

## SECTION NO. 16

### SPECIAL PROVISIONS – STREETLIGHT SPECIFICATIONS

**16-1 STREETLIGHT SPECIFICATIONS:** The streetlighting portion of this project shall be constructed in accordance with the STANDARD SPECIFICATIONS FOR CONSTRUCTION OF HIGHWAYS, STREETS, AND BRIDGES as issued by the Texas Department of Transportation (TxDOT), as it may be amended from time to time.

**16-2 SUBMITTAL DATA:** Prior to the purchase or fabrication of any equipment or material for use on this project, the Contractor shall submit, for review by the Engineer, appropriate catalog cut sheets and specifications for all standard off-the-shelf items. The Contractor shall also submit a State of Texas P. E. sealed set of shop drawings and other necessary data for all non-catalog or custom-made items. Unless otherwise noted, three (3) copies of all submittal information shall be submitted. One copy of the documentation, with appropriate notations, will be returned to the Contractor after the review.

The purpose of the submittal data is to show specifically and in detail that the Contractor will satisfy the requirements of the contract documents in order to avoid non-conformance with those requirements which do not become apparent until it is too late to correct without serious consequences. If preprinted literature, such as catalog cut sheets, is used to satisfy some or all of the submittal data requirements, there shall be no statements on the literature which conflict with the requirements of the contract documents. Any such statements shall be crossed off and initialed by the Contractor.

The Contractor shall clearly label each item of submittal data with the bid item number of the item to which it applies in order to facilitate review. Each submittal shall contain sufficient information and details to permit full evaluation of the item and its interrelationship with other items. Submittals that, in the judgment of the Engineer, are insufficient to permit proper evaluation, will not be reviewed. The Contractor shall take care to address all of the requirements of the contract documents in the submittal data. Nothing shall be left to assumption. The functional and technical interrelationship among the various items shall be carefully addressed. The Contractor shall allow a fourteen (14) calendar day review period for each package of submittal information.

To aid in control of the submittal data process, the Contractor shall transmit each group of submittal data to the Engineer using a transmittal sheet. The Engineer shall date stamp these transmittal sheets with the date received and will return a copy of the stamped transmittal sheet when returning the submittal data. The Contractor shall list on the transmittal sheet specifically each item or element which is included in the transmittal. An element is one part of several parts of information related to the same bid item. Each drawing shall have a unique drawing number that can be referenced. The same drawing number shall not be used on more than one sheet.

Following review of the submittal data, the Engineer will mark the items in one of three ways: "no exception taken," "corrections required" or "rejected." The Contractor may proceed with any items marked "no exception taken." Items that are marked "corrections required" are judged to

be basically acceptable, but will have notations made on them about additional information required or corrections which are necessary before the items can be accepted. In such case, the Contractor shall proceed immediately to correct said items and re-submit them for review. Items that are marked "rejected" are judged to be basically unacceptable and the Contractor shall proceed immediately to identify new items or redesign said items and resubmit them for review.

Review and acceptance of the submittal data by the Engineer shall not relieve the Contractor of his obligation to furnish and install the work in accordance with the contract documents.

No time extensions will be granted to the Contractor as a result of the need to re-submit various items for review.

**16-2A QUALIFICATIONS:** All electrical work must be performed by a contractor licensed in the State of Texas. City reserves the right to require documentation of credentials prior to any work being performed. (Rev 4/2016)

**16-3 BURN-IN PERIOD:** If this contract involves the installation of luminaires and their connection to the lighting system, final acceptance of the work will not be made until the luminaires have been energized with electrical power for at least 30 calendar days without a failure occurring. The Contractor shall correct, at his own expense, all failures that occur prior to the final acceptance of the work. In the event that more than five percent (5%) of the luminaires or their components fail prior to final acceptance of the work, the Engineer may direct the Contractor to replace, at the Contractor's expense, all luminaires included in the work with a new lot of luminaires acceptable to the Engineer.

**16-4 RESPONSE TIME:** If the contract involves on-site installation work, whenever a failure of any kind is reported by the City in such work or in equipment or materials furnished or installed by the Contractor, the Contractor shall repair or otherwise remedy said failure within 48 hours after receipt of notification, including telephone notifications, from the City. If the Contractor fails to affect such remedy within the 48-hour period, the City may affect repair or remedy as it deems best. The Contractor or his surety shall be responsible for all related City costs in such cases.

**16-5 TEMPORARY LIGHTING:** The contractor shall maintain existing lighting levels throughout the construction process, unless otherwise approved by the engineer. Contractor shall provide for installation, maintenance, and removal of temporary lighting systems. Items are considered subsidiary to unit prices bid for roadway lighting. If the contractor fails to provide roadway lighting, the City may install temporary lights as it deems best. The contractor will be responsible for all related City costs in such cases. (Rev. 10/2015)

**16-6 MATERIALS:** (Rev. 5/2015)

A. **POLES:** The design of the completed assembly of poles and hardware shall equal or exceed the current AASHTO STANDARD SPECIFICATIONS FOR STRUCTURAL SUPPORTS FOR HIGHWAY SIGNS, LUMINAIRES AND TRAFFIC SIGNALS. The addenda thereto assumes ice and 80 M.P.H. winds with 104 M.P.H. gusts when loaded in accordance with the typical drawings and these Specifications.

Poles shall be manufactured by Union Metal Corporation, or approved equivalent, in accordance with Figure 1 or Figure 2. Each pole shall be 2-section steel davit type luminaire poles and include either single or twin davit type arms to support the luminaires. Each pole shall also include anchor bolts and, if required, transformer bases. The general design of the poles conform to the requirements of the attached figures with no guys, struts, rods, stay braces, or clamps of U-bolts, except where noted otherwise.

