

DIVISION 16  
SECTION 16000  
ELECTRICAL SPECIFICATIONS

PART 1 - GENERAL:

1.01 RELATED DOCUMENTS

A. The general provisions of the contract, including General and Special Conditions and General Requirements (if any), apply to the work specified in this section.

1.02 DESCRIPTION OF WORK

- A. The Contractor shall furnish all labor, material, equipment, and related items necessary to complete the electrical work indicated on the drawings and described in these specifications. The work shall include all incidental electrical material or items as indicated or implied on the drawings and specifications, or as required in order to perform the work.
- B. The work shall include, but is not limited to the following:
1. Temporary construction power
  2. Electrical service
  3. Electrical service equipment
  4. Panelboards
  5. Branch lighting and receptacle wiring
  6. Wiring devices
  7. Motor outlets and branch wiring
  8. Lighting fixtures, including lamps
  9. Telephone and miscellaneous conduit systems
  10. Fire alarm system
  11. Intercom system

1.03 PLANS AND SPECIFICATIONS

A. The plans and specifications indicate the extent and general arrangement of the electrical systems to be installed, and are subject to the characteristics of the proposed equipment with regard to size, functionality, internal arrangement, etc. Should the Contractor consider any changes necessary, the desired changes shall be detailed and submitted with substantiating arguments to the Architect as soon as possible. No such changes shall be carried out without prior written approval of the Architect. The plans shall not be construed to give complete and accurate details in regard to exact locations of outlets, equipment, etc. Exact locations shall be determined based on the as-built measurements of the building, the purpose of the outlet, or function of the equipment. The Electrical Contractor shall lay out his work in such a way as to make provision for the work of all other trades. Offsets shall be made as necessary to avoid finished rooms, structural members, or other obstructions. The Contractor shall be responsible for accurately locating openings for conduits, busway, or access doors for electrical work, etc.

B. The Architect/Owner reserves the right to make any reasonable changes in equipment locations indicated on the contract documents without additional cost to the Owner.

C. Exceptions to the contract documents or conflicts between the drawings and specifications, or with actual field conditions, shall be promptly brought to the attention of the Architect. Failure to resolve conflicts of this nature, shall be reason to require suitable resolution and correction at the Contractor's expense before acceptance of the building.

1.04 CODES, PERMITS AND INSPECTIONS

A. All work shall comply with the applicable rules of the National Electrical Code, the National Electrical Safety Code, the National Fire Codes (published by National Fire Protection Association), the local codes and ordinances (state and municipal), and the terms and conditions of the electric utility, as well as any other authorities that may have lawful jurisdiction pertaining to the work specified. None of the terms or provisions of this specification shall be construed as waiving any of the rules, regulations or requirements of these authorities. The Contractor shall procure all necessary permits or licenses to carry out his work, and shall pay all required fees, including any costs associated with a certificate of approval.

B. In any instance where these specifications call for materials or construction of a better quality or larger size than required by the codes, the provisions of these specifications shall take precedence. The codes shall govern in case of direct conflict between the codes and the contract documents.

1.05 SUBMITTALS AND SHOP DRAWINGS

A. The Contractor shall submit for approval five (5) bound sets of documentation describing all material and equipment to be provided. These shall be enclosed in hard cover vinyl three-ring binders with clear sleeve on front, back and spine. The information shall be indexed according to specification subsection or material type, and marked to indicate the exact model, type or size being provided. Materials specified on drawings shall be submitted as well as those specified in this section of the specifications. Submittals shall indicate where the proposed equipment or material will be installed, and shall include sufficient manufacturer's information to demonstrate that the material is in accordance with specifications. Any material or equipment that is not in accordance with the specification requirements may be rejected solely at the Architect's discretion.

B. Submittals shall be complete and entire. Partial submittals will be returned to the Contractor for proper preparation and resubmission in complete form.

