

THE DISTRICT BOARD OF TRUSTEES OF
PENSACOLA JUNIOR COLLEGE, FLORIDA
1000 COLLEGE BOULEVARD
PENSACOLA, FL 32504-8998

June 7, 2006

BID NO. 30, 2005/2006

**INVITATION TO BID (ITB) ON INSTALLATION
OF STANDBY GENERATOR SYSTEMS FOR WSRE-TV
AND
PENSACOLA JUNIOR COLLEGE**

The District Board of Trustees of Pensacola Junior College, Florida hereby extends an Invitation To Bid (ITB) on Installation of Standby Generator Systems for WSRE-TV and Pensacola Junior College, as specified in this bid request.

All terms and conditions included hereafter are part of this bid request. Any bid failing to comply with all of these terms and conditions may not be accepted. Rights are reserved to reject any and all bids and to waive any and all technicalities.

Directions for submitting bids include the following:

1. **All bids must be mailed or delivered to the attention of the Director of Purchasing and Auxiliary Services, and be received in the Purchasing and Auxiliary Services Office, Pensacola Junior College, Building 7, Room 737, 1000 College Boulevard, Pensacola, Florida 32504-8998, or delivered to the bid opening site, not later than 2:00 P.M., local time, Wednesday, June 21, 2006 and shall be clearly marked "SEALED ITB NO. 30, 2005/2006 – Installation of Standby Generator Systems for WSRE-TV and Pensacola Junior College."** Due to the requirement of sealed bidding, facsimile bids will not be acceptable as valid bid responses. All bids shall be submitted on the bid form, herein included, and shall be properly signed by an authorized representative of the firm or entity submitting the bid, with delivery or completion date clearly indicated, in order to be considered. Attach all amplifying instructions and documents to this bid form. In the event that you are unable to submit a bid, written notification should be submitted to the Purchasing and Auxiliary Services Office in order for your firm's name to remain on the mailing list.

An evaluation committee meeting, in accordance with FS 286.011(1), is scheduled to be held on **Thursday, June 22, 2006, at 11:00 A.M.** in the Barfield Administration Building No. 7, Room 737, 1000 College Boulevard, Pensacola, Florida 32504-8998. Bid tabulations and award recommendations will be posted in the Purchasing Department, Pensacola Junior College. Posting normally occurs within 10 days of bid opening date.

2. A person or affiliate who has been placed on the convicted vendor list following a conviction for a public entity crime may not submit a bid on a contract to provide any goods or services to a public entity, may not submit a bid on a contract with a public entity for the construction or repair of a public building or public work, may not submit bids on leases of real property to a public entity, may not be awarded or perform work as a contractor, supplier, subcontractor, or consultant under a contract with any public entity, and may not transact business with any public entity in excess of the threshold amount provided in F.S. 287.017, for CATEGORY TWO for a period of 36 months from the date of being placed on the convicted vendor list.
3. Any person(s) requiring reasonable accommodations, in accordance with the provisions of the American With Disabilities Act for attendance at the scheduled bid opening shall contact the Office of the Director of Purchasing and Auxiliary Services, at least seventy-two (72) hours in advance of the scheduled bid opening deadline as indicated on Page 1, herein.
4. Price, quality, specifications and time of guaranteed delivery will be the determining factors in the award of the bid.
5. All prices shall be firm until order is placed, unless otherwise specified herein or indicated by bidder.
6. **Bid prices shall be FOB 1295 West Fairfield Drive, Pensacola, Escambia County, Florida, 32501 and 26567 Ernest Patterson Road, Robertsdale, Baldwin County, Alabama 36567-4331.**
7. Failure to file a protest within the time prescribed in F.S. 120.57(3): Any person who is adversely affected by the agency decision or intended decision shall file within the agency a notice of protest in writing within 72 hours after the posting of the notice or decision or intended decision. With respect to a protest of the terms, conditions, and specifications contained in a solicitation, including any provisions governing the methods for ranking bids, proposals, or replies, awarding contracts, reserving rights of further negotiation, or modifying or amending any contract, the notice of protest shall be filed in writing within 72 hours after date of notice of protest if filed. Failure to file a notice of protest or failure to file a formal protest shall state with particularity the facts and law upon which the protest is based. Saturdays, Sundays, and state holidays shall be excluded in the computation of the 72 hour time periods provided by this paragraph. All protests must be delivered to the Director of Purchasing & Auxiliary Services, Pensacola Junior College, 1000 College Blvd., Pensacola, FL, 32504 within the time prescribed in Chapter 120, Florida Statutes to be considered valid.
8. Unless otherwise indicated herein, when manufacturer's names, trade names, and/or catalog numbers are listed in a specification, they are provided for information and are not intended to limit competition. The bidder may offer any brand for which he/she is an authorized representative which meets or exceeds the specification(s) for any item(s). If equivalent products are offered, the manufacturer's name and model number shall be clearly indicated on the bid form. Any item(s) offered as equivalent to that which is specified must be equivalent in quality of materials, workmanship, and effect and shall be corresponding in function and performance. Descriptive literature and/or complete specifications shall be