1. Pole Assemblies: When the term pole is used in the sense of a bid item, it shall include the entire pole assembly. A pole assembly shall include the pole, the davit arm(s), the transformer base (if required), the anchor bolts, the bolt covers, and all other appurtenances required for a complete and in place installation.
  2. Mounting Height: The pole assembly shall provide a luminaire mounting height of 40 feet for major collectors and arterials. The pole assembly shall provide a luminaire mounting height of 25 feet for local and minor collector streets.
- B. DAVIT ARMS: The pole shall be the davit type with single or twin arms manufactured by Union Metal Corporation, or approved equal. The single davit arm or twin davit arms shall be a separate section that telescopes the pole shaft by one foot. Each arm shall have a 9-foot span and a nominal radius of 9 feet for major collectors and arterials. The arm shall have a 4 foot nominal arm span for local and minor collectors, in accordance with Figure 3.
- C. TRANSFORMER BASE: The transformer base shall be cast aluminum with all necessary fittings and attachments in accordance with Figure 1 (TB-17). The transformer base shall be so designed to afford the lighting standard the quality of "breaking away" under vehicular impact. The base shall break upon impact of a vehicle weighing approximately two thousand pounds and traveling at a speed of twenty (20) miles per hour or faster. It shall meet the structural and wind load requirements specified above and shall conform to the requirements of STANDARD SPECIFICATIONS FOR STRUCTURAL SUPPORTS FOR HIGHWAY SIGNS, LUMINAIRES AND TRAFFIC SIGNALS, including all addenda thereto, published by AASHTO.
- A door opening with a removable door shall be provided in the side of the base approximately 8.56" x 8.94" x 11" in size. Each transformer base shall be furnished with four (4) galvanized, one-inch diameter bolts, each with a hex nut and two (2) washers suitable for attaching the pole to the transformer base.
- D. SURFACE PREPARATION: After fabrication, all welds shall be mechanically cleaned to remove detrimental weld flux slag deposits. All exposed surfaces of the pole assembly shall have a powder coat black over galvanized finish. (Rev 5/2015)
- E. LUMINAIRES: For local and minor collectors, the LED luminaire shall be American Electric Lighting Autobahn LED Series ATBO (20BLEDE70 MultiV R2 BK NL P7) or equivalent, roadway lighting, horizontal luminaire, black in color. For arterials and major collectors, the LED luminaire shall be Leotek GreenCobra (GC1 40F MV NW 2

BK 700 PCR7 WL), or equivalent, roadway lighting, horizontal luminaire, black in color. All fixtures shall have ANSI 7-wire photocontrol receptacle.

- F. **LIGHTING SYSTEM CONTROLLERS:** A LED rated ANSI C136.10 solid state photocontrol shall be furnished with each fixture. The photocontrol MOV shall have a rating of 1280J/40kA. The base shall be 140C rated. Enclosure shall be double thick and have a double thick lens. Electronics shall be full wave rectified, and have dual Zener diodes. Design life shall be 20+ years to match fixture life.

The Contractor shall furnish lighting system controllers. Each lighting system controller shall be equivalent to South Bend Controls, Incorporated, Remote Control Outdoor Circuit model MR-UG, 30 or 60 ampere, single or double pole relay rated for 120/240 volt control. The controller shall include a cast aluminum outdoor cabinet. The cabinet shall be finished with acrylic enamel.

- G. **EMS MARKERS:** The Contractor shall furnish Electronic Marker System (EMS) markers equivalent to 3M type 1256.

- H. **IN-LINE FUSE:** The Contractor shall furnish in-line fuses, disconnecting fuse holders and disconnect kits on arterials and major collectors as per the list below. Type 2 fuses and fuse holders shall be equivalent to the TRON Waterproof Fuse holder, with fuse, manufactured by the McGraw Edison Company, or A. B. Chase CTS Waterproof Fuse and rated for 0 amperes at 600 volts. Types 1F, 3F and 4F fuses and fuse holders and Type 1D, 3D and 4D disconnect kits shall be the following models, with 10 ampere fuses as applicable, manufactured by the Homac Manufacturing Company or approved equivalents.

Type of Fuse Holder or <u>Disconnect Kit</u>	Homac <u>Series</u>	<u>Fused?</u>
1F	SLK	Yes
1D	SDK	No
3F	FYC	Yes
3D	DYC	No
4F	YFC	Yes
4D	YDC	No

- I. **WIRE AND CABLE:** When wire and cable is provided on reels, the reels shall be non-returnable. The wire and cable shall be furnished in the appropriate American Wire Gage (A.W.G.) sizes shown on the plans or in the order.

Ground wire shall be used to connect poles and other devices to grounding electrodes (ground rods). Ground wire shall be bare soft drawn copper wire having a size of A.W.G. #6 unless otherwise noted.

Streetlight cable shall be used to connect streetlights to their power source or controller.

Direct burial streetlight cable shall be aluminum XHHW-2 (for arterials) or XHHW-6 (for local streets) triplex.

Bare wire grounding conductors shall be annealed, uncoated copper conforming to the NATIONAL ELECTRICAL CODE.

The complete assembly shall be packaged on reels having sufficient diameter to prevent inducing permanent set or injury to the cable. Each reel shall be adequately labeled to indicate the voltage, the insulation type, the number and size of conductors, the length of cable on the reel, and the trade name of the manufacturer.

### **16-7 INSTALLATION AND CONSTRUCTION:**

- A. **GENERAL:** This section of the Specifications sets forth the requirements for the on-site installation and construction work related to installing the street lighting equipment and system. Whenever the project requires such work, all such installation and construction work shall conform to the following requirements.

Unless otherwise specifically noted in each instance, the work and materials required by this section shall be considered incidental to the system and no direct payment will be made for them.

**Contractor shall stake all new street light locations and the Engineer shall accept all locations prior to beginning work. The contractor is solely responsible for verification of vertical and horizontal separation requirements of all utilities. The contractor shall notify the Engineer of any perceived conflicts with existing utilities. The engineer may relocate the street light to a more desirable location or to avoid utility conflicts.**

(Rev. 5/2015)

### **B. ELECTRICAL AND WIRING REQUIREMENTS:**

1. **Grounding and the NATIONAL ELECTRICAL CODE:** All electrical equipment shall be fabricated and connected in accordance with the NATIONAL ELECTRICAL CODE published by the National Fire Protection Association and with all state and city codes.
  - a. All equipment, housings, cabinets and pedestals shall be grounded and bonded in accordance with the NATIONAL ELECTRICAL CODE.
  - b. All housings, enclosures, cabinets and pedestals shall be grounded with a third wire (equipment) ground.
  - c. All metal conduit shall be grounded and bonded in accordance with the NATIONAL ELECTRICAL CODE.
  - d. Metallic cable sheaths, metal conduit, transformer bases, anchor bolts, and metal poles and pedestals shall be made mechanically and electrically secure to form a continuous system and shall be effectively grounded. Bonding and

grounding jumpers shall be copper wire or copper strap of not less than the same cross-sectional area as A.W.G. #6.

- e. A ground electrode shall be furnished and installed at each new or revised service point unless otherwise noted on the plans. When so noted, an existing ground electrode may be used. Ground electrodes shall be of copper weld ground rod having a diameter of at least 5/8-inch, with at least eight (8') feet of the length being driven into undisturbed earth. The overall length of the ground electrode shall be sufficient to accommodate this requirement. Grounding conductors shall be at least A.W.G. #6 and shall be of copper. Exposed grounding conductors on poles shall be enclosed in 1/2-inch (minimum) diameter conduit to a height of at least eight (8') feet above the ground. (Rev. 5/2015)

2. **Wiring Requirements:**

(Rev. 5/2015)

- a. The Contractor shall furnish and install all wire, cable, connectors and other incidental materials necessary to connect all new equipment and all existing equipment which is to be incorporated in or connected to the work to form a fully functional and properly operating installation and system, as applicable.
- b. Splices in cables and wiring that are part of the work shall be made only in pole bases or weatherproof cabinets. No in-line splices shall be made at any point in the work other than at such locations. No splices in any cable or wiring shall be made in conduits, in manholes or in pull boxes unless otherwise noted.