C. Submittals shall be accompanied by a letter of transmittal listing the information being submitted. The Contractor shall make all submittals in a timely manner to allow ample time for review, correction, resubmission and approval before construction begins. No work shall be fabricated and no material or equipment shall be purchased, except at the Contractor's risk, until such approval has been received.

D. Any equipment or material submitted which is not in accordance with the specification requirements because of standard shop practice or other reasons, shall be specifically noted in the letter of transmittal including all points of variance. If the submittals are not marked in this way, the Contractor remains responsible to execute his work in accordance with the contract documents even if such submittals are approved.

E. The approval of submittals indicates general compliance with the design concept, but shall not be considered as permitting any departure from the contract documents, or relieving the Contractor's responsibility for any errors in the submittal, such as in details, dimensions, materials, etc.

F. If requested, the Contractor shall provide samples of materials or equipment he proposes to furnish. Such samples shall remain the property of the Contractor and will be returned before contract close-out.

1.06 AS-BUILT DRAWINGS AND INSTRUCTIONAL MANUALS

A. Upon completion of the work, the Contractor shall provide to the Architect a set of instruction manuals on all equipment and systems provided. The information shall be bound in a vinyl hard cover three-ring binder with clear sleeves on front, back and spine. The information shall be logically indexed according to equipment type or system and shall include manufacturer's phone numbers and replacement part information.

B. Also provide a set of electrical drawings marked to indicate all changes made in the field during the progress of construction, including: underground conduit runs, device and equipment locations, circuiting changes, etc. Panel schedules and plans shall show the actual circuit number to which each circuit is connected.

1.07 VISIT SITE

A. The Contractor shall visit the site of the project before submitting a proposal, and shall thoroughly familiarize himself with existing conditions. Failure to do so will not be cause for any change to the contract price by reason of unforeseen conditions.

PART 2 - PRODUCTS:

2.01 MATERIALS

A. All materials shall be new and bear the UL (Underwriters Laboratories, Inc.) or ETL (ETL Testing Laboratories) label. Equipment which is defective, or damaged in the course of installation or while being tested, shall be replaced or repaired in a manner satisfactory to the Architect. All materials and equipment furnished under this Division of the specifications shall be the standard product of a manufacturer regularly engaged in the production of such material, and shall be the manufacturer's current standard design.

2.02 ENCLOSURES FOR ELECTRICAL EQUIPMENT

A. Enclosures for electrical equipment such as motor controllers and MCC's, panelboards, contactors, push-button stations, selector switches, safety switches, circuit breakers, meter enclosures, junction boxes, etc., shall be suitable for the location in which they are installed. Enclosures shall undergo a thorough rust-inhibiting treatment followed by a suitable prime coat, and finished with a baked-on, light-gray enamel or epoxy powder coat.

B. Unless noted otherwise, enclosures shall be NEMA rated as follows for the environment indicated:

1. Indoors in clean, dry environments - NEMA 1
2. Indoors in dirty environments exposed to oil or water mist, dust, etc. - NEMA 12
3. Indoors in wet environments due to falling water such as deluge systems- NEMA 3R
4. Indoors in wet environments due to water spray or hose directed water - NEMA 4
5. Outdoors - NEMA 3R or NEMA 4
6. Corrosive environments whether indoors or outdoors - NEMA 4X

2.03 DISCONNECTING AND ISOLATION MEANS

A. Circuit breakers or safety switches shall be provided as indicated, or as required to comply with the N.E.C.

B. Non-fused safety switches shall be used as isolation disconnects for all motors, except for equipment requiring fuse protection or where fused disconnects are indicated on the plans. Single phase fractional horsepower motors shall be isolated by manual motor starter toggle switches with properly sized overload protection.

2.04 SAFETY SWITCHES

A. Safety switches shall be Heavy Duty, with quick-make, quick-break mechanism and shall meet NEMA Enclosed Safety Switch Standard KS1-1983 for type HD. Safety switches shall be 600V or 250V three-pole, single throw with grounding lug unless noted otherwise.

