

~~~~~ **PROJECT NOTE** ~~~~~

ARCHITECT/ENGINEER OF RECORD IS RESPONSIBLE FOR REVIEWING THIS SPECIFICATION SECTION IN DETAIL FOR COORDINATION WITH THE PROJECT SCOPE OF WORK.

ALL "PROJECT NOTE" TEXT IS TO BE REMOVED FOLLOWING REVIEW OF THE CONTENT OF EACH NOTE BY THE ARCHITECT OF RECORD/ENGINEER OF RECORD.

EDIT THE DOCUMENT FOOTER TO INCLUDE THE PROJECT NAME AND NUMBER.

EDIT THE DOCUMENT HEADER TO INDICATE THE "AOR PROJECT ISSUE" DATE. THE "CPS CONTROL" DATE SHOULD NOT BE EDITED.

ANY MODIFICATIONS TO THE TECHNICAL STANDARDS IN THIS SECTION - INCLUDING THE REMOVAL OR ADDITION OF MANUFACTURERS - MUST BE APPROVED BY CPS. REQUESTS FOR MODIFICATION ARE TO BE SUBMITTED TO THE DESIGN MANAGER DURING THE DESIGN PHASE FOR REVIEW AND APPROVAL.

~~~ **END OF PROJECT NOTE** ~~~

SECTION 27 05 53
IDENTIFICATION FOR COMMUNICATION SYSTEMS

~~~~~ **PROJECT NOTE** ~~~~~

UTILIZE THE TERM "IDF" ONLY FOR PROJECTS FEATURING A SEPARATE IDF ROOM.

~~~ **END OF PROJECT NOTE** ~~~

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Communications identification.
 - 1. Cabling identification products.
 - a. Print Pockets.
 - b. Asset Tags.
 - 2. Communications systems identification(s) methods and schemes.
 - a. Labeling Hierarchy.
 - b. Cable Identification.
 - c. MDF/IDF Room Identification.
 - d. Pathway and Space Identification.
 - e. Equipment Identification.
 - f. Concentrator Enclosure Identification.
 - g. Concentrator Enclosure Warning Sign.
 - h. Fiber, Data, Voice, Coax, and HDMI Cable Identification.
 - i. Termination Location Identification.
 - j. Conduit Pathway Identification.
 - k. Identification of Communications Grounding and Bonding System Components.
 - l. Cable Schedule.

1.02 DEFINITIONS

- A. Refer to Section 27 05 03 - Communications General Requirements for definitions.

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1.03 REFERENCE STANDARDS

- A. City of Chicago Building Code - Chicago Construction Codes, Title 14B; Current Edition.
- B. Chicago Electrical Code - Municipal Code of the City of Chicago, Building/Electrical Code Requirements; 2018.
- C. TIA-606-B - Administration Standard for Telecommunications Infrastructure; Rev B, 2012 (with Addenda; 2015).
- D. UL 969 - Marking and Labeling Systems; Current Edition, Including All Revisions.

1.04 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.
- B. Product Data: Provide manufacturer's standard catalog pages and data sheets for each type of product identified.
- C. Shop Drawings: Show compliance with requirements on isometric schematic diagram of network layout, showing cable routings, telecommunication closets, rack and enclosure layouts and locations, service entrance, and grounding, prepared and approved by BICSI Registered Communications Distribution Designer (RCDD).
 - 1. System Labeling Schedules: Electronic copy of proposed labeling schedules and identification plates, in software and format selected by the Board.
 - 2. Cabling administration drawings and printouts.
 - 3. Provide one copy to CPS ITS Sr. Infrastructure Manager for review and approval.
- D. Evidence of qualifications for installer.

1.05 QUALITY ASSURANCE

- A. Installer Qualifications: Comply with requirements of Section 27 05 03 - Communications General Requirements for installer qualifications as noted in "Quality Assurance" Article.
- B. Electrical Components, Devices, and Accessories: Listed, classified, and labeled as defined in ANSI/IEEE 802.7, by a qualified testing agency, and marked for intended location and application.
- C. Comply with City of Chicago Building Code.