C. **CONDUIT:** The Contractor shall furnish and install all conduits necessary to complete the work in accordance with the typical drawings, the plans and the other contract documents. Conduit and its installation shall conform to the NCTCOG SPECIFICATIONS unless otherwise noted. Unless otherwise noted, the type of conduit to be used shall be in conformance with the following:

- 1. **U-Guard** shall be used on the exterior surfaces of poles.
- 2. **Schedule 40 PVC Conduit** shall generally be used underground and in other conditions unless otherwise set forth above.

Conduit runs are shown in the plans and site sketches in schematic fashion and may be changed, if approved by the Engineer and if the revised routing will not result in increased cost to the City. To the extent practical, conduit runs shall be combined in the same trench to minimize the amount of trenching and backfilling.

Underground conduit shall be placed at a minimum depth of 30 inches below finish grade or six (6") inches below roadway subgrade, whichever is deeper. If the electric power is in the rear adjacent yard, the conductor trench shall be located as shown in Figure 4.

(Rev. 5/2015)

Where the conduit conflicts with other utilities at street crossings so that the depth must be reduced, a 2 inch galvanized rigid metal conduit shall be installed over said utility. A minimum cover of 18 inches shall be maintained over the top of the galvanized rigid metal conduit. All PVC conduit-to-metal conduit connections shall be made with threaded adapters.

Underground secondary service pole connections shall comply with Figure 5. (Rev. 5/2015)

Conduits entering concrete foundations for poles, pedestals or control equipment cabinets shall extend approximately two (2") inches above the foundations.

All metal conduits shall be equipped with bushings to protect the wires and cables from damage.

The open ends of all outside vertical conduits that are exposed to rain shall be equipped with weather heads. The weather heads shall be considered incidental to the associated conduit.

Power service shall not be located in the same conduit or pull box as other circuits.

A nylon pull string shall be placed in all empty conduit prior to the placement of paving.

- D. **FOUNDATIONS:** The Contractor shall install foundations for equipment and poles as required by Figure 6, the plans and these special provisions. Unless otherwise noted, Class "A" concrete shall be used for all foundations. (Rev. 5/2015)

The Contractor shall furnish and install all necessary reinforcing steel in accordance with the typical drawings, the plans and these special provisions.

Foundations shall be monolithic with the exposed surfaces formed and finished to present a neat, smooth appearance. The Contractor shall ensure that the tops of all foundations for poles and pedestals are level and not more than 2 inches above finish grade for proper mounting of the poles. The bottom of each foundation shall rest on undisturbed earth. The concrete edges of the pier shall be chamfered.

The Contractor shall furnish and install in the foundation a copper clad steel ground rod with a diameter of at least 5/8-inch. The ground rod shall be installed, as shown in the typical drawings so that it extends into the surrounding undisturbed earth at an angle from the side of the foundation for a minimum of eight (8') feet. The ground rod shall be driven into place.

Unless otherwise noted, the ground rod shall extend approximately three (3") inches above the foundation. The location of the ground rod shall not interfere with the entry, dressing or connection cables.

Forms for the concrete shall be rigid and securely braced in place. Templates shall be used to properly position and hold in place the necessary conduit, anchor bolts and the

ground rod. Immediately prior to pouring the concrete, both the forms and the earth which will be in contact with the concrete, shall be thoroughly moistened.

After concrete is placed and the top smoothed off, the concrete shall be covered with wet cotton or burlap mats for at least 96 hours. All bracing for anchor bolts shall not be subjected to any applied strain during this curing process.

E. LIGHTING SYSTEM CONTROLLERS:

1. The Contractor shall install lighting system controllers in accordance with the typical drawings and the plans. Such installation shall include:
  - a. Installation of electrical service;
  - b. U-guard on power pole to connect the controller with the streetlights and the streetlighting system;
  - c. Furnishing and installing needed wire and cable;
  - d. Connection of the controller to the power source, the streetlights, the system and other devices; and
  - e. Furnishing and installing needed mounting hardware.
2. The Contractor shall connect the controller to the system and the luminaires to be controlled to form a fully functional system.
3. As part of installing an electrical service or controller, the Contractor shall furnish and install a ground rod and shall ground the electrical service and the cabinet to the ground rod, furnishing and installing all needed wire, grounding clamps and miscellaneous material.
4. As part of installing the electrical service or controller, the Contractor shall furnish and install the in-line fuse/fuse holder required by the plans and Special Provisions. Fuses for local streets and minor collectors shall be per the attached Figure 7.(Rev. 5/2015)
5. Upon request from the contractor, connection of the electrical service to the power source will be completed by COA forces. (Rev. 5/2015)
6. The Contractor shall touch up any scratches in the finish of the lighting system controller's enclosure.

F. STREETLIGHT POLES: The Contractor shall install streetlight poles and transformer bases and shall install the davit arms on the poles in accordance with the requirements of the typical drawings, the plans and the following requirements.

The Contractor shall install the streetlight poles so that the pole is within two (2) degrees of vertical when loaded with the davit arms and luminaires shown on the plans.

The Contractor shall ground the pole to the ground rod.

When tightening bolts, there shall be no gaps between the base plate or transformer base and the foundation on all four bolts. If shims are necessary for leveling there shall be no

gaps between the base plate or transformer base, the shims, and the foundation. All four bolts shall be tightened securely.

Following installation and plumbing of the pole, the Contractor shall install the bolt covers.

The Contractor shall touch up any damage to the finish of the pole, the davit arms, and the transformer bases which occurred during installation. Said touch up shall be performed in accordance with the paint manufacturer's recommendations.

The wiring and connections in the pole bases and transformer bases shall conform to the requirements of the typical drawings. In the event that a connection case arises that is not shown in the typical drawings, the principles implied by the cases shown shall be adhered to and the connections shall be subject to the approval of the Engineer.

As part of the pole installation, the Contractor shall furnish and install disconnecting in-line fuse holders, with fuses, and disconnect kits in the pole base or transformer base. They shall be installed in a manner that will allow them to disconnect in the event that the pole is struck and knocked down or grossly deformed by the impact of a vehicle. The fuse holders and disconnect kits shall be connected to the streetlight circuit as shown on the typical drawings and the plans. (Rev. 5/2015)

G. LUMINAIRES: The Contractor shall install luminaires of the sizes and types shown on the plans. The installations shall conform to the requirements of the typical drawings. As part of the luminaire installation, the Contractor shall do the following:

1. The Contractor shall assemble the luminaire as necessary and shall clean the entire optical system as necessary to render it free of dust, dirt, and other foreign material. The Contractor shall conform to cleaning instructions furnished by the luminaire manufacturer so as not to damage the optical system.
2. The Contractor shall furnish and install insulated conductors from the luminaire to the transformer base, connecting them to the luminaire, the in-line fuse and the streetlight circuits, to form a fully functioning streetlight system. The conductors shall be rated for 600 volts, A.W.G. #12. (Rev. 5/2015)
3. The Contractor shall install shorting caps in each fixture for streetlighting systems, or photo cells when applicable. If installing photo cells, the Contractor is to insure the photo cells face the correct position on top of the fixture.

