SECTION 639
ELECTRICAL POWER SERVICE ASSEMBLY

PART 1 GENERAL

1.01 SUMMARY

A. Description

1. This Section addresses power service assemblies that are utilized for traffic signalization, ITS, and other traffic related roadway applications.

B. Products Required But Not Supplied Under This Section

1. Concrete strain pole

C. Related Sections

1. Section 630 Conduit
2. Section 635 Pull and Junction Boxes
3. Section 641 Concrete Strain Pole
4. FDOT Section 562 Repair of Galvanized Surfaces
5. FDOT Section 620 Grounding

D. Method of Measurement

1. Complete Electrical Power Service Assembly:
    a. Electrical Power Service, Furnish and Install, Underground, Meter Furnished By Power Company:
        1) The Contract unit price per assembly includes all labor, equipment, material, and services for a complete and accepted installation as specified and described herein and in the Contract Documents including the coordination of service with the electrical power company and connecting to the supplied power company electrical source. Materials include all conduit, electrical service wire, pull boxes, meter socket, service disconnect(s), grounding, surge protective device, and miscellaneous appurtenances needed for a complete installation. Measurement and payment for concrete strain pole(s) provided under a separate Contract pay item.
        2) Where site-specific Department authorization and approved Plans allow for the electrical power company's service point to exceed 300 feet from the traffic equipment cabinet; the additional pull boxes, conduit, and service wire required for the installation beyond the aforementioned 300 feet may be paid separately if the additional pay items and their respective Contract unit prices are included in the Contract Documents explicitly for said purpose.
2. For use in maintenance and repair work:
    a. Electrical Service Wire:

1) The Contract unit price per foot of electrical service wire, furnished and installed, will include furnishing all materials and hardware as specified in the Contract Documents, and all labor, equipment, and miscellaneous materials necessary for a complete and accepted installation. Payment for Electrical Service Wire is based upon the distance of the cable run and includes payment for all conductors used in the run.

b. Electrical Service Disconnect:

1) The Contract unit price each for electrical service disconnect, furnished and installed, will include furnishing all materials and hardware as specified in the Contract Documents, and all labor, equipment, and miscellaneous materials necessary for a complete and accepted installation.

E. Basis of Payment

1. Prices and payments will be full compensation for all work specified in this Section.
2. Payment will be made under:

Item No.	Description	Unit
639-1-121	Electrical Power Service, F&I, Underground, Meter Furnished By Power Company	AS
	(For use in maintenance and repair work)	
639-2-1	Electrical Service Wire	LF
639-3-11	Electrical Service Disconnect, F&I, Pole Mount	EA

1.02 SYSTEM DESCRIPTION

A. Design Requirements

1. Provide a single concrete strain pole with service disconnect and meter socket in the right-of-way at a readily accessible location nearest the point of entrance of the conductors into the traffic equipment cabinet, typically within 15 feet of the cabinet.
2. Locate the electrical power company service point as close as possible to the traffic equipment cabinet at a distance not to exceed 300 feet from the cabinet.
3. A service point location that is greater than 300 feet from the cabinet requires written Department authorization and is subject to additional requirements including increasing the size of the conductors and placing a second pole and disconnect near the service point. When two disconnects are required, the pole closest to the service point will support the main disconnect and the meter socket.
4. Voltage drop in feeder or branch circuits must not exceed three percent and the total combined voltage drop for the entire circuit must be less than five percent. When the distance from the service point and the controller is greater than 300 feet, increase the conductor size accordingly to maintain the permissible voltage drop.
5. A written request for authorization for a service point location greater than 300 feet from the traffic equipment cabinet must include:
   a. A statement of what is being requested with a reference to or a quote of the specific requirement(s) aimed to address;
   b. Engineering rationale explaining why it is not possible to meet the requirement(s) and documentation of the effort to comply;

c. Proposed engineered alternative(s), solution(s), or modifications including increasing the size of the conductors to meet voltage drop requirements; and

d. Supporting documents including voltage drop calculations, signed and sealed by a State of Florida licensed Professional Engineer, for each traffic equipment controller whose service point is located at more than 300 feet away. For voltage drop calculations, assume a load of 12 amp for a typical intersection and 6 amp for an isolated traffic control device, unless a larger design amperage is needed for a site-specific design loading.

6. Locate pull boxes so that no conduit runs exceed 250 feet in length.

7. Provide bonding, grounding, and lightning protection pursuant to FDOT Section 620.

PART 2 PRODUCTS

2.01 MATERIALS

A. Electrical Conduit: Use conduit meeting the requirements of Section 630. Meet the requirements of FDOT Section 562 for coating all field cut and threaded galvanized pipe.

1. Rigid Steel Conduit: Conduit and fittings must meet the requirements of UL 6 and shall be hot dip galvanized. Each section of conduit must bear the UL label.

2. Rigid Nonmetallic Conduit: Use Schedule 40 nonmetallic conduit except where accompanying details call out for Schedule 80. Conduit and fittings must be polyvinyl chloride heavy wall meeting the requirements of UL 651. Each section of conduit must bear the UL label.

