

## **SECTION 656 ELECTRICAL SERVICE**

### **656.1 Description**

- (1) This section describes furnishing and installing an electrical service, of the specified type.

### **656.2 Materials**

#### **656.2.1 General**

- (1) Install the electrical service conforming to local utility requirements. Furnish the utility with a wiring affidavit certifying that the service conforms to the WSEC and then verbally inform the engineer that the utility received the wiring affidavit.
- (2) For grounding electrodes for the electrical service, use approved 5/8-inch (16 mm) diameter copper clad grounding electrodes. Furnish the number and length of grounding electrodes as required to install the service conforming to the WSEC and the local utility.
- (3) If required by the local utility, furnish and install a manual bypass meter socket. Obtain the local utility's approval of the manual bypass meter socket.
- (4) If an overhead service is required, furnish and install the riser, weatherhead, wiring, and all necessary fittings as incidental to the electrical service bid item.

#### **656.2.2 Meter Socket Service**

- (1) Furnish an approved service having a meter socket, NEMA 3R breaker enclosure, 22,000-AIC circuit breakers unless the local utility requires otherwise, grounding electrodes and connections, conduit and fittings, and all necessary conductors and equipment required by the WSEC and the utility for a service connection. Use circuit breakers with an amperage capacity of 50 A, unless specified otherwise in the contract.

#### **656.2.3 Meter Breaker Pedestal Service**

- (1) Furnish an approved service having a meter breaker pedestal, 22,000-AIC circuit breakers unless the local utility requires otherwise, grounding electrodes and connections, conduit and fittings, and all necessary conductors and equipment required by the WSEC and the utility for a service connection. Use circuit breakers with an amperage capacity 50 A, unless specified otherwise in the contract. When the meter breaker pedestal is energized, install an approved meter seal at all access points on the meter trough.

#### **656.2.4 Unmetered Service**

- (1) Furnish an approved service conforming to 656.2.2, except do not supply a meter socket.

#### **656.2.5 Main Lugs Only Meter Pedestal Service**

- (1) Furnish an approved service having grounding electrodes and connections, conduit and fittings, and all necessary conductors and equipment required by the WSEC and the utility for a service connection. Provide a lug amperage capacity, and the number of phases, and service voltage rating as the plans show.

#### **656.2.6 Breaker Disconnect Box Service**

- (1) Furnish a 100 A outside rated breaker box with space for 6 circuits, but no main breaker; to 50 A single circuit breaker (22, 000 AIC or larger as required by power companies), conduit fittings, grounding electrodes, and connections and all necessary conductors and equipment required to provide power to the cabinet.

### **656.3 Construction**

#### **656.3.1 General**

- (1) Install the electrical service conforming to local utility requirements. Furnish the utility with a wiring affidavit, certifying that the service was installed conforming to the WSEC.
- (2) All above ground electrical service conduit and fittings shall be rigid metal conduit.

#### **656.3.2 Service Lateral**

- (1) The local utility shall furnish and install a 100 A, 120/240 volt AC, single phase, 3-wire underground electrical service lateral, unless specified otherwise in the contract documents. Arrange and assume

responsibility for the timely installation of the service lateral by the utility. Terminate the lateral at a meter socket, meter breaker pedestal, a NEMA 3R Breaker Enclosure, or a main lugs only meter pedestal, as the plans show.

### **656.3.3 Meter Socket Service**

- (1) If 2 or more grounding electrodes are required, space them at least 6 feet (1.8 m) apart and drive them near the termination point. Run a single unbroken length of stranded copper wire, appropriately sized per Code, from grounding electrode to grounding electrode (if more than one is required) and exothermically welded to each electrode. Then, connect to the meter socket and terminate at the grounding lug in the NEMA 3R Breaker Enclosure. Furnish and install connections and wiring to provide 120 volt AC power, or as the plans show, to the circuit breakers in the cabinets. If only one grounding electrode is required, exothermically weld the stranded copper wire to it and then connect to the grounding lug in the NEMA 3R Breaker Enclosure.
- (2) Furnish and install an appropriately sized equipment grounding conductor from the grounding lug in the NEMA 3R Breaker Enclosure to an equipment grounding bus mounted in the control cabinet.
- (3) If furnishing and installing intersection lighting along with the signal installation, feed lighting power to street lights from a separate circuit breaker. Use a common trip breaker for 240 volt AC installations. Size the breaker conforming to Code requirements, 15 A, minimum.