H. CABLE AND WIRE INSTALLATION: Wherever cable or wire must be installed as part of the work, the Contractor shall furnish and install the appropriate type of cable or wire, including all necessary mounting, attachment and connection hardware, cable guys, anchors, guy guards, wire wrap, wire ties, terminal blocks, spade lugs, solderless connectors, in-line fuses and fuse holders, tape, waterproofing, ground rods and all other material necessary for proper installation in accordance with the requirements of the plans and typical drawings.

If a separate bid item is included for streetlight cable, it shall be the actual number of linear feet of each type of streetlight cable which has been furnished and installed under this section. For the purposes of payment, the measurement shall be the actual horizontal distance measured along the line of each span or conduit run. No allowance will be given for cable risers on or within poles and no allowance will be given for any vertical runs below grade or within foundations. (Rev. 5/2015)

1. **No Splices:** Except as otherwise specifically noted in each instance, no splices shall be permitted in any wire or cable except in pole bases or equipment cabinets.
2. **Protection of Wire and Cable Ends:** The Contractor shall water and moisture proof the raw ends of the wires and cables until they are properly terminated.
3. **Cable in Conduit:**
  - a. **Cable Lubrication:** The Contractor shall lubricate cables and wires entering a conduit with talc, powdered soapstone, or other approved lubricant to prevent damage to the insulation during the installation process.
  - b. Installation with existing circuits shall not be allowed.
4. **Directly Buried Cable:** Where cable is to be directly buried, the trench shall be at least 30 inches deep and shall not exceed eight (8") inches in width. (Rev. 5/2015)

- I. **EXCAVATING AND BACKFILLING:** Excavations required for the installation of conduit, cable, foundations and other equipment shall be performed so as to cause the least possible damage to the streets, sidewalks and other improvements. However, such excavations shall be sufficiently wide to permit effective repair of the pavement, sidewalks and improvements in a manner that will not require excessive maintenance. All such excavations shall be made in accordance with the typical drawings. Trenches shall not be wider than necessary for the proper installation of equipment, materials or foundations to be installed. (Rev. 5/2015)

The Contractor shall furnish all materials necessary for backfilling and finishing the excavations.

Excavations shall not begin until immediately before the installation of the equipment or materials to be installed.

The Contractor shall maintain all backfilled excavations in a well filled and well maintained state to provide a smooth and well drained surface until final paving and grading is accomplished.

Direct bury poles shall be backfilled with poleset backfill in accordance with Figure 8.

- J. **SITE RESTORATION:** Improvements such as pavement surfaces, sidewalks, curbs, gutters, curbs and gutters, base material and other improvements which are disturbed, and

to the extent practical, shall be restored to the same texture and finish. The Contractor shall accomplish such restoration of all surfaces that are damaged by the Contractor in any way, whether such damage was necessary or unnecessary. All such restoration shall conform to the requirements of the typical drawings and to the plans and Specifications.(Rev. 5/2015)

1. **Roadway Surfaces:** Damaged roadway surfaces shall be restored by the Contractor. As part of the excavation work, the outline of all areas to be excavated in the roadway shall be cut to a depth of at least two (2") inches with a pavement saw prior to removing the pavement material. No zig zag edges shall be permitted. Such saw cuts shall be neat and true with no shatter outside the excavation area. During the excavation work, the Contractor shall take care not to damage the saw cut edges. If such edges become damaged, the Contractor shall re-saw the edges of the excavation in a manner acceptable to the Engineer. Following excavation, the Contractor shall backfill the area and restore the pavement surface as indicated in the typical drawings. The Contractor shall accomplish the repair of the street surface within seven (7) calendar days after the surface was excavated. (Rev. 5/2015)
2. **Curbs and Gutters:** The Contractor shall completely remove and replace damaged sections of curbs and gutters. A section of curb and gutter shall be considered to be the entire portion between expansion joints. The Contractor shall take care to match the style and shape of the curb and gutter to the style and shape of the existing curb and gutter and the material and texture shall be the same, insofar as practical. The Contractor shall accomplish the restoration within seven (7) calendar days after the curb and gutter is damaged. (Rev. 5/2015)
3. **Driveway Aprons:** The Contractor shall completely remove and replace damaged sections of driveway aprons. A section of driveway apron shall be considered to be the entire area of the driveway apron between expansion joints and/or scored or sawed construction joints. Insofar as practical, the material and texture of the restored driveway apron shall match the existing driveway apron. The Contractor shall accomplish the restoration of driveway aprons within seven (7) calendar days after the damage occurred. (Rev. 5/2015)
4. **Sidewalks:** The Contractor shall completely remove and replace damaged sections of sidewalk and/or accessible ramps. A section of sidewalk shall be considered to be the entire area of sidewalk between expansion joints and/or scored or sawed construction joints; however, if a section of sidewalk is wider than eight (8') feet, the Contractor may saw it in half longitudinally and replace only the damaged half. The Contractor shall take care to match the material and texture of the restored sidewalk to that of the existing adjacent sidewalk. The contractor must remove and replace the entire accessible ramp in accordance with current American with Disabilities criteria. The Contractor shall accomplish the restoration of damaged sidewalk and ramps within seven (7) calendar days after the damage occurred.(Rev. 5/2015)
5. **Walls:** The Contractor shall restore walls that are damaged by the Contractor's operations in a manner approved by the Engineer in each instance. The Contractor shall take care to match the material and construction of the restoration with that of

the original wall so that the face where the damage occurred will be unnoticeable to the extent practical. The Contractor shall accomplish restoration of damaged walls within 30 calendar days after the damage occurred. (Rev. 5/2015)

6. **Grassed Areas:** The Contractor shall restore to their original levels and contours all grassed areas disturbed by the Contractor's operations. In restoring such areas, the Contractor shall rake the top 1.5 inches of soil to render it free of large stones and debris and make it suitable for seeding or sodding. The Contractor shall then seed or sod the area with the same type of grass as exists, surrounding the area. The Contractor shall accomplish restoration of grassed areas within 30 calendar days after the damage occurred. (Rev. 5/2015)

**16-8 PUBLIC SAFETY AND CONVENIENCE:** The Contractor, in performing work under this contract, shall conform to the following requirements and to all similar requirements of these special provisions and of the STANDARD SPECIFICATIONS FOR CONSTRUCTION OF HIGHWAYS, STREETS AND BRIDGES, published by TxDOT. All equipment and materials used to fulfill the requirements of this section shall be kept clean and in good repair by the Contractor. Unless otherwise noted, all devices furnished by the Contractor solely to fulfill the requirements of this section shall remain the property of the Contractor and shall be removed from the site when no longer required. (Rev. 5/2015)

- A. **General Safety:** The Contractor shall furnish, install and maintain such barricades, fences, railings, signs, warning lights, safety helmets and other devices as are necessary for the general safety of both the public and workmen on and around the work sites.
- B. **Cleanliness:** The Contractor shall immediately remove any trash and/or spillage caused by the Contractor's operations on any street, sidewalk or pedestrian way. (Rev. 5/2015)
- C. **General Convenience:** The Contractor shall conduct operations so as to minimize inconvenience to the public. The Contractor shall not have under construction more work than can be reasonably and effectively managed at any one time, in the judgment of the Engineer.

