

SECTION 16051

PUMP STATION ELECTRICAL MATERIALS

1 GENERAL

1.01 SCOPE OF WORK

A. The Contractor shall furnish and install all electrical material specified herein and required for a complete installation.

1.02 RELATED SECTIONS

A. Section 16940 - Pump Station Control Panel

1.03 QUALITY ASSURANCE

A. All electrical materials and equipment shall be new, of recent domestic manufacture, and approved by the Underwriters' Laboratories, Inc. Material or equipment damaged in the course of installation or test shall be replaced or repaired in a manner meeting with the approval of the Engineer.

B. All electrical material and installation shall comply with the following codes and standards:

1. National Electrical Code (NEC)
2. South Florida Building Code (SFBC)
3. National Fire Protection Association (NFPA)
4. Insulated Power Cable Engineers Association (IPCEA)
5. National Electrical Manufacturers Association (NEMA)
6. Institute of Electrical and Electronic Engineers (IEEE)
7. American Society for Testing and Materials (ASTM)
8. American National Standards Institute (ANSI)
9. Underwriters Laboratories (UL)

1.04 SUBMITTALS

A. Before any material or equipment is purchased, the Contractor shall submit complete shop drawings to the Engineer for approval, including a complete list in quintuplicate of electrical materials, fixtures and equipment to be incorporated in the work. The list shall include catalog number, diagrams, drawings, and such other descriptive data as may be required by the Engineer. Approval of material will be based on the manufacturer's compliance with the Specifications, published ratings, or on test results, where specified.

B. In addition, the Contractor shall furnish four copies, in booklet form, of complete installation drawings, instruction books, operating and maintenance manuals, parts lists for each major item of electrical equipment, and similar data on minor items of equipment, if requested by the Engineer, dimensional drawings, wiring diagrams and schematics for each major piece of electrical equipment.

2 PRODUCTS

2.01 GENERAL

- A. All equipment shall be new, complete and in operating condition unless otherwise specified.
- B. All components shall, whenever possible, be standard stock articles of well known domestic manufacturers, who have been regularly engaged in the manufacture of such material and equipment for at least five years.
- C. Fusible equipment shall be equipped with fuses, and 100 percent of spare fuses of each type shall be supplied.

2.02 SURGE PROTECTION

- A. Line-to-line and line-to-ground protection shall exceed the requirements of ANSI/IEEE Standard C62.1-1984 Sections 8.6.1 and 8.7.3 by a factor of at least 300%. Voltage clamping time shall be less than five nanoseconds with a maximum surge current of 30,000 RMS at a clamping voltage under 600 VAC. One arrestor, complete with circuit breaker disconnect is to be supplied on the incoming line to the control system. Arrestors shall be Ingram Products, Joslyn or approved equal.

2.03 PHASE MONITOR

- A. Phase Monitor shall be a three-phase monitor and supplied on the incoming line. The phase monitor shall prevent motors starting on the following conditions: overvoltage, undervoltage, phase reversal, phase imbalance and loss of phase. The phase monitor shall have integral fault light and dry contact for alarm indication. The unit shall be ATC Diversified Electronics or approved equal.

2.04 GROUNDING, BONDING AND GROUND RODS

- A. Ground Rod shall be a copper-clad steel rod, 3/4-inch diameter by 15 feet long, approved for that use.
- B. Make inaccessible or underground connections with the exothermic welding process using equipment manufactured by Burndy or Erico Products.
- C. Make accessible connections with multiple bolt silicon bronze connectors specifically designed and approved for the purpose. Connectors to be as manufactured by Burndy or O.Z. Gedney Electric.
- D. Install grounding system as shown on Drawings and never use a neutral conductor as grounding or bonding means.
- E. Drive ground rods full length into the earth. Main ground electrode system resistance to ground to be no greater than 3 ohms. Use as many rods as needed to attain this level.

F. Ground and bond panelboard frame, fittings, fixtures and devices, cable sheaths and screens, neutral of transformers, boxes and raceways, motor frames, non-current carrying parts of appliances and devices, control equipment and panels, and all other parts and equipment as required by the NEC.

G. Provide every branch circuit for power and lighting and each 120-volt receptacle circuits, with a green grounding conductor of the same size and type as the power conductors installed in the same raceway.

