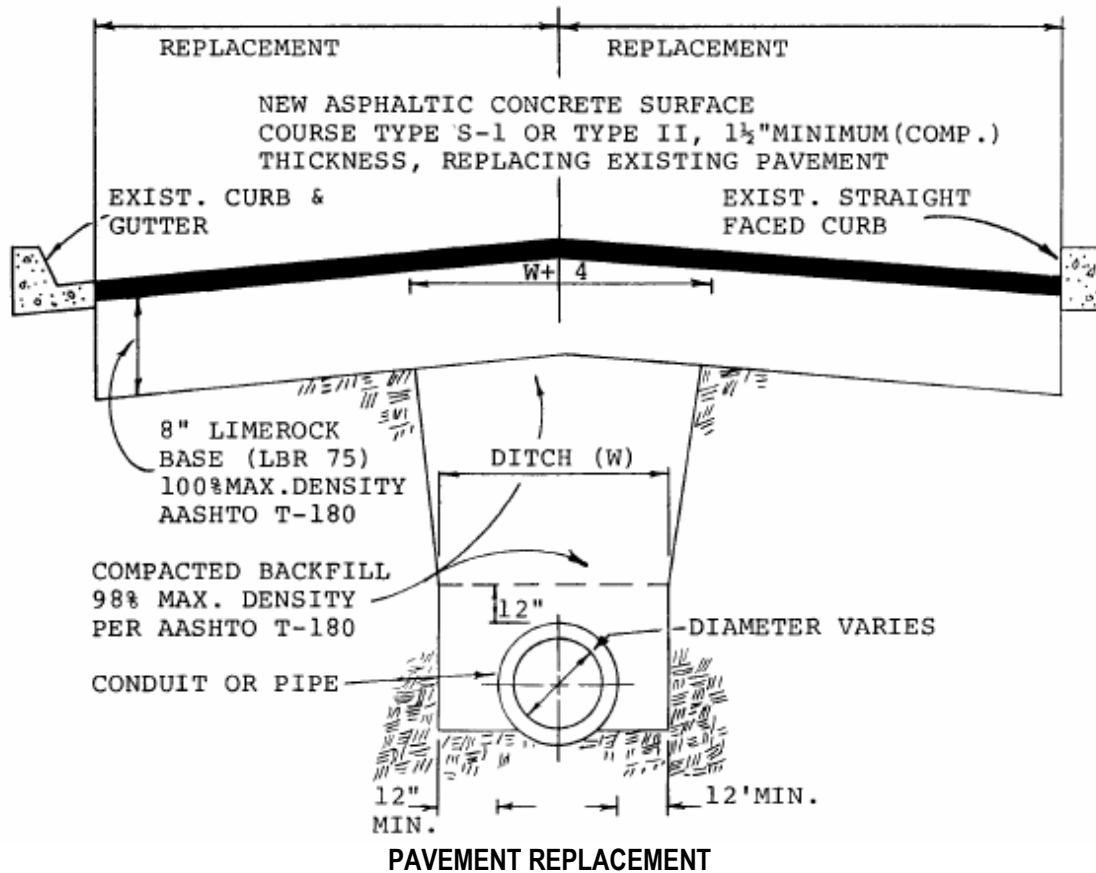
**P-44**  
**CITY STANDARD**



**NOTE:**

Method and materials of repair subject to City of Jacksonville construction requirements for new pavement Type II asphalt.

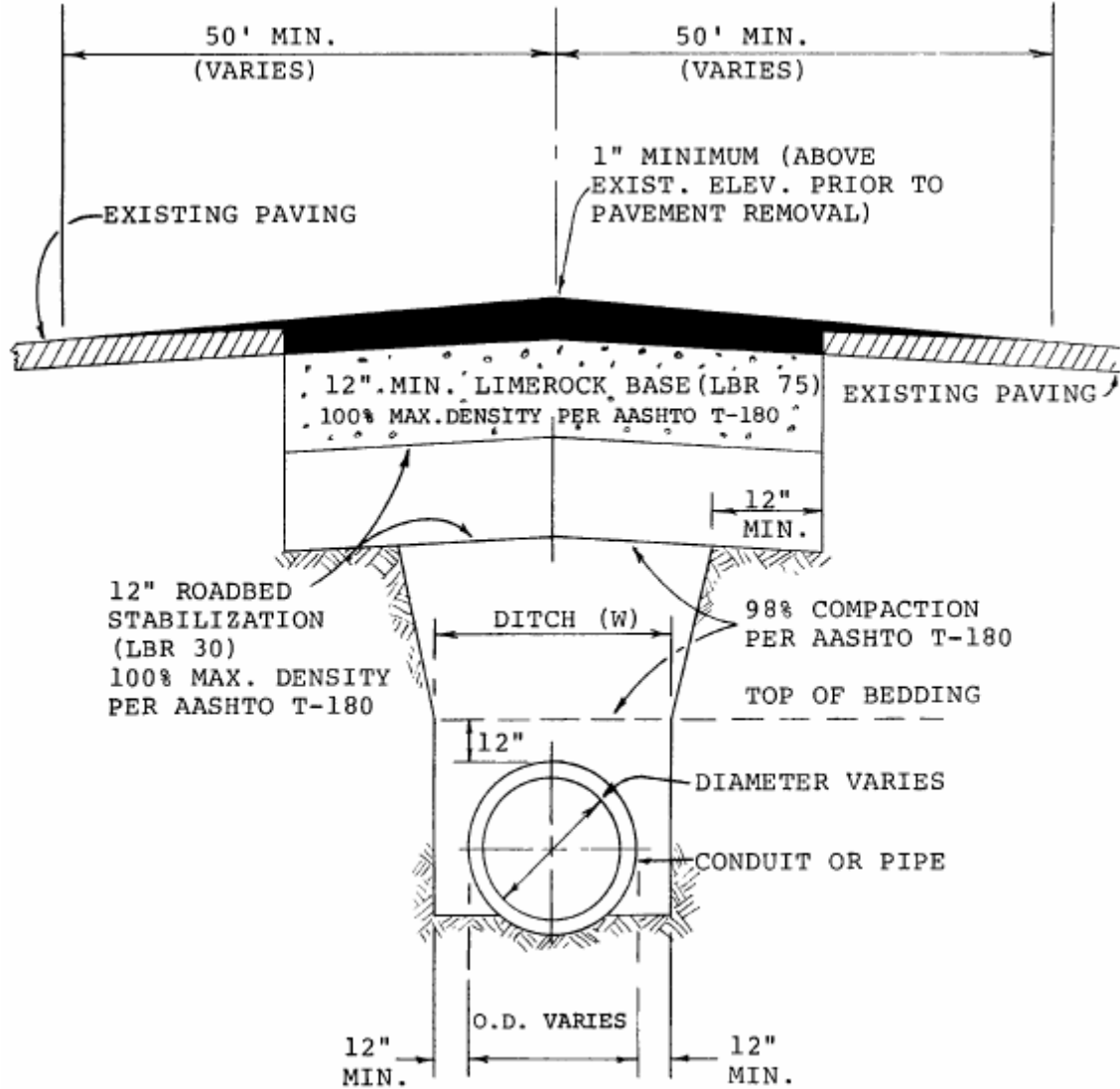
## P-45 CITY STANDARD



**NOTES:**

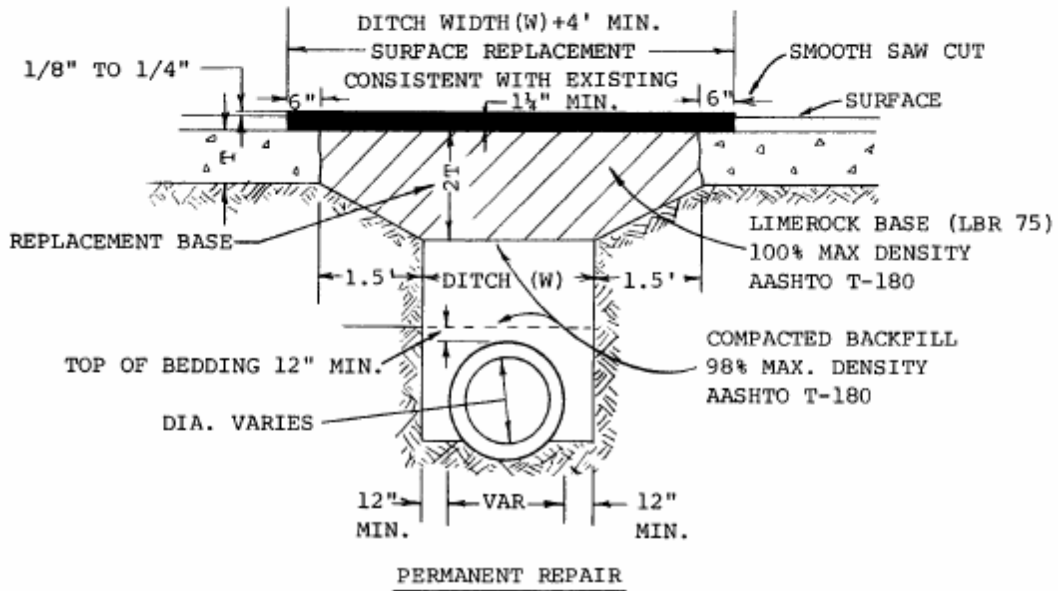
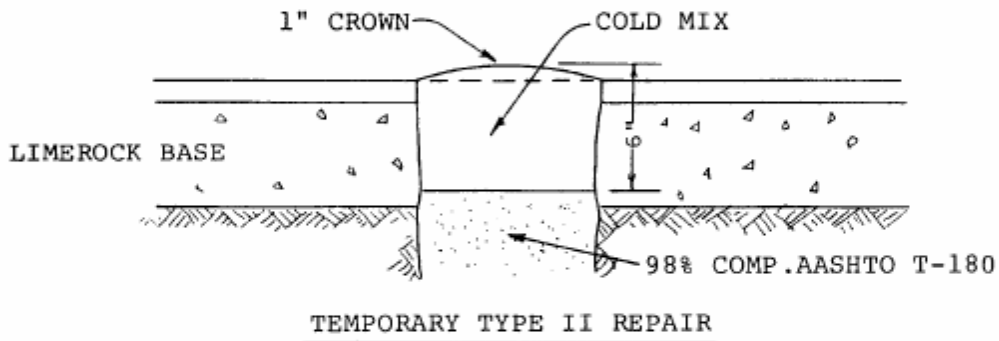
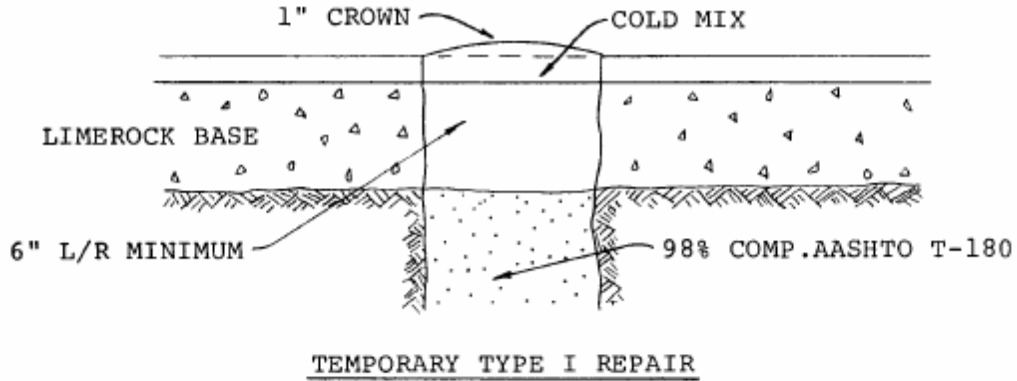
1. Case VI-A thru VIII-A replacement shall require 2" S-1 or Type II asphalt surface course, 12" limerock base (LBR 75).
2. Base material shall be placed in two layers and each layer thoroughly rolled or tamped to maximum density.
3. Existing pavement shall be mechanically sawed.
4. In the absence of a straight faced curb or curb & gutter, the 1 1/2 or 2" surface course shall be extended to the edge of the existing pavement removed (Case VIII & VIII-A replacement).
5. Type I asphalt shall be used on state and federal highways, Type II asphalt shall be used on city streets.
6. Methods, materials, and repair for state highways shall be in full compliance with the terms of the FDOT utility permit obtained.
7. Backfill above 12" over top of pipe to be placed in layers not to exceed a compacted thickness of 6" within FDOT and federal R/Ws and 12" loose within city R/Ws, then compacted.

