SECTION 27 05 53

IDENTIFICATION FOR COMMUNICATIONS SYSTEMS

BASED ON DFD MASTER SPECIFICATION DATED 09/03/24

Notes to A/E:

This section has been written to cover most (but not all) project conditions that you will encounter. Depending on the project, you may need to add material, delete items, or modify what is currently written.

Edit all areas as applicable to meet the requirements of the project. Common options or features recognized by the DFD, or items where A/E input is needed are enclosed in [brackets] and/or <less-greater brackets>.

Editing instructions are included throughout the document (italic text; red if viewed/printed in color). These instructions should be hidden or deleted for printing. Text can be hidden by modifying the MS-WORD Style “A/E Instructions” to use “Hidden Text” as part of the Font type. To display Instructions formatted as “Hidden Text”, configure MS-Word File Options /Display to “Show” Hidden Text on Screen.

The document is structured to automatically update the Table of Contents. You should confirm that changes to the document outline are reflected in the TOC.

Revision History:

In the on-line “DFD Document Library” under “Master Specifications/Design Guidelines / 27 – Communications” see “Div. 27 Revision History”.

1. GENERAL

Applicable provisions of Division 0 and 1 shall govern work of this Section.

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Scope

This Section describes the general, product and execution requirements relating labeling of all communications cabling, terminations and related sub-systems for the Project.

Unless specifically included in this Section, requirements for labeling of pathway items – Junction and Pull Boxes, Communication Conduit, Surface Raceway, and Cable Tray – are covered in the respective Division 26 sections covering those items.

Provide all labeling as detailed in this and related Sections.

Related Work

Section 26 05 53 - Identification for Electrical Systems

Section 26 05 26 - Grounding and Bonding for Electrical Systems

Section 27 10 00 - Structured Cabling

References

ANSI/TIA-606-B - Administration Standard for Telecommunications Infrastructure

Include the following for UW Madison-campus. Otherwise Delete.

University of Wisconsin – Madison campus Technical Guidelines; <https://cpd.fpm.wisc.edu/technical-guidelines/>; Division 27 - Communications

Submittals

Prior to labeling of cabling, connectivity, hardware, etc., provide samples of all label types planned for the Project.

Samples shall include the intended lettering type(s) and sizes to be used.

Mount samples on 8 1/2” x 11” sheets and mark to indicate their proposed use. Submit scanned image(s) of the mounted samples.

1. PRODUCTS

General

All labels shall be permanent, and machine generated. NO HANDWRITTEN OR NON-PERMANENT LABELS ARE ALLOWED unless specifically exempted by the language of this Section.

Labels and markings shall be physically and chemically resistant to damage that would affect readability.

Embossed tape will not be permitted for any application.

Labels shall match hardware layout and design and shall be as large as possible while fitting properly.

Refer to Part 3 for labeling formats and content.

Use of installing company logo on any labeling is not permitted.

*Exception: Where included for warranty and/or maintenance purposes, such labeling is acceptable.*

Equipment Room and Fittings

Confirm Agency requirement for labeling of this type. If the agency has no such requirements, it is acceptable to delete and indicate “Not applicable to this project”.

Backboard

Adhesive Label or Stencil.

Character height shall be 2-inch (minimum).

Equipment Racks and Cabinets

Adhesive Label.

Character height shall be 1-inch (minimum).

Equipment Enclosures

Adhesive Label.

Character height shall be 1-inch (minimum).

Pathways

General

Labeling and identification of communications-related boxes and conduit is covered in specification Section 26 05 53 – Identification for Electrical Systems.

Innerduct

Label shall be a durable, YELLOW plastic tag that reads, “CAUTION FIBER OPTIC CABLE” and includes blank spaces for adding information about the cable(s) contained within the innerduct.

Tag shall incorporate holes/slots for use in securing to innerduct using self-locking ties.

Cable and Termination Hardware

Cable Labels

Labels shall be Wrap-around, adhesive type or – for Inter-Building Backbone Cables only – plastic label that is secured to the cable.

Flag type labels are not allowed.

Wrap-around Labels shall be:

* White Vinyl or other appropriate substrate and incorporate a clear lamination that, when label is wrapped around cable, covers printed part of label.
* Of adequate size to accommodate circumference of cable(s) being marked and properly self-laminate over full extent of printed area of label. Labels on larger cables (e.g., Copper Backbone) may be wrapped with clear non-removable tape.

Equipment Outlet

Equipment Outlet labels that are placed in recessed label holders shall be white paper on which outlet information is added.