2.05 OUTLET BOXES, JUNCTION BOXES, PULL BOXES AND CABINETS

A. Junction boxes, outlet boxes, pull boxes and cabinets shall conform to NEC requirements and shall be suitable for the environment in which they are installed.

B. Device Boxes: Provide pressed cadmium-plated or zinc-coated sheet steel type boxes for concealed conduit systems. Provide cast alloy boxes for exposed work within nine feet of each floor level or in damp or wet locations, and exposed work pressed cadmium-plated or zinc-coated sheet steel type boxes above nine feet. All boxes shall be sized with sufficient volume to accommodate the device(s) and number of conductors entering the box as required by the National Electrical Code. Boxes shall be not less than 1-1/2" deep. Switch and receptacle boxes shall be not less than 3"H x 2"W x 2"D. Telephone boxes shall be 4" square x 2-1/8" deep with a single gang device ring. Boxes installed in concealed locations shall be set flush with the finished surfaces and shall be provided with the proper type device rings as required. Boxes shall be rigidly and securely installed using bar hangers between studs, wood screws for wood construction, bolts and wedge anchors for concrete or brick, toggle bolts for concrete masonry units (CMU), or machine screws or welded threaded studs for steel construction. Powder charge driven threaded studs provided with lock washers and nuts are acceptable for masonry, brick or steel.

C. Junction Boxes, Pull Boxes and Cabinets: Boxes and cabinets shall be of suitable size and type to accommodate structural requirements, terminating space, number of raceways and conductors or cables being installed. Boxes and cabinets shall be not smaller than indicated on the drawings, or as required by the N.E.C. where sizes are not given.

2.06 CONDUIT SYSTEMS

A. The conduit system shall consist of rigid galvanized steel conduit (RGSC), electrical metallic tubing (EMT), PVC coated galvanized rigid steel conduit, rigid PVC conduit, flexible metallic conduit and liquidtight flexible metallic conduit. Conduit shall be installed as shown on the drawings and in accordance with the N.E.C. Minimum conduit size shall be 3/4 inch trade size. All fittings for rigid steel conduit shall be threaded, and EMT fittings shall be raintight steel compression type. Set screw or indentation type fittings will be not be permitted.

B. Exposed conduit below ten feet above each floor level shall be rigid galvanized steel, while conduit above nine feet may be electrical metallic tubing. All exposed conduit shall be secured to the structure according to the N.E.C. Install exposed conduit parallel or perpendicular to the building lines. Conduits shall be secured to all sheet steel boxes and cabinets with locknuts on each side of the box. Bushings shall be provided for all RGSC terminations and where required by the N.E.C.

C. Conduit shall be routed concealed above ceilings, in stud or masonry walls, or under concrete floors wherever possible, unless noted otherwise. Electrical metallic tubing may be used concealed except in direct contact with earth or in poured concrete. In poured concrete and direct contact with earth, PVC coated RGSC shall be used, except rigid PVC schedule 40 conduit may be used where specifically called for on the drawings. Where PVC conduit is stubbed up indoors, a PVC coated RGSC sweep and riser shall be used.

D. Conduit shall be installed with not more than four ninety degree bends, or equivalent, between pull points. Pull points shall also be provided at not more than one hundred feet of run, unless noted otherwise. Ninety degree bends shall be accomplished using preformed sweeps. Field made symmetrical bends or cast-alloy "condulet" fittings. Special care shall be taken when field bending PVC coated RGSC, and the manufacturer's recommendations for bending equipment and procedures shall be strictly followed. Conduit that has been crushed or deformed shall not be installed. Conductors shall not be installed until the conduit system is complete, and all conductors shall be pulled together at one time. The Contractor shall exercise the necessary precautions to prevent the entrance of water, dirt, concrete or other debris into the conduits. Debris shall be cleared from conduits before installation of conductors. If conduit becomes obstructed so that it can not be completely cleared, replace the obstructed section of conduit.