1.06 DELIVERY, STORAGE, AND HANDLING

- A. Comply with requirements of Section 27 05 03 - Communications General Requirements for delivery, storage and handling.

1.07 WARRANTY

- A. Comply with requirements of Section 27 05 03 - Communications General Requirements for system warranty and application assurance.

PART 2 PRODUCTS

2.01 IDENTIFICATION PRODUCTS

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following manufacturers:
 - 1. Brady Corporation
 - 2. Brother Printer
 - 3. 3M
 - 4. Panduit Corporation
- B. Cable markers for the actual cables - shall be self-adhesive, self-laminating mechanically printed with a clear protective laminating over wrap or protective heat-shrink tubing. These cable markers shall be placed directly on the cable within 10-inches of both ends of the cable.
- C. Labels for the faceplates, patch panels or devices where cables terminate - the label shall be self-adhesive and shall be from one of the four manufacturers above. The label shall be white in color with Ariel font, no smaller than 9 point.

- D. Hard tag shall be metal or hard plastic and shall be attached to the device with a cable tie. The hard tag can be embossed, engraved or an adhesive label can be placed on the hard tag. Cut the excess end of the cable tie off and dispose of it in the trash.
- E. The contractor shall utilize women's clear nail polish on all labels where there is a possibility of the label falling off the faceplate or device that it is adhered to.
- F. Comply with TIA-606-B and UL 969 for labeling materials, including label stocks, laminating adhesives, and inks used by label printers.

2.02 PRINT POCKETS

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following manufacturers:
 - 1. Milbank Mfg. Company, part no. A-LPPOCKET
 - 2. Hoffman, a Pentair Company, part no. ADP1
- B. Adhesive-backed pocket mounted to any enclosure flat surface. Thermoplastic pockets in dark gray color with cutaway areas for inspection of contents.

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BE SURE TO APPLY "ASSET TAGS" ARTICLE IF PROJECT IS PERFORMED UNDER E-RATE PROCUREMENT.

~~~ END OF PROJECT NOTE ~~~

2.03 ASSET TAGS

- A. Manufacturers: Asset tags are provided by the CPS Office of Information and Technology Services. Contact ITS and coordinate information and quantity requirements with the ITS Sr. Infrastructure Engineer for the project.
- B. When equipment is deployed in the school, the Asset Tag numbers must be recorded along with equipment and school information, including:
 - 1. School Name and Unit Number
 - 2. Equipment Manufacturer
 - 3. Equipment Model Number
 - 4. Equipment Serial Number
 - 5. Physical Location of the equipment within the school: Room number if possible, otherwise a description of the room's location and use that will allow Board personnel unfamiliar with the school to find the equipment easily (for example, "2nd floor south Janitor's closet next to the gym" would be acceptable)
- C. All information described above must be delivered to the Board Representative in either Microsoft Excel or in a text file using comma separated values, (.csv) format as well as paper copies where the Board requires.

PART 3 EXECUTION