Modular Patch Panel

Paper Inserts integral to patch panel, Adhesive labels or factory-screened numbering.

Fiber Optic Patch Panel

Paper Inserts integral to patch panel, Adhesive labels or factory-screened numbering.

Termination Blocks

Labels for 110-type Termination Blocks shall be paper inserts and be color-coded to indicate the block’s place in the cabling hierarchy (backbone, horizontal, etc.). Refer to Part 3 for insert colors.

Systems

Refer to applicable specification section for system-specific labeling requirements.

Miscellaneous

Add any miscellaneous labeling requirements applicable to the project.

Where an Equipment Outlet or plug-terminated cable is concealed above a suspended ceiling (e.g., for a Wireless Access Point or Security camera), provide a marking on the ceiling to identify such a location. Coordinate with agency to determine preferred identification method.

1. EXECUTION

General

Clean surfaces before attaching labels with the label manufacturer’s recommended cleaning agent.

Install labels firmly as recommended by the label manufacturer.

Install labels square and neatly on all equipment.

Position labels as to be visible and not obscured by termination hardware or other cabling.

Lettering shall be 10-point or larger unless noted otherwise.

Equipment Room and Fittings

General

Edit to include all rooms as applicable to the project. Designator should be text or numerical indicator of room to be used in labeling.

Identifier for communications equipment rooms to be used in labeling shall be as follows:

Entrance Room [Insert Designator Here]

Main Cross-Connect (MC) [Insert Designator Here]

Telecommunications Room (TR) [Insert Designator Here]

Telecommunications Enclosure (TE) [Insert Designator Here]

Telecommunication Room identifiers shall be unique in each building.

If the user agency/campus has an existing labeling system, insert it here instead of using the following paragraphs. If the agency/campus does not have an existing labeling system, then use the following generic labeling system.

Backboard

Label Backboards with room designator.

Position label on wall adjacent to entry door.

Equipment Racks and Cabinets:

Edit for the particulars of the Site.

Label each Equipment Rack and/or Cabinet with [a unique alpha character starting at “A”.] [a unique identifying code as follows: <ADD APPLICABLE TEXT>]

Position labels at top of rack. Label may be center, left or right for best visibility.

Equipment Enclosures:

Label each Equipment Enclosure with designation for Telecommunications Enclosure.

Pathways

General

Labeling and identification of communications-related boxes and conduit is covered in specification Section 26 05 53 – Identification for Electrical Systems.

Innerduct

Label exposed innerduct containing fiber optic cable. This includes areas where the innerduct is (1) Installed in risers, tunnels or trays, (2) in each maintenance hole, hand hole and pull box and (3) in equipment rooms. Space labels at 25-foot intervals (maximum) in a tunnel or cable tray installation. Adjust labeling interval to ensure that tags are visible.

Mark Label with:

* Fiber Count
* Cable Designation as defined for Backbone Cables.

Hand lettering is acceptable on this tag, using an indelible ink.

Secure the tag to the innerduct(s) using self-locking ties.

Horizontal Cable and Termination Hardware

General

Label all Equipment Outlets, Patch Panels, Termination Blocks, and Cables.

The A/E is responsible for developing bid drawing(s) as required showing samples of how telecommunication outlets and cables are to be labeled.

This is inclusive of each voice, data, video, or fiber optic outlet, or any configuration thereof, as identified on the Drawings.

Label each component using a unique code identifying the link.

Equipment Outlet

Equipment Outlet identification shall be based on and result in a logical numbering sequence in each Work Area. Labeling plans that result in random EO numbering are not acceptable.

Label Equipment Outlets on the faceplate and, if applicable, on the base or frame of the EO which is permanently attached to its mounting.

Where outlet faceplates incorporate recessed label holders, labels shall be positioned beneath clear plastic covers that are part of the faceplate assembly. Where no such label holders are present (e.g., on existing to remain outlets or wall-mounted telephone-only outlets) protect the faceplate labels with a clear over-laminate.

Labels shall be White background with Black lettering. Lettering size shall be as large as practicable (up to 16-point) to fit properly on the outlet label. No lettering shall be smaller than 12-point.

The following (2) labeling formats are for information only. Verify requirements with User Agency for each project. If the user agency has no established labeling format, use Format Option 1.

Edit the example labels to include the format and designators applicable to the project.

It is acceptable to include formatting directions on the project drawings. If so, add the reference to the drawings and delete the formatting text included in this article..