2.05 CABLE AND WIRE

A. Cable and Wire shall be plainly marked with the manufacturer's name, year of manufacture, and type of cable. All conductors shall be copper unless otherwise specified.

B. All cable shall be manufactured in strict accordance with the specifications and the applicable IPCEA, NEMA, IEEE, UL, and ANSI standards, by a manufacturer with at least 5 years of experience in cables of this type.

C. All cable and wire shall be suitable for wet locations.

D. All 600 volt class cable shall be Class B, heat and moisture resistant thermoplastic type THW rated 75° C, maximum conductor temperature in wet or dry locations, with copper conductors. No. 10 and smaller shall be single strand, No. 8 through No. 2 shall be 7 strand and No. 1 through 4/0 shall be 19 strand and 250 MCM through 500 MCM shall be 37 Strand. Insulation shall meet UL Standard 83.

E. All conductors shall be plainly marked on outer braid at least every two feet with name of manufacturer, size and grade of insulation.

F. Conductors shall be as manufactured by General Cable, Phelps Dodge, Okonite or approved equal.

2.06 CONTROL WIRING

A. Wiring for monitoring system and control shall be single conductor #14 AWG minimum, solid or stranded with THW or THWN insulation.

B. Wiring for analog or pulse systems shall be 3-conductor shielded cable with #14 AWG stranded copper conductors with individual thermoplastic color-coded insulation. Overall shield shall be either copper or aluminum tape providing 100% shielding coverage and provided with a stranded copper ground drain wire and an overall vinyl jacket. Cable shall be Belden, Dekoron or approved equal.

C. Fireproofing tape shall be Irvington No. 7700, or approved equal, applied in accordance to the manufacturer's instructions.

D. Multiconductor cable shall be copper conductors, flame retarded ethylene-propylene insulated for 600 V with a 90°C rating. The single conductors of the multiple conductor cable shall be color coded with integral color for proper

identification. Color coding shall be equal to ICEA S-68-514, Table K-2. Cable shall meet the requirements of IEEE-383. A heat, moisture flame and chemical resistant, mechanically rugged ethylene-propylene insulating compound, 30 mils thick, shall be provided for #14 AWG. Conductors shall be tin or alloy coated stranded copper as per ASTM B-8 and B-33 or B-189. Overall cable jacket shall be chlorosulfonated polyethylene compound over cable tape and fillers and shall exceed the requirements of ICEA S-68-516.

E. Connectors, Terminals and Splices:

1. Provide connectors, terminals and splices for all power and lighting circuits using 600-volt wire and cable as follows:
 - a. Provide connectors, terminals, and splices, for all wire, cable, and equipment and bus connections that are designed and approved for the specific type and size of conductors being connected.
 - b. Connectors and terminals shall be designed and UL approved for use with the associated conductor material, and shall provide a uniform compression over the entire contact surface. Solderless terminal lugs shall be used on all stranded conductors.
 - c. Pressure-crimp type connectors, terminals and splices shall be applied with a mechanical or hydraulic tool with proper size crimping dies for making each connection. The tool shall be of the type that will not release until the correct pressure has been applied.
 - d. Splices and taps in wire No. 10 AWG, and smaller, shall be made with approved, wire-nut-type, patent spring connectors. Use 3M Scotch-locks or equal.
 - e. Provide Burndy, type YAV box, or equal, pressure-crimp ring-tongue terminals for termination of No. 8 stranded cable.
 - f. Provide Burndy type YSV box butt splices, or equal, for splicing No. 8 AWG stranded cable.
 - g. For termination and splicing of cable of AWG No. 6 or larger, provide long-barrel, type YA pressure-crimp lugs and type YS tubular pressure-crimp splices by Burndy or equal. Use long-barrel pressure-crimp lugs wherever space conditions permit. Use long-barrel pressure crimp splices exclusively for splicing. Where space is inadequate for use of long-barrel lugs, provide Burndy Type YA-L, pressure-crimp, short barrel lugs, or equal. Use two-hole lugs on cable of 250 MCM and larger.
 - h. For tap off AWG No. 8 cable and larger, provide Burndy type KS split-bolt copper connectors (bugs), with Burndy type SC one-piece plastic split bolt covers, or equal. Other types of connectors for tapping may be used subject to prior approval by the Engineer.
 - i. Use proper size bronze bolts, nuts, washers, and lock washers of Burndy Durium alloy, or equal, for bolting cable terminations to equipment terminals and bus bars.
 - j. Termination of solid wires of AWG No. 10 and smaller at

terminal blocks shall be made by forming the wires in a ring to fit under a screw head, thus requiring no terminal lug.