included for any item(s) offered as approved equivalent(s). Bids lacking any written indication of intent to bid an alternate product or brand will be considered to be in complete compliance with the specifications of the bid form. Pensacola Junior College shall retain the right to determine the acceptability of any item(s) offered as equivalent to any item(s) specified.

9. In the event of an error in extending the total cost of any item, the unit price submitted will prevail.
10. **With the consent and agreement of the successful bidder(s)** purchases may be made under this ITB by other community colleges, state universities, district school boards and by other educational institutions within the state of Florida. Such purchases shall be governed by the same terms and conditions stated in the proposal solicitation as provided in State Board of Education Rule 6A14.0734(2) (c). If the period of time is not defined within the solicitation, the prices, terms and conditions shall be firm for 120 days from the date of award. Bidders shall note exceptions to the above paragraph, if any.
11. Bids may be awarded or rejected, item-by-item, in sub-group(s) or in whole, at the discretion of Pensacola Junior College.
12. Any award on the basis of this bid will be contingent upon approval by The District Board of Trustees of Pensacola Junior College, Florida, and the terms of the contract to be negotiated with the successful bidder.
13. Insurance: The successful bidder shall provide appropriate insurance as indicated hereafter:
 - (a) Valid workmen's compensation insurance as required by FS 440, covering the successful firm's employees:
 - (b) General public liability insurance against bodily injury, personal injury, and property damages, in limits of not less than \$1,000,000.00 each occurrence; \$3,000,000.00 per aggregate. The District Board of Trustees, Pensacola Junior College, Florida shall be named as an additional insured on the contractor's policy.
 - (c) Automotive liability for all owned, hired & non-owned autos against bodily injury and property damage, in the amount not less than \$1,000,000.00 Combined Single Limit (each accident);
 - (d) Certificates evidencing that all of the above listed insurance(s) are in force and that The District Board of Trustees, Pensacola Junior College, Florida, is listed as additional insured. All policies shall have Best Rating of A X or better. Failure to maintain the required insurance may result in termination of the contract at the Certificate Holder's option.

We look forward to your participation in submitting a proposal for consideration. Any questions or concerns should be addressed to the Director, Purchasing and Auxiliary Services at (850) 484-1794.

Angie C. Jones
Director of Purchasing
and Auxiliary Services

SCOPE OF PROJECT

The District Board of Trustees of Pensacola Junior College, Florida, on behalf of WSRE, is accepting proposals to provide installation of customer provided generator systems for WSRE-TV. The work is to be provided at WSRE’s transmitter sites, which are located at 1295 West Fairfield Drive, Pensacola, Florida, and 26567 Ernest Patterson Road, Robertsdale, Baldwin County, Alabama. These systems are new equipment. PJC requests that when the transfer switches are delivered by Kohler that they are installed as soon as possible and all work except the actual placement and connection of the generator set be completed so that when the generators are delivered they can be placed, connected, and tested in a minimum amount of time. This request is made to facilitate the ability of WSRE-TV to remain on the air in the event of an emergency. The system must at a minimum meet the specifications hereinafter provided. **This bid is to include all labor and materials except the transfer switches and generators.**

Pre-bid transmitter site inspections can be arranged by contacting Roland Phillips, Director Of Engineering at WSRE-TV, at 850-484-1220 (office) or 850-572-6602 (cell) at least 2 business days prior to the desired date of inspections.

