1407-2 MATERIALS

Refer to Division 10.

Item	Section
Wood Poles, Class 4	1082
Type USE Wire	1091-2, 1400-2
Conduit	1091-3

1407-3 CONSTRUCTION METHODS

Dig holes large enough to permit the proper use of tampers to the full depth of the hole. Place backfill in the hole in 6" maximum layers and thoroughly tamp. Place surplus earth around the pole in a conical shape and pack tightly to drain water away.

Set the pole to a depth of at least 5.5 ft unless shown otherwise in the plans. When utility power is available from outside the right of way, locate the service pole no more than 10 ft inside the right of way. The utility company will install overhead conductors from their facilities. Install an underground service lateral from the service pole to the control system. The proposed service pole will be deleted from the contract if the utility company:

(A) Provides a pad mount transformer,

(B) Allows attachment of the riser and weatherhead to their pole, or

(C) Provides underground service from their pole.

Make connections at the service head at the bottom of the drip loop to prevent siphoning of water through the cable.

Provide for a meter in accordance with the requirements of the utility company's condition of service. A meter base for a self-contained meter may be mounted on the service pole or back of the control enclosure as indicated in the plans. A current transformer (CT) cabinet and meter base may be mounted in either location if requested by the utility company.

Use stranded copper Type USE conductors installed in rigid galvanized steel conduit sized as shown in the plans for the service lateral.

1407-4 MEASUREMENT AND PAYMENT

Electric Service Pole ____ will be measured and paid as the actual number of the appropriate length and class electric service poles installed and accepted.

Electric Service Lateral ____ from service pole to control panel will be measured and paid as the actual number of linear feet of the appropriate size and type service lateral installed and accepted. Measurement will be along the longest conductor from electrical terminal to electrical terminal.

Payment will be made under:

Pay Item	Pay Unit
Electric Service Pole ____	Each
Electric Service Lateral ____	Linear Foot

SECTION 1408
LIGHT CONTROL SYSTEM

1408-1 DESCRIPTION

Furnish and install an entire control system, including enclosure, control panel, photocell, switches, contactors, breakers, terminal blocks, wiring, concrete foundation and lightning arrester. The control system will be standard electrical components in a stainless steel enclosure mounted on a metal pole with a concrete foundation as shown in the contract.

1408-2 MATERIALS

Refer to Division 10.

Item	Section
Conduit	1091-3
Electrical Junction Box	1091-5
Portland Cement Concrete	1000-2
Wire and Cable	1091-2, 1400-2

Provide concrete foundations and wire in accordance with the Specifications.

Use a piece of 4” rigid galvanized steel conduit with threaded conduit cap, embedded in concrete as shown in the plans for mounting the control system

Provide a NEMA type 3R stainless steel enclosure with external stainless mounting flanges, drip shield, back panel and continuous hinge door with a print pocket. Provide a door closing mechanism interlocked with a flange mounted operator handle to prevent the opening of the door with the service circuit breaker in the ON position, except by use of safety override devices.

Provide an enclosure approximately 36" (h) x 30" (w) x 10" (d) unless noted otherwise in the plans. Provide only openings necessary for the entrance of conduits as shown in the plans. Do not use knockouts. Ensure the enclosure conforms with NEC Article 312 and mount the devices so the NEC clearances will be provided, except use 1.5" where not specified or noted in the tables for minimum wire bending space.

Use galvanized slotted steel framing channel with straps and bolts, sized as shown in the plans for the mounting brackets and hardware for attaching the enclosure to the pole. Use galvanized finish on the brackets and hardware and coat all field cuts or scratches with organic zinc repair paint.

Provide a polymer concrete (PC) electrical junction box measuring 36" (l) x 24" (w) x 18" (h) (PC36) and meeting Section 1411.

Provide a neutral bar bonded to the panel with sufficient box lug type terminals to accept the required number of wires.

Mount components to the back panel with manufacturer supplied mounting brackets or permanently attached screw studs.

Use a service circuit breaker providing an minimum interrupting rating of 22,000 A. Provide thermal magnetic, molded case, permanent trip breakers. Provide multi-tap, solderless, load side box lugs or distribution terminal blocks of the appropriate size. Use insulating material approved for NEMA 3R applications. Provide a breaker with a voltage and amperage rating as indicated in the plans.

Provide a single pole, open type control circuit breaker rated at 240 VAC phase to ground with a minimum current interrupting capacity of 5,000 A and a high magnetic trip setting of 15 A.

Provide three 60 A, 4 pole mechanically held contactors that have coil clearing contacts and coil voltage rating as indicated in the plans. Contactor latching with hooks or semi-permanent magnets is unacceptable.

Use a control relay rated 240 VAC with one normally open contact and one normally closed contact and has a continuous load rating and inductive make rating greater than that required by the mechanically held contactor. Use a coil rated for 240 VAC, 60 Hz.

Use a selector switch which is a heavy duty 3-position maintained contact unit in a surface mount (NEMA 1) enclosure with a legend consisting of On-Off-Auto and having continuous current rating of 10 A at 240 VAC for the contacts.

Use feeder circuit breakers which are rated 14,000 A minimum interrupting capacity and have an open type molded case with a non-adjustable thermal magnetic trip setting as noted in the plans.

Use a photo-control which is the encapsulated cadmium-sulfide type, suitable for use on an operating voltage range of 105 V to 285 V and nominal control voltages of 120 V, 208 V, 240 V and 277 V. Ensure the control is rated for 1,000 W resistive load or 1,800 V-A of inductive load. Set the light-level within a range of 1.0 to 3.0 footcandles. Have internal protection for surges in excess of 2,000 V peak for the control. Mount a receptacle directly to the top of the enclosure with a weatherproof fitting. Use controls and receptacles which conform to NEMA Standard C136.10 for roadway lighting equipment.

Use a lightning arrester of the thyrite type, designed to contain and arrest an arc of 10,000 A. Install the arrester on the load side of the service breaker.

Use terminals and lugs rated for the connection of the appropriate size copper conductors. All conductors shall be made of copper and neatly wrapped in bundles or run in plastic raceways.

Perform all galvanizing in accordance with Section 1076.

Provide a drawing to scale showing the location, brand and catalog number of each component of the control system for approval.

The completed light control system shall be marked "Suitable for Use as Service Equipment", in a prominent location in the enclosure, in accordance with NEC Article 409.110. If the control system is not made in a certified UL 60947-4-1A Panel Shop, a third party, recognized by the Department of Insurance as having the authority, shall label the control systems.

1408-3 CONSTRUCTION METHODS

Construct the foundation for the control system as shown in the plans with the top of the foundation 3" above finished grade.

Fasten the enclosure to the pole by means of a galvanized bracket assembly as shown in the plans. Make all cuts square and remove all rough edges. Have mounting holes match existing mounting holes of the enclosure.

Arrange all conduits entering the enclosure in a neat symmetrical manner and extend directly downward into the foundation. Install all conduits shown in the plans. Stub and cap spare conduits for future circuits underground.

Install the PC36 junction box within 2 ft of edge of pad in front of Control System. Stub all feeder circuit conduits and spare conduits from Control System in this junction box. See plans for conduit sizes. Place pull cord in any unused conduits and cap unused conduit in junction box.

Apply 2 coats of organic zinc repair paint to all field cut metal and conduit threads as specified in Article 1076-7.

1408-4 MEASUREMENT AND PAYMENT

Light Control Equipment (Type) will be measured and paid as the actual number of the appropriate type light control systems completed and accepted.

Payment will be made under:

Pay Item	Pay Unit
Light Control Equipment, (Type) ____	Each