2. Provide terminals and splices and make connections in control, alarm and instrumentation system as follows:
 - a. For solid wiring provide type TP, vinyl-insulated, ring-tongue terminals by Burndy, or equal, for all terminations.
 - b. In locations where splicing of solid wire is indicated or permitted by specifications, use type SP vinyl-insulated, butt splices by Burndy, or equal.
 - c. Wire terminals shall be installed with pressure tools equal to those manufactured by American Pamcor, one of which is No. 59072, which obliges the Electrician to apply the correct pressure required to produce a tight connection before the tool is released. Use a pressure tool designed for the specific size of connector and wire being terminated.
 - d. Taps in solid wire may be made with 3M, Scotchlock wire nut, or equal, except that the conductor being tapped shall not be cut, and shall be twisted together with the tap conductor before wire nut application.

2.07 LUGS

- A. All power cables of any voltage class shall be terminated with tinned copper indentation-type lugs. The lugs shall be Bundy type YA, T & B, or equal, long barreled, with double indentations in the larger sizes. Two-hole lugs shall be used where possible. The Contractor shall be responsible for compatibility between hole size and spacing on the lugs and on the equipment furnished.
- B. Terminate stranded conductors on mechanical connectors furnished on equipment. Where no connectors are included, provide suitable mechanical connectors.
- C. Termination of stranded conductors on screw terminals will not be permitted. Provide suitable size compression or mechanical type connector with spade tongue.

2.08 PULLING COMPOUND

- A. Pulling Compound, if used, shall conform to the recommendations of the wire and cable manufacturer.

2.09 CONDUIT, FITTINGS AND WIREWAY

- A. Conduit shall be heavy wall, threaded, rigid, metallic conduit. PVC schedule 40 conduit shall be used where it is embedded in concrete and/underground runs, and aluminum conduit shall be used for exposed runs. Use PVC coated rigid steel conduit for risers and transitions from underground PVC conduit to above-ground conduit seals. Use galvanized rigid steel conduit above conduit seals. Conduit, fittings and wireway shall be sized in accordance with the National Electrical Code, where sizes are not shown on the Plans. Conduit smaller than 3/4-inch shall not be used.

1. Galvanized Steel Conduit shall be hot-dip galvanized, inside and outside, after threading, and shall conform to Federal Specification WW-C581, ANSI C80.1 and UL 6.
2. PVC Coated Steel Conduit shall be externally coated with a 40 mil of grey PVC per UL 6.
3. Aluminum Conduit shall contain less than 0.1 percent copper, and shall conform to Federal Specification WW-C-540C. It shall be as manufactured by Kaiser Aluminum and Chemical Corporation, Triangle, or approved equal. Alcoa thread lubricant shall be used on all aluminum threads.
4. Flexible Conduit shall be "Sealtite" flexible, liquid tight conduit, as manufactured by the American Brass Company, Bridgeport, Connecticut, the equivalent by O-Z/Gedney, or equal.
5. PVC Conduit shall be Schedule 40, heavy-walled rigid, rated for 90 degree C cables conforming to UL 651, Fed Spec W-C-1094 and NEMA TC-2 as manufactured by Carlon or approved equal.
6. Conduit Fittings and Device Boxes embedded in concrete shall be PVC conforming to UL 514 and NEMA TC-3.
7. Wall Sleeves for Conduit shall be O.Z., positive, watertight through wall entrance fittings, FSK Series, Crouse-Hinds, or equal.
8. Entrance Seals shall be O.Z. type CSBG, Crouse-Hinds, or equal.
9. Rigid Conduit Straps and Clamp Backs of cast aluminum such as EFCOR 233 AL, Appleton, or equal, shall be used in attaching conduit to concrete surfaces where channels and clamps are not used.
10. Conduit Bushings shall be insulated metallic bushings by T & B, O.Z., or approved equal, except where grounding bushings are required.
11. Conduit Sealing Fittings shall be Crouse-Hinds, type GUAB, with sealing covers, or approved equal.
12. Wireways shall be of the size required plus no less than 50% of spare capacity, made of 12 gauge aluminum with hinged spring-latched covers conforming to UL 870, and painted to protect against corrosion. The Contractor shall furnish all necessary bends, couplings and connectors. Interior parts shall be smooth, free of sharp edges and burrs. Use grounding type locknut and copper bond wire to make wireway and attached conduits electrically continuous. Slip-fasteners are not acceptable for this purpose. Wireways shall be type HW as manufactured by General Metals, Inc., Square D, or approved equal.

