SP- 159011
(New)

SPECIAL PROVISIONS
FOR
NAVIGATION LIGHTING AND AESTHETIC LIGHTING

Allamakee County
STP-009-9(84)--2C-03

Effective Date
August 1, 2023

THE STANDARD SPECIFICATIONS, SERIES 2015, ARE AMENDED BY THE FOLLOWING MODIFICATIONS AND ADDITIONS. THESE ARE SPECIAL PROVISIONS AND THEY SHALL PREVAIL OVER THOSE PUBLISHED IN THE STANDARD SPECIFICATIONS.

159011.01 DESCRIPTION.

A. General.

1. Section Includes
- **a.** Conductor
- **b.** Conduit
- **c.** Luminaire Junction Box
- **d.** Navigation Lighting Unit
- **e.** Aesthetic Lighting Unit
- **f.** Control Cabinet
- **g.** Concrete Control Cabinet Base

B. References.

1. 2023 National Electric Code

2. State and Local Electrical Code

3. Underwriters Laboratories, Inc. (UL)

4. National Electrical Manufacturers Association (NEMA)

C. Submittals.

1. Shop Drawings
- **a.** Navigation Luminaires and Mounting Equipment
- **b.** Aesthetic Luminaires and Mounting Tenon
- **c.** Aesthetic Lighting Control System Components
- **d.** Junction Boxes

e. Luminaire Junction and Box Mounting Bracket
f. Conduit
g. Conduit Mounting Brackets
h. Conduit Mounting Clamps
i. Control Cabinet
j. Control Cabinet Components
k. Contractor Prepared Truss Conduit Mounting Plans

2. Product Data
a. Conductors
b. Conduits & Couplings
c. Fuse Holders
d. Fuses
e. Splicing Hardware
f. Adhesive Concrete Anchor System Components

D. Quality Assurance.
Regulatory Requirements

1. Obtain approval of completed system from state or local electrical inspector.

2. Provide all necessary permit and inspection fees.

E. Project Conditions.

1. Painting.
The Contractor shall repair any damage to the painted or galvanized finish of new equipment due to the shipping or installation.

2. Energy Supplier.
Coordinate with the energy supplier for connection to the source. Energy is supplied by Alliant Energy - Contact: Chip Piper 563.419.9404

3. Current Characteristics.
a. 120/240 Volt, A.C.
b. 1 Phase
c. 60 Hertz
d. 3 Wire

F. Sequencing And Scheduling.

1. All roadway conduit items under this section shall be installed prior to final street, sidewalk and boulevard grading and/or restoration.

2. Contract unit prices shall reflect all construction and engineering costs. Extra construction and engineering costs associated with the installation of items under this section after the completion of shop drawing review process, and new street surfaces; curb, boulevard, and sidewalks, shall be considered incidental.

159011.02 MATERIALS.

A. Manufactured Unit.

1. Lighting Units.
a. See the Equipment Schedule on the plans for aesthetic lighting luminaires.
b. See plan details for navigation luminaires.

2. Control Cabinet.

- **a.** Manufactured weatherproof, NEMA 3R assembly with dimensions, components and construction as indicated in the “Control Cabinet” detail in the plans – 200 Amp.
- **b.** Two independent 30 space lockable sections.
- **c.** Meter socket as identified on the plan, painted to match control cabinet anodized color.
- **d.** Two NEMA twist-lock photocells and receptacles behind Lexan windows.
- **e.** Two Hand-Off-Auto selector switches.
- **f.** Two Surge protectors.
- **g.** Two 200A circuit breakers.
- **h.** Contactors and circuit breakers as specified in plans.
- **i.** 20A WR-rated GFCI convenience receptacle mounted to deadfronts.
- **j.** Concrete mounting base sized to accommodate cabinet dimensions.
- **k.** Side-mounted aesthetic lighting control enclosure and equipment.
  1) Lighting control equipment consists of:
     a) 200-watt heater with thermostat and warm weather cooling fan
     b) LumenLink Pro – LNKP-208/240-DMX-SI-UL
     c) LumenTranslators – LTL-100/277-DMX-BK-UL
     d) Pharos 1U controller – PHAROS-U1-BB-SBB
- **l.** Completed assembly shall bear ‘UL’ label as “suitable for use as service entrance equipment.”
- **m.** Manufacturer:
  Povolny Specialties, minimum 42 inches(W) by 14 inches(D) by 60 inches(H). Anodized Duranodic #311. See details in plan.