B. Electrical Service Wire:

1. All cables must be single conductor, minimum No. 6 AWG stranded copper wire, Type RHW-2 with cross-linked polyethylene (XLPE) high heat-resistant, water-resistant insulation rated at 600 V in dry and wet condition.

C. Meter Socket: Meter socket must be aluminum, Florida Power and Light listed Category 3/3a with isolated neutral, Landis & Gyr./Talon 41405-025F or approved equal.

D. Service Disconnect:

1. Enclosure (Cabinet): Use stainless steel enclosure conforming to National Electrical Manufacturers Association (NEMA) Standards for Type 4X that is approved and listed in the TSSQPL. Ensure that the inside dimensions meet NEC requirements.

2. Circuit Breaker: Use a manually resettable circuit breaker which has a current rating above the current rating of the circuit breaker to which electrical power is provided. Do not use less than a 40A circuit breaker.

3. Surge Protective Device: Use a lightning arrester rated for a maximum permissible line to ground voltage of 175 VAC.

4. Attachment Hardware: Use attachment hardware that meets the requirements of Section 600.

PART 3 EXECUTION

3.01 INSTALLATION

A. General: Meet the following requirements for the installation of individual components of the electrical power service assembly:

1. Use extreme care and caution in the installation of all components of the electrical power service assembly.
2. Follow installation procedures recommended by NEC and National Electrical Safety Code (NESC).
3. Consider the location of electrical power service point as shown in the Plans to be approximate, and coordinate with the appropriate electrical power company authority to determine the exact locations of each service point.

B. Provide a 2 inch PVC conduit with a minimum 24 inch bending radius between the "Electric" pull box and the power company pole to provide for their installation of the DPX cable. Stub up next to the pole at 6 inches above final grade.

C. Conduit: Securely attach all conduits to the pole or cabinet with a maximum distance of three feet between conduit attachment hardware.

D. Electrical Service Wire:

1. Install the electrical service wire in a manner which will ensure that damage to the installation will not occur.
2. Service wire must be continuously run wire. Splices are not permitted.
3. Ensure that the service wire is of sufficient length after installation in the conduit to provide for attachment to the power company service and for termination within the cabinet for which power is required.

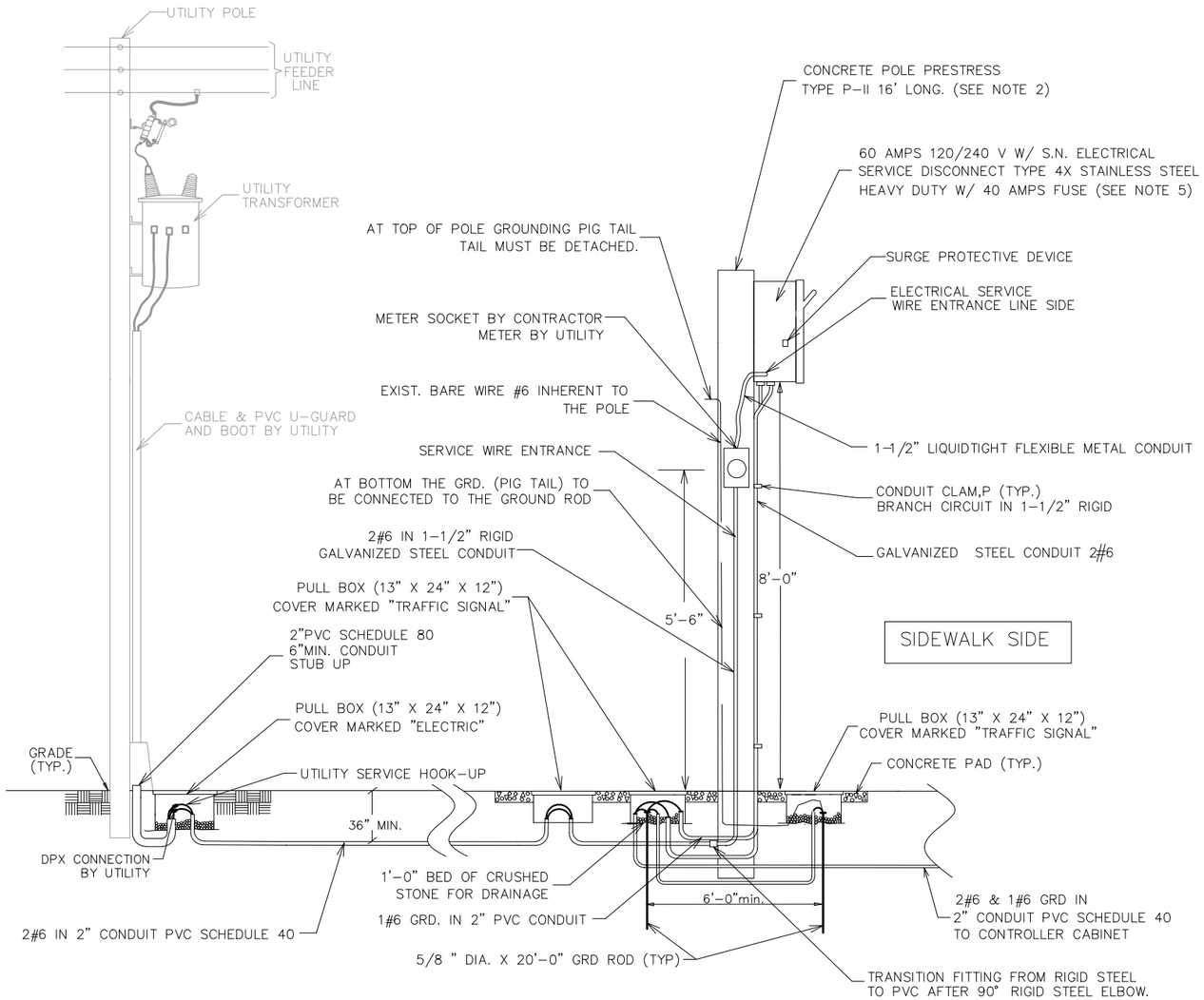
E. Meter Socket: Securely fasten the meter base to the pole. Install pole mounted meter bases at a minimum height of 5-1/2 feet above grade when measured from the center of the meter ring.

