

## SECTION 27 05 53 - IDENTIFICATION FOR COMMUNICATION SYSTEMS

### PART 1 - GENERAL

#### 1.1 INTRODUCTION

1. This document covers the most common labeling needs for the installation of network infrastructure across the University of Colorado Denver and Anschutz Medical Campus.
2. The administration standard as presented in the ANSI/TIA/EIA-606- C addresses the need for an independent and scalable labeling standard in the administration of telecommunications cabling infrastructure. To standardize and administer the entirety of the infrastructure at the University, it is necessary to have a complete standard for labeling.
3. In compliance with the ANSI/TIA/EIA-606-C standard, the University requires a class 3 labeling standard as the University must manage multiple buildings and outside pathways. All identifiers must be independent and scalable. All labels read from the general to the specific from left to right.
4. Other than outlined in this standard, there are several more specific situations covered in the ANSI/TIA/EIA-606-C administration standard including a standard fare of abbreviations for descriptors. If you have any questions concerning these standards and those outlined in this standard and their interpretation in reference to the University, please contact OIT and the Project Manager.
5. There are three significantly different pieces to consider in developing a system for the administration of any complex system: naming, labeling, and supporting documentation.
  - a. Naming is the process of assigning every piece of identifiable equipment a unique identifier to differentiate it from others. Unique names enable the use of databases in administration of the supporting documentation. In this system, the style of a name differs based upon the type of equipment named. This allows a quick and easy identification of the hardware.
  - b. Labeling is the process of affixing tags to the hardware so that their names can be determined. The tag affixed to the hardware is not always the full name of the piece of infrastructure. As will become apparent later, some pieces of a name can be determined based upon the location of the hardware. Because of this, it is not necessary to affix the entire name to every piece of hardware. This distinction becomes critical when the piece of equipment is too small to accept a label that contains its full name.
  - c. Supporting documentation is the key to any successful administration. Naming and labeling assure that everyone on campus can use the same basic keys for accessing information about the infrastructure, but the supporting documentation holds all the information that individuals will need to access; fiber-optic strand count, termination points, last test date, copper pair counts, manufacturer of the cable and so on. This document deals primarily with the naming and labeling process in order to support contractors installing the network infrastructure here at the University of Colorado. Aside from providing the deliverables required by CU Telecommunications Standards, the contractor is not responsible for maintaining any documentation of campus infrastructure.

#### 1.2 SUBMITTALS

1. Samples of each color, lettering style, and other graphic representation required for identification materials; samples of labels and signs.
2. Closeout Documentation

- a. All deliverables that are turned over to the University of Colorado will reference network-infrastructure equipment using this standard.
- b. Contractor to provide record documents indicating the following:
  - 1) All rack layouts and data port schedules.
  - 2) Floor plan indicating location and label of all data ports.
  - 3) Horizontal Record of all installed horizontal cables.
  - 4) Test reports for all cables as per they physical requirements of the cable.

## PART 2 - PRODUCTS

### 2.1 MANUFACTURERS

- A. Acceptable Manufacturers: Subject to compliance with requirements, provide products by the following:
  1. No specific manufacturer requirements under this standard.

### 2.2 MATERIALS, GENERAL

- A. Electronic/Mechanical Labels: self-adhesive, black letters on white. Embossed DymoType labels are not accepted.

## PART 3 - EXECUTION

### 3.1 NAMING - GENERAL

- A. There are four distinct styles of naming telecommunications infrastructure here at the University of Colorado. They all use the same identifiers in the construction of a name but differ in their order and presentation.
- B. Every component of the telecommunications infrastructure has a unique and independent identifier.
- C. Individual identifiers can be combined to create an overall and accurate picture of a cabling plant. Names will use a combination of these identifiers in an established format to completely identify any specific piece of the cabling plant. This, in turn, requires that every piece of equipment be labeled so that a technician can determine the name of any piece of infrastructure while in the field.

Label Target	Example	Explanation
Building	Q20 NC	University of Colorado official building number or abbreviation
Telecommunications Room	1A	1-first floor, A- Telco Room A on that floor
Communications Cabinet	PCB001	Designates Pathway communication cabinet #1
Maintenance Hole	PMH001	Maintenance Hole #1
UTP communications panel	A	Designates communication panel A
Non-UTP communications panel	1	Designates communication panel 1, most commonly a fiber panel
Panel module	1	Module #1 in a communication panel
Port	1	Port #1 in a module or communication panel

### 3.2 NAMING - LOCATION

- A. There are three fundamental identifier types that shall be used at the beginning of any name: building numbers, telecommunications room identifiers, and room numbers. These are used to designate locations and include all current location types here at the University of Colorado. Assignment of any location identifiers should be coordinated with the University of Colorado Facilities Department in the case of building and room numbers, or the Office of Information Technology (OIT) in the case of Telecommunication Room (TR) identifiers.
- B. Building identifiers: The University of Colorado Facilities Department has determined official building-number designations for each building on Anschutz Medical Campus as well as the Denver campus. These identifiers shall be used to reference the buildings in all names. These identifiers can be obtained from CU's Facilities Department. For example, Q20 is the official building identifier for the Fitzsimons building at Anschutz Medical Campus.
- C. Telecommunication Room Identifiers: Each Telecommunication Room (including Entrance Facilities and Main Telecommunications Rooms) shall be identified with three alphanumeric characters that represent the floor level and a letter that differentiates it from other TRs on the same floor. The identification, assignment of these identifiers, and labeling of these rooms will be covered later in this standard. The full name of a Telecommunications Room is this two-character identifier preceded by the official building identifier. For example, Q20-TR01A is the name of a TR on the first floor of building Q20 (Fitzsimons building). All letters in TR identifiers are capitalized.
- D. Room Numbers: Room numbers are assigned by the University and reflect individual rooms that are not serving as TR's. Due to their inconstant nature, use of room numbers is to be avoided in the use of Telecommunications Plant naming except where required.

