

SECTION 27 10 00
COMMUNICATIONS SYSTEM
(Data and Voice)

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Raceway system
- B. Supportive equipment such as grounding and plywood backboards
- C. Empty Communication Outlets
- D. Power requirements

1.2 REFERENCES

- A. SDPBC - School District of Palm Beach County
- B. DOE - The Florida Department of Education
- C. EIA/TIA - Electronic Industries Association/Telecommunication Industry Association
- D. NEC - National Electrical Code (NFPA 70)
- E. UL - Underwriters Laboratories
- F. NEMA - National Electrical Manufacturer's Association

1.3 SYSTEMS DESCRIPTION

- A. Provide materials and labor for complete raceway system and power distribution; including conduits, pull wire, junction boxes, empty outlet boxes, backboards, power receptacles, and grounding for communication and multi-media Instructional Technology program for Data and Voice Systems.
- B. Owner shall furnish and install the fiber optic cables, unshielded twisted pair cables, telephone cables, termination racks, communication outlets, and final terminations of cables.

1.4 ELECTRICAL STANDARDS

- A. Work shall comply with requirements of FBC.
- B. Use electrical products, tested, listed and labeled by an approved testing Laboratory such as UL and comply with NEMA.
- C. Telephone Utility Company is AT&T.
- D. Install service entrance in accordance with Telephone Utility Company's requirements.

1.5 SUBMITTAL

- A. Submit under provisions of Section 01 33 00.

1.6 RELATED WORK

- A. See Division 23 and HVAC Design Criteria for Air Conditioning requirements.
- B. Communication Service Room shall have air conditioning from local AHU for normal business hours and dedicated DX air conditioning for after normal business hours and holidays.
- C. Communication Closet shall have air conditioning from local AHU.

1.7 ALLOWANCES

- A. Provide 20 additional empty communication outlets as directed in field.
- B. Allowance includes purchase, delivery, and installation of empty box, 100' of conduit for each outlet.

1.8 PROJECT RECORD DOCUMENTS

- A. Submit product data under provisions of Section 01 77 00.
- B. Accurately record the location of service entrance conduits and all conduits feeding from the main backboard to each terminal backboard location. Dimension from permanent physical features.

PART 2 PRODUCTS

- 2.1 Plywood backboards shall be 4' x 8' x 3/4" seven A-C grade plywood painted grey.

2.2 See riser diagram on drawings for details.

PART 3 EXECUTION

3.1 INSTALLATION

- A Communication Service Room shall be the entry point for communication cables coming to the facility and the origination point of the communication systems in the facility.
 - 1 The size of Communication Service Room for the elementary school shall be a minimum of 168 SF (12' x 14') and for middle schools/high schools a minimum 320 SF (16' x 20').
- B Use a communication closet on each floor in each building for distribution of communication system to the Communication Outlets in each space.
 - 1 Size of Communication Closet shall be a minimum of 8' wide x 6' deep, with no other systems in this room.
- C Connect each Communication Closet to the Communication Service Room with two-2" minimum size conduits.
- D Connect each communication outlet with one ¾" conduit.
 - 1 Provide one 1" conduit home run to the nearest Communication Closet for each two Communication Outlets.
 - 2 Contractor may connect eight Communication Outlets with one 2" conduit to the Communication Closet.
 - 3 For classroom outlets, fed by an overhead 2" conduit, only one ceiling junction box is required.
- E Install conduits from Communication Outlet to Communication Closet overhead above ceilings and walls.
 - 1 For any approved floor outlet, connect each floor outlet with a 1" home-run conduit.
 - 2 DO NOT install these conduits underground unless approved by School District.
 - 3 Contact Gary Carpentier 561-723-0968.
- F The maximum conduit distance from the Communication closet to the Communication outlet is 250'.
 - 1 Run conduits using the shortest distance possible.
- G Conduit installations shall meet the requirements of Section 26 05 33.
- H Provide manholes, junction boxes and painted plywood backboards.
- I Conduit installation shall not contain more than two 90° bends.
 - 1 Use pull boxes or junction boxes in place of 90° bends.
 - 2 The conduit distance between boxes shall not exceed 125' for above the ceiling conduits.
 - 3 See Section 26 05 33 for boxes.
- J Conceal conduit runs in finished areas from view.
- K Identify communication junction box covers with yellow marking.
- L Provide two-2" conduits from Communication Service Room to 10' outside of building for future use, cap conduits in manhole, and mark "FOR FUTURE COMMUNICATIONS".
- M Terminate overhead conduits installed to the Communication Service Room and Communication Closets on power strut at 9' above finish floor.
- N Provide smooth plastic bushings on conduits that terminate in the Communication rooms (for slab and rack conduits) and at manhole locations, before installing cables.
- O Provide a #6 AWG stranded copper insulated grounding conductor, installed in a 1" conduit (PVC), from CER/Service Entrance backboard and each Communication Closet backboard to the building grounding electrode system, provide buss bar.
- P Install pull wires, 200 lb. minimum, in all empty raceways and secure at each end.
- Q Support conduits, backboards, wiring gutters and outlets under provisions of Sections 16190.