2.10 SWITCHES AND COVERS

- A. Light Switches shall conform with Fed Spec WS-896E and shall be rated 20 amp, 120/277 volt AC, for tungsten or inductive load, Hubbell 1221 and 1223, Leviton, or approved equal.
- B. Weather proof Switch Covers shall be Crouse-Hinds DS185-SA, Appleton, or approved equal, copper-free aluminum.
- C. Explosion-Proof Switches shall be rated 20 amp, 125 volts AC with front operating handle, Appleton Cat. No. EFS175-FL, Crouse-Hinds, or approved equal.

- D. Safe-Run Switches shall be 2 position, double pole, single throw, maintained contact, selector switch in NEMA-4 enclosure, General Electric AJ201C or approved equal.
- E. Safety Disconnect Switches shall be heavy duty Type A, quick-make, quick-break, horsepower rated, with external operating handle interlocked to prevent opening of the cover unless it is in the "off" and "open door" position. Switch shall be manufactured by Square D, Westinghouse, or approved equal.
- F. Mercury Float Switch shall have molybdenum contacts sealed in a doublewalled float of plastic material resistant to inorganic salt solutions, alkalis, and mineral acids. The electrical cable shall be two conductors with neoprene jacket and shall run unspliced to the Control Cabinet. Switch shall be Enpo-Cornell Pump Co. or equal.
- G. Limit Switch shall be heavy duty Square D Class 9007 or approved equal with 2 N.O. and 2 N.C. contacts.

2.11 RECEPTACLES AND COVERS

- A. Outlets shall be 125 volt, 20 amp, grounding type, duplex receptacle specification grade, Hubbell 5362, Leviton, or approved equal.
- B. Weatherproof Switch Covers shall be Crouse-Hinds DS185-SA, equivalent by Appleton, or approved equal, copper-free aluminum, gasketed cover.
- C. Receptacle for Emergency Power shall be 4 wire, 4 pole with angle adapter and screw cover, Russell Stoll, Catalog numbers as indicated below for the different services, or approved equal:
 - 1. JRSA 2034 DR45 for 240 volts
 - 2. JRSA 2034 HR45 for 480 volts
- D. Ground Fault Protected Receptacles shall be Class A, 120 Volt, duplex 20/20A NEMA 5-20R, Square D Catalog GDFR-120BC or approved equal.

2.12 PANELBOARD

- A. Panelboards shall be dead front, safety type construction and shall conform to Federal Specification WP-115, NEMA PB1, ANSI C33.38 and UL67.
- B. All circuit breakers shall be thermal magnetic, temperature compensated, bolt-on type with quick-make quick-break mechanism, of the frame and size indicated.
- C. Circuit breakers minimum interrupting ratings shall be 22,000 A for 277 volts systems and 14,000 A for 120 volt systems. Circuit breaker minimum rating shall be 20A single pole unless otherwise noted.
- D. The panel board shall be provided with the voltage, phases and amperage required per project drawings, with main and branch breakers ambient-

compensated. It shall provide for a minimum of 20% spare space. Panels shall have neutral and equipment grounding bus and shall be Square D, General Electric, Westinghouse or approved equal.

E. Install panelboards in accordance with manufacturer's instructions.

2.13 PUMP MOTOR CONNECTION BOX

A. Pump motor connection box shall only be used in submersible pump wet well applications. The Contractor shall furnish and install 24" x 18" x 8" NEMA 4X stainless steel enclosure with hinged bolt-on cover and all necessary appurtenances for a complete installation. Connection box assembly shall include 3' x 3' x 6" concrete slab and 1-5/8 x 1-5/8 unistrut support. The following shall also be included:

1. 6-Pole power insulated terminal block panel mount shall be Allen Bradley Bulletin 1492, sized as required.
2. 6-Circuit control insulated terminal block panel mount shall be Allen Bradley Bulletin 1492
3. Gland nut and neoprene bushing shall be Crouse-Hinds CGK, or approved equal, sized as required for cable outer diameter.
4. Conduit Seal.