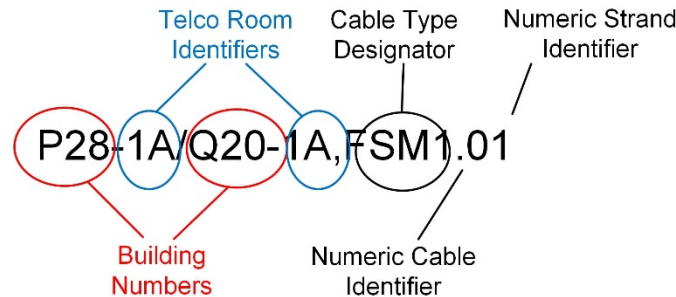
### 3.3 NAMING - EQUIPMENT

- A. All infrastructure elements that are not addressed in other departmental naming standards are named as pieces of infrastructure equipment. The beginning of the name specifies the location of the piece of equipment. The end of the name includes a three-letter description of the equipment and ends with an index number. The index number exists solely to differentiate the piece of equipment from other similar equipment in the same location. The three-letter acronym used in describing the equipment is based on the abbreviations presented in the ANSI/TIA/EIA-606-C. The most common abbreviations used at the University of Colorado can be found in the following examples.
  - 1. Q20-1A-PRK01
    - a. This equipment is in Building Q20, Telecommunications Room 1A.
    - b. This equipment is a pathway element (P), specifically, a rack (RK).
    - c. The index number will differentiate it from other racks in the same location, a second rack in building Q20, room 1A would have an index number of two.
  - 2. P28-1A-TGB01
    - a. This equipment is in Building P28 (Education 2 North), Telecommunications Room 1A
    - b. This equipment is a telecommunications (T) grounding bar (GB)
    - c. The index number will differentiate it from other grounding bars in the same location; a second grounding bar would have an index number of two
- B. Pieces of equipment that are in racks or mounted on walls follow a similar naming convention with an additional character to denote where the equipment can be found. This additional character follows the second dash and precedes the three-letter descriptive acronym. All acronyms are based on ANSI/TIA/EIA-606-C standard abbreviations. The additional character shall be a number if the equipment is in a rack or other identified termination area (rack, cabinet, mounting table, and so on). This number shall be the index number of the termination location. If the equipment is wall-mounted, the character shall be an upper-case W.
  - 1. Q20-1A-1FPL1
    - a. This equipment is in Building Q20, Telecommunications Room 1A.

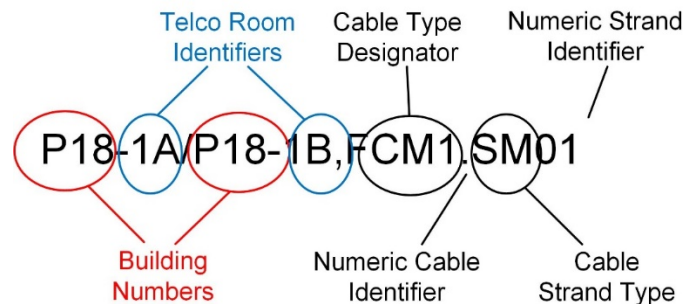
- b. This equipment is located or mounted inside a termination area (rack, cabinet or other) within the room identified as #1.
      - c. This piece of equipment is a fiber (F) panel (PL) and its index number is 1.
    - 2.
    - 3. NC-1A-WXPL1
      - a. This equipment is in the North Classroom – Auraria Campus, Telecommunications Room 1A.
      - b. This equipment is mounted on the wall.
      - c. This piece of equipment is a coaxial (X) panel (PL) and its index number is 1.
  - C. An exception to these rules has been made in the case of Unshielded Twisted Pair (UTP) termination panels. Instead of using index numbers, UTP panels are identified by an indexing letter. This is in accordance with the standards set out by the ANSI/TIA/EIA-606-C.
    - 1. M24-1A-WCPLA
      - a. This equipment is in Building M24 (Nighthorse Campbell bldg), Telecommunications Room 1A.
      - b. This equipment is mounted on the wall.
      - c. This piece of equipment is a copper twisted pair (C) panel (PL) and its index letter is A. A second panel on the wall would be identified as B.
  - D. Subdivisions of pieces of equipment, such as the modules of a fiber panel or the ports of a UTP panel, will have the same name as their parent piece of equipment followed by an additional index number that is assigned to the subdivision. In the interest of brevity, subdivisions are not preceded by a three-letter descriptor. The index number of the parent piece of equipment and the subdivision will be separated by a period. A period always represents a subdivision of a larger piece of equipment. This nomenclature applies to all aspects of this naming standard except when referring to the ports on an individual module – In that case, the two numbers will be separated by a slash, instead of a period, following current switch port naming conventions.
  - E. Port numbers are assigned beginning with 1 independently for each subdivision
    - 1. L10-1A-WCPLA .01
      - a. This equipment is in Building L10 (Leprino Building), Telecommunications Room 1A.
      - b. This equipment is mounted on the wall.
      - c. This is the first port of a UTP copper(C) panel (PL) designated as A.
      - d. In general, UTP panels do not have subdivisions aside from ports.
    - 2. Q20-1A-1FPL1.2
      - a. This equipment is in Building Q20 (Fitzsimons bldg.), Telecommunications Room 1A.
      - b. This equipment is located or mounted inside a termination area (rack, cabinet or other) within the room identified as #1.
      - c. This piece of equipment is part of a fiber (F) panel (PL) whose index number is 1.
      - d. This equipment is a module designated as module #2.
      - e. In general, fiber optic panels are assumed to have subdivisions (modules or drawers) that will be identified. Fiber Panels that do not have modular subdivisions are treated as if all ports are in module #1.
    - 3. T36-1A-1FPL1.2/03
      - a. This equipment is in Building T36 (Campus Services), Telecommunications Room 1A.
      - b. This equipment is located or mounted inside a termination area (rack, cabinet or other) within the room identified as #1.
      - c. This piece of equipment is part of a fiber (F) panel (PL) whose index number is 1.
      - d. This designates port #3 on module #2 in fiber panel #1.
- 3.4 NAMING - BACKBONE CABLES AND PATHWAYS
  - A. Backbone cable and pathway names are constructed by combining the names of the two Telecommunications Rooms that are being joined by this equipment, following them with a description of the equipment itself and ending with a numeric designator to distinguish the equipment from any other

object with the same qualities. Order of the telecommunications rooms in the name is decided alphanumerically, not based on physical location itself. The Telecommunications Room identifiers will be separated by a slash and followed by a comma to separate them from the equipment description. There is no space between the comma and the cable description.

- B. The following is a breakdown of a single-mode fiber cable name.