The Contractor shall minimize the adverse effects of the Contractor's work on abutting property owners. Unless otherwise noted or approved by the Engineer in each instance, the Contractor shall maintain intersection roadways and driveways open to traffic.

**16-9 SALVAGE OF CABLE AND EQUIPMENT:** All equipment which is removed by the Contractor and not reused in the work shall be salvaged and delivered by the Contractor to the City during the City's normal business hours at:

City of Arlington  
Pole Storage Facility  
801 W. Main Street  
Arlington, TX 76013

The Contractor shall not damage any such equipment. If requested by the Engineer, the Contractor shall demonstrate that the salvaged equipment is in working order. The Contractor shall repair or replace all salvaged equipment which is damaged by the Contractor's operation at the Contractor's expense and to the satisfaction of the Engineer.

The Contractor shall label each item of salvaged equipment with a tag specifying the location from which the item was removed.

Unless otherwise noted, existing wire and cable that is removed by the Contractor, shall become the property of the Contractor and shall be removed from the work sites.

The Pole Storage Facility is not normally manned. The Contractor shall notify the Engineer at least one work day in advance of the day the Contractor intends to deliver equipment and shall cooperate with the Engineer in establishing a mutually convenient time for the delivery.

The requirements of this section are incidental to the work and no direct payment will be made for them.