**P-46**  
CITY STANDARD

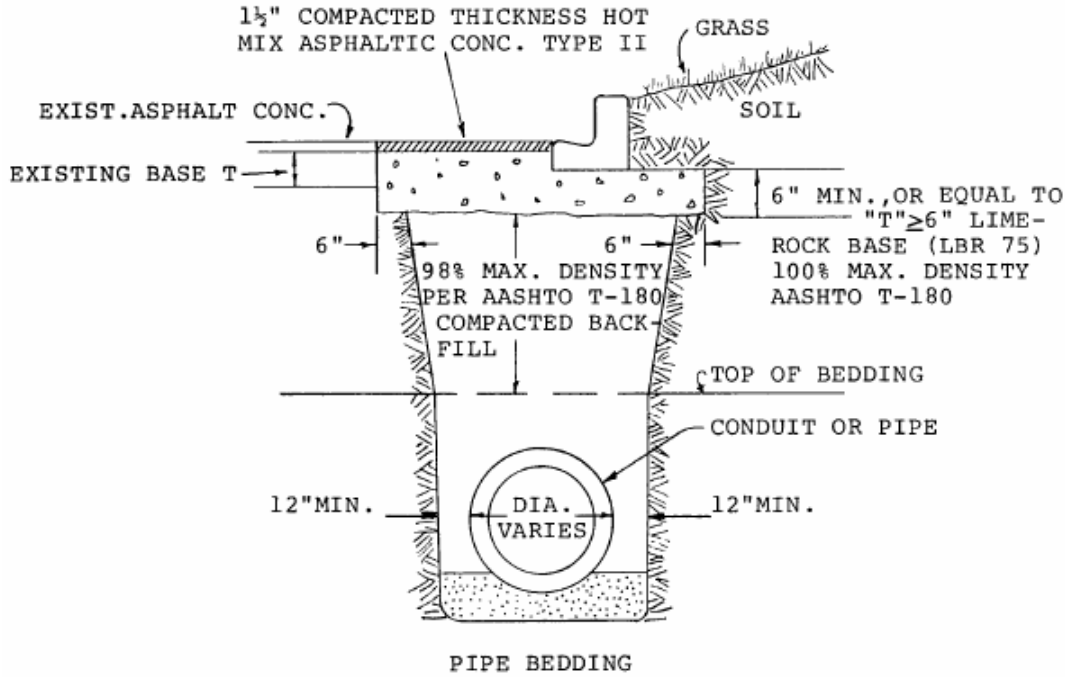


**PAVEMENT REPLACEMENT (DOT)**  
(No Scale)

**P-47**  
CITY STANDARD



**P-48**  
**CITY STANDARD**

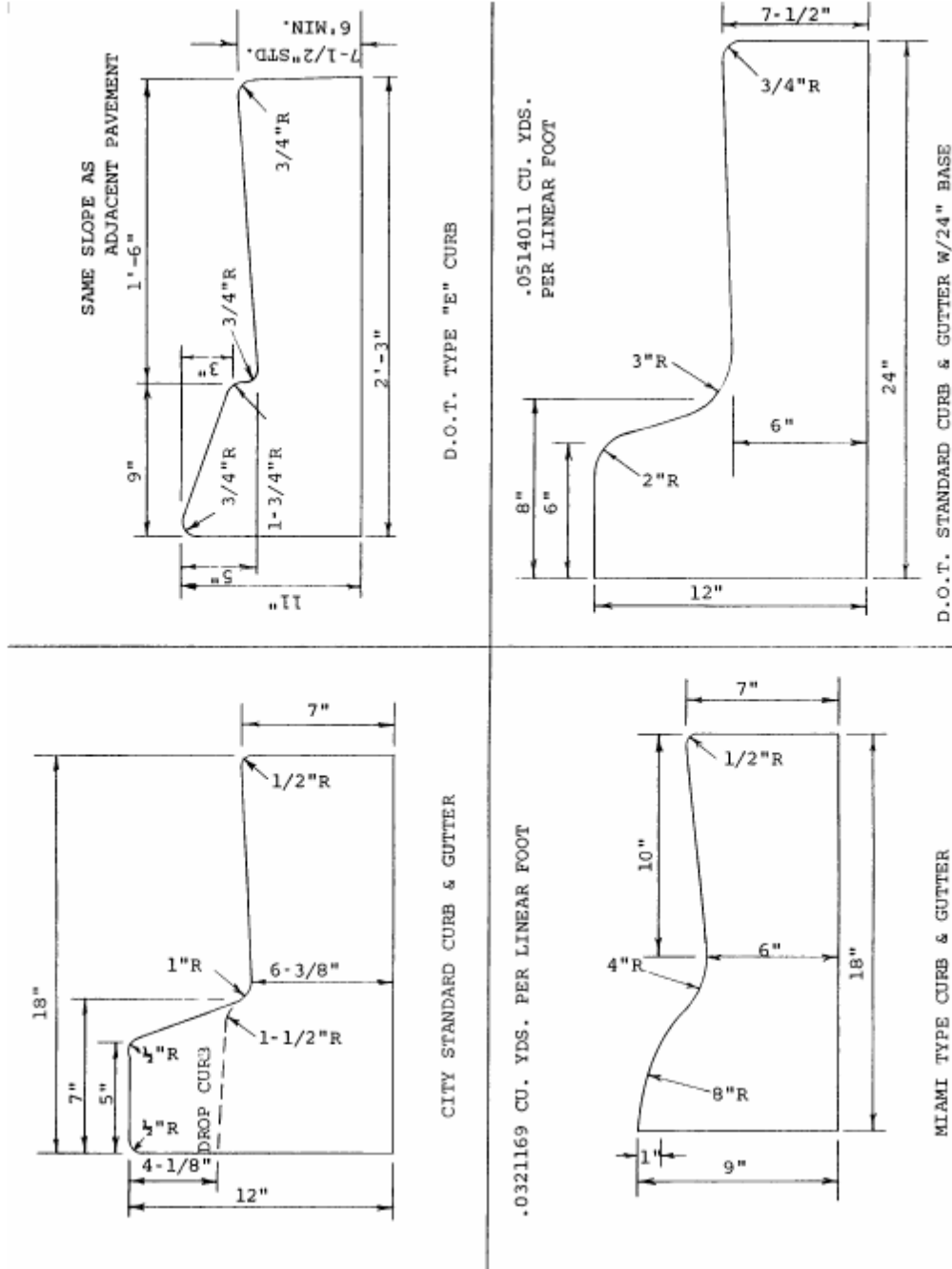


# **SIDEWALK AND CURBING**

## **I. SIDEWALK AND CURBING NOTES**

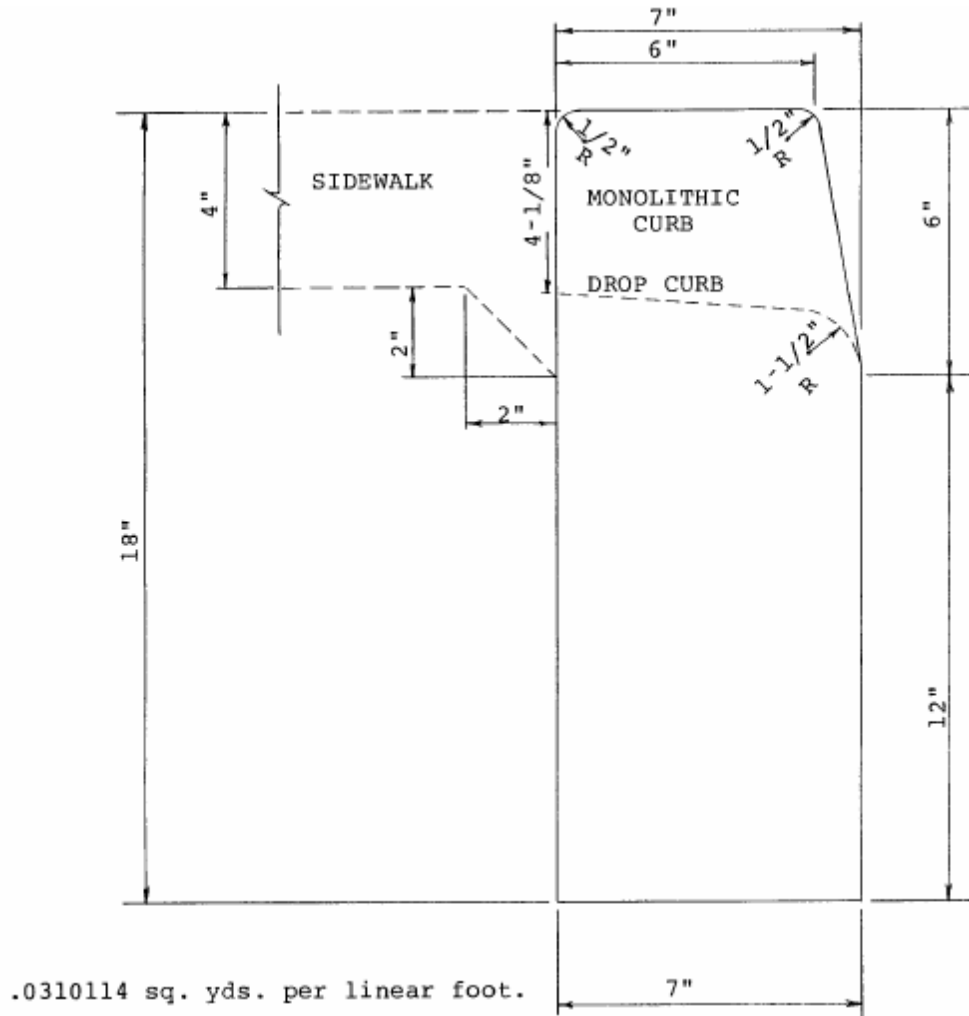
- I.1. Concrete curb, gutter, sidewalk and driveway shall be removed to neatly sawed edges with saw cuts to a minimum depth of 1-1/2 inches.
- I.2. Concrete sidewalks or driveways to be removed shall be neatly sawed in straight lines parallel to the curb or at right angles to the alignment of the sidewalk. No section to be replaced shall be smaller than 30 inches in either length or width.
- I.3. If the saw cut in sidewalk or driveway would fall within 30 inches of a construction joint, expansion joint, or edge, the concrete shall be removed to the joint or edge except that where the saw cut would fall within 12 inches of a score mark, the saw cut shall be made in and along the score mark.
- I.4. Curb and gutter shall be sawed to a depth of 1-1/2 inches on a neat line at right angles to the curb face.
- I.5. **REPLACEMENT**  
Sidewalks shall be replaced to the same pattern of construction joints, expansion joints, scores, etc. as existed in the sidewalk prior to removal.