<u>ITEM</u>	<u>QTY./UNIT</u>	<u>DESCRIPTION/SPECIFICATIONS</u>	<u>TOTAL PRICE</u>
1.	1 Lot	Installation of Standby Generator System as listed herein and the drawing enclosed. This system is for the transmitter site located at 1295 West Fairfield Drive, Pensacola, Escambia County, Florida, 32501.	_____
2.	1 Lot	Installation of Standby Generator System as listed herein and the drawing enclosed. This system is for the transmitter site located at 26567 Ernest Patterson Road, Robertsdale, Baldwin County, Alabama 36567-4331.	_____
3.	1 Lot	Less discount, if any, if awarded both locations.	(_____)
GRAND TOTAL			_____

DESCRIPTION OF GENERATORS AND TRANSFER SWITCHES
PROVIDED BY PJC FOR INSTALLATION

Diesel Engine Driven Generator, Kohler Model 230REOZJB

Rated - 230kW Voltage - 277/480 Phase – 3 Wire – 4 Hertz – 60

Dec-3+ 16 Light Controller

- Remote Serial Annunciator
- Remote Emergency Stop Switch
- Run Relay
- Failure Relay
- Local Emergency Stop Button
- Pre-Alarm Senders
 - Anticipatory Low Oil Pressure
 - Anticipatory High Water Temperature
 - Low Water Temperature

Weather Housing Complete with

- Critical Silencer
- Tail Pipe and Rain Cap

Fuel System

- 425 Gallon Double Wall Subbase Fuel Tank
 - Emergency Pressure Relief
 - Inner Tank Leak Alarm
 - 2” Locking Fill Cap
 - Normal Vent Kit
 - Low Fuel Level Alarm
 - Flexible Fuel Lines

Engine and Generator Accessories

- Starting Batteries
 - Battery Rack and Cables
- Battery Charger, Equalize/Float Type with Alarms, 24V, 10 Amp
- Block Heater, 240 V
- Safeguard Breaker
- Line Circuit Breaker, 350 Amps, 3 Pole

Automatic Transfer Switch

Kohler Model KCT-AMTC-0400S

- 400 Amps, 480 V, 3 Pole, 3 Phase, 4 Wire, NEMA-36
- Microprocessor Controller
- Real-time Clock
- Broad-range Voltage Sensing (208-600VAC) with 2% Accuracy
- Frequency Sensing with 1% Accuracy on Both Sources
- Environmentally Sealed User Interface
- Keypad with Tactile Feedback Pushbuttons
- LED Indicators
- Selectable Operating Modes

Programmable Inputs and Outputs

- Load / No Load Exercise Function
- In-phase Monitor
- Anti-single Phasing Protection
- Load Control Inputs and Outputs
- Phase Rotation Sensing
- Time-stamped Event Log
- Gold-Flashed Engine Start Contacts
- Modbus Communication with Network and Setup Connections

Miscellaneous Items

- Standard One (1) Year Warranty
- Three (3) Copies General Maintenance Literature
- Rated Power Factor Test
- Certified Test Report
- Load Bank Test, Two (2) Hours
- Lube Oil and Antifreeze
- Installation Supervision
- Initial Test, Startup and Training

CERTIFICATION OF DRUG-FREE WORKPLACE PROGRAM

IDENTICAL TIE BIDS - Whenever two or more bids which are equal with respect to price, quality, and service are received by the State or by any political subdivision for the procurement of commodities or contractual services, a bid received from a business that certifies that it has implemented a drug-free workplace program shall be given preference in the award process. Established procedures for processing tie bids will be followed if none of the tied vendors have a drug-free workplace program, or if all of the tied vendors have drug-free workplace programs. In order to have a drug-free workplace program a business shall:

- (1) Publish a statement notifying employees that the unlawful manufacture, distribution, dispensing, possession, or use of a controlled substance is prohibited in the workplace and specifying the actions that will be taken against employees for violations of such prohibition.
- (2) Inform employees about the dangers of drug abuse in the workplace, the business's policy of maintaining a drug-free workplace, any available drug counseling, rehabilitation, and employee assistance programs, and the penalties that may be imposed upon employees for drug abuse violations.
- (3) Give each employee engaged in providing the commodities or contractual services that are under bid a copy of the statement specified in subsection (1).
- (4) In the statement specified in subsection (1), notify the employees that, as a condition of working on the commodities or contractual services that are under bid, the employee will abide by the terms of the statement and will notify the employer of any conviction of, or plea of guilty or nolo contendere to, any violation of chapter 893 or of any controlled substance law of the United States or any state, for a violation occurring in the workplace no later than five (5) days after such conviction.
- (5) Impose a sanction on, or require the satisfactory participation in a drug abuse assistance or rehabilitation program if such is available in the employee's community, by any employee who is so convicted.
- (6) Make a good faith effort to continue to maintain a drug-free workplace through implementation of this section.