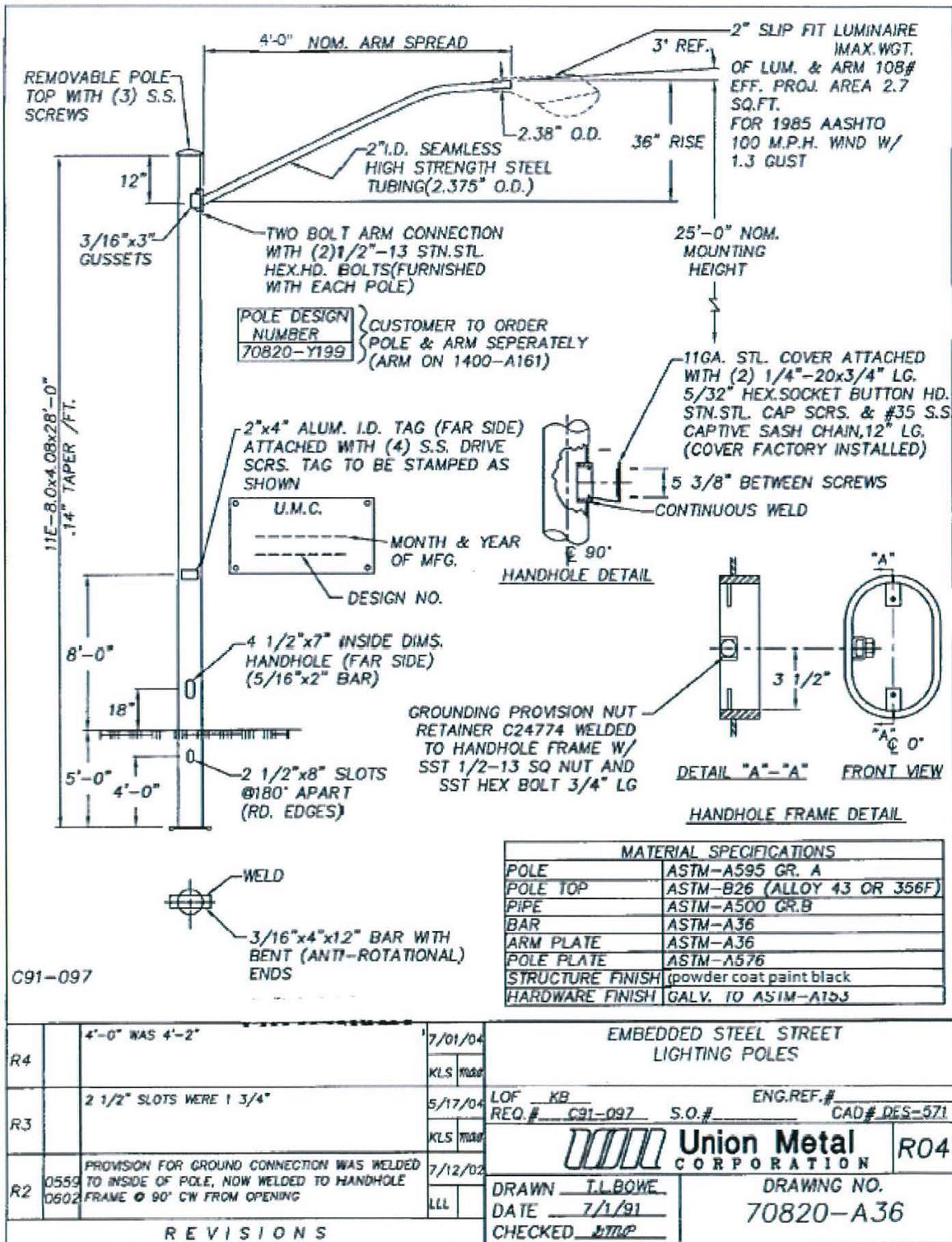


Figure 2

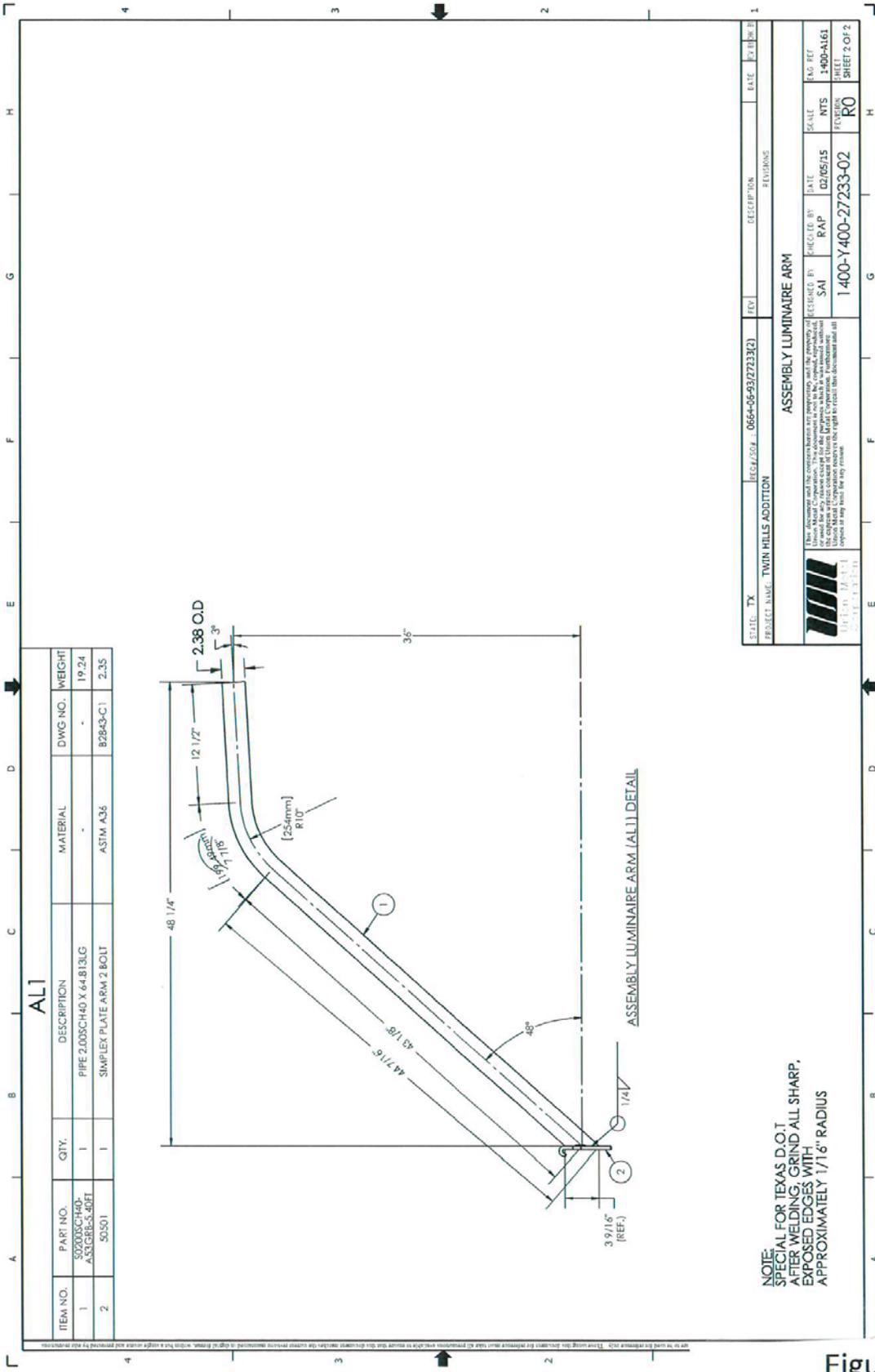
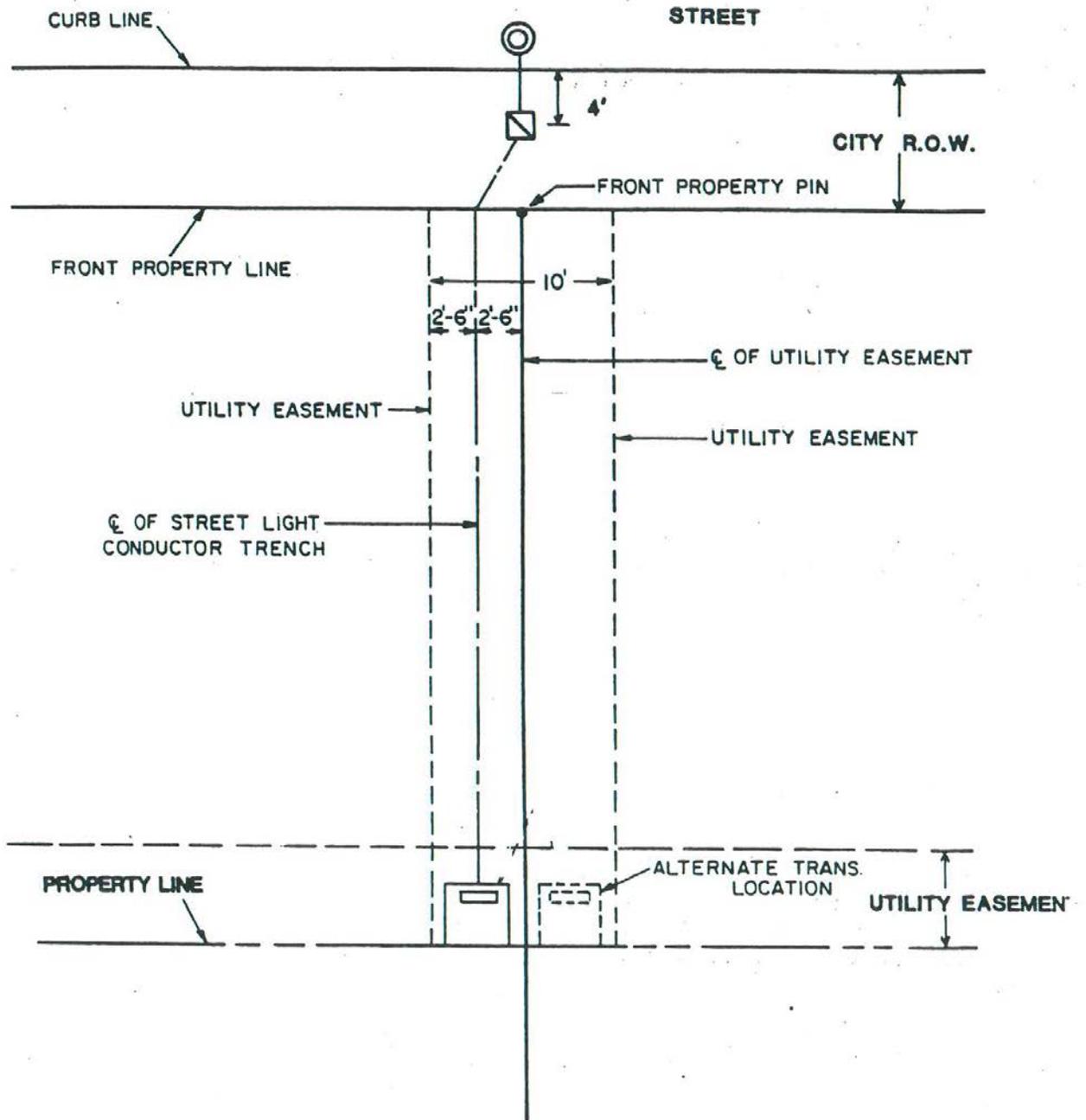
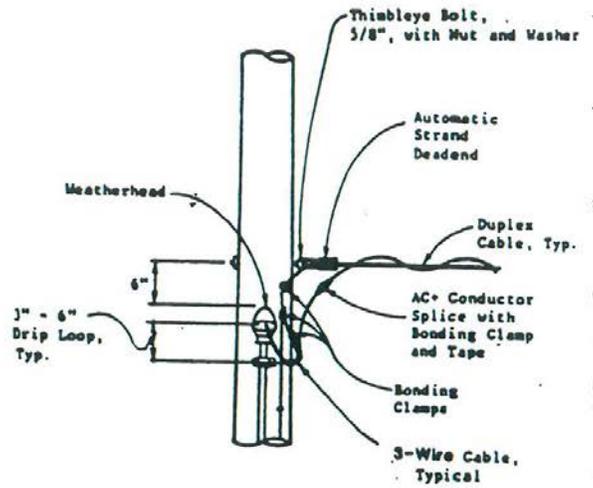
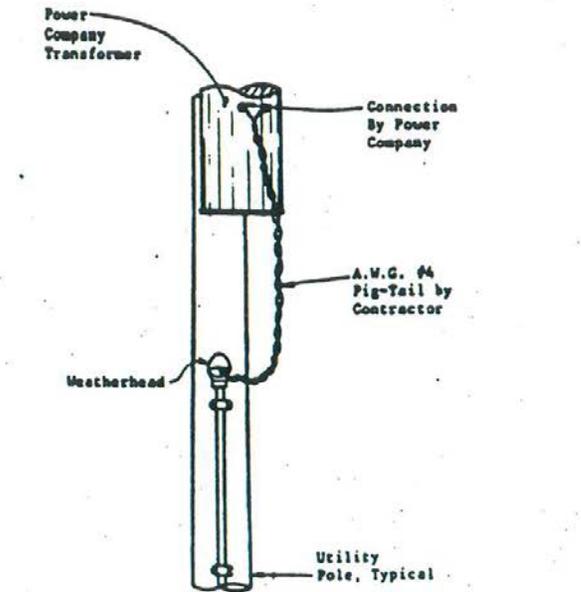