The format of the Equipment Outlet identifier shall be as follows:

[Format Example 1. In large installations where patch panels occupy multiple racks in a Telecom Room, adding a Rack designator may be appropriate. Use of an “Application” Identifier may be desirable. Confirm with agency.]

HC-P##X

where: HC = Identifier for Horizontal Cross-connect serving that location

P = Designation for the Patch Panel on which cable is terminated at the HC; [a number starting at “01”] [an alpha character starting at “A”]. Panels are to be numbered/lettered be from Top (of Rack) to Bottom.

## = Sequential position of the Jack on the Panel–values of 01 - 48 are typical–starting at the top left and counting from left-to-right.

Include if applicable

X = Special application identifier; S = Security, C = Camera, W = Wireless Access Point (WAP)

For example: "1E-A25" represents a cable terminated in the 25th Jack Position in Patch Panel “A” at the Horizontal Cross-connect identified as “1E’.

Faceplate labels can use common HC identifiers on each label strip. For example, two links that terminate in the room designated as “1E” on positions “25” and “26” of Patch Panel “A” and sharing common label strip may be represented by:

1E

A25 A26

[Format Example 2. Note that where there is no DATA/VOICE distinction, the “X” is often deleted. In such an instance, use of the “W” may still be appropriate due to different cable performance types for each application.]

HC-X###

where: HC = Identifier for Horizontal Cross-connect serving that location

X = an alpha character identifying cable type. V = Voice, D = Data, F = Fiber Optic, C = Coax/CATV, S = Security, C = Camera, W = Wireless Access Point (WAP)

### = a sequential number starting at 001

For example: “1E-D001” represents the first “data” jack served from the Horizontal Cross-connect identified as “1E” for that building. The second “data” jack served from the same location would be labeled as “1E-D002”.

Faceplate labels can use common HC identifiers on each label strip. For example, the jacks in the above example sharing common label strip may be represented by:

1E

D001 D002

Horizontal Cable

Code used to label Horizontal Cables shall be same as identified for Equipment Outlet above.

The following sentence shall remain in the specification no matter whether the agency/campus labeling system or generic labeling system is used.

Label each Horizontal Cable at the Horizontal Cross-connect (e.g., Modular Patch Panel or Termination Block) and at the Equipment Outlet. If applicable, label cables at an intermediate interconnect such as a Consolidation Point in a Zone Cabling installation.

At an Equipment Outlet or Modular Patch Panel, position labels within 4-inches of each cable end.

Cable ID shall repeat around the perimeter of the cable (3-times minimum) to allow the ID to be visible from all angles.

At a Termination Block, position label so that it is not obscured by the designation strip (labeling) on the block.

Modular Patch Panels

The following paragraphs assume the use of modular patch panels in terminating horizontal cabling. Where modular patch panels are used in terminating backbone “voice” cables (unusual), edit as applicable to instruct the contractor.

Label each Patch Panel and port at horizontal cross-connect with unique identifying code. Code shall identify Outlet ID that corresponds with each jack/connector position.

Horizontal Cross-connect (location) identifier is not required on modular patch panels.

Select one of the formats described in the paragraphs below. Delete the unused format(s).

Modular Patch Panel labeling format shall be as follows:

* Label each Modular Patch Panel with its designator “PP”. This is a [number starting at “01”][letter starting with “A”]. Panel sequence is from Top (of Rack) to Bottom.
* Label each jack position sequentially with its designator “##”. A numerical value of 01 - 48 is typical starting at the top left and counting from Left-to-Right then Top-to-Bottom. Use of factory-screened numbering is preferred.

or

Patch Panel labeling format shall be same as identified for Equipment Outlet above. Connectors shall be positioned in sequence of Outlet ID starting at the top left and counting from Left-to-Right then Top-to-Bottom.

Backbone Cable – Copper and Fiber Optic

General

Label backbone (inter- and intra-building, and tie) cables with a unique code.

Label at each termination location, at each intermediate pull box and handhole/manhole, and where a cable passes through an intermediate Equipment Room. Where installed in cable tray, label at 25-foot intervals.

At manhole locations, label each cable twice – once each at entry and exit conduit.

At end points, place label within 12” of the termination (e.g., entrance to a Fiber Optic Termination Enclosure or Copper Termination Block).

Adjust labeling interval to ensure that tags are visible.

Where a plastic label is used (e.g., not wrap-around type), secure the tag to the cable using self-locking ties.