### **656.3.4 Meter Breaker Pedestal Service**

- (1) If 2 or more grounding electrodes are required, space them 6 feet (1.8 m) apart and drive them outside the concrete base and near the electrical service meter breaker pedestal. Run a single unbroken length of stranded copper wire, appropriately sized per Code, from grounding electrode to grounding electrode (if more than one is required) and exothermically welded to each electrode. Then, terminate at the grounding lug in the meter breaker pedestal. Furnish and install connections and wiring to provide 120 volt AC power, or as the plans show, to the circuit breakers in the cabinet. If only one grounding electrode is required, exothermically weld the stranded copper wire to it and then connect to the grounding lug in the meter breaker pedestal.
- (2) Furnish and install an equipment grounding conductor, appropriately sized. Run the conductor from the grounding lug in the meter breaker pedestal to an equipment grounding bus mounted in the control cabinet.
- (3) If furnishing and installing intersection lighting along with the signal installation, feed lighting power to street lights from a separate circuit breaker. Use a common trip breaker for 240 volt AC installations. Size the breaker conforming to Code requirements, 15 amp, minimum.

### **656.3.5 Unmetered Service**

- (1) Conform to 656.3.3, except no meter is required.

### **656.3.6 Main Lugs Only Meter Pedestal Service**

- (1) Conform to 656.3.4.

### **656.3.7 Breaker Disconnect Box Service**

- (1) Furnish connections and wiring to provide 120 volt AC power to the circuit breaker in the cabinet from the bus located within the breaker disconnect box.
- (2) Furnish connections and wiring to provide 120 volt AC power from the bus bar located within the meter breaker pedestal to the 50 amp single circuit breaker within the breaker disconnect box and then to the circuit breaker in the control cabinet.
- (3) Mount the breaker disconnect box to the cabinet as the plans show.

## **656.4 Measurement**

- (1) The department will measure the Electrical Service bid items as a single lump sum for each service acceptably completed.

## **656.5 Payment**

- (1) The department will pay for measured quantities at the contract unit price under the following bid items:

<u>ITEM NUMBER</u>	<u>DESCRIPTION</u>	<u>UNIT</u>
656.0100	Electrical Service Meter Socket (location)	LS

656.0200	Electrical Service Meter Breaker Pedestal (location)	LS
656.0300	Electrical Service Unmetered (location)	LS
656.0400	Electrical Service Main Lugs Only Meter Pedestal (location)	LS
656.0500	Electrical Service Breaker Disconnect Box (location)	LS

- (2) Payment for Electrical Service Meter Socket is full compensation for providing the meter socket; and for manual bypass meter socket if required, NEMA 3R breaker enclosure, conduit and fittings, circuit breakers, grounding electrodes and connections.
- (3) Payment for Electrical Service Meter Breaker Pedestal is full compensation for providing all materials including the meter breaker pedestal, manual bypass meter socket if required, conduit and fittings, circuit breakers, grounding electrodes and connections.
- (4) Payment for Electrical Service Unmetered is full compensation for providing all materials including the NEMA 3R breaker enclosure, conduit and fittings, circuit breakers, grounding electrodes and connections.
- (5) Payment for Electrical Service Main Lugs Only Meter Pedestal is full compensation for providing all materials including the main lugs only meter pedestal, disconnect if required, manual bypass meter socket if required, grounding electrodes and connections.
- (6) Payment for Electrical Service Breaker Disconnect Box is full compensation for providing all materials including the breaker box, circuit breakers, 10 AWG wire, grounding electrodes, cadwelding, conduit, fittings, wiring, connections, grounding electrodes and connections; for excavating, bedding, backfilling, and restoration of ground to original condition including any sand, concrete, or other required materials; for disposing of surplus materials.
- (7) The party or parties designated in the contract special provision as being responsible for the service lateral installation and energy costs shall pay for them. If the contract special provisions do not specify who is paying for the electrical service lateral installation and energy costs, then the ultimate owner of the electrical service shall bear both costs.