~~~~~ PROJECT NOTE ~~~~~

INCLUDE "COMMUNICATIONS DEMOLITION" ARTICLE FOR EXISTING BUILDINGS; DELETE "COMMUNICATIONS DEMOLITION" ARTICLE FOR NEW CONSTRUCTION.

~~~ END OF PROJECT NOTE ~~~

3.01 COMMUNICATIONS DEMOLITION

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- A. Comply with requirements of Section 27 05 03 - Communications General Requirements for demolition of communications systems.

3.02 EXAMINATION

- A. Verify that surfaces are clean before installing labels. When in doubt wipe with alcohol swab prior to applying label.
- B. Install labeling in accordance with label manufacturers' instructions and requirements related to preparation of surface area.

3.03 LABELING HIERARCHY

- A. Labeling is in a "From - To"- hierarchy with the greater significance room being the "From" and the less significance room being the "To".
- B. When labeling communications cabling and pathways, always begin the labeling scheme with the room or location of greater significance. Ex: MDF, IDF, Concentrator Enclosure designation.
- C. Consult with CPS ITS Sr. Infrastructure Manager for clarifications regarding application of hierarchy to the project. Hierarchy relationships that must be adhered to include, but are not limited to:
 1. Cabling and/or pathways between the MDF and any IDFs must list the MDF first.
 2. Cabling and/or pathways between the MDF and concentrator enclosures must list the MDF first.
 3. Cabling and/or pathways between an IDF and concentrator enclosures must list the IDF first.
 4. Cabling and/or pathways between a concentrator enclosure and the faceplate port (including WAP) must list the concentrator enclosures first.
- D. Labeling must be exactly the same on both ends of the conduit, cable, and faceplate port.
- E. Labeling for all communications infrastructure elements shall be consistent across the installation. Coordinate with requirements for labels and identification defined in Contract Drawings.

3.04 CABLE IDENTIFICATION

- A. Cable labels shall be installed on the cable within 4-inches of each end of the cable, and in addition where cable is accessible in junction or pull boxes. The label on the cable shall match exactly what the label is on the patch panel port and the workstation faceplate.
- B. Identification within Connector Fields in MDF, **[IDFs,]** and concentrator enclosures: Label each connector and each discrete unit of cable-terminating and connecting hardware.

3.05 MDF/IDF ROOM IDENTIFICATION

- A. On the exterior and interior face of the door to the MDF **[and for each IDF]**, provide a vitreous enameled metal sign or rigid polyethylene, red on white, reading "MDF" **[or "IDF" respectively]**.
- B. On each interior wall of the MDF **[and each IDF]**, provide a vitreous enameled metal sign or plastic sign, red on white, reading "MDF Room. **[(or "IDF Room" respectively)]** No Storage Permitted." Signs shall be mounted at clearly visible locations within the rooms or on the inside of doors where wall space within the room is not available.

3.06 PATHWAY AND SPACE IDENTIFICATION

- A. Label each conduit coming into the MDF **[or IDF]** utilizing one of the following methods:
 1. Write legibly with a permanent marker (wide Sharpie) on each conduit near the end of the conduit or at a location that is easily read.
 2. Provide 3/4 inch wide, embossed label with the designations in 5/16-inches high letters.
 3. Conduits that home run from one location (room, roof, outside) shall list the location and orientation within space (north, east, south or west walls).

4. When multiple conduits terminated in a junction box and one conduit comes into the MDF [or IDF], label the conduit and cover plate of the junction box (of consolidated junction box) with the same number.
- B. Minimum of two (2) labels, one at each end of the conduit pathway and any exposed points (i.e. Screw cover boxes, pull points, etc.).
- C. Exposed conduit raceways do not need to be labeled unless transitioning into or out of an inaccessible space.
- D. Use voltage markers or color-coded bands to identify systems other than normal power system for accessible conduits at maximum intervals of 20 feet. This is coordinated with 26 05 53 Identification for Electrical Systems
 1. Color-Coded Bands: Use field-painting or vinyl color coding electrical tape to mark bands 3 inches wide.
 2. Color Code:
 - 1) Emergency Power System: Red.
 - 2) Fire Alarm System: Red.
 - 3) Control Wiring: Green and red.
 - 4) IT Sytems:
