SECTION 16905
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. 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 Florida Building Code.
   B. Electrical products, which have been tested, listed and labeled by an approved testing Laboratory such as UL and shall comply with NEMA.
   C. Electrical Standards: Provide electrical products, which have been tested, listed and labeled by Underwriters Laboratories and comply with NEMA standards.
   E. Install service entrance in accordance with Telephone Utility Company's requirements.

1.5 SUBMITTAL
   A. Submit under provisions of Section 01300.

1.6 RELATED WORK
   A. See Division 15000 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.
The School District of Palm Beach County
Project Name:
SDPBC Project No.:

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 01700.
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. Size of Communication Service Room for the elementary schools shall be minimum 168(12' x 14') square feet, and for middle schools/high schools shall be minimum 320 (16' x 20') square feet.
B Use a communication closet on each floor in each building for distribution of communication system to the Communication Outlets in each space. 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. Two Communication Outlets shall be provided with one 1" conduit home run to the nearest Communication Closet. Eight Communication Outlets may be connected with one 2" conduit to the Communication Closet. For classroom outlets, fed by an overhead 2" conduit, only one ceiling junction box is required.
E Conduits from Communication Outlet to Communication Closet shall be installed overhead above ceilings and walls. For any approved floor outlet, each floor outlet shall be connected with a 1" home-run conduit. DO NOT install these conduits underground unless approved by School District. (Contact Gary Carpentier 561-723-0968)
F The maximum conduit distance from the Communication closet to the Communication outlet is 250'. Conduits shall be run using the shortest distance possible.
G Conduit installations shall meet the requirements of Section 16111.
H Provide manholes, junction boxes and painted plywood backboards.
I Conduit installation shall not contain more than two 90° bends. Pull boxes or junction boxes shall be used. The conduit distance between boxes shall not exceed 125' for above the ceiling conduits. See Section 16130 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 Overhead conduits installed to the Communication Service Room and Communication Closets shall be extended 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.

O A #6 AWG stranded copper insulated grounding conductor, installed in a 1inch conduit (PVC), shall be provided from CER/Service Entrance backboard and each Communication Closet backboard to the building grounding electrode system.

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.

R Provide raceway for the cash register data outlets: Extend a ¾" conduit from the Communication Outlet in the Kitchen Managers’ Office to the serving line first cash register outlet, loop to remaining cash register outlets (if more than one), thereafter extend and terminate conduit in a junction box located above ceiling within the cafeteria.

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 16141 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. Provided a dedicated neutral on each branch circuit

V Communication Outlets shall be installed 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 30-amp twist-lock receptacles in the Communication Service Room. Provide two-surge protection type, quad, 125 volts, and 20 amp receptacles in each of the Communication Closets. Each outlet shall be served from a separate branch circuit with dedicated neutral and ground conductor. See details for exact locations for these power outlets.

X All installation shall be first class and professional and shall be judged by the Engineer and

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. Provide 120-volt power at each pay phone location. Coordinate height of power junction box and telephone outlet with pay telephone vendor. Base pedestal type telephones and surface conduit are not permitted.

DD Mark ceiling grid below J-box locations with yellow color under the provisions of Section 16195.

EE Install an outlet for a telephone bell outside the cafeteria manager's office in the kitchen 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.

END OF SECTION