Cable Designation

Identify each cable with a unique designator to identify the end locations where the cable is terminated (e.g. cross-connect location at ER, HC, etc.).

Select Option that is most intuitive to Agency or where Agency standards have been developed. EDIT Examples below to match selected designations. In lieu of Agency input, the DFD preference is listed first.

Fiber type designations for fiber optic cable shall be as follows:

* 62.5/125µm (core/cladding) multimode [OM1] [MMF62]
* 50/125µm LASER-Optimized multimode [OM3] [LOMMF] [MM50]
* Single-mode [OS2] [SMF] [SM]

Backbone Cabling - Intra-Building & Tie

Label Intra-Building (within building) and Tie cabling with:

* Origin and Destination Telecom Room or Enclosure (e.g., “From” & “To”)

[Designation will be the same at both ends of the cable.]

[Designation will differ (To/From) at opposite ends of the cable]

* Fiber type(s) (Fiber Optic Cable only)
* Pair Count or Fiber Count

Example (Copper Twisted-pair):

Label for 200-pair copper cable installed from Main Cross-connect to Telecom Room 1E (TR1E) would appear as follows:

MC-TR1E
001-200

Where multiple cables are installed between same endpoints, labeling shall indicate sequential pair numbering. For example, 200-pair provided as two 100-pair cables would be labeled "001-100" and "101-200".

Example (Fiber Optic):

Label for fiber optic cable containing (24) OS2 single-mode fibers installed from Main Cross-connect to Telecom Room 1E (TR1E) would appear as follows:

MC-TR1E
(24) OS2

Backbone Cabling - Inter-Building

Label Inter-Building (between buildings) cabling with:

* Origin and Destination locations (e.g., “From” & “To”)

[Designation will be the same at both ends of the cable.]

[Designation will differ (To/From) at opposite ends of the cable]

* Fiber type(s) (Fiber Optic Cable only)
* Pair Count or Fiber Count
* Year Installed

Example (Copper Twisted-pair):

Label for 300-pair cable installed October 2019 from Building 123 Main Cross-connect (123MC) to Building 456 Main Cross-connect (456MC) would appear as follows:

123MC – 456MC
001-300
10/2019

Where multiple cables are installed between same end-points, labeling shall indicate sequential pair numbering. For example, 600-pair provided as two 300-pair cables would be labeled "001-300" and "301-600".

Example (Fiber Optic):

Label for fiber optic cable containing (24) OS2 Single-mode fibers installed October 2019 from Building 123 Main Cross-connect (MC123) to Building 456 Main Cross-connect (MC456) would appear as follows:

MC123-MC456
24-OS2
10/2019

Edit the following Article to include only applicable labeling types. Delete non-applicable content.

Termination Blocks

General

Provide color-coded Designation Strips with Termination Blocks.

Label termination positions on Designation Strips with identifier.

Label each Designation Strip with (2) rows of identifiers. Identifiers on “upper” row on each strip refer to cable positions ABOVE the label; identifiers on the “lower” row refer to cable positions BELOW the label.

Horizontal Cabling

Designation Strips for Blocks on which Horizontal Cabling is terminated shall be BLUE.

Code used to label Designation Strips shall be same as identified for Equipment Outlet above. Label each position.

Horizontal Cross-connect (location) identifier is not required on Termination Blocks.

Example: Designation Strip for block on which “Voice” cables 001V – 012V are terminated would appear as follows:

|  |
| --- |
| *- - - - - Conductor Positions - - - - -* |
| 001V 002V 003V 004V 005V 006V007V 008V 009V 010V 011V 012V |
| *- - - - - Conductor Positions - - - - -* |

Backbone Cabling - Intra-Building

Designation Strips for Blocks on which Intra-Building (within building) Backbone Cabling is terminated shall be WHITE.

Label Designation Strips with:

* Cable Origin & Destination. Repeat on every designation strip.
* Pair Number. Label 1st and 25th Positions on each row (e.g., 001 & 025, 026 & 050, etc.).

Example: Designation Strip for block on which pairs 001 – 050 in cable linking Main Cross Connect with Horizontal Cross-connect at TR1E would appear as follows:

|  |
| --- |
| *- - - - - Conductor Positions - - - - -* |
| 001 MC – TR1E 025026 050 |
| *- - - - - Conductor Positions - - - - -* |

Consider the following where the project includes multiple Telecom Rooms. Confirm agency preference and include if applicable.