## CURB CITY STANDARD





**P-14**  
CITY STANDARD



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# FIBER OPTICS

## I. ENGINEERING

### I.1. DEFINITIONS

#### I.1.1. Fiber Optic Cable:

A cable that contains individual glass fibers, designed for the transmission of digital information, using light pulses.

#### All Dielectric Self Support (ADSS) Cable:

A cable designed and constructed with non-metallic components, that is designed for aerial applications and does not require a separate cable messenger.

#### I.1.2. Loose Tube Cable:

A cable designed and constructed with non-metallic components, that is designed for underground applications. These are “dry” cables using water swell able powders to protect against water penetration.

#### I.1.3. OTDR:

Optical Time Domain Reflectometer. A device used for characterizing a fiber, wherein an optical pulse is transmitted through the fiber and the resulting backscatter and reflections are measured as a function of time.

#### I.1.4. Single-mode Fiber:

An optical fiber with a small core diameter, in which only a single mode of light is capable of propagation.

#### I.1.5. Multi-mode Fiber:

An optical fiber whose core diameter is large compared with the optical wavelength and which, consequently, a large number of light modes are capable of propagation.

#### I.1.6. Splicing:

A permanent junction between optical fiber splices. May be thermally fused or mechanically applied.

#### I.1.7. Minimum Bend Radius:

The minimum radius a fiber may be bent before optical losses are induced.

### I.2. JEA GUIDELINES FOR INSTALLING/PULLING UNDERGROUND FIBER OPTIC CABLE

#### I.2.1. Bend Radius:

The main risk of damage to the fiber optic cable is by overlooking the minimum bending radius. It is important to know that the damage occurs more easily when the cable is bent under tension, so when the installation is in process be sure to allow for a 13 inch bending radius. The number of 90 degree turns on a pull shall not exceed four (4).

#### I.2.2. Reel Placement:

Have the reel set adjacent to the manhole and use a fiber optic manhole pulling block assembly from Sherman & Reilly.

#### I.2.3. Cable Slack:

Please coil 150 feet of cable at the Transition, Termination points, and every 1500 feet.

- I.2.4. Splices:  
All splice locations will be designated by the JEA communications department.
- I.2.5. Strength:  
The fibers in the cable will shatter under considerable impact, pressure or if pulling tensions exceed 600 LB, although from the outside of the cable this will not be apparent. With fiber optic cable the jacket of the cable and the Kevlar layer directly beneath give the cable its strength so please be sure to note and repair all nicks and cuts.
- I.2.6. Installation:  
When installing use a swivel eye for pulling the fiber optic cable and conduit system.
- I.2.7. Precautions:  
Please review the manufacturer's installation instructions prior to commencing with the installation. If any questions arise during installation please refer to the manufacturer's installation instructions, or notify the project engineer.
- I.2.8. Testing:  
Perform OTDR test on each fiber in the installed cable, to verify the parameters of each fiber meet the system design criteria.

### I.3. SAFETY

- I.3.1. The fiber cables used by JEA, being constructed entirely of non-conducting, all-dielectric materials are designed for installation around high voltage lines. In this application the fiber cable is classified as a fiber supply cable, and can only be installed, maintained and handled by electric utility employees trained and equipped to work on and around electric supply lines.
- I.3.2. Although the fiber cable is made entirely of non-conducting materials, under certain conditions it is still capable of having induced or static charges on its surface. Each of the fiber cables in use is designed for installation in and around electric fields of up-to 12 KV per meter without material damage. These fields can however induce a static surface charge that can be dangerous if touched bare handed. To insure the safety of field operations personnel, it is recommended that all fiber cable installed near and around JEA electric facilities, be treated as an energized conductor and that it be grounded prior to handling. It should be made clear that fiber cable is more susceptible to crushing than regular conductors, so proper grounding techniques should be observed. See cable manufacturer's literature.

### I.4. INSTALLATION LOCATIONS

- I.4.1. Distribution  
The fiber optic cables may be attached to distribution poles at various elevations, as determined by the Distribution Engineering Group (DEG), with the assistance of the Information Grid Group. This attachment location may be in the supply space of the pole, as determined by NESC rules. Installation and maintenance of cable facilities in this location must be performed by qualified electric utility personnel or approved electric utility contractor.
- I.4.2. JEA Conduits and Building Entrances  
The installation of fiber cable in JEA's downtown underground conduit system and building entrances, is determined by the DEG. As a general guideline, if 3 or more spare power conduits are available between any two manholes in the downtown

underground conduit system, one of the spare conduits may be reserved for JEA fiber communications. The DEG is responsible for determining what constitutes a spare conduit. The installation and maintenance of fiber cable in the JEA's underground conduit system must be performed by qualified electric utility personnel or approved electric utility contractors. However, as of the date of this standard, JEA does not lease empty conduits in the downtown network area.

#### I.4.3. Fire Protection

I.4.3.1. The intent is to install the cable so that fiber is protected from underground electrical conductor arc and burn. There needs to be enough cable at the splice points to allow the splice to be easily removed from the manhole and pulled into a fiber optic splice van.

I.4.3.2. Fiber cable is wrapped with fire retardant tape (TAPEL004) as it passes through each manhole. At the splice points, the fiber cable is wrapped with fire retardant tape. 75 feet of extra cable is coiled for each end. The coils are stored in a fire resistant cloth bag (FIBFB001). The fiber cable, coils, & splices are kept in the bottom of the manhole so as to be out of the way of the electrical conductors and equipment.

I.4.3.3. Inner Duct should be cut off 0-6 inches beyond the end (stick out) of the conduit. Pull string ends should be tied together if the sub-duct is not being used. Unused sub-ducts should be plugged (use plate PLUGDUCT1).

#### I.4.4. Location Fiber Optic Cables

I.4.4.1. Florida Statute 556.101-111 requires all excavators to call for locates 48 hours before they dig! The Sunshine State One-Call of Florida phone # is 1-800-432-4770.

I.4.4.2. The One-Call office will contact the JEA locating contractor requiring locates of our facilities.

I.4.4.3. Aiding the locators, please install fiber optic cables in the same trench with primary cables. In areas where we have no primary cable, please install a #12 gauge wire (COIBW005). Pull #12 gauge wire in with the Fiber cable for the Directional Bored conduit systems.

I.4.4.4. Terminate the ends of the #12 gauge wire in the BOXPS002 handhole box. This box can be used by the locating contractor.

I.4.4.5. Use marking tape I.TAPMA001 for electric systems and I.TAPMA005 for water systems.

#### I.4.5. Design and Placement of fiber optic Cables and Splices

The USC Information Grid Projects will design all fiber optic cable routes and splice points. This information will be supplied to the Project Engineer.

## I.5. Documentation

A detailed discussion about fiber optic cable documentation is located in the overhead fiber optic standards section vii.10.3. Underground fiber documentation should include all of those elements in the engineering design package. These include a cover sheet & key map, composite schematic, route map construction sheets, construction detail sheets, fiber splice plans, circuit diagrams, and manufacturer provided documentation: the following paragraphs will discuss some unique or variation needed specifically for underground fiber.

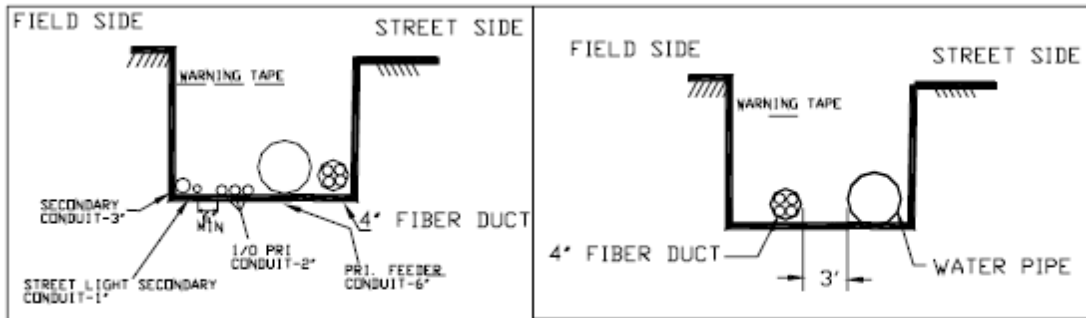
### I.5.1. Underground Fiber Documentation

For each fiber optic system the following information should be included in the documentation package. The Fiber Route Map for underground should typically be prepared at a scale of 1 inch to 50 feet or less when applicable. Maps should show the locations of other existing underground infrastructure. An elevation contour should show the depth of fiber optic infrastructure (Typically conduit). When a fiber optic cable is routed with electric infrastructure (for example, within the Downtown Ductbank) the route maps should show its duct assignment. Construction detail sheets should clearly describe location and clearance information within the electric Manhole.