AS THE PERSON AUTHORIZED TO SIGN THE STATEMENT, I CERTIFY THAT THIS FIRM COMPLIES FULLY WITH THE ABOVE REQUIREMENTS.

SIGNATURE OF VENDOR
REPRESENTATIVE: _____

TYPED OR PRINTED NAME OF VENDOR
REPRESENTATIVE _____

BIDDING FIRM OR ENTITY NAME: _____

BID SUBMITTED BY:

FEDERAL TAX I.D. NUMBER

FIRM OR ENTITY NAME

ADDRESS

CITY, STATE & ZIP CODE

TELEPHONE NUMBER /FAX NUMBER

TYPED OR PRINTED NAME
OF REPRESENTATIVE: _____

SIGNATURE OF REPRESENTATIVE: _____

DATE: _____

SECTION 16050 - BASIC MATERIALS AND METHODS FOR STANDBY GENERATOR FACILITY FOR WSRE TRANSMITTER SITES

PART 1 - GENERAL

1.01 CONDITIONS AND REQUIREMENTS

- A. The General Conditions, Supplementary Conditions and Division 1, General Requirements, and Section 16050 apply.

1.02 DRAWING

- A. The drawing shows the general arrangement of all conduit, equipment and appurtenances and shall be followed as closely as actual building construction and the work of other trades will permit. The work shall conform to other requirements shown on all of the drawings. Because of the small scale of the drawings, it is not possible to indicate all offsets, fittings and accessories which may be required. The contractor shall investigate the structural and finish conditions affecting the work and shall arrange his work accordingly, providing such fittings and accessories as required to meet such conditions.

1.03 CODES AND STANDARDS

- A. All material and workmanship shall comply with all applicable codes, specifications, local ordinances, and industry standards.
- B. In case of difference between building codes, specifications, state laws and local ordinances, regulations and the Contract Documents, the most stringent shall govern. The Contractor shall promptly notify the Engineer in writing of any such difference.
- C. Non-Compliance: Should the Contractor perform any work that does not comply with the requirements of the applicable building codes, state laws, local ordinances, industry standards and utility company regulations, he shall bear all costs arising in correcting the deficiencies.

1.04 COORDINATION OF WORK

- A. The Contractor shall compare the electrical drawings and specifications with existing conditions and report any discrepancies between them to the Engineer and obtain from him written instructions for changes necessary in the work. Before installation, the Contractor shall make proper provision to avoid interferences in a manner approved by the Engineer. All changes required in the work of the Contractor due to his neglect shall be corrected by the Contractor at his own expense.
- B. Locations of electrical raceways, switches, panels, equipment, fixtures, etc., shall be adjusted to accommodate the work to interferences anticipated and encountered. The Contractor shall determine the exact route and location of each pipe, duct and electrical raceway prior to fabrication.

- C. Installation and Arrangements: The Contractor shall install all materials and equipment to allow access and clearances for equipment operation, maintenance and in compliance with code.

1.05 FEES, PERMITS AND INSPECTIONS

- A. All required fees, permits and inspections for electrical work shall be obtained and paid for by the Contractor.
 - 1. Certificate of Final Inspection: The Contractor shall, upon completion of the work under this section, furnish a certificate of final inspection to the Engineer.

1.06 CUTTING AND PATCHING

- A. The Contractor shall be responsible for all required excavation, cutting, etc., incidental to the work under that Section, and shall make all required repairs thereafter to the satisfaction of the Engineer, but in no case shall the Contractor cut into any major structural element, beam or column without the written approval of the Engineer.

1.07 AS-BUILT DRAWINGS

- A. Maintain one set of blueline electrical prints on site marked to show as-built conditions and installations.

1.08 GUARANTEE

- A. Contractor shall leave the entire system in proper order and shall replace without additional charge all work or material which may develop defects within one year of final inspection and acceptance by the Engineer.