2.14 TRANSFORMER

A. Transformer shall be 480 volt to 120/240 volt, single phase, 60 hertz, 3KVA for submersible stations. It shall be high efficiency Square "D" Model 9070E01D1, or approved equal, with two 5% taps below normal, weatherproof for indoor or outdoor service.

2.15 PULL BOX

A. Pull box shall be welded aluminum, 12 gauge, with hinged cover, minimum dimensions of 12 inch x 12 inch x 6 inch, without knockouts, anodized and painted, as manufactured by General Metals, Inc., Hoffman, or approved equal.

2.16 LIGHTNING ARRESTOR

A. Lightning arrestor shall be 3-pole, 650 volt, thyrite secondary arrester, General Electric type 9L15BCC008, Westinghouse 634A217AO1, or approved equal.

2.17 SURGE CAPACITOR

A. Surge capacitor shall be a 3-pole, 650 volt, 1.0 mfd. capacitor. It shall be a General Electric Type 9L18ABB301, equivalent by Westinghouse, or equal.

2.18 EMERGENCY LIGHT

A. Furnish and install wall mounted emergency light package unit with battery backup wired to an existing lighting fixture, Hubbel Lighting IMF 12-50-2-

P8 or approved equal.

2.19 LEVEL CONTROLLER

- A. Level controller shall be microprocessor based SCADA ready, station controller with float switches backup. It shall measure the depth of water in the wet well and operate the pumps based on selected setup values. The controller shall be a microprocessor-based device and not require a battery to maintain the operating program. All set-up values shall be stored in non-volatile memory.
- B. The controller shall be standard “off the shelf” equipment with published literature and fully tested hardware and operating program. The controller shall be field configurable from the front of the unit, and require no special tools or software to set-up or operate.
- C. MPE Station Controller, microprocessor based controller with pressure transducer, Model SC2000, as manufactured by Motor Protection Electronics, Inc. or approved equal.
- D. Provide intrinsically safe duplexer backup controller with float switches, as manufactured by Motor Protection Electronics Inc. or approved equal.

2.20 PUMP STATION LEVEL TRANSDUCER

- A. A submersible level transmitter shall be capable of sensing and measuring the level of wastewater in the wet well based on the hydrostatic pressure above the submerged sensor’s diaphragm.
- B. The level transmitter shall be factory calibrated to a nominal 4-20 mADC output.
- C. The transducer housing shall be fabricated of PVC with a 2.5-inch diameter Teflon diaphragm and shall be filled with silicone oil.
- D. The sensor shall be mounted using its signal cable and have ¾” NPT pipe threading for pipe mounting.
- E. The internal air pressure of the sensor assembly shall be relieved to atmospheric pressure through a sealed breather system.
- F. The unit shall measure 9 inches high by 3.8 inches diameter. The cable diameter shall be 0.26 inches.
- G. The level transducer shall be Model SLX 130-M, as manufactured by Contegra, Inc., or approved equal.
- H. The mounting option used shall be a 316 SS pipe for cable suspension (SLX-SP1 Contegra Option 3).

PART 3 EXECUTION

3.01 GENERAL

A. All electrical work shall comply with the applicable rules of the National Electrical Code, the National Fire Protection Association, and the South Florida Building Code, and shall be in accordance with the requirements of OSHA, and the best commercial and industrial practice. Conduit and cable shall be sized as specified in the National Electrical Code, where sizes are not shown on the Plans.

B. All electrical wiring, regardless of voltage classes, shall be installed in rigid conduit, except where shown otherwise on the Plans. No conduit installed shall be smaller than 3/4 inch IPS and no wire smaller than 12 gauge, except as otherwise shown on the Plans, specified herein, or authorized by the Engineer.

C. In some cases, the exact requirements must be determined from the shop drawings of the equipment furnished by the Contractor. Changes required by the Contractor - furnished equipment shall be the Contractor's responsibility. Materials or equipment damaged in the course of installation or test shall be replaced or repaired to the satisfaction of the Engineer.

3.02 EXAMINATION

A. Verify items provided by other sections of Work are properly sized and located.

B. Verify that built-in items are in proper location, and ready for roughing into Work.

C. Electrical service shall be built per Florida Power & Light Standards.

3.03 INSTALLATION OF 600-VOLT WIRE AND CABLE

A. Install wire and cable in conduits, ducts, wireways, cable trays and other enclosures as indicated.

B. Except as otherwise indicated or specified, all wire and cable shall be installed in continuous runs between terminal points without splicing.