### I.5.2. Redline Mark-ups and "As-built: See Overhead Fiber Optic Standards section VII.10.3. for details.

# UC\*3F (INCLUDES 3-INNERDUCTS)

## INSTALLATION OF FIBER OPTIC CONDUIT IN TRENCH



**TRENCH DETAIL**

POLYVINYL CHLORIDE (PVC) - SCHEDULE 40			
PLATE	ITEM I.D.	DESCRIPTION	QTY
UC*3F	CODPC003	4" GRAY PVC DUCT	1FT
	FIBPE012	1-1/4" PE INNER DUCT 3 COLORS PARELLELED (GRAY, GREEN, BROWN)	1FT

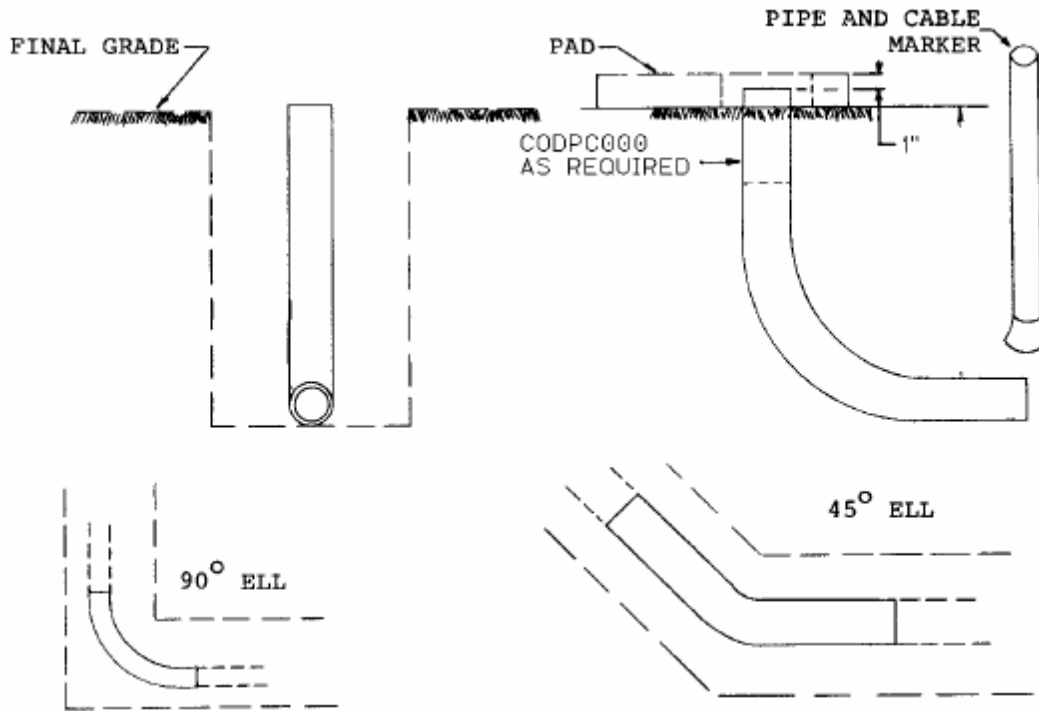
**NOTES:**

1. PVC cement must be itemized. Issue one (1) quart can, item I.ADCMI002, for each 500 linear feet of PVC conduit, or for each 25 conduit joints. Glue is not used on the 1" PE conduit.
2. Install warning tape as specified on UCT plate. Use marking tape I.TAPMA001 for electric systems and I.TAPMA005 for water systems.
3. Minimum separation of 2" between Fiber Optic conduit and conduits carrying conductors of the same voltage. Minimum separation of 6" between conduits carrying conductors of different voltage.
4. Use lubricant to pull PE conduit into the PVC conduit.

# UCL9\*3F (INCLUDES 3-INNERDUCTS)

# UCL4\*3F (INCLUDES 3-INNERDUCTS)

## INSTALLATION OF FIBER OPTIC CONDUIT ELL



### SCH 40 ELL CONDUIT

PLATE	ITEM	DESCRIPTION	QTY	RADIUS
UCL9*4F	CODEP006	4" - 90° SCH-40 ELBOW	1	36"
	FIBPE012	1-1/4" PE INNER DUCT 3 COLORS PARELLELED (GRAY, GREEN, BROWN)	1FT	N/A
UCL4*4F	CODEP005	4" - 45° SCH-40 ELBOW	1 36"	
	FIBPE012	1-1/4" PE INNER DUCT 3 COLORS PARELLELED (GRAY, GREEN, BROWN)	1FT	N/A



# UFC\*      INSTALLATION OF FIBER CABLE IN CONDUIT



PLATE & OPTION	ITEM	QTY	DESCRIPTION
UFC*48	CAIUF048	1	48 COUNT UG FIBER OPTIC CABLE , LOOSE TUBE
UFC*72	CAIUF072	1	72 COUNT UG FIBER OPTIC CABLE , LOOSE TUBE
UFC*144	CAIUF144	1	144 COUNT UG FIBER OPTIC CABLE , LOOSE TUBE

**NOTES:**

1. All fiber cables are installed by blowing or pushing into conduit (Do Not Pull).
2. Use lubricant when installing fiber cable (see ADCMI004).

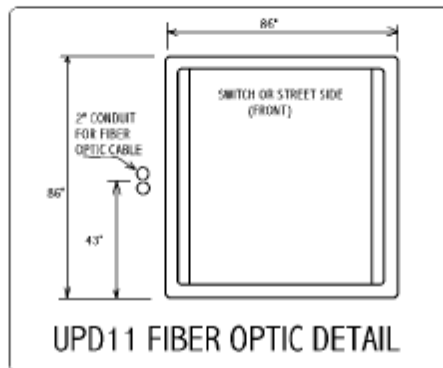
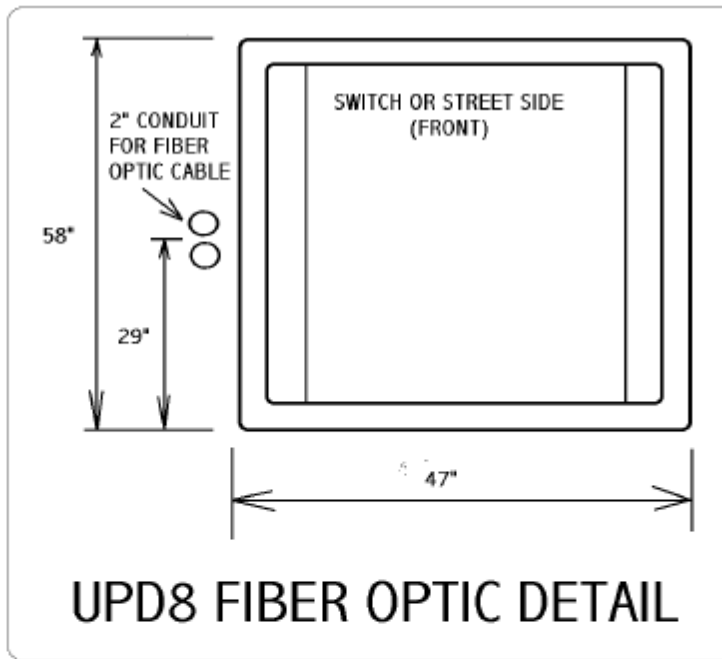
**TRUCK STOCK ITEMS:**

CABLE LUBRICANT 5-GAL (I.ADCMI004)

# FIBER OPTIC CABLE FOR DISTRIBUTION AUTOMATION

The drawings attached below depict where the conduits should be installed. The conduits should be installed at the center of the pit wall 2-inches above the grade. In the trench, the conduit should be installed between primary cable conduits. This will help for locates and protection.

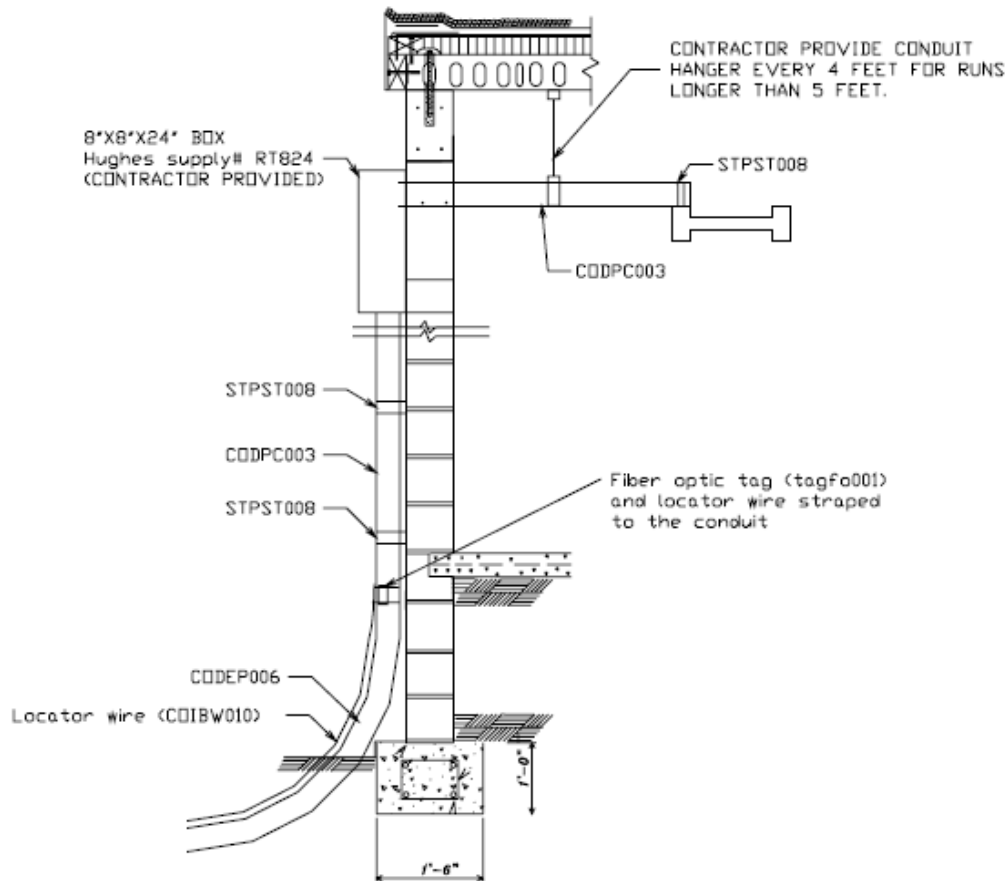
**NOTE: USE FOR “DA PROJECTS”**



Conduit used to communicate between DA switches.