- C. Below is a breakdown of a composite fiber (containing both multi-mode and single-mode) cable name.



- D. Consistent with this standard, index-number identifiers for cables and cable strands are used solely to differentiate themselves from other cables sharing their same characteristics. A cable should only be identified with a L28-1A/P28-1A,FMM2 if there is already a L28-1A/P28-1A,FMM1 in existence.

1. Naming examples:

- a. L28-1A/P28-1A,FMM1
  - 1) Cable terminates in Bldg L28 (Education 2 South), Telecommunications Room 1A.
  - 2) Cable terminates in Bldg P28 (Education 2 North), Telecommunications Room 1A.
  - 3) This is a fiber (F) multimode (MM) cable connecting two rooms and its index number is 1.
- b. L28-1A/P28-1A,FSM1
  - 1) Cable terminates in Bldg L28 (Education 2 South), Telecommunications Room 1A.
  - 2) Cable terminates in Bldg P28 (Education 2 North), Telecommunications Room 1A.
  - 3) This is a fiber (F) singlemode (SM) cable connecting two rooms and its index number is 1.
- c. L28-1A/P28-1A,FCM1
  - 1) Cable terminates in Bldg L28, Telecommunications Room 1A.
  - 2) Cable terminates in Bldg P28, Telecommunications Room 1A.
  - 3) This is a fiber (F) composite (CM) cable connecting two rooms and its index number is 1.

- d. P26-1A/Q20-GD,CUT1
    - 1) Cable terminates in Bldg P26 (Education 1), Telecommunications Room 1A.
    - 2) Cable terminates in Bldg Q20 (Fitzsimons), Telecommunications Room GD.
    - 3) This is a copper (C) unshielded twisted-pair (UT) backbone cable connecting two rooms and its index number is 1.
  - e. P26-1A/P28-1A,PCO01
    - 1) Conduit terminates in Bldg P26 (Education 1), Telecommunications Room 1A.
    - 2) Conduit terminates in Bldg P28 (Education 2 North), Telecommunications Room 1A.
    - 3) This is a pathway (P) conduit (CO) connecting two rooms and its index number is 1.
  - f. P26-1A/PMH074,PCO01
    - 1) Conduit terminates in Bldg P26 (Education 1), Telecommunications Room 1A.
    - 2) Conduit terminates in Maintenance Hole 74
    - 3) This is a pathway (P) conduit (CO) connecting two rooms and its index number is 1.
- E. Subdivisions of backbone cables or pathways shall be labeled following the manner of labeling subdivisions in equipment. Subdivisions will have the same name as their parent piece of equipment followed by an additional index number that is assigned to the subdivision. (Note: different binder groups in UTP or fiber cable will not be tracked as subdivisions in this standard.) In the interest of brevity, subdivisions are not preceded by a three-letter descriptor except as needed to differentiate themselves from other subdivision types. Currently, only composite- fiber-cable subdivisions require an additional descriptor for each fiber strand. The index number of the parent piece of equipment and the subdivision will be separated by a period. Fiber strand numbers in a fiber cable will be assigned in order with standard color code as outlined in ANSI/TIA/EIA-598-A.

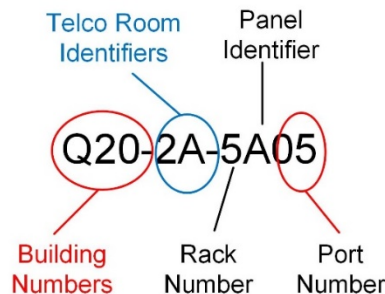
1. Naming Examples:

- a. P26-1A/P28-1A,FMM1.01
  - 1) Cable terminates in Bldg P26 (Education 1), Telecommunications Room 1A.
  - 2) Cable terminates in Bldg P28 (Education 2 North), Telecommunications Room 1A.
  - 3) This is strand #1 in fiber (F) multi-mode (MM) cable #1 connecting these rooms.
- b. P26-1A/P28-1A,FSM1.01
  - 1) Cable terminates in Bldg P26 (Education 1), Telecommunications Room 1A.
  - 2) Cable terminates in Bldg P28 (Education 2 North), Telecommunications Room 1A.
  - 3) This is strand #1 in fiber (F) single-mode (SM) cable#1 connecting these rooms.
- c. P26-1A/P28-1A,FCM1.MM01
  - 1) Cable terminates in Bldg P26 (Education 1), Telecommunications Room 1A.
  - 2) Cable terminates in Bldg P28 (Education 2 North), Telecommunications Room 1A.
  - 3) This is multi-mode strand #1 in fiber (F) composite (CM) cable #1 connecting these rooms.
  - 4) Single-mode strand #1 of the same cable would be named P26-1A/P28-1A, FCM1.SM1.
- d. P26-1A/P28-1A,CUT1.01
  - 1) Cable terminates in Bldg P26 (Education 1), Telecommunications Room 1A.
  - 2) Cable terminates in Bldg P28 (Education 2 North), Telecommunications Room 1A.
  - 3) This is a pair #1 in copper (C) unshielded twisted-pair (UT) cable #1 connecting these rooms.
- e. P26-1A/P28-1A,PCO1.01
  - 1) Conduit terminates in Bldg P26 (Education 1), Telecommunications Room 1A.

- 2) Conduit terminates in Bldg 193, Telecommunications Room 1A P28 (Education 2 North), Telecommunications Room 1A.
  - 3) This is inner-duct #1 in pathway (P) conduit (CO) #1 connecting these rooms.
- f. PMH015/PMH025,PCO1.04
- 1) Conduit terminates in Maintenance Hole #15
  - 2) Conduit terminates in Maintenance Hole #25
  - 3) This is inner-duct #4 in pathway (P) conduit (CO) #1 connecting these rooms.

