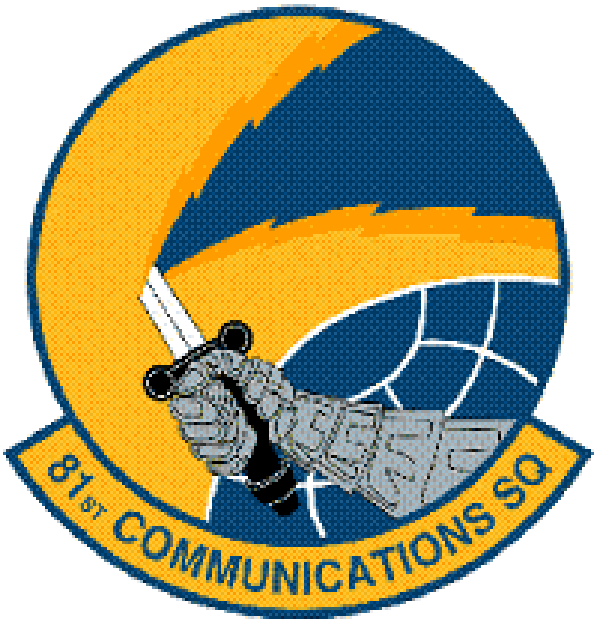


PREMISE WIRING GUIDANCE

Revision F, August 2024

This guide is supplemental in nature and not all inclusive.

GENERAL

1. The purpose of this document is to supplement Telecommunications Industry Association/Electronic Industry Alliance (TIA/EIA) commercial standards for premise wiring (Local Area Network [LAN] cabling) on Keesler AFB.

2. New construction or renovations programming premise wiring work requires coordination with the 81 CS/SCXP Plans and Programs Office, contact # 377-7500 prior to implementation.

3. All premise wiring installed on Keesler AFB will conform to TIA/EIA wiring standards listed at the end of this document and the supplemental guidance contained in the attachments within this document.

4. Any deviations from the attached standards and this supplement should be coordinated and approved by the 81 CS/SCXP.

5. Contractual responsibilities:

5.1 Contractors selected to complete premise wiring work must have at least one experienced\technically certified Building Industry Consulting Service International (BICSI) technician on site.

5.2 Provide as-built drawings for the premise wiring work accomplished identifying installation/relocation work.

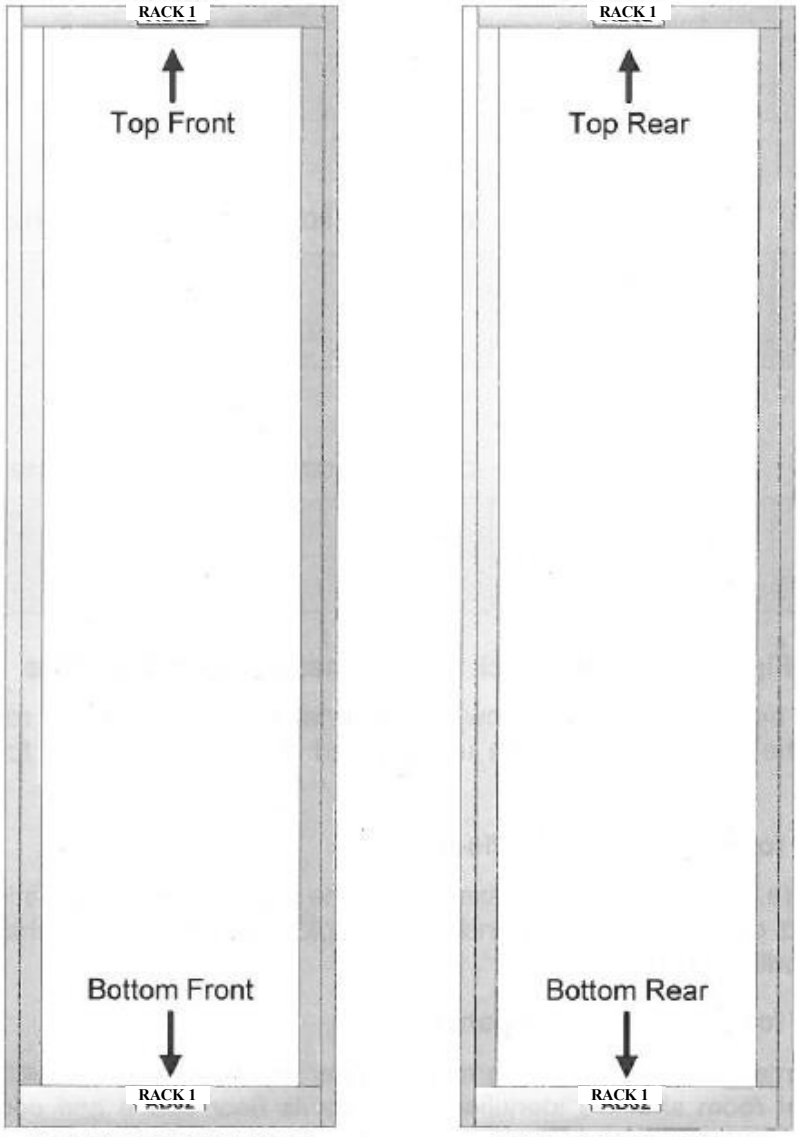
5.3 Provide test results for new\relocated premise wiring work accomplished.