 - (a) Provide blue colored conduit (not colored band) for IT system raceway. Conduit to be in accordance with Section 26 05 33.13 - Conduit for Electrical Systems systems.
 - (1) Traditional Data: blue cable
 - (2) Wireless Access Point: blue cable
 - (3) IX Aiphone: blue cable
 - (4) BAS: blue cable
 - (b) Printers: blue cable
 - (1) Smartboards: blue cable
 - 5) Mechanical and Electrical Supervisory System: Green and blue.
 - 6) Security System: Blue and yellow.
 - (a) Cameras: purple cable
 - 7) Fire-Suppression Supervisory and Control System: Red and yellow.
 - b. Field-Painting: Comply with Section 09 91 23 - Interior Painting and 09 91 13 - Exterior Painting.
 - c. Vinyl Color Coding Electrical Tape: Comply with Section 26 05 19 - Low-Voltage Electrical Power Conductors and Cables.

3.07 EQUIPMENT IDENTIFICATION

- A. Label each Patch Panel (Fiber and Copper) with a 3/4-inch adhesive label; letters will be 5/16-inches high. Label shall reference the numerical designation and equipment designation. Labels shall be placed on the front and rear of equipment adjacent to the top left hand side of the equipment at the rack. Label shall not cover any existing labels, asset tags, or vents.
- B. It is the responsibility of the Architect/Engineer of Record and the Contractor to verify requirements regarding and pertaining to the ITS Asset tags type and installation procedures.

3.08 CONCENTRATOR ENCLOSURE IDENTIFICATION

- A. Coordinate concentrator enclosure type with Contract Drawings. Utilize the following identification scheme to label each type of concentrator enclosures where (room #) is the room in which the CE is located:
 1. Administrative Concentrator: "ACE-(room#)".
 2. Library or Lab Concentrator: "LCE-(room#)".
 3. Quad Classroom Enclosure: "QCE-(room#)".

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3.09 CONCENTRATOR ENCLOSURE WARNING SIGN

- A. On the exterior of each concentrator enclosure door, provide the following:
 - 1. White label with red core laminated phenolic nameplate with 3/8-inch lettering etched through the outer covering, reading "DO NOT OBSTRUCT". Sign size shall be 5 inches high by 7 inches wide.
 - 2. White label with red core laminated phenolic nameplate with 3/8-inch lettering etched through the outer covering, reading the room number that the concentrator is located in. The label shall be installed in the upper right corner of the enclosure.
 - 3. Contractor's business information must not be placed on the sign.
 - 4. Each concentrator shall be labeled with the type of concentrator and the room number on the top right side of the enclosure with a 3/4-inch adhesive label; letters will be 5/16-inches high white background with black lettering. Example: QCE-215.

3.10 FIBER, DATA, VOICE, COAX, AND HDMI CABLE IDENTIFICATION

- A. Each Fiber Optic cable, Copper Category cable, Coax and HDMI cable shall be labeled within four (4) inches of termination, and at all accessible points in concentrators, manholes, hand holes, and pull boxes. Labels shall be self-sticking wire markers as defined in Part 2.
- B. Each cable shall be assigned a unique identification number and shall be recorded on a cable schedule showing the identification number and what the purpose of the cable is for.
- C. The basis of labeling cables and conduits is to always state "From - To" on each of the cables and then, in addition, give the cable or conduit a sequential unique identification number.
- D. Connecting the cable to end hardware - or - ports in a patch panel or ports in a faceplate shall be identified using the following system:
 - 1. Room numbers shall be utilized to depict the **"From - To"**. The contractor shall use these room numbers (when available) to state where the cable is **"From"** and where it is going **"To"**. The MDF room shall always be stated first and the end location room number shall always follow then a unique identification number. If there is no room number assigned to the MDF **[or IDF]**, the MDF **[or IDF]** designation shall be all that is required.
 - 2. From the MDF **[or IDF]** room cables are home run to individual rooms within the building.
 - 3. Within the individual rooms cables are terminated in Concentrators Enclosures and/or faceplates ports.
 - 4. The types of cables that are home run from the MDF **[or IDF]** to the room are:
 - a. High pair count Cable (25 pair)
 - b. RG 6 Coaxial Cable (MMTV)
 - c. Fiber Optical Cable