E. Flexible conduit shall be used only for final connection of equipment, grid mounted lighting fixtures, or where specifically called for on the drawings. All equipment subject to vibration shall be connected with flexible conduit. Other equipment may be connected with flexible conduit for the sake of convenience. Provide liquid-tight flexible metallic conduit in all damp or wet locations, where subject to water or oil spray, or where specifically called for on the drawings.

2.07 WIRING

A. All wiring shall be installed in conduit. Building wire shall be copper with 600V, type THHN/THWN (rated 90°C dry and 75°C wet) or THHN/THWN-2 (rated 90°C dry or wet) insulation.

B. Exterior underground conductors shall be installed in conduit and shall be copper with 600V, type THHN/THWN (rated 90°C dry and 75°C wet), THHN/THWN-2 (rated 90°C dry or wet), XHHW (rated 75°C wet), or XHHW-2 (rated 90°C wet).

C. Branch circuit conductors shall be not smaller than No. 12 AWG. Class 1 remote control and signal circuit conductors shall be not less than No. 14 AWG. Class 2 low-energy remote control and signal circuit conductors shall be not less than No. 18 AWG.

D. Conductors shall be continuous from outlet to outlet with no splices except in outlet or junction boxes. Junction boxes shall be utilized where required. Splices in conductors No. 8 and smaller shall be made with 600V insulated "Scotchlok", or equal, twist-on spring connectors, or with 600V insulated copper sleeve crimp connectors. Splices in conductors No. 6 or larger shall be made with bronze split bolt solderless connectors of the proper size and insulated with two layers of rubber or plastic tape to provide insulation equivalent to that on the conductors spliced. Split bolts may also be insulated with proper size snap-on Bakelite covers. Plastic tape shall be 8.5 mil all weather flame retardant vinyl-plastic tape approved by U.L.

2.08 WIRING DEVICES AND PLATES

A. The Contractor shall evaluate the device locations shown on the plans based on type of construction, work by other trades and the intended purpose of the device in order to coordinate the overall effort of the project. Based on this evaluation the Contractor shall recommend to the Architect any relocation of devices he deems beneficial, stating the reason for each relocation.

B. Duplex receptacles shall be wide body industrial specification grade, NEMA 5-20R with one piece grounding backstrap and integral ground contacts having a single rivet and green hexagonal ground screw. Receptacles shall accept side or back wiring and shall be gray in color. Provide Hubbell #5362GRY, Leviton #5362A-GY or approved equal.

C. Wall mounted toggle switches shall be wide body industrial specification grade, single pole quiet type, rated 20 amperes at 120/277 volts AC. Switches shall accept side or back wiring. Device color shall be gray and shall be equal to Hubbell #1221GRY or Leviton #1221-2GY.

D. Device plates in finished areas shall be one-piece, #302 stainless steel, secured by stainless steel screws with countersunk heads. Device plates in unfinished areas with surface mounted boxes shall be of one-piece construction and shall be of the same material as the box. Cast alloy plates shall be provided for cast boxes and zinc-coated sheet steel covers with rounded or beveled edges for sheet steel boxes. All multiple mounted devices shall be ganged under one cover plate unless otherwise noted on the drawings. All devices shall be attached to the outlet box and shall not depend upon the cover plate for support. The use of section plates will not be permitted.

2.09 MOTOR CONTROL AND PROTECTION

A. Provide motor overload protection for all motors except those which are part of packaged equipment having overload protection provided by the equipment manufacturer. Provide a safety disconnecting means for each motor as specified.