### 3.5 NAMING - HORIZONTAL CABLES AND PATHWAYS

- A. Horizontal refers to any piece of the cable plant that feeds directly from a Telecommunications Room out to a user outlet, work area, or host device. This includes equipment that feeds out to a consolidation point in the work area or MUTOA. Horizontal cable labeling is based on the point of origination of the cable or pathway element in the Telecommunications Room. Each horizontal plant element is labeled on both ends with an identifier that locates its termination point in the appropriate Telecommunications Room.
- B. For UTP horizontal cables, the point of origination for the cable run will usually be in a patch panel or termination block in a Telecommunications Room. A port in a patch panel is named according to the standards for equipment given above. For identification of horizontal cabling, a shorthand version of the full port name is used in order to differentiate the cable name from the termination point name. This also facilitates labeling by providing a shorter name for the cable.
- C. A termination point for a horizontal cable might terminate in Q20-2A-5CPLA.05. This would be port #5, in copper panel A, in termination area #5, in Telecommunications Room 2A, in building Q20 (Fitzsimons bldg.).
1. The horizontal cable attached to that port would be identified as follows:



- D. Naming Examples
1. L10-1A-1A45
    - a. UTP cable originates in Building L10 (Leprino bldg.), Telecommunications Room 1A.
    - b. UTP cable originates in Rack #1, Patch Panel A, Port 45.
  2. TV-3B-WA37
    - a. UTP cable originates in Building TV (Tivoli), Telecommunications Room 3B.
    - b. UTP cable originates in wall mounted Patch Panel A, Port 37.
- E. For non-UTP horizontal cable installations, the panel identifier shall not be used for cable names due to the variety of termination methods that exist for non-UTP cable. Fiber cables truly terminate in more than one port and could conceivably terminate in multiple panels. Coaxial installations often do not use termination panels at all and plug directly into electrical devices.

- F. The name of non-UTP horizontal cables is still based upon the point of origination, but that information is limited to the Telecommunication Room where the cable originates. This information is followed by the standard three-letter descriptor and an index number.
  - 1. NC-2F-2FMM01
    - a. Horizontal fiber (F) multimode (MM) cable that originates in Building NC (North Classroom), Telecommunications Room 2F.
  - 2. LW-3A-XDR01
    - a. Horizontalcoaxial (X) drop (DR) that originates in Building LW (Lawrence Street Center), Telecommunications Room 3A.
  - 3. Finally, horizontal conduit installations will be named following the equipment standard set forth above. This implies that a horizontal conduit will be named for the Telecommunications Room in which the conduit originates.
    - a. LW-4A-PCO01
      - 1) This is a horizontal conduit.
      - 2) This horizontal pathway (P) conduit (CO) element originates in Telecommunications Room 4A, in building LW (Lawrence Street Center).
  - 4.

### 3.6 LABELING – GENERAL

- A. Labeling is the process of affixing tags to the infrastructure components in order to effectively communicate the name of that piece of equipment to the technician in the field. In many cases this can be as simple as tagging a piece of equipment with the official name but under some circumstances this may not be feasible due to the size of the piece of equipment or other factors, such as the length of the name. Additionally, the labeling may communicate other pieces of information such as what fiber cable is in what FPL in a particular Telecommunications Room. This standard addresses the need for each piece of equipment to be labeled in the same fashion so that technicians can expect the same standards of repair to be used at each University of Colorado location.
- B. All labels are to be mechanically generated. Handwritten labels are not acceptable. All label adhesives shall have a functional lifespan equal to the infrastructure being labeled.
- C. Following is a comprehensive list of how each piece of network infrastructure will be labeled at the University of Colorado. If there are any questions concerning these requirements, please contact OIT.
- D. Backbone Conduit
  - 1. An installed conduit shall be labeled with its full name as discussed in the naming section above.
  - 2. To be labeled at both ends within 4 inches of termination of the conduit.
  - 3. To be labeled where it enters and where it exits any pull boxes that have been installed along its path.
- E. Entrance Facilities, Main Telecommunications Rooms and Telecommunications Rooms
  - 1. Room labeling will consist of a plastic sign on the outside door of the Telecommunications Room consistent with the style of other room signs in the building.
  - 2. This sign should designate the use of the room as a Telecommunications Room and display the appropriate identifier for that specific room such as ‘Telecommunications Room 1A’.
- F. Fiber-Optic cable (see Section 27 05 53, diagram #1)
  - 1. The fiber optic cable should be labeled at both termination points on the outside jacket of the cable within 8 inches of the breakout point for the individual strands. This label will contain the full name of the cable.



2. A typical backbone label will be of the following format, L28-1A/P28-1A,FSM1. A typical horizontal fiber cable label will be of the following format, NC-2F-1FSM01. This label will be applied outside of the fiber panel.
3. Individual fiber strands should be inserted into any fiber panel following the standard color code for fiber with Blue being first, as per ANSI TIA/EIA-598-C. This color code should be followed so it can be read from left to right and from up to down for each module as viewed from the front of the fiber panel. In the documentation, strand numbers will begin at 1 and ascend in keeping with the color code, i.e., blue=1, orange=2, green=3, and so on.
4. Each fiber termination should be labeled on the boot by a number that corresponds to its placement in the color code of the cable. Numbers should begin at 1 and ascend from there with duplicate numbers used for different types of fiber strands in one cable. For example, a composite fiber cable will have multiple strands designated with a 1 to correspond to the first MM fiber cable and the first SM fiber cable. Numbers will not refresh for different binder groups, only for different classifications of fiber.

G. Fiber Panel (see Section 27 05 53, diagram #1)

1. Outside
  - a. A fiber panel should be assigned an independent identifier and be labeled with it in the upper right corner of the front of the LIU. Appropriate identifiers include FPL1, FPL2, and so on.
  - b. A fiber panel should have a list of all fiber cables that are held in the box itself. Often, this will just be one fiber cable but could be much more. This list should be preceded with an introduction of 'This FPL holds:' or the like to prevent confusion between the fiber name and the recorded name of the fiber panel. This list should be in the upper left corner of the fiber panel.