3. Junction Boxes (Luminaire Junction Box).

- **a.** Cast iron boxes and covers shall be galvanized according to ASTM A 153.
- **b.** Boxes classified by the manufacturer as meeting the requirements for NEMA 4X, Watertight.
- **c.** UL approved boxes.
- **d.** Apply applicable provisions of Article 314 of the current NEC.
- **e.** Raised buttons (blind drilled, tapped, and fitted with screws as specified) of the specified size and location cast into the surface of the box floor and cover for grounding purposes.
- **f.** Junction boxes must be equipped with neoprene gaskets. Cork gaskets are not acceptable.

B. Components.

1. Conductors.

- **a.** Standard copper with 600 volt insulation.
- **b.** Insulation: Type XHHW-2 for underground installation in conduit, and for above-ground installation within conduit, junction boxes, and control cabinets.
- **c.** Service conductors shall bear UL label for Type USE-2. The insulation on each lighting distribution conductor shall be colored red, black, white or green.
- **d.** Size and type:
  - **1)** As shown on drawing
  - **2)** Single conductor luminaire wires connecting the navigation luminaires to the distribution circuits shall be 1/c #10 stranded wire with XHHW-2 rated insulation.

2. Conduit.

- **a.** Nonmetallic Conduit (NMC) and Fittings:
  - **1)** Polyvinyl Chloride, Schedule 40, UL Label.
  - **2)** Extra heavy wall, rigid.
  - **3)** Carlon PVC conduit Plus 40, 90°C or approved equal.

b. Rigid Metallic Conduit (PVC Coated Rigid Steel Conduit, and Fittings):

1) PVC-coated conduit, fittings, fasteners and supporting products shall be provided by the same manufacturer to ensure that a five-year product guarantee is achieved.

2) The PVC coated galvanized rigid conduit must be UL Listed. The PVC coating must have been investigated by UL as providing the primary corrosion protection for the rigid metal conduit. Ferrous fittings for general service locations must be UL Listed with PVC as the primary corrosion protection. Hazardous location fittings, prior to plastic coating must be UL listed. All conduit and fittings must be new, unused material. Applicable UL standards may include: UL 6 Standard for Safety, Rigid Metal Conduit, UL514B Standard for Safety, Fittings for Conduit and Outlet Boxes.

3) The conduit shall be hot dip galvanized inside and out with hot galvanized threads.

4) PVC coated galvanized rigid conduit must be ETL Verified to the Intertek ETL SEMKO High Temperature H2O PVC Coating Adhesion Test Procedure for 200 hours.

5) PVC exterior and urethane interior coatings shall have flexibility to permit field bending without cracking or flaking at temperatures above 30°F (-1°C).

6) All male and female threads on conduit, elbows nipples, fittings and couplings shall have a urethane coating.

7) PVC coating on the outside of conduit couplings shall have protection built in to protect the coating from tool damage during installation.

8) All female fittings shall have a PVC sleeve formed at the opening extending one pipe diameter or two inches, whichever is less, except unions. The inside sleeve diameter shall be matched to the outside diameter of the conduit.

9) Condulets, 1/2" through 2" diameters, shall be design with a positive placement feature to ease and assure proper installation and have a seal tongue-in-groove gasket.

10) Condulets shall be supplied with plastic encapsulated stainless steel cover screws.

11) All conduit and fittings shall have a 2-mil nominal thickness uniform internal urethane coating.

12) Beam clamps and U bolts shall be formed and sized to snugly fit the outside diameter of the coated conduit. All U bolts shall have plastic encapsulated nuts that cover the exposed portions of the threads.

13) Material: PVC-coated, Galvanized Rigid Conduit (GRC) and fittings shall conform to the above requirements. Materials manufactured by Plasti-Bond are known to meet or exceed the above requirements. All equipment will require approval of the specifying engineer or owner.