B. Motor control shall be provided as indicated on the drawings. Magnetic motor starters shall be NEMA rated and shall not be smaller than size 1. Provide properly sized magnetic motor starters with integral disconnect, instantaneous trip motor circuit protector, thermal overload relays, 120 VAC control power transformer having primary and secondary fuses, 1 N.O. and 1 N.C. unused auxiliary contacts, red "run" and green "stop" pilot lights, Hand-Off-Auto switch mounted on the cover and enclosure suitable for the installation environment. Pilot lights shall be wired through auxiliary contacts.

C. Provide manual motor starters having motor overload protection for all single phase fractional horsepower motors, unless noted otherwise.

2.10 PANELBOARDS AND CIRCUIT BREAKERS

A. The panelboards shall be circuit breaker type, dead-front with tin plated copper bus bars and straps. Equip panelboards with main disconnecting device or lugs as described and shown on drawings. Provide separate solid neutral bus and equipment ground bus for all panels, unless noted otherwise. Provide all indicated branch circuit breakers shown on the drawings.

B. Twin, tandem and half-sized single pole breakers are not acceptable. All multiple pole breakers shall be common trip.

C. Provide a neatly typed directory card properly identifying each circuit and corresponding load served. Install directory card on inside of panel door in a clear plastic holder.

D. All circuit breakers and panelboard enclosures shall comply with the applicable provisions of the N.E.C. All panelboards shall be provided with a hinged door having a keyed latch, and shall be keyed alike. Enclosures shall undergo a thorough rust-inhibiting treatment followed by a suitable prime coat, and finished with a baked-on, light-gray enamel or epoxy powder coat. The enclosure, covers and trim shall be designed for flush or surface mounting as indicated on the drawings.

E. Provide each panelboard rated as a complete unit equal to or greater than the symmetrical amps interrupting rating shown in the panelboard schedules, or as required to exceed available fault current.

2.11 LIGHTING FIXTURES

A. The Contractor shall furnish and install all electric lighting fixtures as scheduled on the drawings, complete with lamps. Fluorescent fixtures shall have C.B.M. and U.L. approved ballasts equipped with an internal, thermal protection system. Fixtures shall be supplied by the manufacturers indicated. Fixtures other than those specified must receive the approval of the Architect/Owner before purchase. It shall be the responsibility of the Contractor to furnish the proper ceiling frames for the ceiling material in which recessed fixtures are to be installed. All lamps broken or burned out during the course of construction shall be replaced without additional cost to the Owner. Lamps shall be first quality Sylvania, General Electric, Philips or Venture.

2.12 ELECTRICAL IDENTIFICATION

A. All electrical equipment shall be identified with a permanent nameplate installed with suitable adhesive. Nameplates shall be engraved with the name or legend as indicated on the drawings and approved by the Architect.

B. Nameplates shall be laminated bakelite or plastic with black core and white face. All nameplates shall be of the same type with the same style engraving.

C. Receptacles and switches shall be identified by panelboard and circuit number using a clear machine lettered adhesive tape with 1/8" black letters. Affix near the bottom of the cover plate on the exterior face.

PART 3 - EXECUTION:

3.01 CONTINUITY OF ELECTRICAL SERVICE

A. Continuity of electrical power to all areas shall be maintained at all times unless otherwise arranged with the Owner.

B. Provide either new or used materials and equipment for electrical temporary facilities which are suitable for intended uses and will ensure safe, adequate performance of the facilities in accordance with governing regulations and codes.

3.02 DEMOLITION

A. All salvaged electrical materials which are not reused, shall become the property of the Owner. All abandoned conduit shall be removed except conduit in masonry or concrete. Conduits left in walks or floors shall be cut off flush and end grouted.

B. The Contractor shall remove all material not retained by the Owner and all debris from the site.

C. Where the demolition work renders equipment downstream inoperable, service shall be extended to the downstream devices or equipment so that they are left in operating condition.

3.03 CUTTING AND PATCHING

A. All necessary cutting of walls, floors, partitions, ceilings, etc., as required for the proper installation of electrical work shall be accomplished at the Contractor's expense, and shall be done in a neat, careful and workmanlike manner. Contractor shall patch all holes, trenches, etc., associated with his work to provide a smooth and level substrate for finishing.