1.11 IDENTIFICATION

- A. Devices: Each panelboard cabinet, safety switch, individual circuit breakers in distribution panel or main distribution switchboard, time clock, motor starter, and the like shall have an identifying nameplate, such as "PANEL L", "FAN EF-1 STARTER". Nameplates: Laminated plastic with 1/4-inch high white engraved letters on black background. Fasten nameplates by 2 rustproof screws.
- B. Conductors: Label each branch circuit in every panel, box, and wireway to indicate the circuit number corresponding with the panel directory. Labels: Self-stick adhesive baked vinyl cloth wire markers. Write on type markers, lettered with indelible ink will be acceptable where stock numbers will not suffice.
- C. Directories: Each panel shall have a typewritten directory mounted on the inside of panel door (power distribution panels shall have engraved nameplates).

1.12 FIRE SAFING

- A. Provide all required fire safing in accordance with accepted UL Standards and in accordance with all applicable code requirements. Boxes in fire walls shall be arranged in accordance with UL requirements.

1.13 EQUIPMENT AND MATERIALS

- A. All materials shall be new and shall bear the manufacturer's name, trade name and the UL label. The equipment to be furnished shall be essentially the standard product of a manufacturer regularly engaged in the production of the required type of equipment, and shall be the manufacturer's latest approved design.
- B. Delivery and Storage: Equipment and materials shall be delivered to the site and stored in original containers, suitable sheltered from the elements. All items subject to moisture or heat damage shall be properly stored in dry and/or heated spaces.
- C. Equipment and materials of the same general type shall be of the same make throughout the work to provide uniform appearance, operation and maintenance.
- D. Protection: Equipment shall be tightly covered and protected against dirt, water and chemical or mechanical injury. At the completion of the work, fixtures, equipment and materials shall be cleaned thoroughly and turned over to the Owner in a condition satisfactory to the Engineer. Damage or defects developing before acceptance of the work shall be made good at the Contractors expense.
- E. Dimensions: It shall be the responsibility of the Contractor to insure that items to be furnished can be properly installed within the space provided which will allow adequate space for operation and maintenance. The Contractor shall make necessary field measurements to determine actual space requirements.
- F. Manufacturer's printed instructions shall be followed completely in the delivery, storage, protection and installation of all equipment and materials. The Contractor shall promptly notify the Engineer in writing of any conflict between any requirement of the contract documents and the manufacturer's directions and shall obtain the Engineer's written instruction before proceeding with the work. Should the Contractor perform any work that does not comply with the manufacturer's directions or such written instructions from the Engineer, he shall bear all costs arising in correcting the deficiencies.
- G. The Contractor shall furnish and install all equipment, accessories, connections and incidental items necessary to fully complete the individual systems in such a manner that each system can be operated, maintained, and serviced by the Owner.
- H. Concrete Equipment Bases and Pads: Provide concrete pads and bases for equipment as indicated.
- I. Supports: The Contractor shall support plumb, rigid and true to line all work and equipment. The Contractor shall study thoroughly all general, structural, mechanical and electrical drawings, shop drawings and catalog data to determine how equipment,

fixtures, etc., are to be supported, mounted or suspended and shall provide extra steel bolts, inserts, pipe stands, brackets and accessories for proper support whether or not shown on the drawings.

- J. Owner furnished contractor installed equipment - as indicated on the drawings certain equipment will be owner furnished contractor installed. These specifications cover all material regardless of whether contractor furnished or owner furnished.

1.14 SUBMITTED DATA AND SHOP DRAWINGS

- A. Materials and equipment schedules shall be submitted as soon as practicable, but not later than thirty days after the date of award of contract, and before commencement of installation of any material or equipment.

PART 2 - PRODUCTS

2.01 CONDUIT

- A. General: $\frac{3}{4}$ " diameter minimum conforming in size to NEC requirements for the number and type of conductors installed.
 - 1. Uniform thickness, smooth circular bore, standard lengths and free of defects.
- B. Rigid Conduit: Hot dipped galvanized including threads conforming to F.S. W-C58, and ANSI Standard C80.1.
- C. Electro-Metallic Tubing: Zinc plated or sheradized, as manufactured by Triangle or Republic Steel Co.
- D. Flexible Conduit: Regular galvanized, 1/2 diameter minimum.
- E. Liquidtight Flexible Conduit: Galvanized with polyvinyl covering.
- F. Plastic conduit, Schedule 40 or 80 PVC only.
- G. Fittings: Manufactured for service required.
 - 1. Steel fittings only for electro-metallic tubing and rigid.
 - 2. Threadless couplings and connectors not permitted on rigid conduit.
 - 3. EMT: Steel compression type or all steel set screw fittings.