# FO-ENTU1

## FIBER OPTIC CABLE ENTRANCE INTO A BUILDING/CONTROL HOUSE

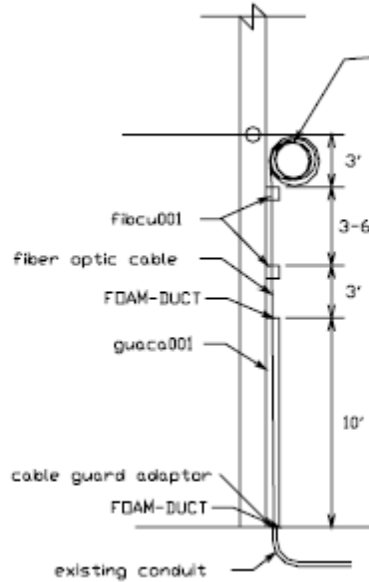


ITEM	QTY	DESCRIPTION
CODEP006	1	ELBOW, PVC 4IN. 90 DEG.36IN RAD SCH 40
CODPC003	20	CONDUIT, PVC 4" SCH40 W/COUP
STPST008	2	STRAP, CONDUIT 2-HOLE 4IN
TIETH001	4	TAG HOLDER TIE 3" DIA.
TOGFO001	1	FIBER OPTIC TAG 1-1/8" x 2-1/2" 8'X8'X24' BOX (CONTRACTOR SUPPLIED) CONDUIT HANGER (CONTRACTOR SUPPLIED)

# FO-RIS1C

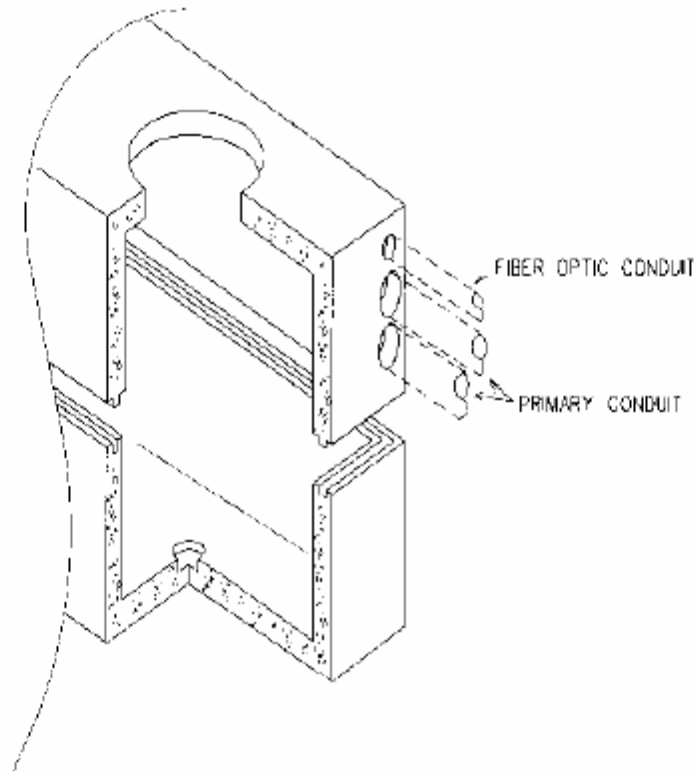
# FO-RIS1W

## FIBER OPTIC RISER POLE



APPLICATION	ITEM	QTY	DESCRIPTION
FOR CONCRETE POLES FO-RIS1C	ADPCG002	1	4"-3" CABLE GUARD ADAPTER
	ANCST002	2	ANCHOR, STUD BOLT
	ANCST003	8	SCREW, 1/4 X 1 3/4" , HEX HEAD
	FIBCU001	2	CUSHION, FIBER OPTIC CABLE DOWNLEAD
	GUACA001	1	GUARD, 2INx10FT
	NUTPG300	8	NUT, HEX 1/4 PLATED
	NUTPG500	2	NUT, HEX 1/2 PLATED
	TIETH001	2	TAG, HOLDER TIE
	WASSF001	2	WASHER, SQ. FLAT
FOR WOOD POLES: FO-RIS1W	ADPCG002	1	4"-3" CABLE GUARD ADAPTER
	FIBCU001	2	CUSHION, FIBER OPTIC CABLE DOWNLEAD
	GUACA001	1	GUARD, 2INx10FT
	SCWLA002	2	SCREW, LAG 1/2" x 4"
	SCWLA005	8	SCREW, LAG FOR CABLE GUARD 1/4" x 2"
	TIETH001	1	TAG HOLDER TIE 3" DIA
	WASSF001	2	WASHER, SQ. FLAT 2 SQ. x 1/8" x 1/2" BOLT

# DOWNTOWN FIBER OPTIC CABLE MANHOLE INSTALLATION

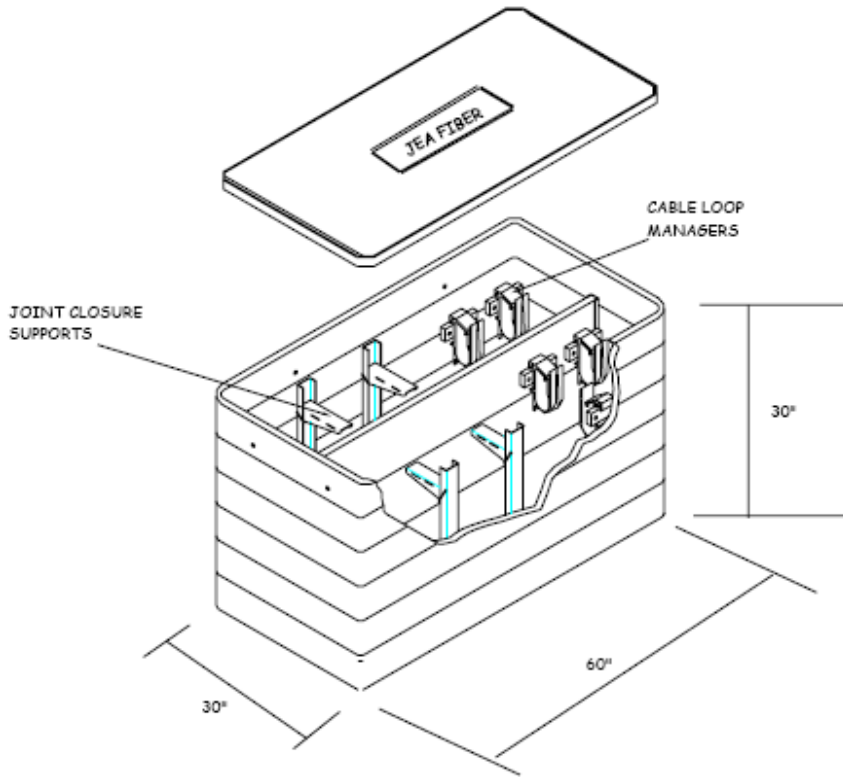
**NOTES:**

1. Install the Fiber conduit above the primary conduit with a 2-inch separation.
2. Rack the Fiber cable above the primary cable.
3. When installing PE Duct allow for shrink back.
4. Fiber cable is wrapped with fire retardant tape (TAPEL004) as it passes through each manhole.
5. The fiber cable is wrapped with fire retardant tape. Coil 75 feet of extra cable on each end. The coils are stored in a fire resistant cloth bag (FIBFB001). The fiber cable, coils, & splices are kept in the bottom of the manhole so as to be out of the way of the electrical conductors and equipment.

For areas outside of the downtown, route the fiber optic conduits around the outside of electric manholes.

# SET-FMH

**REINFORCED PLASTIC MANHOLE  
20,000 LB. RATING**



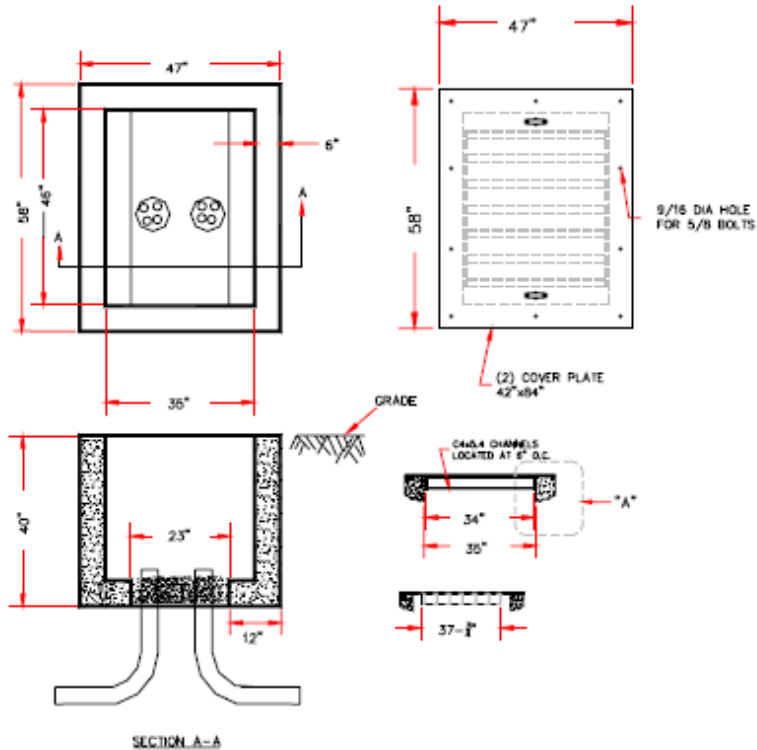
ITEM	QTY	DESCRIPTION
MANHO008	1	MANHOLE, REINFORCED PLASTIC, 30"W x 60"L x 30"H
	1 CU. YD.	BASE COURSE *

**\*NOTE:**

1. A compacted base course footing shall be included in this plate. Footing shall be level, minimum of one (1) foot deep, and extend a minimum of six (6) inches beyond the outside edges of the manhole base. (+/- 4.0' x 6.0' x 1.0'deep)

## UPD8F

### FIBER OPTIC PRE-CAST PIT



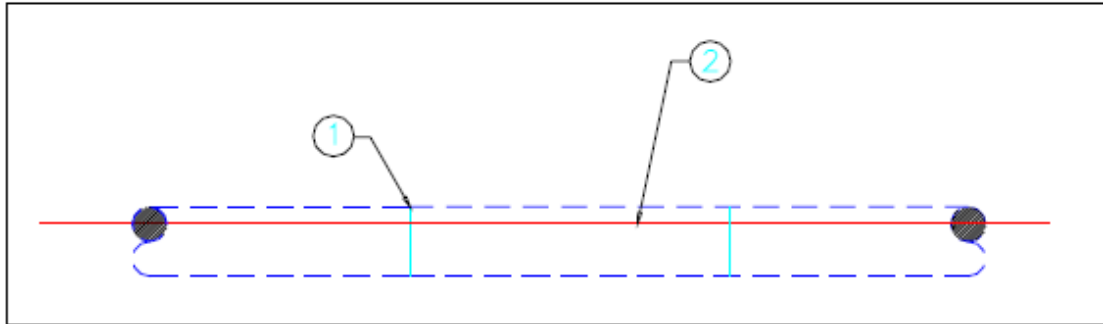
ITEM ID	QTY	DESCRIPTION
CODEP006	1	4" - 90° SCH-40 ELBOW 36" RADIUS
COVPT003	1	HINGE COVER
FIBPE001	3FT	1" BLACK PE INNER DUCT
FIBPE002	3FT	1" ORANGE PE INNER DUCT
FIBPE003	3FT	1" WHITE PE INNER DUCT
FIBPE004	3FT	1" BLUE PE INNER DUCT
PITME003	1	PIT, CONCRETE, DMD-77

**NOTES:**

1. Plate additional conduit ells as required on an individual basis. (See UCL9\*4F & UCL4\*4F)
2. Conduit ends to extend 2" above gravel/base course.
3. Conduit locations to be detailed by engineer.