 - d. Category 5e Cable (Voice) - The individual voice cables do not terminate in the enclosure, but use the enclosure as a pass thru from jack location to MDF **[or IDF]**.
- E. HDMI cables between Teacher Station and Overhead Projector shall be labeled:
 - 1. Teacher Station end of HDMI cable shall be labeled "To Overhead Projector."
 - 2. Projector end of HDMI cable shall be labeled "To Teacher Station."
- F. HDMI cables between Teacher Station and Smartboard / Short Throw Projector shall be labeled:
 - 1. Teacher Station end of HDMI cable shall be labeled "To Smartboard."
 - 2. Projector end of HDMI cable shall be labeled "To Teacher Station."

3.11 TERMINATION LOCATION

- A. The Category 5e cables that are home run from the MDF **[or IDF]** to the individual faceplate within a room are used for telephone. Voice cables shall have a 'V' designation before the unique number. Labeling Example: MDF-115-V01.
- B. The High pair count cables (25 pair) that are home run from the MDF **[or IDF]** to the room concentrator is terminated on a wall mount 110 block in the MDF **[or IDF]** and then terminated

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on a rack mount 110 block in the concentrator. Because space is limited on the 110 block the contractor shall place a brother label around the 25 pair cable itself. The label has to be in clear view and not behind other cables. As an example, from the MDF or IDF to the QCE the label on the cable shall read "QCE115-115-V02. The in the QCE the label would read 115-V02.

- C. The Fiber Optic Cables (6 strand) are home run from the MDF [or IDF] to the concentrator is terminated on both ends in a rack mount Fiber Optic Patch Panel. Labeling Example: MDF-115-01.
- D. The RG6 Coax cables are home run from the MDF [or IDF] to the individual faceplate within each room. Labeling Example: MDF-115-01.
- E. The Category 6A cables for data shall be terminated on a patch panel in closest Concentrator Enclosure. If data is near MDF [or IDF], then can be terminated on patch panel in rack. Data cables shall have a 'D' designation before the unique number. Labeling Example: QCE115-115-D01. The first number "D01" shall begin at the teacher's station, and then proceed around the room in a clockwise rotation with increasing numbers, D02, D03 and so forth. If there is no teacher station in the room the numbering will begin at the door and continue clockwise around the room.
- F. The Category 6A cables for WAP shall be terminated on a patch panel in closest Concentrator Enclosure. If WAP is near MDF [or IDF], then can be terminated on patch panel in rack. WAP cables shall have a 'WAP' designation before the unique number. Labeling Example: QCE115-115-WAP1. WAP cables located in a hallway/corridor shall have a 'H' designation after the room number. Labeling Example: QCE215-200H-WAP1.
- G. The Category 6A cables for IP CCTV cameras shall be terminated on a patch panel in closest Concentrator Enclosure. If camera is near MDF [or IDF], then can be terminated on patch panel in rack. Data cables shall have a 'C' designation before the unique number. Labeling Example: QCE115-115-C01.
- H. Administration of the individual jack locations will be used for local tracking or tracing of the patch panel termination points. At Intercom Admin station jack, faceplate shall be labeled 'INTERCOM 1' in a sequential number scheme. At the other end of the Intercom 1 station, the patch panel shall be labeled 'IC1'.
- I. Aiphone system shall be labeled at the master station faceplate, door station and patch panel. At Aiphone master station jack, faceplate shall be labeled 'AIPHONE 1' in a sequential number scheme. At the doors, the Aiphone jack shall be labeled AI-D#, with the appropriate door designation number. At the patch panel, master station connection shall be labeled 'AI-M1' and door connections shall be labeled 'AI-D#'.
- J. In classrooms, the sequential unique numbering scheme shall begin at the teacher station and continue in a clockwise rotation around room. In all other rooms, the sequential unique numbering scheme shall begin at the main door and continue in a clockwise rotation around room, then ceiling, then floor.

3.12 CONDUIT PATHWAY IDENTIFICATION

- A. Conduit labels shall be made adhesive and a minimum of 3/4 inch wide, embossed with the designations in 5/16-inch high letters (numbers placed in 2 locations for all spaces and on all pathways at both ends) and legibly written with a permanent marker.