2.02 OUTLET JUNCTION AND PULL BOXES

- A. Outlet boxes and covers shall comply with UL Standard No. 514, cadmium or zinc coated.
- B. Boxes with volume greater than 50 square inches shall comply with UL Standard No. 50 hot dip zinc sheet steel.

- C. Minimum box size 4 inches square with plaster frame to suit outlet.

2.03 WIRE AND CABLE

- A. All conductors shall be copper with type THW, THHN or THWN insulation (size #14 thru #6 shall be THHN/THWN only). Conductors for branch circuits shall be #12 minimum with conductors through #10 solid, #8 and above stranded.
- B. All conductors shall be color coded. Wire sizes through #8 shall have factory applied colored insulation. Wires #6 and larger shall have field applied colored tape at all junction boxes and terminal locations. Color coding shall be as follows:

	L1	L2	L3	Neutral	Grd
120/208V 3 ϕ 60Hz	black	red	blue	white	green
277/480V 3 ϕ 60Hz	brown	orange	yellow	grey	green

- C. Minimum #12 AWG branch circuit conductors. Minimum #10 AWG conductors shall be used for all branch circuit runs exceeding 100 feet to first outlet.
- D. Special system conductors shall be in accordance with manufacturer's recommendations.
- E. Fixture wires shall be suitable for fixture operating temperature.

2.04 WIRE CONNECTIONS AND DEVICES

- A. Comply with F.S. W-S-610B for connections.
- B. Connectors:
 - 1. For temperatures to 105 degrees C: Ideal Wing Nut or 3M Scotchloc.
 - 2. For temperatures to 150 degrees C for use in fixtures: Ideal Wire Nut.
- C. Taped Connections:
 - 1. Scotch 33 or slip-knot grey. Fill voids with rubber tape or Scotchfill.
 - 2. Use Burndy or equivalent compression connectors for wire sizes #6 and larger.

2.05 INSTALLATION

- A. Conduit:
 - 1. Rigid Conduit:
 - (a) For exposed (exterior) use.
 - (b) Make up all joints tight with no running threads.
 - (c) Ream inside edge of cut conduit to prevent wire damage during pulling.
 - 2. Electro-Metallic tubing:
 - (a) May be used for all branch circuit system wiring in dry areas above grade within the building.
 - 3. Flexible Metal Conduit:

- (a) Use flexible conduit for the connection of light fixtures in ceiling, electric motors and all equipment subject to vibration.
 - (b) Make connections to equipment having motors with flexible metal conduit; where exposed to weather or moisture, use liquid tight flexible metal conduit, unless otherwise shown.
4. PVC Conduit: PVC conduit may be used for runs in slabs or for exterior underground installation.
 5. MC Cable. MC Cable may not be used.
 6. In slabs on grade having wire mesh reinforcing and no steel bars, install below the vapor barrier.
 7. Use conduit of sizes indicated and required by NEC for number and sizes of conductors indicated. Minimum size shall be 1/2" for branch circuits. Minimum size for communications or fire alarm circuits (unless specifically indicated otherwise) shall be 3/4".
 8. Neatly paint threaded conduit connections with sealant before connecting. Cut conduit with hacksaw and ream smooth to remove burrs. Cutting by any method which alters the cross section of conduit in any way will not be permitted. Keep conduit bends free from dents, kinks and bruises. Protective coating shall be undisturbed. Radii of the bends shall not be less than those stated in current edition of the NEC. Do not use more than four 90 degree bends between outlets or boxes. Avoid trapping of conduit.
 9. Conduit shall be electrically continuous from service equipment to outlets and cabinets. Secure to boxes of sheetmetal construction with on locknut outside and one inside box with reinforced bakelite bushing, O.Z. Gedney Type "A" through 2" and Type "B" for 2-1/2" and larger.
 10. See that each length of conduit has the manufacturer's name, initials, or trademark and the Underwriters' Laboratories Inspection Label thereon.
 11. Where connections are made to motors, not near walls or columns, install a vertical conduit, minimum size 3/4", attached to floor by a floor flange; bring wiring out of this conduit by means of condulets and flexible conduit, and extend to motor junction boxes.
 12. Provide hangers made of durable materials, suitable for the application involved.
 13. Do not use perforated iron for supporting conduit.
 14. Do not support conduit from ceiling system support wires.
 15. Base required strength of supporting equipment and size and type of anchors on the combined weight of conduit, hanger and cables.
 16. Support conduits at intervals not to exceed code requirements.
 17. Use capped bushings to prevent dirt, concrete, moisture, or other foreign matter from entering conduits during construction. Paper, wood or other plugs are unacceptable.
 18. Remove any water from conduit and ducts to avoid freeze damage. Blow out or swab conduit and ducts before pulling wire.
 19. Run exposed conduits parallel with or at right angles to building lines. Where more than one conduit is following a given path, install with uniform distances between each other and with concentric bends, offsets and saddles.
 20. Fasten single runs of conduit installed exposed on walls and ceilings with cadmium-plated malleable iron or pressed steel one hole straps, machine screws, and lead anchors. Suspend single runs of conduit larger than 1-1/2" by 3/8" steel rod and malleable iron hinge hangers. Use 1/4" steel rods for smaller conduit.
 21. Cut necessary openings in concrete, masonry, brick walls, concrete, wood construction, etc., from both sides to affect a neat workmanlike job.