5.4 Contractors shall be responsible for restoring work areas to original condition.

5.5 81 CS quality assurance office 81 CS/SCQ will be the approving authority for premise wiring work accomplished in new construction or renovations.

RACKS & CABINETS *(If installed)*

Racks and cabinets will be labeled on the front and rear at the top and bottom on a permanent part of the cabinet/rack. Text on labels shall be machine printed without serifs, uppercase and large enough to be read while standing near the cabinet/rack. The label color will contrast with surface upon which it is affixed (white on a dark surface, black on a light surface)(TIA-606-D-2021, para 5.1.2.6).



This guide is supplemental in nature and not all inclusive.

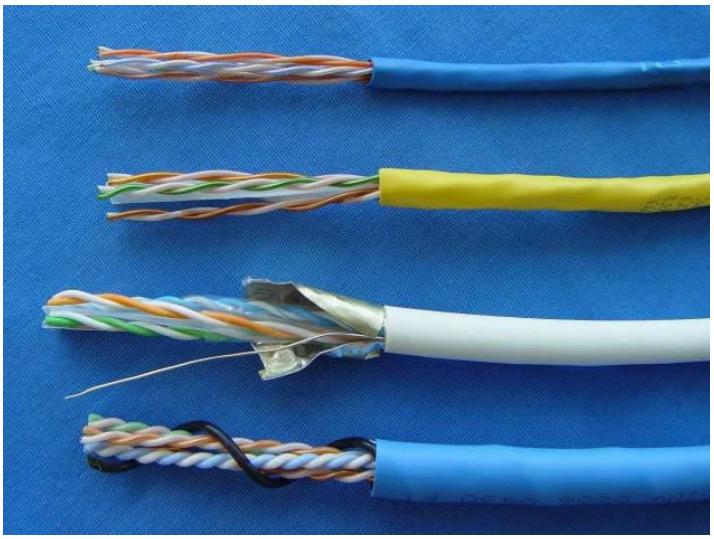
Premise Power Requirements

SWITCH TYPE	POWER REQUIREMENT
Cisco 9600, 9400 type	Two NEMA Locking L6-30 female Plug connectors. NEMA L6-30 Female
Cisco 9200, 9300 type	Four NEMA 5-20R NEMA 5-20R

* Coordinate with 81 CS/SCXP to determine switch requirement.

CABLING

All copper cables, connectors, ports, jacks, outlets, and patch panels shall be TIA/EIA Category 6 rated and must be compatible with Panduit Mini-Com UTP RJ45 TG Jack Modules.