14) Independent certified test results shall be available to confirm coating adhesion under the following conditions:

a) Conduit and condulet exposure to 150°F (65°C) and 95% relative humidity with a minimum mean time to failure of 30 days. (ASTM D1151)

b) The interior coating bond shall be confirmed using the Standard Method of Adhesion by Tape Test (ASTM D3359).

c) No trace of the internal coating shall be visible on a white cloth following six wipes over the coating which has been wetted with acetone (ASTM D1308).

d) The exterior coating bond shall be confirmed using the methods described in Section 3.8, NEMA RN1. After these tests the physical properties of the exterior coating shall exceed the minimum requirements specified in Table 3.1, NEMA RN1.

c. Liquid-Tight Flexible Metallic Conduit:

Liquidtight Flexible Metal Conduit (LFMC) shall be in accordance with Articles: No. 70 National Electrical Code, Article 351A, Underwriters Laboratories UL 360, and the following:

1) Shall have a steel core manufactured of a spiral wound strip of heavy gauge, corrosion-resistant, hot-dipped galvanized steel. For 3/8" through 1-1/4" trade sizes, the core shall be constructed with a square locked steel strip with an integral copper-bonding strip enclosed within the steel convolutions. For 1-1/2" through 4" trade sizes, the core shall be constructed with an interlocked steel strip. All sizes shall accept standard metallic liquidtight fittings.

2) A flame retardant, flexible, grey thermoplastic PVC jacket shall be extruded over the steel core to seal out water, liquids, abrasives, dirt, corrosive fumes and gases, grease, petroleum oils, salt air and spray, and weather. The PVC Jacket shall be resistant to exposure to sunlight UV radiation. The interior shall be smooth metal for easy wiring pulling

3) The conduit shall have an IP 67 rating with approved end connections. They shall also be rated for a temperature range of -30°C to +80°C.

4) The following shall be marked on the outside of conduit:

a) Manufacturer's name

b) Size of conduit

c) Type of conduit (LFMC, etc.)

d) Any other markings required by the N.E.C

d. Splicing Equipment

Above grade:

1) Insulated splicing blocks

2) Cold temperature rated to -40°C, 1000V

a) Burndy Uni-Tap

b) NSI

c) ILSCO

d) Polaris

3) Wire-nuts are not an acceptable method of splicing within junction box.

C. Accessories.

1. Grounding Equipment.

a. Grounding Conductors:

1) Bare copper wire.

b. Ground Rods:

1) 5/8 inch by 8 foot, copper clad, Copperweld, or equal.

2) Exothermically welded to ground wire.

3) Place two ground rods 6' apart at metered service location per Utility requirements.

2. Fuses.

a. Each luminaire in the 240-volt navigation lighting and aesthetic lighting system shall be fused with two 3-amp fuses. The two-pole fuse holders for the 240-volt luminaires shall be a Bussmann Catalog No. HEX-AW-DRLC-A, Littelfuse Catalog No. LEX-AA-S, or Mersen Catalog No. FEX-11-11-BA.

b. The fuses shall be mounted in inline molded fuse connector/holders with the casing located in the nearest luminaire junction box. Fuse holders shall be of the breakaway type, complete with watertight rubber boots. The Contractor shall provide sufficient excess conductor length to allow withdrawal of the connected fuse holder. The grounding wires shall not be fused. Fuses and fuse holders shall be "UL" listed and shall be installed in such a manner that the fuse stays with the load side when holder is separated. In addition, the Contractor shall form loops in the leads on each side of the fuse holders and so position the fuse holders so that they may be easily removed or inserted through the access hole.

159011.03 CONSTRUCTION.

A. Examination.

1. Verify rules and procedures of the energy supplier for connection to the existing system.

2. Verify locations for making connections to existing facilities.

3. Verify location of existing underground facilities prior to installation.

B. Protection.

Protect all existing surface and underground facilities that are scheduled to remain in place.

C. Installation.

1. General.

- **a.** Conform to the detail drawings and specifications.
- **b.** Install all equipment based on the locations and dimensions shown on the drawings unless utility or other conflicts require a new location for proposed lighting equipment.
- **c.** Distribution:
  - **1)** The lighting distribution circuits shall consist of two ungrounded conductors and one grounding conductor.
    - **a)** The two ungrounded conductors shall constitute one 240-volt circuit.
  - **2)** The control cabinet receptacle circuit shall consist of one ungrounded conductor, one grounded conductor, and one grounding conductor.
    - **a)** The one ungrounded conductor and one grounded conductor shall constitute one 120-volt circuit.