This FPL holds Q20-1A/Q20-2F, FMM1 LSC-1A/Q20-1A, FSM1	FPL1
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H. Inside

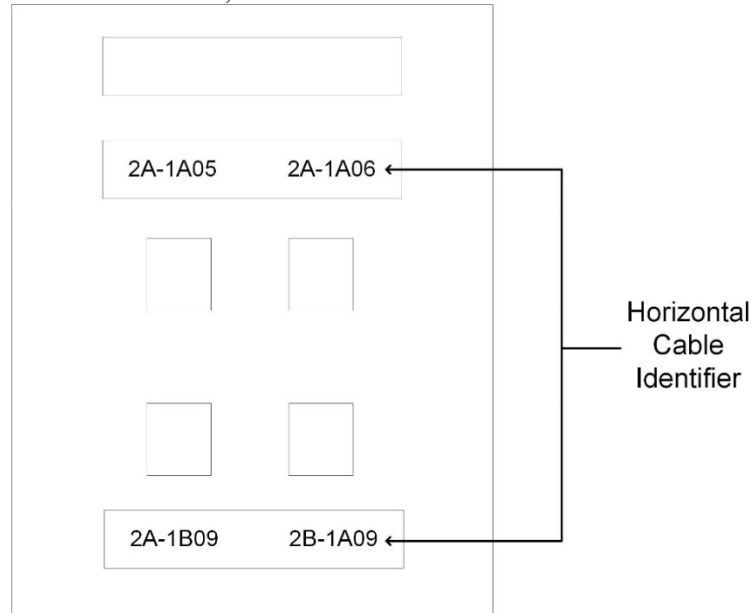
1. Fibers should be installed in each module of a fiber panel from left to right and up to down accordingly as you look at the face of the bulkheads with the standard color code for fiber installation.
2. Each bulkhead will have an independent identifier. In a fiber panel that has been subdivided into modules, label the modules with numbers beginning with 1 and ascending. The individual bulkheads need not be labeled as they will be identified with numbers that begin with 1 and will be read from left to right or up to down in accordance with the orientation of the module. In fiber panels that have not been subdivided, the individual bulkheads will need to be identified with a number. If the fiber panel does not come preprinted, the installer will be responsible for labeling the bulkheads.
3. A documentation page will be supplied inside the panel that should be marked with which fiber strand matches up to which bulkhead. The installer may create a simple spreadsheet similar to that pictured below. In this case, labeling should make clear the identity of each bulkhead and the fiber strand that is connected to it. In the case of horizontal fiber, the strand identifier will be followed by the room number of the cables remote end. This sheet should be stored in a clear plastic pouch inside the FPL. If the FPL does not provide such a pouch, the installer is responsible for providing one. Copies of this spreadsheet will be supplied to OIT with all other deliverables at the end of a project.

Fiber Panel # Q20-2F-WFPL1	
Module/Port	Fiber Identifier
1/1	Q20-1A/Q20-2F,FMM1.01
1/2	Q20-1A/Q20-2F,FMM1.02
1/3	Q20-1A/Q20-2F,FMM1.03
1/4	Q20-1A/Q20-2F,FMM1.04
1/5	Q20-1A/Q20-2F,FMM1.05
1/6	Q20-1A/Q20-2F,FMM1.06
2/1	Q20-2F-1FMM01.01(Rm CG004)
2/2	Q20-2F-1FMM01.02(Rm CG004)
2/3	Q20-2F-1FMM02.01 (Rm CG010)
2/4	Q20-2F-1FMM02.02 (Rm CG010)
2/5	Q20-2F-1FMM02.03 (Rm CG010)
2/6	Q20-2F-1FMM02.04 (Rm CG010)

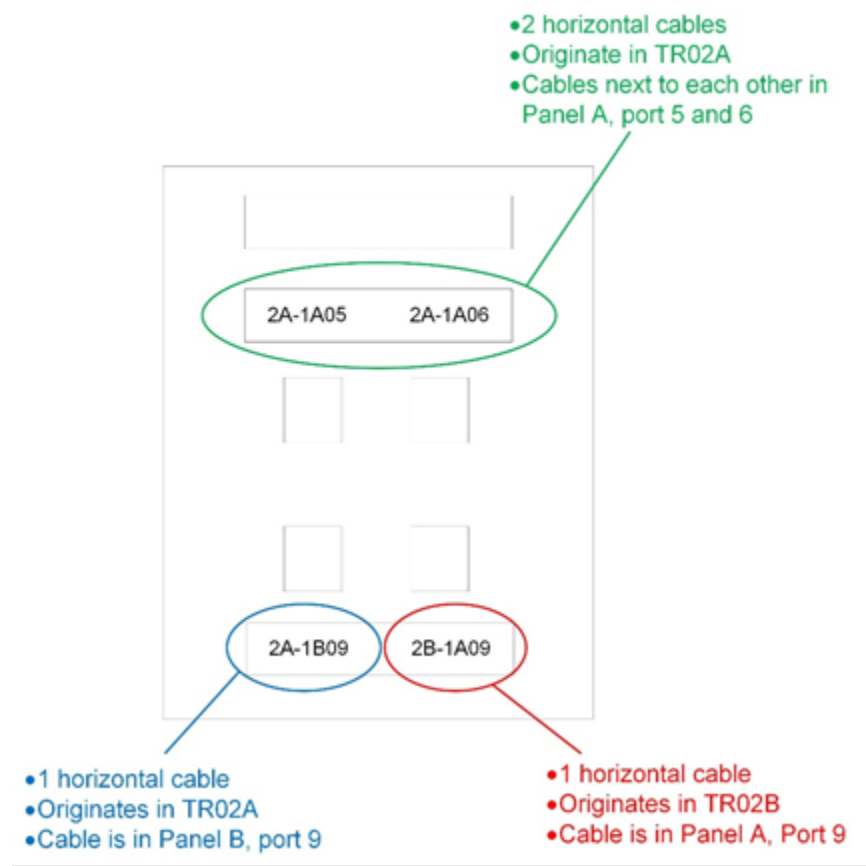
4. This insert can be found in fiber panel #1, mounted on the wall In Telecommunications Room 2F, in building Q20. Bulkhead #1 of module #1 holds the strand #1 of multi-mode fiber-optic cable #1 that connects Telecommunications Rooms Q20-1A and Q20-2F. Bulkhead #1 of module #2 holds the first strand of a horizontal fiber cable that feeds from Telecommunication Room Q20-2F.
  5. At no time should the labeling inside a fiber panel require a technician or engineer to open the installer's side of the fiber panel to retrieve labeling information.
- I. Horizontal Cable (see Section 27 05 53, diagram #2)
1. Each end of the horizontal cable should be labeled on the outside jacket of the cable within 12 inches of the termination points with the name of the cable. Horizontal cables do not need building identifiers printed in the name on these labels. This label will follow the conventions outlined above with a typical label being 1A-1A03 in the case of UTP cable or 1A-1FMM01 in the case of non-UTP cable. This label shall be applied before the horizontal cable enters any bundle.
- J. Horizontal Conduit
1. An installed horizontal conduit that directly connects the WAO with the TR without passing through the cable tray shall be labeled with the conduit's full name and the name of the WAO it serves within 4 inches of the termination in the Telecommunications Room.
  2. An installed horizontal conduit that directly connects the WAO with the TR without passing through the cable tray shall be labeled at the user end, inside the work area outlet box with the full name of the conduit
  3. WAO feeding horizontal conduit that stubs out at the ceiling or extends only from the Work Area Outlet to the nearest cable tray shall be marked inside the WAO with blue paint. Where it terminates in the ceiling or near the cable tray, this conduit shall be wrapped with blue electrical tape.
- K. Maintenance Hole
1. Maintenance Holes are to be labeled with their full name. Maintenance hole identifiers should be placed underneath the cover and on an interior wall if possible. Purchasing of labels for use in maintenance holes must be coordinated through OIT.
- L. Twisted Pair Patch Panels and Termination Blocks (see Section 27 05 53, diagram #2)
1. Labeling of panels or punch blocks with letters will begin with A. Labeling of panels should begin again with the letter A for each new termination area and the labeling of panels on the wall should begin with A.
  2. Where possible, individual ports on the panel should be numbered in ascending order. Since identification of individual panels for wall mounted 110 panels can be difficult, that the installer will be held responsible for labeling all ports on wall mounted 110 blocks with the Panel identifier and the port identifier before adding additional labeling information.
- M. Horizontal terminations (see Section 27 05 53, diagram #2)