At a building served by multiple Telecom Rooms, overall numbering shall be sequential and not re-start with “001” at each TR. For example, 100-pair to each of (3) TRs; TR1 = pairs 1 - 100, TR2 = pairs 101 - 200, TR3 = pairs 201 - 300.

Backbone Cabling - Inter-Building

Designation Strips for Blocks on which Inter-Building (between buildings) cabling is terminated shall be BROWN.

Where cable is terminated in a Building Entrance Terminal (BET), BET labeling color shall follow this color standard. (Typical BET Label colors are to be Brown and White.)

Label Designation Strips with:

* Cable Origin & Destination. Repeat on every designation strip.
* Pair Number. Label 1st and 25th Positions on each row (e.g., 001 and 025, 026 and 050, etc.).

Example: Designation strip for block on which pairs 001 – 050 in cable linking Building 123 Main Cross-connect (MC) and Bldg. 456 Main Cross-connect are terminated would appear as follows:

|  |
| --- |
| *- - - - - Conductor Positions - - - - -* |
| 001 123MC – 456MC 025026 050 |
| *- - - - - Conductor Positions - - - - -* |

Voice Multiplier

The following assumes creation of a Voice “Multiplier” Block using 100-pair blocks which have been wired to make each pair position in a row common with the comparable position in each other row.

Designation Strips for Voice Multiplier Blocks shall be YELLOW.

Label Designation Strips with:

* Designation as “MULTIPLIER”. Repeat on every designation strip.
* Row designator - Label 25-pair rows in 100-pair multiplier block as "A" (1st 25-pair). "B" (2nd 25-pair), "C" and "D".
* Pair Number. Label 1st and 25th Positions on each row (e.g., 001 and 025).

Example: Designation strips (2) for 25-pair multiplier (4 x 25 pair = 100-pair block) would appear as follows:

|  |
| --- |
| *- - - - - Conductor Positions - - - - -* |
| A001 MULTIPLIER A025B001 B025 |
|   |
| *- - - - - Conductor Positions - - - - -**- - - - - Conductor Positions - - - - -* |
|  |
| C001 MULTIPLIER C025D001 D025 |
| *- - - - - Conductor Positions - - - - -* |

Network Connection Cabling

Designation Strips for Blocks on which cabling from Access/Service Provider (Feed) is terminated shall be GREEN.

Label Designation Strips with:

* Designation as "NETWORK (*PROVIDER NAME)*”. Repeat on every designation strip.
* Pair Number.

Example: Designation strip for block on which Service Provider (AT&T in this example) pairs 1001 – 1050 are terminated would appear as follows:

|  |
| --- |
| *- - - - - Conductor Positions - - - - -* |
| 1001 NETWORK (AT&T) 10251026 1050 |
| *- - - - - Conductor Positions - - - - -* |

Telephone System Equipment Cabling

Designation Strips for Blocks on which cabling from Telephone System Equipment is terminated shall bePURPLE.

Label Designation Strips with:

* Equipment Designation (e.g., System or Equipment Type)
* Pair Number.

Example: Designation strip for block on which pairs 001 - 050 from PBX is terminated would appear as follows:

|  |
| --- |
| *- - - - - Conductor Positions - - - - -* |
| 001 PBX 025026 050 |
| *- - - - - Conductor Positions - - - - -* |

Fiber Optic Patch Panels

Label front of each Fiber Optic Patch Panel with unique labeling codes to identify:

* [Cable Destination] [Cable Number] [Patch panel number in rack]
* Fiber type(s)
* Label each fiber (or coupler) position number of each panel position.
* Fiber/coupler I.D. shall be from Top to Bottom, Left to Right,
* Manufacturers port labeling is acceptable.

Room designator is not required on fiber optic patch panels.

Equipment Rack designator is not required on fiber optic patch panels.

Audio-Video

Where applicable, refer to specification Section 27 41 00 – Audio-Video Systems for cable designation formats.

Abandoned Cable

Select the following paragraph or indicate “Not applicable to this Project”. Identify cabling to be abandoned on the project drawings.

Coordinate with the user Agency to Identify and Label all abandoned cables, residing within and passing through the construction boundary of the Project that are to remain and/or are to be removed cable to a designated point in the cable pathway (conduit, tunnel or signal manhole) at the project boundary.

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Cable Bundles (e.g., abandoned Horizontal Cabling or cabling in a conduit in a ductbank) may be identified by a single label.

Label to identify:

* DFD Project Number (##X#X) under which cable was cut and identified.
* Date cable was labeled.

or

Not applicable to this Project. No labeling required.

END OF SECTION