2. Trenching and Backfill.

- **a.** Excavate trenches to a uniform depth 2 feet below the finished grade.
- **b.** Maintain uniform alignment based on dimensions shown on the drawings.
- **c.** Conduit shall be placed in a direct line between light foundations, as shown in plans.
- **d.** Multiple conduits shall be placed in same trench where possible.
- **e.** Use excavated trench materials for backfill. Salvage and reinstall existing Class V aggregate base. If existing Class V becomes contaminated, Contractor shall replace at his own expense.
- **f.** Remove sod, roots, clod, debris and stones over 1 inch in diameter from the backfill material.
- **g.** Compact backfill material in maximum 12 inch lifts. Finished compacted density for work in street sections shall match that of the density specified for street construction.
- **h.** Dispose of surplus excavated materials on the site as directed by the Engineer.
- **i.** Do not place backfill material on foundations frozen deeper than 3 inches.
- **j.** See structural plans for conduit penetrations though footing walls

3. Lighting Units.

Luminaires

- **a.** Stainless steel mounting hardware shall be used to mount luminaires.
- **b.** The Contractor shall apply an approved zinc-based anti-seize compound to all mounting hardware prior to assembly.

4. Control Cabinet.

- **a.** The cabinet type shall be as detailed in the Plans and Specifications. Cabinet shall be equipped with components as indicated. All materials including, photocell, conduit, fittings, clamps and hardware, and all labor, tools, equipment, incidentals, and coordination necessary to complete the contract work shall be incidental to the cabinet and installed as per details in the plans.
- **b.** Install on concrete foundation as per detail and location indicated in plan.
- **c.** Provide grounding per Utility requirements.
- **d.** Meter socket to be painted a color to match cabinet.

5. Lighting Control System.

- **a.** Lighting control components shall be installed in a neat an orderly manner within the climate-controlled enclosure mounted to the side of the Control Cabinet.
- **b.** Provide all wiring connections, grounding, bonding, all required mounting hardware, and miscellaneous items required for a complete and operational installation.

c. Coordinate commissioning of lighting control system with manufacturer and supplier. Commissioning shall include a minimum of 8 hours by a factory representative and an additional 8 hours for training City Staff on the use and operation of the lighting control system.

6. Concrete Control Cabinet Base.

a. Furnish and install a concrete control cabinet base in accordance with the details in the Plan, at the location indicated in the Plan or as directed by the Engineer. The anchor bolt size and pattern shall accommodate the cabinet manufacturer's requirements.

b. Provide a rigid template of the cabinet base including anchor bolt holes and a slot to hold in proper position and height the anchor bolts, ground rod and conduits during the concrete pouring. The template shall not be removed until the concrete has cured.

c. Anchor rods shall be hot dipped galvanized full length and shall be four in quantity for each cabinet. Each anchor rod shall be threaded a minimum of 4 inches and be provided with two hex-head galvanized nuts and one galvanized washer.

d. Maintain 4 inches of clearance from finished grade to top of foundation. The Contractor shall coordinate foundation installation with the Engineer, City, and General Contractor to ensure proper foundation elevation is maintained.

7. Wiring and Grounding.

a. Type XHHW-2 conductors shall be used for all underground conduit runs. Leave sufficient lengths of branch conductors to allow conductor splices to be extracted from junction box for maintenance.

b. Extend three No. 10 AWG Type XHHW-2 feeder leads to the navigation luminaires from the cables in the junction box.

1) Install two/pole fuse holders on feeder leads. Leave sufficient lengths of feeder conductors to allow fuse holders and conductors to be extracted from junction box for maintenance.

c. Provide a No. 6 AWG bare copper wire connection to ground rods with ample length to allow connection to light standard grounding lug and system ground conductor.

d. Attach grounding conductor to the energy suppliers neutral at the control cabinet.

e. Terminate grounding conductor with a 25 ohm ground at the control cabinet.

f. Establish 25 ohm ground with driven ground rods.

g. Provide minimum 2 feet of cover over all underground wiring.

h. Provide two ground rods at the metered service per Utility requirements.

8. Splicing.

a. Splicing shall be performed only within the luminaire's respective junction boxes and control cabinets.

b. Apply two layers of protective vinyl electrical tape over the insulated wire splice connector blocks in the area where the conductors enter the block including the set screw access covers and extend the wrap at least 1 inch over the incoming conductor insulation.

c. Wire-nuts are not an acceptable method of splicing within junction boxes.