1. Each port on a UTP termination panel will be labeled with the jack number of the room where the opposite end of the cable terminates.
  2. For rack or wall mounted RJ45 patch panels that do not have a defined label space, place the remote room number label above or below the Port. E.g., CG024.
  3. For rack or wall mounted 110 punch blocks, place additional labeling in the approved labeling section above or below the termination pins to define the port in addition to the remote room number. E.g., A01 / CG024.
- N. Backbone UTP terminations (see Section 27 05 53, diagram #2)
1. Where 4 pair UTP cable terminating in patch panels is being used as a backbone connection between TR's, the patch panel port where they terminate will be labeled with the termination position of the other end of the cable. For example, where Q20-1A/Q20-2F,CUT01 connects two TR's each patch panel would be labeled with the termination position of the other room. In Q20-1A, the port where this line terminates may be labeled 2F-1A05. This points to Rack #1, Panel A, and port 5 in TR 2F.
  2. For higher count UTP backbone cables terminating in wall mounted 110 blocks on both sides, the termination area should be labeled with the name of the backbone cable. This should be followed by the pair count in parentheses. Pair count should also be accessible through the supporting documentation. An appropriate label on a fourth floor termination block would read, NC-3B/NC-4A,CUT1 (100 pair) where the other end of the cable terminates in room TR03B and the cable has 100 pairs.
  3. For higher count UTP cables that terminate in a 110 block on one side and an RJ45 patch panel on the other, we default to the standard listed above for 4 pair UTP cables. This requires that the 110 blocks be split into logical ports for purposes of labeling. Each pair, or set of pairs, that connect to a port on the RJ45 patch panel will be considered a port and should be labeled as such on the wall mounted panel. Each panel on each side then will be labeled according to the port identifier for the other side. For example, where LW-1A/LW-1B,CUT1 connects two termination areas in different TRs, the 110 block and the RJ45 patch panel would be labeled with the termination position of the other side. On the patch panel, each port would be labeled with a port identifier for the 110 block, 1A-WA14. On the 110 block, the 'port', or series of pairs, would be labeled with the panel and port identifier for the 110 block followed by the port identifier for the patch panel, A14 / 1A-1A14.
- O. Rack or other Termination Area (see Section 27 05 53, diagram #1 and #2)
1. Termination areas within a room should be labeled numerically beginning with 1 and ascending as more racks or cabinets are added to the room. The equipment defining the termination area should be clearly labeled along the top crossbar.
  2. For purposes of this labeling standard, a termination area is any structure capable of holding telecommunications terminations and electronic hardware. This includes, but is not limited to, 7-ft free-standing racks, free-standing enclosures, 3-4 ft wall mounted fixed racks, wall-mounted enclosures, server desks and so on.
- P. Telecommunications Bonding Backbone
1. Telecommunications Bonding backbones will be labeled with the full name of the bonding backbone at each termination point.
  2. In addition, the bonding backbone will be labeled with the full name of the bonding backbone at every point to which it is bonded in any other Telecommunications Rooms through which it passes.
- Q. Telecommunications Pull Boxes
1. All pull boxes installed to support telecommunications infrastructure will be identified as such. The letters OIT will be painted on the front cover plate of the outlet box.
  2. All conduits entering the pull box shall be labeled as addressed in the horizontal and backbone conduit sections in this standard.
- R. Twisted Pair Backbone cable

1. The twisted pair cable should be labeled at both termination points on the outside jacket of the cable within 8 inches of the breakout point for the individual strands. This label will contain the full name of the cable. A typical label will be of the following format, LW-1A/LW-3A,CUT1.
- S. Work Area Outlets (see Section 27 05 53, diagram #2)
1. Work Area Outlet ports shall be labeled on the appropriate area with the name of the cable connected to them without the building designator. For example, the Work Area Outlet port connection for 0047-1A-1B05, should be labeled 1A-1B05. See the illustration below.



2. Work Area Outlet labeling will be the most common labels encountered by customers in the field. These labels convey a great deal of information, and their flexibility allows for a number of unconventional applications. For example, see the expanded details below for the WAO previously used as an example.