22. Have competent personnel on job during placing of concrete and masonry wall construction to insure proper installation of electrical conduit.
23. Use standard electrical unions for connection conduit where standard couplings cannot be used. Use of running threads will not be permitted.
24. Conduit passing through concrete shall be sealed with concrete grout. Conduit passing through rated walls shall be sealed with concrete grout or drywall cement.
25. Conduit passing through concrete shall be sealed with concrete grout. Conduit passing through rated walls shall be sealed with concrete grout or drywall cement.
26. Where conduit passes through building expansion joints, provide O.Z. Gedney Type "AX", or equal, expansion fittings.
27. Pull a 200 pound test line into conduits left empty.
28. All conduits passing from building to building and conduit sleeves installed below the computer floor shall be interior sealed around cables (including cables installed by others) using suitable cable sealing material.

B. Cable Installation

1. Do not pull conductors into conduits until work which may cause cable damage is completed. Use only approved cable lubricants.
2. Tag all conductors and identify major conduits in or at wireways, panels, pull boxes, motor controllers, cabinets and similar items to assist in future circuit tracing.
3. Provide barriers where required by Code.
4. Independently support pull boxes on the building structure.
5. Do not depend on the conduit system for support.
6. Connection to all fixtures in areas with removable ceiling panels shall be from outlet boxes located above the ceiling with flexible conduit connection to the fixtures. Symbols on drawings and mounting heights as indicated on drawings and in specifications are approximate only. The exact locations and mounting heights must be determined on the job and is shall be the Contractors responsibility to coordinate with all trades and the architectural drawings, to secure the correct installation, i.e., over counters, in or above backsplashes, in block walls and other specific construction features. Back-to-back outlets will not be allowed. Minimum separation between boxes shall be 2 inches.

C. Grounding

1. Ground electrical system in accordance with Article 250, National Electrical Code and local authorities having jurisdiction and the following requirements. Bond to building steel, cold water mains and driven ground rods.
2. All feeders and branch circuit raceways shall contain an insulated green wire.
3. Attach panel ground bars to panel cans and isolate neutral bars.
4. Grounding bushings where required shall be bonded to the panel board ground bus with an insulated conductor sized in accordance with the NEC table for equipment grounding conductors.
5. Provide ground wire sized as per NEC in all PVC conduit.

2.06 TESTS

- A. General: The Contractor shall show by demonstration in service that all circuits and devices are in operating conditions. Tests shall be such that each item of control equipment will function not less than five times.
- B. Test on 600 Volt Wiring: Test all 600 volt wiring to verify that no short circuits or accidental grounds exist. Tests shall be made using an instrument which applies a voltage of approximately 500 volts to provide a direct reading of resistance.
- C. Grounding System Test: Test the grounding system to assure continuity and that resistance to ground is not excessive.

PART 3 - EXECUTION - Not Applicable To This Section

End of Section