C. Make splices and taps only in junction boxes, from terminals in terminal boxes, in manholes, in handholes and other accessible enclosures.

D. Do not splice wire and cable in ducts or conduits.

E. Except as otherwise indicated, or specified, do not splice or tap control, alarm or instrumentation wiring in underground manholes and handholes.

F. When pulling wire or cable, do not subject the wire or cable to a tension greater than 50% of the yield strength of the conductor. Pulling lugs shall be attached to the conductor with a sleeve or grip over the cable sheath to prevent slipping the insulation.

G. Use a UL approved lubricant to decrease friction when pulling cable in

ducts and conduits

H. Do not subject cable to a bending radius less than 8 times the cable O.D. during or after installation.

I. In wet locations, make splices first as for dry locations, then encapsulate them in an epoxy resin sealing and potting compound. Encapsulation of compression sleeve splices shall be with preformed molds.

J. Pulling of wires and cable into conduits shall be done in a manner which will in no way injure the insulation.

K. All wires in conduit shall be continuous between pull points without splices. No joints or splices in the conductors shall be permitted except at outlet or accessible junction boxes.

L. Sufficient lengths of wire shall be left at pull boxes for connecting to equipment and apparatus without straining.

M. All wires passing through pull boxes shall have enough slack in each box so they may be pulled out of the box a distance of no less than 6" across the entire length of the box.

N. Pull together all cables or conductors to be installed in a single conduit.

O. Wire Sizes: Drawings indicate wire and conduit sizes for typical equipment. If sizes shown on the drawings are not appropriate for the equipment chosen by the Contractor, wires and conduit shall be sized for the proper current-carrying capacity (including voltage drop and motor inrush allowances) in accordance with the NEC, at no extra cost to the Department. On 120/240 volts systems, "Homeruns" of over 50 feet in total length from panel to first outlet shall be #10 AWG minimum size and on 277/480 volts, the distance shall be 100 feet total length for #12 AWG minimum size.

3.04 CONDUIT INSTALLATION

A. The Plans are generally indicative of the work to be installed, but do not show all bends, fittings, boxes, and specialties which may be required or the exact location of all conduits. The Contractor shall carefully investigate the site and conditions affecting all of his work and arrange his work accordingly. Any changes from locations shown on the Plans must be approved by the Engineer.

B. Conduits shall be installed in such a manner that wires may be removed and replaced at a later date and to ensure against collection of condensation or rainwater. Where bends are made, they shall be made with an approved conduit bending machine. Crushed or deformed conduit shall not be used.

C. All conduit ends shall be square cut and reamed to remove burrs. Running threads will NOT be permitted. Approved couplings shall be used. All conduit joints shall be made up wrench tight, using strap wrenches, and shall be made waterproof in such a manner as not to interrupt the electrical bonds.

D. As soon as installed, all open conduit ends, including those terminating in boxes, shall be plugged or capped and so maintained during construction to prevent the entrance of moisture and dirt. All conduit shall be carefully cleaned and dried inside before the installation of wire.

3.05 GROUNDING

A. All grounding shall comply with the requirements of the National Electric Code and all local Codes having jurisdiction.

B. Unless otherwise shown on the Plans, the ground system shall be composed of at least two 5/8" in diameter by 10 feet long copper clad ground rod, spaced a minimum of 6 feet apart. Ground rods shall also be connected to rebar in slab. Make all connections with #6 bare copper wire.

C. Maximum ground resistance shall not exceed 25 ohms under normal dry conditions. Additional ground rods shall be driven if required to maintain this level.

D. All electrical equipment, structural steel, guard rails, and other metallic objects shall be connected to the above-mentioned ground system.

E. Provide a warning ribbon installed at 12" depth in the ground above the ground loop conductor.

3.06 NEUTRALS

A. Each circuit which requires a neutral conductor shall have its own individual neutral conductor, contained in the same enclosure.

3.07 TESTING

A. All circuits and motors shall be megger tested, and the voltage and current load on each circuit shall be checked. Five copies of the results shall be furnished to the Engineer and the Department before acceptance of the work.

END OF SECTION