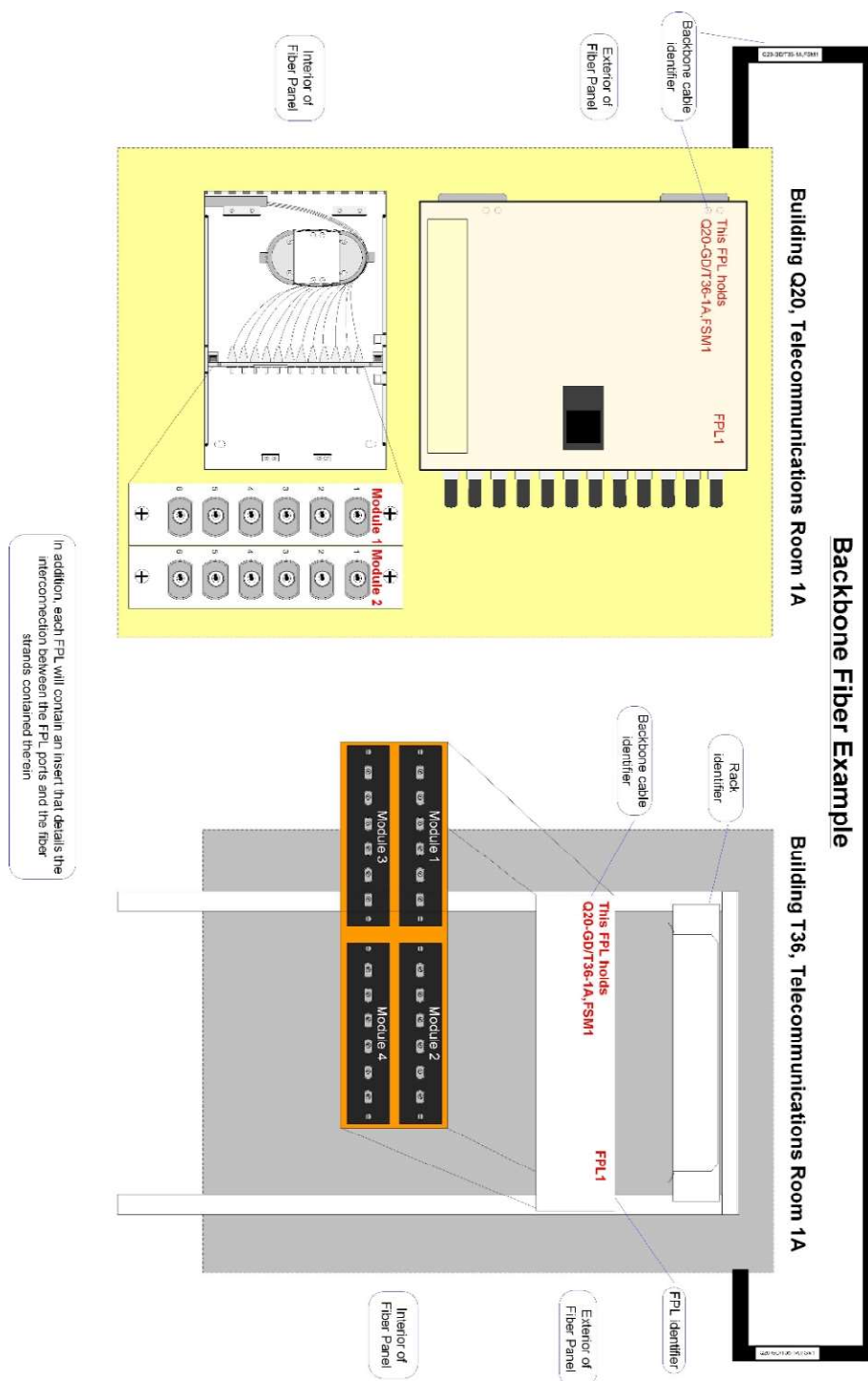


### 3.7 SUPPORTING DOCUMENTATION

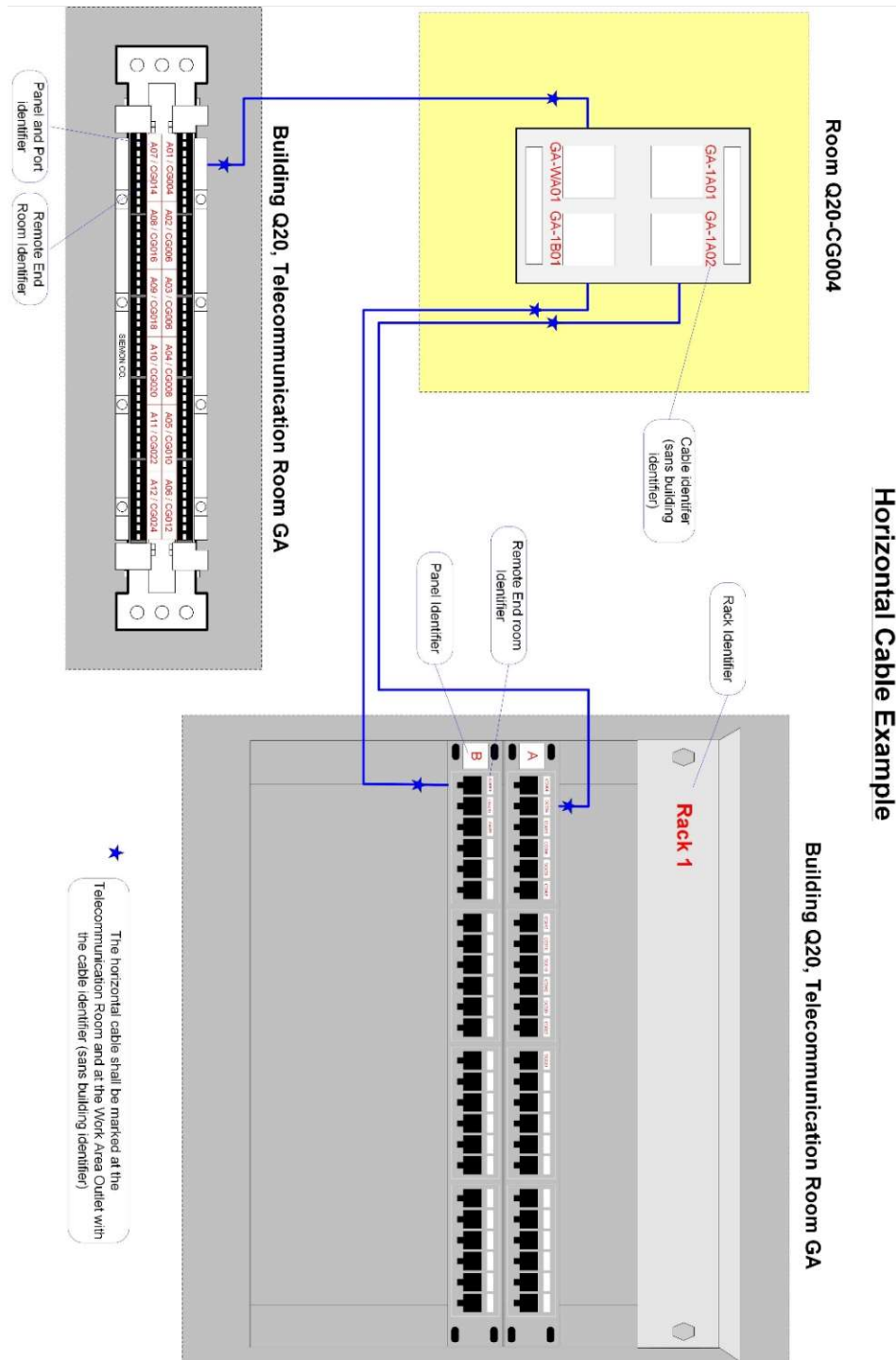
- A. All deliverables that are turned over to the University of Colorado will reference network-infrastructure equipment using this standard. At that point it is the responsibility of OIT to maintain all records and documentation of network infrastructure. As such, those procedures are open to more regular review, procedural change and will not be addressed here.