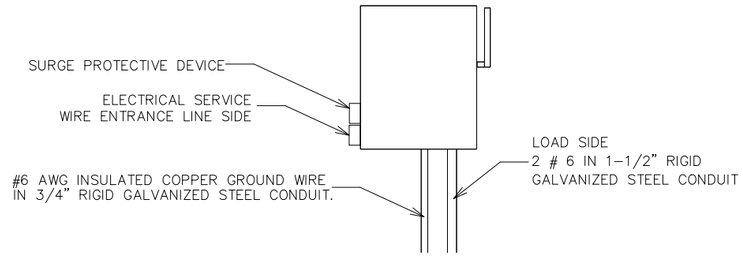
F. Service Disconnect:

1. Securely fasten the service disconnect to the pole, and electrically position the service disconnect between the service meter and the traffic control device cabinet to which electrical service is being supplied.
2. Install pole mounted service disconnects a minimum of 8 feet above grade when measured from the bottom of the disconnect.

END OF SECTION 639

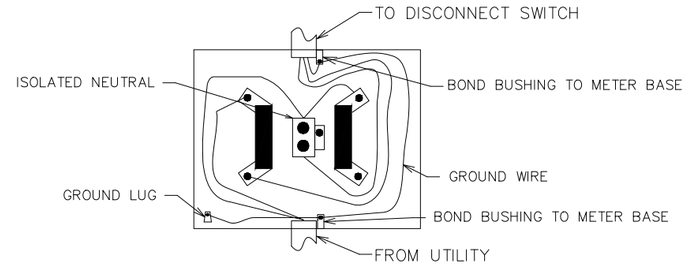
(DETAILS ATTACHED AS SHEET 639-5)





SERVICE DISCONNECT DETAIL

FRONT VIEW



METER SOCKET DETAIL

NOTES

1. CONTRACTOR MUST COORDINATE WITH ELECTRICAL POWER COMPANY (UTILITY) ENGINEERS FOR THE INSTALLATION OF THE UTILITY RISER.
2. STRUCTURAL CALCULATIONS OF THE POLE INSTALLATION, SIGNED AND SEALED BY A FLORIDA LICENSED PROFESSIONAL ENGINEER, MAY BE REQUIRED.
3. INTERCONNECT ALL GROUNDING ELECTRODES USING #6 GROUNDING CONDUCTOR.
4. PROVIDE SUPPLEMENTARY GROUNDING ELECTRODE SPACED AT A MINIMUM OF 6FT APART.
5. SERVICE DISCONNECT MUST BE RATED FOR SERVICE ENTRANCE. LABEL MUST BE FACTORY INSTALLED.
6. SERVICE DISCONNECT TO BE ORIENTED ON CONCRETE POLE SO ITS FACING THE SIDEWALK.
7. METER TO BE ORIENTED ON SIDE OF CONCRETE POLE SO WHEN READING IT YOU ARE FACING ON-COMING TRAFFIC.
8. PROVIDE 2 FEET OF COILED TERMINATION OF CONDUCTOR IN THE PULLBOX MARKED "ELECTRIC".
9. TERMINATE CONDUITS IN METER SOCKET AND SERVICE DISCONNECT WITH INSULATED GROUNDING BUSHING WITH SOLDERLESS LUG.

LATEST REVISION	DESCRIPTION:	TRAFFIC CONTROL EQUIPMENT STANDARDS AND SPECIFICATIONS	MIAMI-DADE COUNTY	TRAFFIC SIGNALS AND SIGNS DIVISION 7100 NW 36th STREET MIAMI, FLORIDA 33166 305.592.3580		NAME	DATE	ELECTRICAL POWER SERVICE ASSEMBLY TYPICAL DETAILS (N.T.S.)	SHEET NO.
02/25/21					DRAWN BY	HECTOR SANCHEZ	02-13-20		639-5
					CHECKED BY	NAHUM FERNANDEZ	02-13-20		
					APPROVED BY: FRANK AIRA, P.E.				