Figure 3

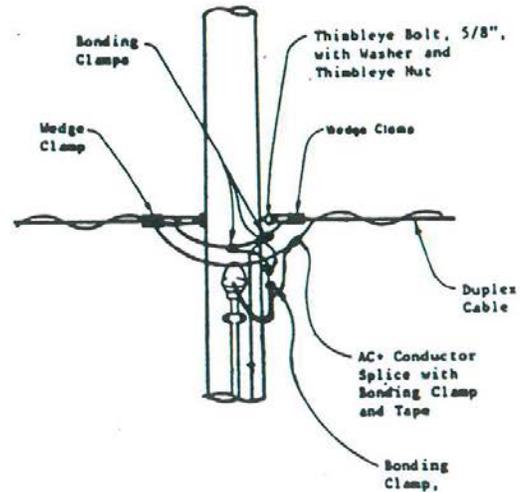
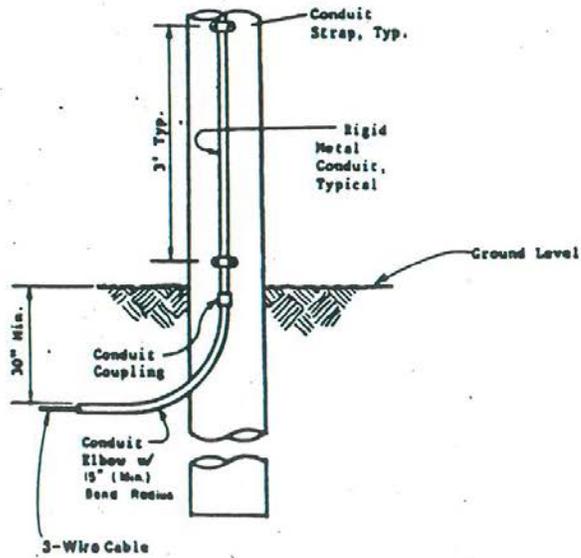