### 3.8 Diagrams

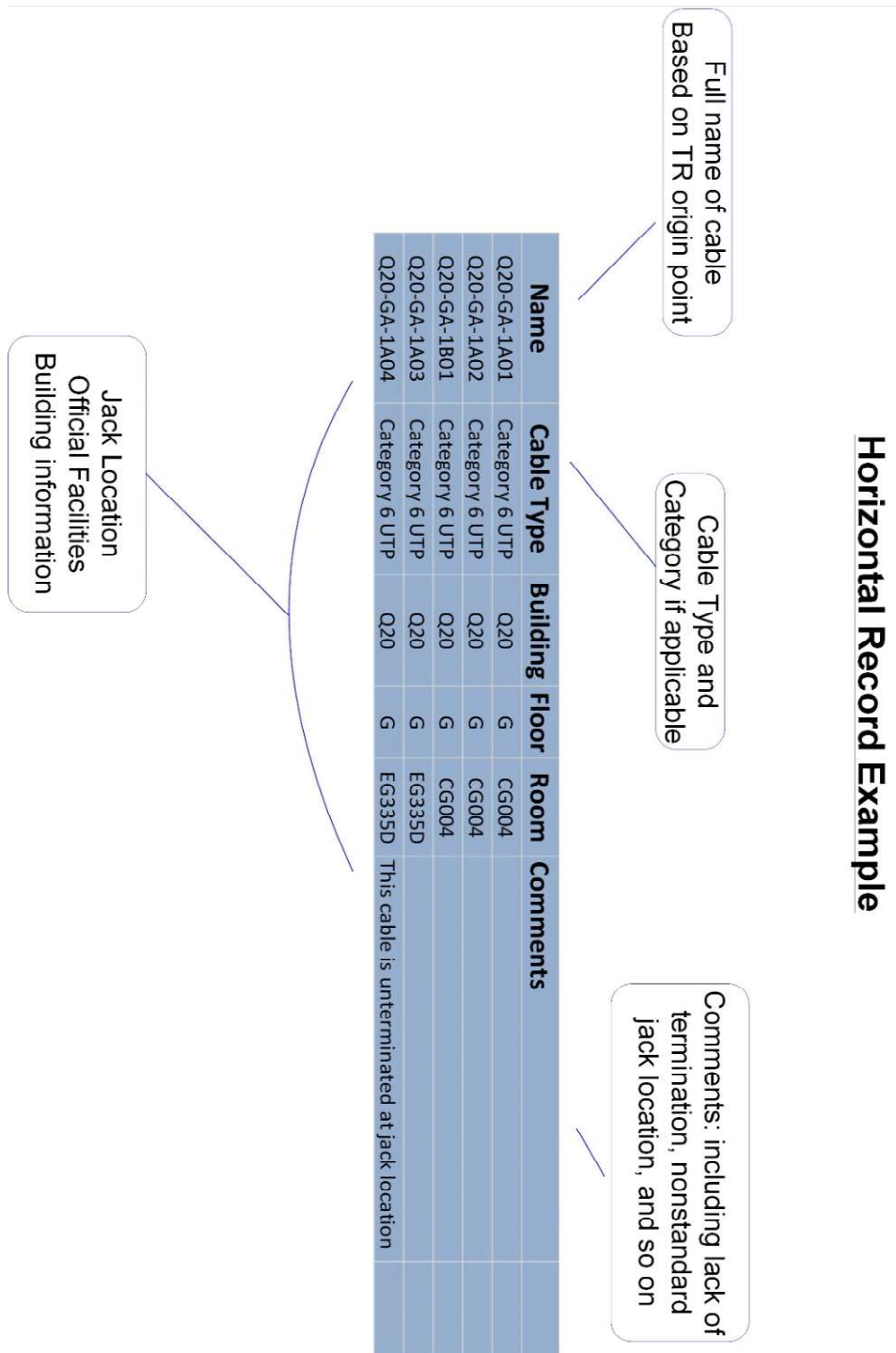
#### A. Diagram 1 - Backbone Fiber Cable Example Labeling:



B. Diagram 2 - Horizontal UTP Cable Example Labeling:



C. Diagram 3 – Horizontal UTP Cable Horizontal Record:





3.9 Common TIA/EIA 606-C Abbreviations:

- A. There are a number of abbreviations used in the CU Telecommunications Administration Standard. The enumeration of these standards does not replace the more common acronyms used by cabling professionals. Instead, these acronyms exist specifically to support this new TIA EAI 606-C administration standard. Following is a list of the more common ones for your use.

Common Abbreviations

RKO	rack outlet
WAO	work area outlet
TBB	telecommunications bonding backbone
TGB	telecommunications grounding bar
TMGB	telecommunications main grounding bar
TR	telecommunication room

Coaxial Elements

XDR	coaxial horizontal drop cable
XPL	coaxial panel

Copper elements

CPL	copper panel
CST	shielded twisted copper cable
CUT	unshielded twisted copper cable

Electronic Elements

EMC	media converter
EPN	power injector

Fiber elements

FCM	composite fiber cable
FMM	multimode fiber cable
FPL	fiber panel
FSM	singlemode fiber cable

Pathway Elements

PCB	communication cabinet
PCO	conduit
PHH	hand hole
PMH	maintenance hole
PRK	rack
PTY	splice tray

PART 4 - CHANGE LOG

4/8/2021 Standard Created.

**END OF SECTION 27 05 53**