3.04 TEMPORARY POWER

A. The Contractor shall furnish and install temporary electric service as required for construction activities. Services shall include, temporary single phase service for fractional horsepower motors and power saws, and temporary GFCI protected convenience outlets. Convenience outlets shall be spaced so that every part of the building is within 50 feet of an outlet.

B. Provide adequate temporary lighting in all areas per O.S.H.A. requirements.

3.05 GROUNDING

A. Properly ground the raceway system, and all electrified equipment in accordance with the requirements of the National Electrical Code.

B. Provide green insulated equipment ground conductors with all power and lighting circuits, sized in accordance with the National Electrical Code.

C. Connect all equipment ground conductors to the ground bus and neutral conductors to the neutral bus at the point of origination for each circuit. All grounding paths shall be continuous back to the service entrance equipment.

3.06 COORDINATION

A. The electrical work shall be coordinated with the requirements of the other divisions of these specifications and with all the drawings for the entire project. The electrical work shall be properly coordinated and accomplished on such a schedule and in such a manner as not to delay or interfere with the work of other trades. Workmanship shall be of the highest grade and shall be accomplished in accordance with the best practices of the trade. In case of conflict with other trades, the General Contractor shall decide, subject to the Architect's approval, which equipment or work shall be relocated regardless of which was installed first.

3.07 CONNECTIONS TO EQUIPMENT FURNISHED BY OTHERS

A. Furnish rough-in, including necessary labor and materials, for all equipment indicated on the drawings of all disciplines or specified elsewhere in all divisions of these specifications. Final connection to equipment shall be provided if equipment is installed before acceptance of the building.

B. Contractor shall verify sizes and requirements of actual equipment supplied against what is shown on the drawings and determine the suitability of the electrical service and controls indicated. If the equipment provided is different in size, or has different control or other requirements, the Contractor shall provide the appropriate service and controls.

3.08 TESTS

A. The entire electrical system shall be tested by the Contractor in the presence of the Architect. Every switch, circuit breaker, and safety switch shall be operated under load conditions. Every fixture shall be lighted, every receptacle tested, every motor exercised, and all special outlets and equipment tested and operated. Any short circuits or defects in workmanship, material or equipment shall be corrected by the Contractor before final acceptance.

3.09 ACCEPTANCE

A. Acceptance of the work will be given after completion, final adjustment and successful demonstration of all systems.

3.10 GUARANTEE

A. The Contractor shall guarantee the electrical system, including all equipment and material, as installed by him or his subcontractors to function as specified for a period of one year from the date of acceptance. The Contractor shall furnish free of cost to the Owner all material, labor, and other expenses as necessary to correct any defective equipment, material or workmanship.

TELEPHONE SYSTEM:

PART 1 - GENERAL:

1.01 DESCRIPTION OF WORK

A. The extent of telephone and data work is indicated by drawings and schedules, and by the requirements of this section.

B. The types of components required for the project include the following:

1. Station Cable
2. Jacks and Mounting Frames
3. Termination Equipment - Copper

1.02 QUALITY ASSURANCE

- A. Manufacturers: Firms regularly engaged in the manufacture of cable and devices of the types and capacities required, whose products have been in satisfactory use in similar service for not less than 5 years.
- B. NEC Compliance: Comply with applicable portions of National Electrical Code pertaining to telephone and data systems.
- C. NEMA Compliance: Comply with applicable portions of National Electrical Manufacturers Association's standards pertaining to cable, wire and connectors.
- D. UL Labels: Provide cable, wire and connectors which have been approved, listed and labeled by Underwriters Laboratories.
- E. EIA/TIA Standards: Comply with latest versions of EIA/TIA standards.
- F. Installers: Installers shall be certified for installation of the cable system and hardware specified, and shall provide written warranty from the manufacturer to guarantee the installed system performance at the data throughput level as specified.