# FLW

## LOCATE WIRE (FLW)



ITEM ID	QTY	DESCRIPTION
CNNTY112	2	14-1/2 NYLON CABLE TIES
CAIDF003	20	WIRE, WHITE OR ORANGE FIBER OPTIC LOCATE TRACER

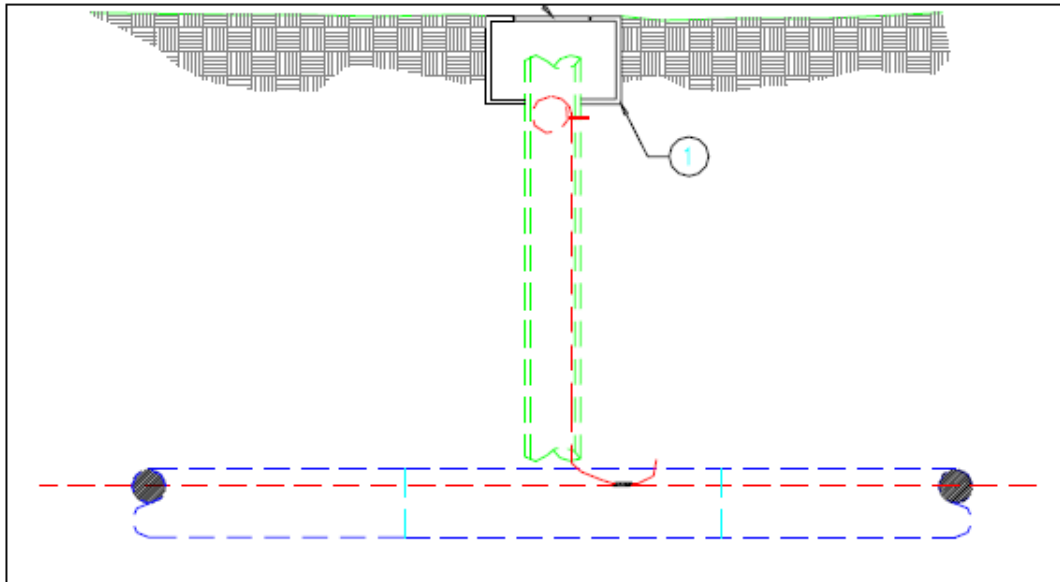
**NOTES:**

1. This plate gives 20 feet of wire for each quantity plated.
2. Terminate the ends of the #12 gauge wire in the BOXPS002 handhole box. This box can be used by the locating contractor.



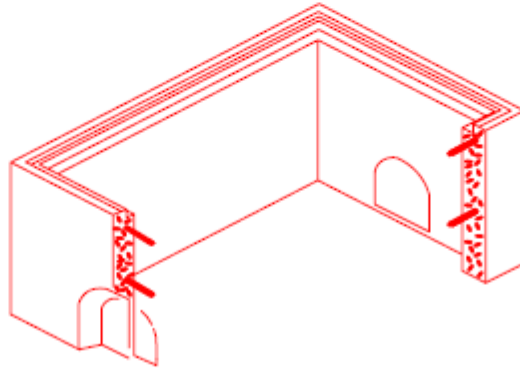
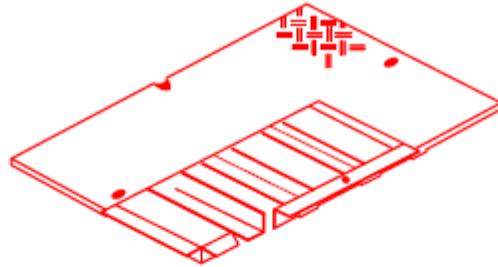
# FLWLS

## LOCATE WIRE LOCATING STATION



ITEM ID	QTY	DESCRIPTION
BOXPS001	1	BOX, POLYMER CONCRETE, 13" X 24" X 18" DP

# PULL-BOX\* CONCRETE SPLICE BOX



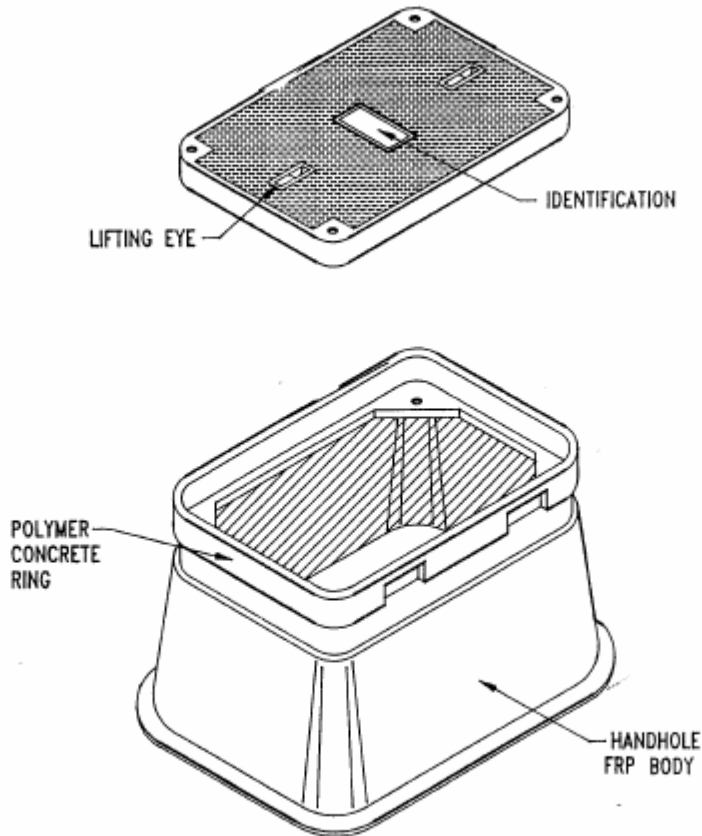
**PULL-BOX OPTIONS:**

1. INSTALLATION CONDITIONS:
2. U – NEW UNDEVELOPED AREA
3. D – EXISTING DEVELOPED AREA

**EXAMPLE:** PULL-BOX\*D  
INSIDE DIMENSIONS – 16"W X 24"L X 24"DEEP

ITEM ID	QTY	DESCRIPTION
BOXSP002	1	PULL BOX, CONCRETE ,TRAFFIC BEARING, STEEL COVER

**SERV\_BOX-\_\***  
**POLYMER CONCRETE SERVICE BOX**



**SERV-BOX OPTIONS:**  
**INSTALLATION CONDITIONS**  
 U – NEW UNDEVELOPED AREA  
 D – EXISITNG DEVELOPED AREA

**EXAMPLE: SERV-BOX-P\*D**

PLATE	QTY	DESCRIPTION
SERV-BOX-P*_	1	BOX, POLYMER CONCRETE, 13" X 24" X 18" DP (BOXPS001)

**UCCF**  
**CURB MARKER**



**APPLICATION:**

Contractors are required to mark manholes and hand-hole boxes. A 2-1/2" adhesive curb marker shall be installed on the curb directly in front of each manhole or in the street side of a sidewalk where no curb is available. In the event neither curb nor sidewalk is available, the contractor shall install the marker in the asphalt paving directly in front of each manhole.

PLATE	ITEM	QTY	DESCRIPTION
UCCF	MARCB003	1	MARKER, CURB 2-1/2" CIRCLES BLACK ON RED LABELED "JEA FIBER".

**NOTE:**

1. The markers are installed with adhesive (JEA item ADCAD002). One tube of adhesive is required for 5 markers. This item will be stored as truck stock.

# UG FEEDING OH SYSTEMS

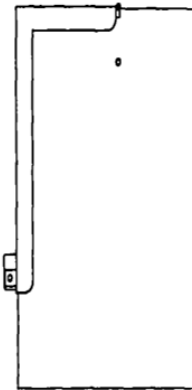
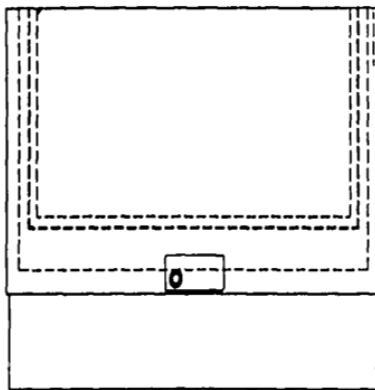
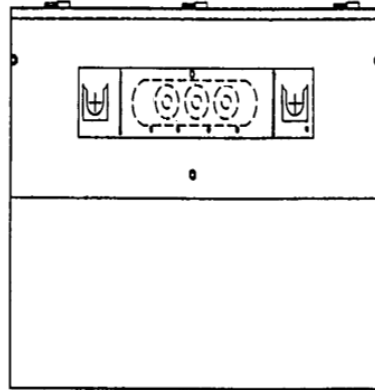
## I. GENERAL GUIDELINES

Design, Construction & Material Standards formed a special committee to establish some basic design guidelines for construction alternatives to be used for OH to UG conversion projects. The following guidelines were established to facilitate the conversion of existing overhead lines to an underground system. The completion of the conversion will have underground systems feeding the overhead. The following standards will accomplish this with safety & reliability in mind. For situations not covered by this standard, please contact the standards department.