9. Conductors.

a. Install complete cable in conduit to each lighting unit as specified on the Plan.

b. Do not splice cable between connection points.

c. All conductors shall be color-coded. If multiple lighting circuits are to be installed within the same conduit, unique color codes or tracer colors shall be applied to conductor groups to identify respective circuits. The conductors shall be grouped and clearly labeled in the lighting control cabinet and junction box.

d. Use insulation of greater rating at the connection of two unlike types.

10. Conduit Systems.

a. General

1) Install conduit in a direct line between cabinets, and junction boxes (unless trees or other obstructions require an alternate location) to a depth of 24 inches; by direct bury method unless otherwise noted.
2) Jack or auger conduit under permanent surfaces.
3) Grout all resultant voids from abandoned augering or jacking attempts.
4) Maintain conduit runs on grade to provide definite drain to low points in the system.
5) Temporarily cap conduit ends during construction.
6) Install ground conductor in all conduit.
7) End bells or bushings will be required at all conduit terminations in junction boxes and control cabinets.
8) Following installation of cables and conductors, seal the open ends of conduit entering cabinets, or junction boxes using duct seal compound NRTL classified under general use tapes.

b. Nonmetallic Conduit (PVC)
1) Solvent weld all conduit and fittings in accordance with manufacturer's instructions.
2) Shall be used for all underground conduit installations, in or beneath slabs under roads, sidewalks, parking lots, and driveways unless noted otherwise.
3) End bells/bushings shall be installed on all conduit ends prior to pulling conductors.

c. Liquid Tight Flexible Metal Conduit (LFMC)
1) Install equipment grounding conductor in all liquid-tight flexible metal.
2) Conduits shall be fastened to bridge structure and decorative elements to prevent movement or sagging during high winds.
3) Aesthetic luminaires will be equipped with factory installed SO cord conductor whips and liquid tight conduit. Cut conduit and conductors to facilitate splicing to branch conductors and fusing and splicing equipment in their respective junction boxes. Provide appropriate water tight fittings as required.

d. Conduit System Placement on Bridge (PVC Coated Ridged Steel Conduit)
1) Conduit size shall be as specified in the Plans.
2) Install vertical runs perpendicular to the bridge structure.
3) Install runs perpendicular or parallel to the bottom of bridge deck.
4) Install horizontal runs parallel to the grade or surface being supported from.
5) Install expansion couplings at expansion joints, coupling shall not be mounted directly underneath the expansion joint.
6) Do not install couplings, fittings or junction boxes below expansion joints or joints where the possibility of dripping water may be present.
7) Conduits shall be fastened to bridge structure using stainless steel or galvanized clamps and fasteners. Wedge expansion anchors are not acceptable, epoxy anchors are required.
8) Installation of the PVC Coated Conduit System shall be performed in accordance with the Manufacturer's Installation Manual. To assure correct installation, the installer shall be certified by Manufacturer to install coated conduit.
9) All clamping, cutting, threading, bending, and assembly instructions listed in the manufacturer's installation guide should be vigorously followed. Installer certification, before installation, is required.

11. Junction Boxes.
a. Install junction box as required to facilitate pulling of conductors.
b. Mount junction boxes as required by NEC to facilitate wire installation and termination and as shown on plans and details. Approximately one foot of slack cable shall be left in each light junction box.

12. Lighting Control Cabinet.
a. Install new lighting control cabinet at location indicated on plans.
b. Install 2 inch conduit stub to a point outside of the control cabinet base to enable the Alliant Energy service connection. Coordinate with energy provider for connection.
c. Alliant Energy to provide service conduit and conductors and make final connection.

13. Labeling of Circuits.

a. Label all conductors in conduit in new control cabinet and junction boxes on the abutment indicating the next termination point. For example, in lighting control cabinet, the label would read "TO NORTH SIDE NAVIGATION LIGHTING"; in the junction box the label would read "TO LIGHTING CONTROL CABINET" and "TO LIGHTING UNIT N6".

b. Provide labels that consist of white vinyl adhesive tape wrapped around the cable or conductors. Hand write the labeling on the vinyl adhesive tape or produce with a label maker. If label marking is handwritten, accomplish the labeling by using a black permanent marker, in such a manner, that the markings are legible to the satisfaction of the Engineer. Labels produced with a label maker shall be suitable for use in wet locations, and this label must wrap around the cable one complete revolution with some overlap.

