656 Electrical Service

656.1 Description

(1) This section describes providing 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 notify the engineer that the utility received the wiring affidavit.

(2) For grounding electrodes for the electrical service, use engineer-approved 5/8-inch 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, provide a manual bypass meter socket. Obtain the local utility's approval of the manual bypass meter socket.

(4) If an overhead service is required, provide the riser, weatherhead, wiring, and necessary fittings.

656.2.2 Meter Socket Service

(1) Furnish an engineer-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 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 engineer-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 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 engineer-approved meter seal at access points on the meter trough.

656.2.4 Unmetered Service

(1) Furnish an engineer-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 engineer-approved service having grounding electrodes and connections, conduit and fittings, and 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 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) Above ground electrical service conduit and fittings must be rigid metal conduit.

656.3.2 Service Lateral

(1) The local utility will provide 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 apart and drive them near the termination point. Run a grounding conductor, from grounding electrode to grounding electrode if more than one is required. Then, connect to the meter socket and terminate at the grounding lug in the

NEMA 3R Breaker Enclosure. Provide 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) Provide 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 installing intersection lighting along with the signal installation, feed lighting power to street lights from a separate circuit breaker. Use a common trip breaker rated at 15 amps or more.

656.3.4 Meter Breaker Pedestal Service

(1) If 2 or more grounding electrodes are required, space them 6 feet apart and drive them outside the concrete base and near the electrical service meter breaker pedestal. Run a grounding conductor, from grounding electrode to grounding electrode if more than one is required. Then, terminate at the grounding lug in the meter breaker pedestal. Provide 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) Provide 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 providing 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 each individual service acceptably completed.

656.5 Payment

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

ITEM NUMBER	DESCRIPTION	UNIT
656.0101	Electrical Service Meter Socket (location)	EACH
656.0201	Electrical Service Meter Breaker Pedestal (location)	EACH
656.0301	Electrical Service Unmetered (location)	EACH
656.0401	Electrical Service Main Lugs Only Meter Pedestal (location)	EACH
656.0501	Electrical Service Breaker Disconnect Box (location)	EACH

(2) Payment for Electrical Service Meter Socket is full compensation for providing the meter socket; and for manual bypass meter socket, 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 materials including the meter breaker pedestal, manual bypass meter socket, conduit and fittings, circuit breakers, grounding electrodes and connections.

(4) Payment for Electrical Service Unmetered is full compensation for providing 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 materials including the main lugs only meter pedestal, disconnect, manual bypass meter socket, grounding electrodes and connections.

(6) Payment for Electrical Service Breaker Disconnect Box is full compensation for providing 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.

(7) Coordinate with the engineer to determine how to handle the electrical service lateral installation costs. If the electrical utility bills the contractor directly, pay the utility promptly. The department will reimburse the contractor for invoice costs under the Electrical Service Lateral administrative item.