- I.1. For proper fuse coordination, please refer to the system protection section to select the appropriate fuse for underground risers.
- I.2. Terminators or “Pot-heads” and their mounting brackets are included with the associated underground plates.
- I.3. The terminator bracket shall always be installed a minimum of 38 inches below the phase conductor.
- I.4. The riser plates require a warning sign indicating that the underground system feeds the overhead. It will be necessary for these signs to clearly mark the underground cables feeding each overhead fuse cutout phase. This is accomplished by attaching a sign to the pole below each fuse cutout and at the base of the pole adjacent to pole address.
- I.5. Please see the OH Distribution Standards manual for riser pole installations. For the riser plates DUOA\*, DUOB\*, and DUOC\*, the underground pot-head jumper connects to the arrester first and then to the top of the cutout. The bottom of the cutout connects to the hot-line clamp. This jumper connection insures that the bottom of the cutout is de-energized in the event of a blown fuse.
- I.6. Plate options are listed on each construction standard.
- I.7. Install fuse cutouts on the street side of the pole for the DUOA\* plate. Install the top fuse cutout on the street side of the pole for the DUOB\* plate. Install the top and bottom (A&C phase) fuse cutouts on the street side of the pole for the DUOC\* plate.
- I.8. Where possible, above grade enclosures should be utilized when there are easements available, provided the enclosure is not so close to the road or other objects where it presents a safety hazard.
- I.9. Please see the UG Distribution Standards manual for manhole installations. The manhole needs to be installed as close to the base of the riser pole as possible to maintain consistency for troubleshooting. This will facilitate outage restoration by enabling JEA to know where these manholes are located, and also reduces the length of the radial feed to the riser pole. The PVC manhole should be placed within the sidewalk, where sidewalks are available. The manhole (I. MANH005) shall be sized adequately to permit removal of the elbows in the 3 point junction module (I. JUNLO001) from above the ground with a hot stick without having to enter the manhole or stand on the roadway. The junction module is allowed for use in the PVC manhole. Warning: Do not use the junction module in the pre-cast manholes or make the junction a normal open point.
- I.10. Engineer shall add “UG FEEDS OH” on the preliminary circuit maps. The circuit map manhole address shall begin with the letter “T”, designating an underground termination (in manhole) feeding the overhead.

# JE1

## SINGLE PHASE JUNCTION ENCLOSURE



**NOTES:**

1. Enclosure comes equipped with two (2) parking stand mounting plates and one (1) universal junction module mounting plate.
2. Itemize the accessories you wish to mount in the enclosure.

**EXAMPLES:**

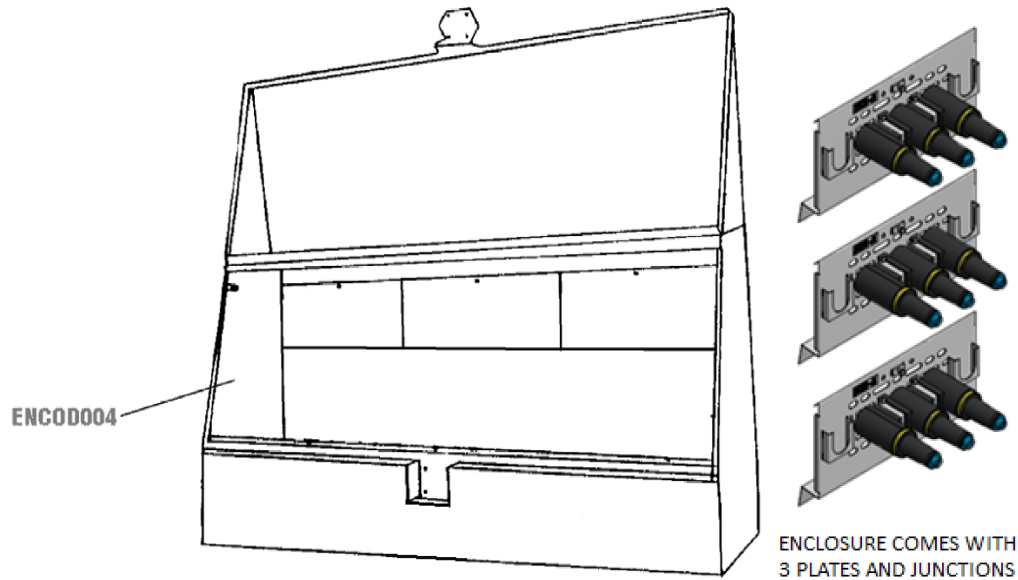
FEED-THRU BUSHING            I.RECPA004  
 3 POINT JUNCTION MODULE        I.JUNL0XXX

3. Use pad plate – UPD1 \*

ITEM	QTY	DESCRIPTION
ANCSD001	4	ANCHOR, CONCRETE
ENCOD007	1	ENCLOSURE, SINGLE PHASE JUNCTION
LOCPA001	1	PADLOCK, ALL BRASS 1 - 3/4 IN SHANK OPENING
RECPA004	1	BUSHING, FEED-THRU

## JE2

### TWO PHASE JUNCTION ENCLOSURE



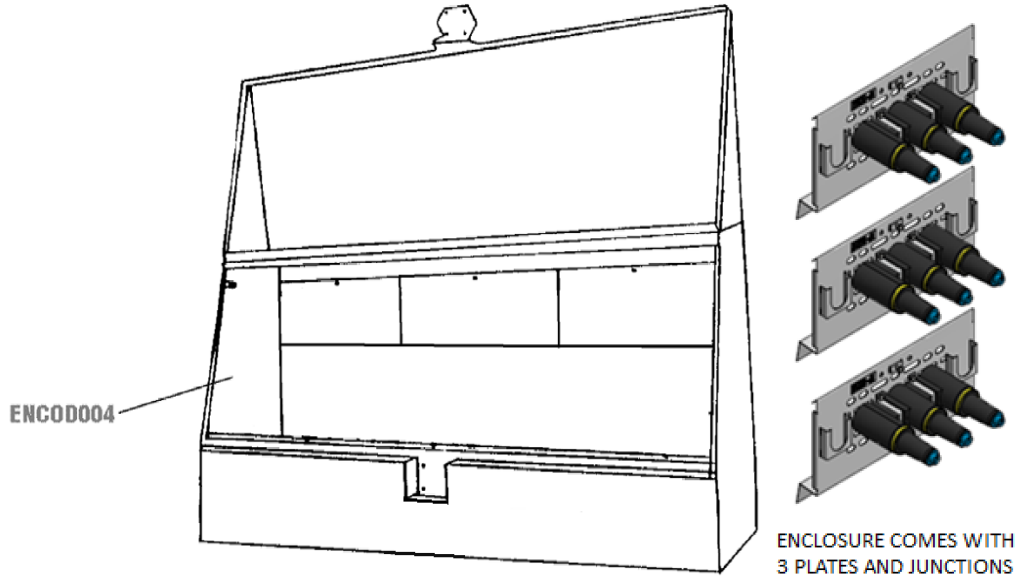
ITEM	QTY	DESCRIPTION
ANCSD001	10	ANCHOR, CONCRETE
BOLMS017	4	BOLT, MACHINE SQ. HEAD 5/8 X 8 IN. GALVANIZED
CLATG001	5	CONNECTOR, TRANSFORMER TANK GROUND
ENCOD004	1	ENCLOSURE, THREE PHASE JUNCTION/ ARRESTER
INDCF004	6	INDICATOR, CABLE FAULT, 400 AMP
LOCPA001	1	PADLOCK, ALL BRASS 1 - 3/4 IN SHANK OPENING
NUTSA500	10	NUT, 1/2" 316 SS HEX
NUTSQ003	4	NUT, SQUARE 5/8" GALVANIZED
PLGSO001	4	PLUG, LOAD BREAK 25KV STANDOFF
RECPA002	4	RECEPTACLE, DEADEND 25KV LOADBREAKER
SIGDA009	1	SIGN, "DANGER U.G. FEEDS OH"
WASBA500	10	WASHER, BELLEVILLE SPRING 1/2" SS
WASFG500	10	WASHER, ROUND 1/2" SS
WASSF003	4	WASHER, SQ. FLAT FOR 5/8 OR 3/4 IN. BOLT GALVANIZED

#### NOTES:

1. Use pad plate – UPD16 \*
2. Engineer must plate G1P to receive the ground.
3. WARNING: Do not make the junction a normal open point.
4. For replacement Junction/Plate use JUNLO003
5. Leave the center junction plate empty for Two phase set up.

## JE3

### THREE PHASE JUNCTION ENCLOSURE



ITEM	QTY	DESCRIPTION
ANCSD001	10	ANCHOR, CONCRETE
BOLMS017	4	BOLT, MACHINE SQ. HEAD 5/8 X 8 IN. GALVANIZED
CLATG001	5	CONNECTOR, TRANSFORMER TANK GROUND
ENCOD004	1	ENCLOSURE, THREE PHASE JUNCTION/ ARRESTER
INDCF004	9	INDICATOR, CABLE FAULT, 400 AMP
LOCPA001	1	PADLOCK, ALL BRASS 1 - 3/4 IN SHANK OPENING
NUTSA500	10	NUT, 1/2" 316 SS HEX
NUTSQ003	4	NUT, SQUARE 5/8" GALVANIZED
PLGSO001	6	PLUG, LOAD BREAK 25KV STANDOFF
RECPA002	6	RECEPTACLE, DEADEND 25KV LOADBREAKER
SIGDA009	1	SIGN, "DANGER U.G. FEEDS OH"
WASBA500	10	WASHER, BELLEVILLE SPRING 1/2" SS
WASFG500	10	WASHER, ROUND 1/2" SS
WASSF003	4	WASHER, SQ. FLAT FOR 5/8 OR 3/4 IN. BOLT GALVANIZED

#### NOTES:

1. Use pad plate – UPD16 \*
2. Engineer must plate G1P to receive the ground.
3. WARNING: Do not make the junction a normal open point.
4. For replacement Junction/Plate use JUNLO003



# STANDARDS BOOK UPDATES

## I. UPDATES 2018

DATE – UPDATED BY

1/19/18 – PARKTA

- In Chapter “Secondary”
  - On pg. 4of22 the Table has been changed to add BOXSP003
- In Chapter “System Protection”
  - The tables on pg. 4of14 and 5of14 were removed
  - The right two columns were removed from table 1 on pg. 4of14  
Along with the corresponding verbiage in III.1.3.
  - Removed II.1.1. “Overhead Laterals on Private Property” from pg. 2of14
  - Removed II.1.2.2. under “Underground Laterals” from pg. 2of14
  - Adjusted numbers for changes above
  - Adjusted page numbers, bring new total to 11pages
  - Added “Blank Page” to make section even numbered pages (12pg)
- In Chapter “Table of Content”
  - Adjusted to match up with changes made

1/22/18 – PARKTA

- New Section added “XI. Standards Book Updates”
- New Chapter added “Standards Book Updates” under section “1. Standards Book Updates”
- In Chapter “Standards Book Updates”
  - Added “1. Updates Starting 2018”
  - Updated chapter to reflect recent changes
  - Added “Blank Page” to make section even numbered pages (2pg)
- In Chapter “Table of Content”
  - Updated to include new section and chapter

5/30/18 – PARKTA

- In Chapter “Switching”
  - Plate UVS\*\_ on pg. 2of12 has been updated
    - Table updated to include Cabinet Sealing Plate info
    - Table Rearranged to fit to page
  - Plate UVSA\*\_ on pg. 3of12 has been updated
    - Table updated to include Cabinet Sealing Plate info
    - Table Rearranged to fit to page
    - Picture Rearranged to fit page
  - Plate UVSR\*3 on pg. 5of12 has been updated
    - Table updated to include Cabinet Sealing Plate info
    - Table Rearranged to fit to page
  - Chapter page amount increased from 12 to 14 pages
  - Plate SWCAB-SEAL with Instructions added to pg. 13of14
  - Added “Blank Page” to make chapter even numbered pages
- In Chapter “Table of Contents”
  - Updated Switching on pg. 12of16.