STANDARD  
FRONT LINE CONSTRUCTION  
EASEMENT LAYOUT TO  
TRANSFORMER

Figure 4



SPLICE AT SPAN END

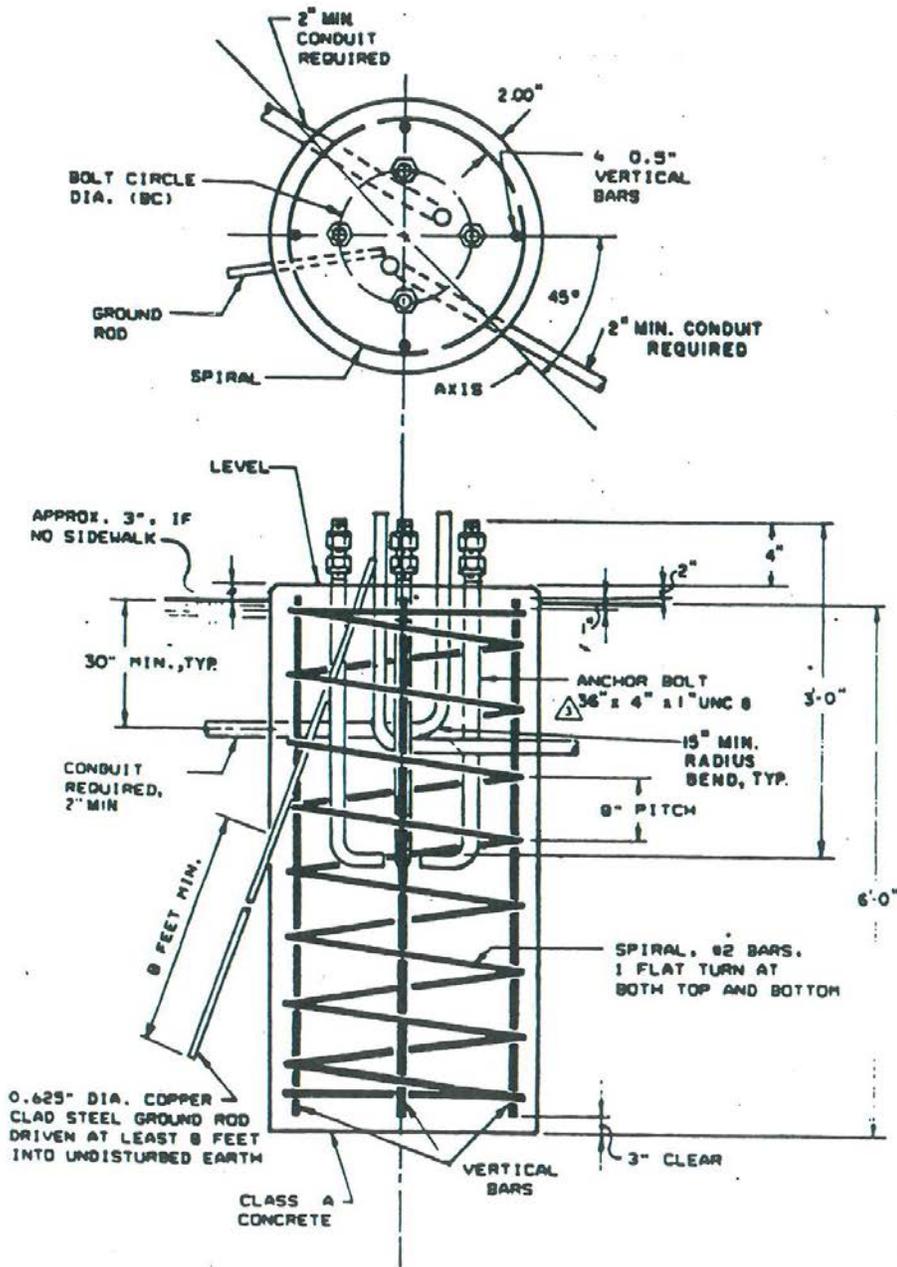


SPLICE AT MID-SPAN

ELECTRICAL SERVICE-OVERHEAD

# UNDERGROUND TO OVERHEAD ELECTRICAL CONNECTIONS

Figure 5



NOTES:

1. ELEVATION OF THE FOUNDATION TOP SHALL BE THE SAME AS THE ELEVATION OF THE SIDEWALK, IF ANY, AT THE FOUNDATION OR THE CROWN OF THE ROADWAY UNDER THE DAVIT ARM, WHICHEVER IS HIGHER. THE CONTRACTOR SHALL VERIFY THE ELEVATIONS.
2. EACH FOUNDATION SHALL HAVE AT LEAST TWO 2" (MIN) CONDUITS EACH ORIENTED AS NEEDED TO SERVE THE ENTERING CABLES.

FOUNDATION DETAILS

Figure 6

**SPECIFICATION  
FOR FUSING  
STREET LIGHT TAPS**

**NOTES:**

1. FUSING SHALL BE IN-LINE CARTRIDGE TYPE RATED 10 AMPS AT 600 VOLTS SIMILAR TO THE MCGRAW EDISON CO. TRON WATERPROOF FUSEHOLDER
2. FUSE CARTRIDGES SHALL BE LOCATED NEAR THE POINT OF CONNECTION TO THE SECONDARY POWER SOURCE AND INSTALLED IN SUCH A MANNER THAT THE FUSE CAN BE MAINTAINED SAFELY.
3. ALL BARE CONNECTIONS AND CONDUCTORS SHALL BE TAPED FOR AN INSULATION VALUE OF 600 VOLTS MINIMUM.
4. SOURCE - SIDE CONDUCTOR SHALL BE A MINIMUM #6 SOLID COPPER OR EQUIVALENT STRENGTH ALUMINUM CONDUCTOR IN ORDER TO SUPPORT THE WEIGHT OF FUSEHOLDER.

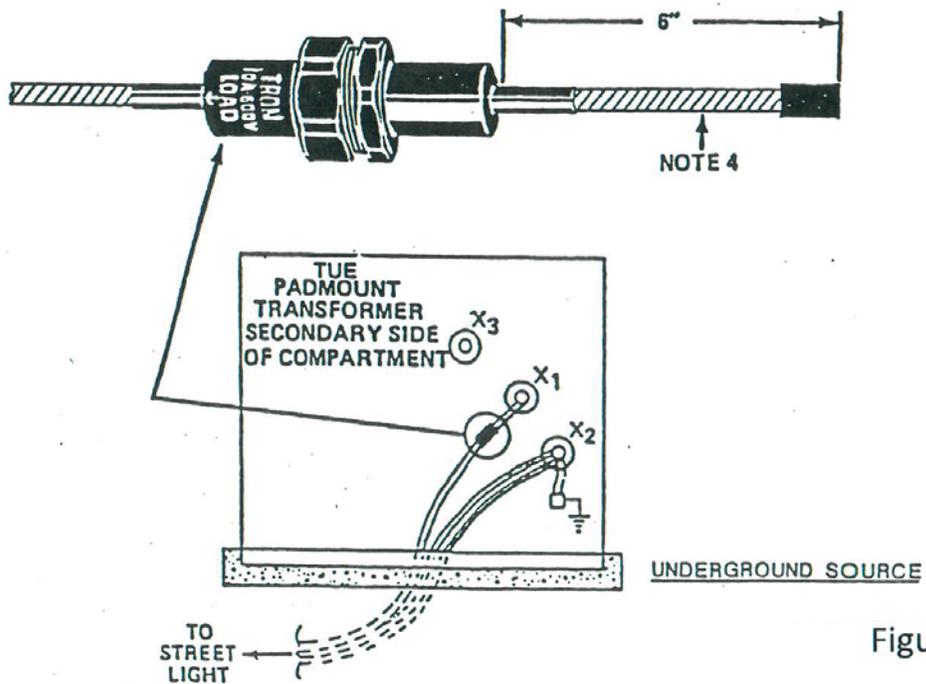
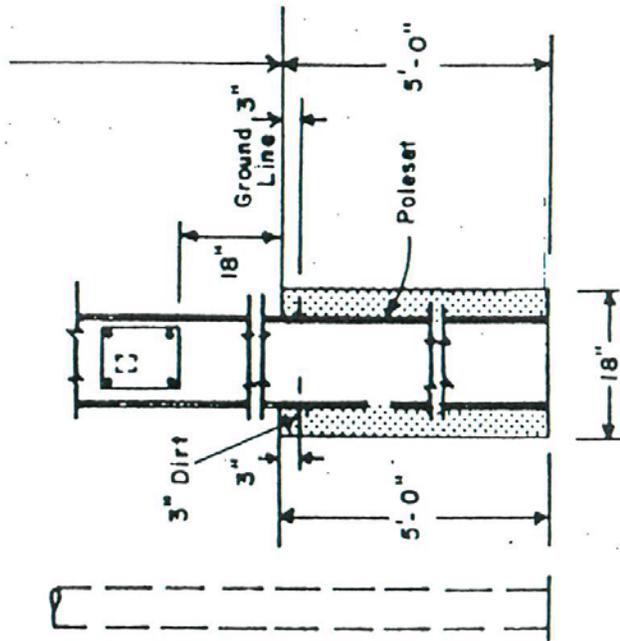


Figure 7



POLESET  
BACKFILL

STREET LIGHT  
BACKFILL POLESET

Figure 8

END OF SECTION