14. Grounding.

Ground all metallic conduits, supports, cabinets, non-current carrying equipment parts and the neutral conductor in accordance with the National Electrical Code.

15. Rust Inhibitor.

a. A thorough application of an approved rust inhibitor shall be used to grease or otherwise protect the threads of the anchor rod, prior to pouring the concrete foundation to ensure that the concrete does not mold to the threaded portion of the rod.

b. All threaded stainless-steel hardware and dissimilar metal, threaded hardware shall be coated with an approved zinc-based anti-seize compound by the Contractor prior to assembly.

D. Field Quality Control.

1. Testing.

a. Test completed system for unwanted grounds.

b. Conduct megohm meter test (at 500 volts D.C.) indicating resistance of each circuit.

c. Allowable Results:

1) Phase Conductor Insulation Resistance:
Not less than 100 megohms.

2) Neutral Conductor Insulation Resistance:
Not less than 5 megohms.

3) Circuit Insulation Resistance:
Not less than 5 megohms.

d. Provide necessary corrections and retest.

2. Demonstration.

Demonstrate proper operation of completed system.

3. Field Service.

a. Provide full instruction and demonstration in the adjustment, operation and maintenance of all components of the system.

b. Provide instruction and demonstration to the Owner’s employees during regular working hours.

E. Painting.

1. Repair all exposed metal surfaces or areas damaged during construction using approved methods detailed in the truss plans and specifications. Repair all damage to lighting equipment metal surfaces or areas damaged during construction using factory approved methods.

2. Match original paint type and color.

F. As-Built Drawings and O & M Manual.

1. Contractor shall supply accurate as-built drawings of the project to the Engineer and DOT. Drawings shall indicate location and setback of conduit, and luminaire locations within the project measured from a reliable location. Work must be completed under the direct supervision the Engineer.

2. The Contractor shall collect, gather, and assemble into one book the installation details, instructions, schematics of actual equipment and operations directions supplied by the manufacturer with all equipment. Final acceptance of the work will be withheld until such data has been presented complete to the DOT. The manual shall be available for instruction of operations and maintenance of equipment and systems.

159011.04 METHOD OF MEASUREMENT.

A. Conductor.

1. Measure by length in feet.

2. Measure each type and size separately.

3. Measure between terminal point centers along the centerline of the conductor.

4. Add 5 feet at each terminal point for connections.

B. Conduit.

1. Measure by length in feet.

2. Measure each type and diameter separately.

3. Measure between end terminals along the centerline of the conduit.

C. Luminaire Junction Box.
Measure as individual units.

D. Navigation Lighting Unit.

1. Measure as individual units.

2. Measure each type and size separately.

E. Aesthetic Lighting Unit.

1. Measure as individual units.

2. Measure each type and size separately.

F. Control Cabinets.
Measure as individual units.

G. Concrete Control Cabinet Base.
Measure as individual units.

159011.05 BASIS OF PAYMENT.

A. System Components.

1. Conductor item includes wire, cable, pulling, splicing, splicing equipment, connections, pull rope, and accessories and testing as required to provide a complete installation.

2. Conduit item includes conduit, fittings, fasteners, sealing, conduit drains, mounting brackets and clamps, Tenon Light Mounting Brackets, pull rope accessories, trenching, directional boring methods, backfill, jacking, augering, and restoration as required to provide a complete installation.

3. Luminaire Junction Box item includes luminaire junction box, mounting bracket, and fasteners.

4. Navigational Lighting Unit item includes LED luminaire, extension box, fusing, connections, and accessories as required, to provide a complete and operational unit.

5. Aesthetic Lighting Unit item includes LED luminaire, LFMC conduit, SO cord conductor whip, fittings, fusing, connections, and accessories as required, to provide a complete and operational unit.

6. Control Cabinet item includes cabinet, combo meter socket enclosure, circuit breakers, photo controls, lighting contactors, selector switches, surge arrestors, wiring, conductors, ground rods with exothermic welds, conduit duct seal, aesthetic lighting controls and data cables, climate-controlled controls enclosure, factory commissioning, and accessories as required to provide a complete installation.

7. Concrete Control Cabinet Base unit item includes anchor bolts, nuts and washers, conduit stubs, concrete base, concrete form, ground rod, and bonding material, excavation and backfill, restoration and accessories as required to provide a complete unit.

B. Payment for the site electrical system components shall be at the contract unit price as listed on the Bid Form.