8/23/18 – PARKTA

- In Chapter “UG Feeding OH Systems”
  - “Blank Page” on pg. 14of14 was removed
  - Added page for new plate JE3 on pg. 14of14
  - Adjusted revised date on chapter
- In Chapter “Table of Contents”
  - Updated info on “UG Feeding OH Systems” section to reflect changes listed above.
  - Adjusted revised date

11/20/18 – PARKTA

- In Chapter “Grounding”
  - Updated “Grounding notes” to match Unit Price Contracts 8 ground rod Max
  - Adjusted revised date

11/30/18 – PARKTA

- In Chapter “UG Feeding OH Systems”
  - Updated JE3 on pg. 14of14
    - Removed note 2
    - Added 9 RECPA004 to the table
    - Labeled the picture JUNLO003
  - Adjusted revised date

## II. UPDATES 2019

2/25/19 – PARKTA

- In Chapter “Direct Buried Conduit”
  - Updated table under UCL9\* on pg. 4of4
    - Under plate UCL9\*7, Changed Special SCH 40 elbow to DB-60 elbow.
    - Under plate UCL9\*7, Changed angle in Description from 90 deg to 45 deg
  - Adjusted revised date
- In Chapter “Manholes”
  - Updated plate UDBP on pg. 20of22
    - Added Item IDs for multiple pump parts
  - Adjusted revised date

3/13/19 – PARKTA

- In Chapter “Direct Buried Conduit”
  - Updated title on pg. 4of4 from “UCL9\*” to “UCL4\*\_ AND UCL9\*\_ ”
  - Updated table under UCL4\*\_ AND UCL9\*\_ on pg. 4of4
    - Plate for Special DB-60 PVC was Changed to UCL4\*7 to match recent changes
    - Plate UCL9\*7 was added to SCH 40 Conduit with New Item CODEP013
  - Adjusted revised dates
- In Chapter “Table of Contents”
  - Updated info on “Direct Buried Conduit” section to reflect changes listed above.
  - Adjusted revised date

## 3/15/19 – PARKTA

- In Chapter “Manholes”
  - Added JEA IDs to table for Plate UDBP on pg. 21of22
  - Added Plate SET-10X16\*\_ to pg. 14of22
  - Removed “Blank Page” on pg. 22of22
  - Added comment on adding grounding plates to pgs. 7 through 14
  - Swapped out picture of 8X16 on pg. 12of22
  - Adjusted note 1 in plate ADJ-MH-T on pg. 19of22
  - Adjusted revised date
- In Chapter “Table of Contents”
  - Updated info on “Manholes” section to reflect changes listed above
  - Adjusted revised date

## 3/25/19 – PARKTA

- In Chapter “Manholes”
  - Added comment on poured in place collars, ADJ-MH to pgs. 7 through 14
- In Chapter “Pads”
  - Changed Note 4 for Plate UPD13, pg.12of14
  - Adjusted revised date

## 4/25/19 – PARKTA

- In Chapter “System Protection”
  - Updated pictures on pgs. 7of12
  - Adjusted revised date

## 5/20/19 – PARKTA

- In Chapter “Terminations”
  - Updated Plate on pgs. 14of20
    - Removed Bushing Well from Plate
  - Adjusted revised date

## 6/4/19 – PARKTA

- In Chapter “Transformers”
  - Corrected Plates on pgs. 9 through 17
    - Changed CNNTS003 to 004 to match Oracle
  - Adjusted revised date
- In Chapter “Manholes”
  - Corrected Plate SET-PVC-MH on pg. 6of22
    - Removed HOKCA006
  - Adjusted revised date
- In Chapter “Splices”
  - Corrected Plate UVSH\*1/0 on pg.17of20
    - Changed SPLSH002 to SPLST007
  - Adjusted revised date

## 6/5/19 – PARKTA

- In Chapter “Transformers”
  - Corrected Plates for UVGA\*\_ on pgs. 3 through 5
    - Removed CNNTS001 and CLATG001 to match Oracle
  - Reorganized tables for UVGA\*\_ on pgs. 3 through 5
    - This reduced the space the plates took up
  - Reorganized tables for UVGC\*\_ on pgs. 9 through 17
    - This reduced the space the plates took up
  - New page total is 14pgs
  - Adjusted revised date
- In Chapter “Table of Contents”
  - Corrected Transformer section on pg. 11of16
  - Adjusted revised date

## 7/26/19 – PARKTA

- In Chapter “Secondary”
  - Added to the table under Plate SERV\_BOX-\_\*\_ on pgs. 5of22
    - Added # of Services
  - Adjusted revised date

## 8/15/19 – PARKTA

- In Chapter “Pads”
  - Adjusted pictures and added notes to multiple plates about Bollards
  - Adjusted pictures and added notes to multiple plates about Clearances
  - Adjusted revised date
- In Chapter “Switching”
  - Adjusted pictures and added notes to multiple plates about Bollards
  - Adjusted pictures and added notes to multiple plates about Clearances
  - Adjusted revised date

## 8/20/19 – PARKTA

- In Chapter “Manholes”
  - Adjusted the picture under Plate SET-PVC-MH on pgs. 6of22
    - Picture now correctly represents MANHO008
  - Added note under Plate ADJ-MH-T on pg. 19of22
    - Allows for the pour of a rectangle to encompass two Manhole covers if they are within close proximity.
  - Adjusted revised date

## 10/29/19 – PARKTA

- In Chapter “Pads”
  - Changed picture under Plate UPD2 on pg. 3of14
    - Length of tail was changed from 4’ to 5’
  - Changed picture under Plate UPD3 on pg. 5of14
    - Length of tail was changed from 4’ to 5’

10/29/19 – PARKTA

- In Chapter “Pads”
  - Changed picture under Plate UPD2 on pg. 4of14
    - Adjusted conduit set up
  - Changed picture under Plate UPD3 on pg. 6of14
    - Adjusted conduit set up
  - Created new Plate UPD16 on pg. 15of14
    - Copied from UPD10 but adjusted for the needs of JE2 and JE3
  - Added “Blank Page” to make section even numbered pages
  - New page total is 16pgs
  - Adjusted revised date
- In Chapter “Table of Contents”
  - Adjusted info to match recent changes
  - Adjusted revised date

11/5/19 – PARKTA

- In Chapter “UG Feeding OH Systems”
  - Complete rework of Plate JE2 on pg. 3of4
  - Complete rework of Plate JE3 on pg. 4of4
  - Adjusted revised date

11/21/19 – PARKTA

- In Chapter “Secondary”
  - Adjusted the table under Plate SERV\_BOX-\_\*\_ on pgs. 5of22
    - Added more clarification to description and # of Services
  - Adjusted revised date

12/17/19 – PARKTA

- In Chapter “Secondary”
  - Adjusted the table under Plate SERV\_BOX-\_\*\_ on pgs. 5of22
  - Adjusted revised date

### III. UPDATES 2020

5/20/20 – PARKTA

- In Chapter “Manholes”
  - Included Average weights of the manhole corresponding with each page.
  - Adjusted revised date

**IV. UPDATES 2021**

1/11/21 – PARKTA

- In Chapter “Concrete Work”
  - Added Wording to III.4. and VIII.3. on Concrete Strength for Downtown Network.
  - Adjusted revised date
- In Chapter “Concrete Encased Duct Bank”
  - Added Wording to I.1. on Concrete Strength for Downtown Network.
  - Adjusted revised date

3/22/21 – PARKTA

- In Chapter “System Protection”
  - Added Wording to I.1.3 on pg. 1 of 12
  - Changed Table 2 on pg. 5 of 12, to have 150E T-Link from 80 to 65
  - Adjusted revised date

4/5/21 – PARKTA

- In Chapter “Transformers”
  - Added new plates UWGNT\*1000, UWGNT\*1500, UWGNT\*2000 on pg. 10 of 14
  - Added New Network Protectors PROTR006/007 to pg. 1 of 14
  - Adjusted the Picture and added wording to clarify Open Delta Tx info on pg. 12 of 14
  - Adjusted revised date
- In Chapter “Secondary”
  - Added new plates USC\*500-3C and USC\*500-3NC on pg. 3 of 22
  - Adjusted revised date

6/22/21 – PARKTA

- In Chapter “Direct Buried Duct Bank”
  - Added wording on Pull Wire pg. 2 of 4
  - Adjusted revised date
- In Chapter “Direct Buried Conduit”
  - Added wording on Pull Wire pg. 2 of 4
  - Adjusted revised date
  -

8/26/21 – PARKTA

- In Chapter “Cable”
  - Removed Plate Cable-Setup pg. 1 of 4
  - Adjusted revised date

## V. UPDATES 2022

8/31/22 – PARKTA

- In Chapter “Pads”
  - Adjusted Picture measurements on pg. 12 of 16
  - Adjusted revised date

9/16/22 – PARKTA

- In Chapter “Switching”
  - Removed info on Plate UVFI and BUVFI-200 pg. 8 to 12
  - Adjusted revised date
- In Chapter “Table of Contents”
  - Updated Switching section
  - Updated Standards Book Updates Section
  - Adjusted revised date

## VI. UPDATES 2024

7/22/24 – PARKTA

- In Chapter “SECONDARY”
  - Updated Plate info for USMT\* on pg. 17 of 22
  - Updated Plate info for USF1 on pg. 18 of 22
  - Adjusted revised date

8/26/24 – PARKTA

- In Chapter “TRANSFORMERS”
  - Table rearrange on pg. 3 of 14
  - Updated listed items in “All Plates” Table on pg. 3 of 14
  - Added CNNVG004 to the following plates: UVGA, UWGA, URGGA, UVGC, UWGC, URGC
  - Adjusted revised date

8/29/24 – PARKTA

- In Chapter “SWITCHING”
  - Added new UVSF plates to table on pg. 1 of 10
  - Added new UVSF plate page on pg. 4 of 10
  - Added Blank page on pg. 12 of 12
  - Updated footer
  - UVSD plates are now labeled as “G&W Primary Padmount DeadFront Switch”
  - Adjusted revised date
- In Chapter “Table of Contents”
  - Updated Switching section
  - Updated Standards Book Updates Section
  - Adjusted revised date