- B. Minimum of two (2) labels, one at each end of the pathway and any exposed points (i.e., screw cover boxes, pull points, etc.).
- C. Exposed raceways do not need to be labeled unless transitioning into or out of an inaccessible space. When necessary, raceway designation will be (RW).
- D. All conduit pathways shall be identified with a sequential numbering to designate locations for the origin and the end of the pathway.
- E. Conduit Pathways labels shall follow the hierarchy.

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- F. Each conduit shall have a "From - To" room number with an individual unique number for the conduit. The origin of the conduit shall always be listed first. Examples:
 - 1. Conduit leaving MDF and ending at classroom concentrator 232:
 - a. Conduit label shall read "MDF-QCE232"
 - b. Room of Primary Significance = MDF (Main Distribution Frame) - Room of Primary Significance = QCE232 Quad Classroom Enclosure Room 232).
 - 2. Telecommunications service entrance from the main service entrance to the MDF:
 - a. Conduit label shall read "MDF-TCN"
 - b. Room of Primary Significance = MDF (Main Distribution Frame) - Conduit Identification = TCN (Telecommunications service entrance).
 - G. When multiple rooms of secondary significance are combined together (Branched off) within the same common conduit, leaving the room of significance, each label will be attached to the common conduit and Identified on a spreadsheet in the enclosure pockets and the MDF binder. Example:
 - 1. MDF-SCE256
 - 2. MDF-TCE254
 - H. When multiple conduits are extended from the MDF to a common location, a distinction is to be made between the conduits. Example:
 - 1. Two conduits from MDF to the Telecommunications Service Entrance:
 - a. Conduit label shall read "MDF-TCN-CN1 (2)"
 - b. Room of Primary Significance = MDF (Main Distribution Frame) - Conduit Identification = TCN (Telecommunications service entrance) - Conduit Identification = CN1 (Conduit # 1).
 - 2. If going from MDF room to room number 115 and there are 3 different conduits going from the MDF to room 115 the labels shall read:
 - a. MDF-115-01
 - b. MDF-115-02
 - c. MDF-115-03
 - I. For ALL clarifications on Media and Equipment administration, contact the Office of Information & Technology Services (ITS).
- 3.13 IDENTIFICATION OF COMMUNICATIONS GROUNDING AND BONDING SYSTEM COMPONENTS
- A. Tags shall be adhesive, 3/4-inch wide and be embossed with the designations in 5/16-inch high black letters and numbers on white or clear background.
 - B. Utilize the following abbreviations to label each type of component:
 - 1. Telecommunications Main Grounding Bus bar: TMGB
 - 2. Telecommunications Grounding Bus bar: TGB
 - 3. Telecommunications Bonding Backbone : TBB
 - 4. Equipment Bonding Conductors: EBC
 - 5. Telecommunications Bonding Conductors to the main electrical service equipment: TBC
- 3.14 CABLE SCHEDULE
- A. Concentrator Enclosures: Provide a type written directory of concentrator enclosure types and room numbers. Data port ID numbers and voice port ID numbers shall be identified with the hierarchy listed. Provide information on 8 ½ by 11 inch paper placed in a print pocket on the inside of the door of the concentrator, vertical centerline of doors (do not cover vents) and MDF binder.
 - B. MDF [IDF] Post in prominent location in MDF,[in each IDF]. List incoming and outgoing cables and their designations, origins, and destinations. Provide information on 8 ½ by 11 inch

paper. Provide in protective print pocket installed on interior door of MDF [and each IDF]. Furnish an electronic copy of final comprehensive schedules for Project.

- C. Provide photographs of the completed concentrator enclosures with all active and passive components included with the typewritten directories of the concentrator's. Photographs shall be included with documents in the concentrator print pockets and also in a three ring binder at the MDF.
- D. E911 Compliance: Contractor to provide CPS ITS with an electronic copy of floor plans to include all voice jacks with their respective jack numbers indicated. VISIO is the desired format to be used.

3.15 CLEANING

- A. Comply with requirements of Section 27 05 03 - Communications General Requirements for cleaning.

3.16 COMMISSIONING AND DEMONSTRATION

- A. Comply with requirements in Section 27 05 03 - Communications General Requirements for performance tests, inspections, correction of deficiencies, and preparation of test and inspection reports.

END OF SECTION