1.03 SUBMITTALS

A. Product Data: Cable, jacks, equipment and accessories.

PART 2: PRODUCTS

2.01 GENERAL

A. For each system provide all wire, cable, jacks, termination accessories and other components as required to form a complete system of the types indicated or specified.

2.02 MATERIALS

A. Cable

1. Station and Cable:
  - a. Telephone Voice Cable - CAT 3, 4 pair, 24 AWG, White jacket. Belden or approved equal.
  - b. Install one station cable of appropriate type per each outlet (jack) shown on the drawings.

B. Telephone Receptacles:

1. Provide telephone outlets configured as indicated on the plans with the following components:

- a. RJ-11 Voice Connector (white) - Systimax CAT 3
- b. Faceplate - 1 port faceplate with wallmount studs

C. Copper Termination Equipment

1. Accessories: Provide all accessories needed for a complete neat and workman-like installation, including, but not limited to, loops, spools, ties, stand-offs, labels, etc.

D. Miscellaneous Labels

1. Cable Labels: Heat Shrink Type

PART 3: EXECUTION

3.01 INSTALLATION

A. General: Install telephone and data products in accordance with the manufacturer's written instructions, the applicable requirements of NEC, and in accordance with recognized industry practices to ensure that products serve the intended function.

B. All telephone and data cables routed exposed, in walls or above hard ceilings shall be installed in conduit. Minimum conduit size shall be 3/4". Conduits shall be sized according to the NEC for number of station cables installed.

C. Installation of all termination equipment and other work in telephone equipment rooms shall be accomplished under the direction of Owner personnel.

D. Bundle and tie-wrap cables, and provide cable rings as required to neatly train all cables. Label all cables in accordance with Owner standard nomenclature using approved labeling material as specified.

E. Route telephone/data cables orthogonal to building lines and in separate supports from all other systems.

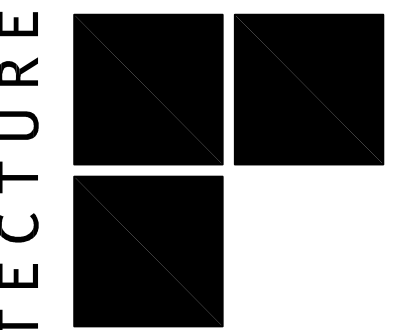
F. Contractor shall provide a pull string in all communications conduits including those in which cables are installed.

3.02 TESTING

A. Copper Cable Testing

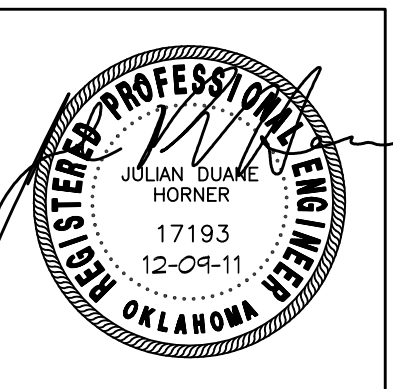
1. Station Cable Testing
  - a. Test each station cable, jack assembly and terminations in accordance with manufacturer's requirements for issuance of system warranty. Document all testing.
  - b. Contractor shall replace any defective or noncompliant cable at no additional cost to the contract.
2. Documentation: Provide complete documentation of each test performed.
  - a. Contractor shall submit two (2) copies of each test to the Owner for acceptance and approval.
  - b. Contractor shall replace any defective or noncompliant cable at no additional cost to the contract.

END OF SECTION



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CLAREMORE CIVIC EXPO CENTER  
SHOP REPLACEMENT  
CLAREMORE, OKLAHOMA

Revision

Project Number	11 019
Sheet Title	PROJECT ELECTRICAL SPECIFICATIONS
Date	12/09/2011
Sheet No.	E4.1