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- R Cash Register Data Outlets: Provide a ¾-inch conduit from the cafeteria manager's outlet to the data backboard location.
 - 1 Provide a ¾-inch conduit from each register to the data backboard.
 - 2 At multi-register locations, provide a 1" conduit back to the data backboard.
 - 3 Contractor may route these conduits in slab.
- S Provide a 125 volts, 20 amps quad receptacle outlet within 12" of Communication Outlet.
- T 125 volts, 20 amps receptacles designated for Communication Systems (noted above) shall be gray color. See Section 26 27 26 for wiring devices.
- U Receptacles for Communication Systems shall be on separate circuits from other loads with maximum of two quad receptacles on each branch circuit.
 - 1 Provided a dedicated neutral on each branch circuit
- V Install Communication Outlets no closer than 5-linear feet and no further than 6-linear feet from another Communication Outlet located on the same wall.
- W Provide two-surge protection type, quad, 125 volts, 20 amp receptacles, and two 125 volts, 30-amp twist-lock receptacles in the Communication Service Room.
 - 1 Provide two-surge protection type, quad, 125 volts, and 20 amp receptacles in each of the Communication Closets.
 - 2 Serve each outlet from a separate branch circuit with dedicated neutral and ground conductor.
 - 3 See details for exact locations for these power outlets.
- X All installations shall be first class, professional, and as judged by the Engineer and the owner.
- Y Owner shall furnish and install communication cabinets/racks.
- Z Install terminal backboards plumb and attach securely at each corner.
- AA Provide one 2" conduit from each telephone terminal backboard to an accessible location above the ceiling, for future use.
- BB Provide a ¾" conduit to the following special purpose communication outlets for the Electric utility meter location, Main Energy Management System cabinet, Main Security cabinet, Main Card Access cabinet, Main Video Surveillance cabinet, Kitchen bell location, and the Elevator equipment location.
- CC Provide a 1" conduit to pay telephone locations.
 - 1 Provide 120-volt power at each pay phone location.
 - 2 Coordinate height of power junction box and telephone outlet with pay telephone vendor.
 - 3 Do not use base pedestal type telephones and surface conduit.
- DD Mark ceiling grid below J-box locations with yellow color tag per Section 26 05 53.
- EE Install an outlet for a telephone bell in the kitchen area and in the serving area, 7' above the finished floor.
- FF Install an outlet for a telephone bell, outside of the P.E. office, in the covered play area for Elementary Schools, at 7' above the finished floor.
- GG Coordinate installation with all trades.
- HH In communication rooms, do not install the light fixtures on top of the center island rack.
- II Provide and install a mule-tape 2500-pound test pull string in each of the service conduit for Bellsouth.
- JJ Floor outlets not allowed.
- KK Cable trays not allowed.
- LL Install vinyl tile flooring in Communication Service Room (CER / MDF).
- MM Install a 1-1/2" conduit from each sign to the nearest data backboard.
- NN Each data backboard requires a quad power outlet at 7' above finish floor.

3.2 DEMONSTRATION AND TRAINING

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- A Training of the Owner's operation and maintenance personnel is required in cooperation with the Owner's Representative.
 - 1 Provide competent, factory authorized personnel to provide instruction to operation and maintenance personnel concerning the location, operation, and troubleshooting of the installed systems.
 - 2 Schedule the instruction shall in coordination with the Owner's Representative after submission and approval of formal training plans.
 - 3 Refer to Section 01 91 00, Commissioning, for further contractor training requirements.
- B Provide demonstration and training for all types of communications systems installed in this project.

END OF SECTION