Cat 5e UTP

Cat 6 UTP OK!

Cat 6 FTP OK!

Cat 6A UTP OK!

CABLE COLOR CODING

All installations and renovations will use the following cable color code:

Alarms/Cameras – yellow

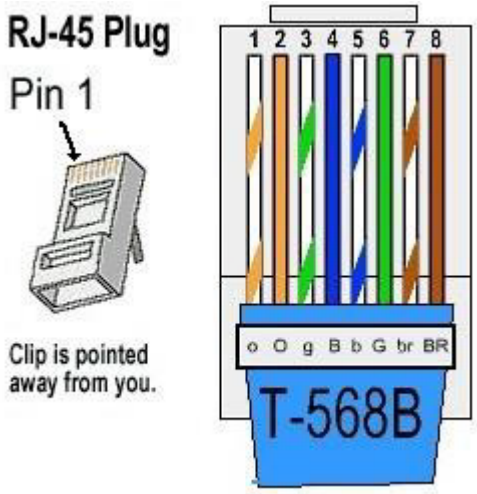
Public Address (PA) Systems – gray

Secure Comm (encrypted) – red

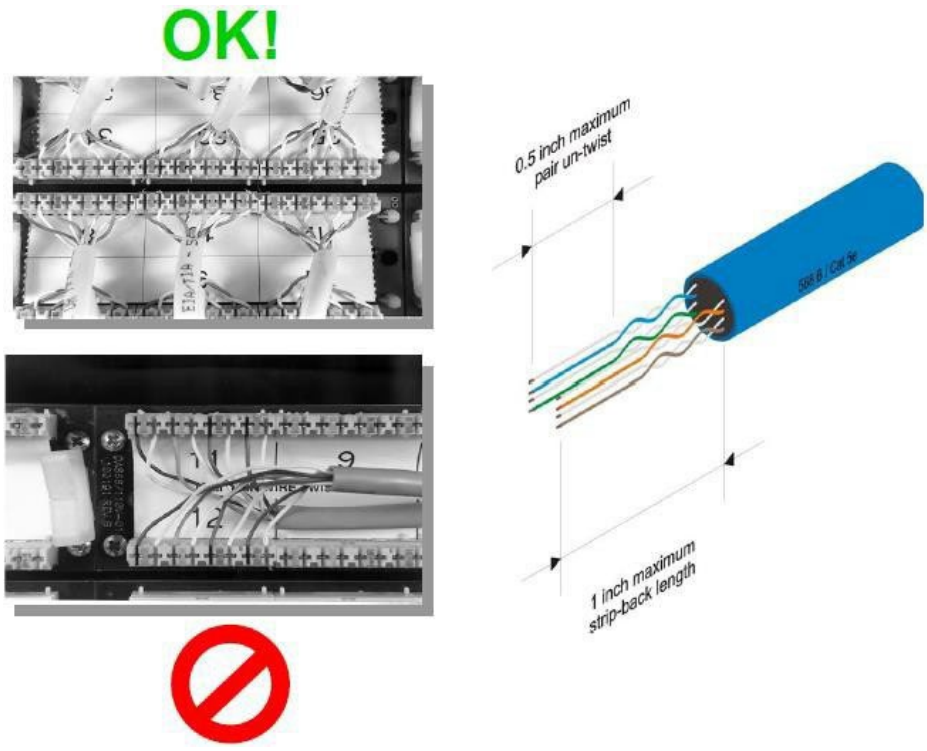
Data/Voice - blue

TERMINATIONS

All premise cabling supporting a LAN will be terminated using the T-**568B** standard. Terminations will be made to available patch panel slots using the standard outlined below and appropriate labeling applied. If no patch panel slots are available a new patch panel will be installed. Deviation from this requirement will be considered on a case-by-case basis i.e., where space for a patch panel is not available.



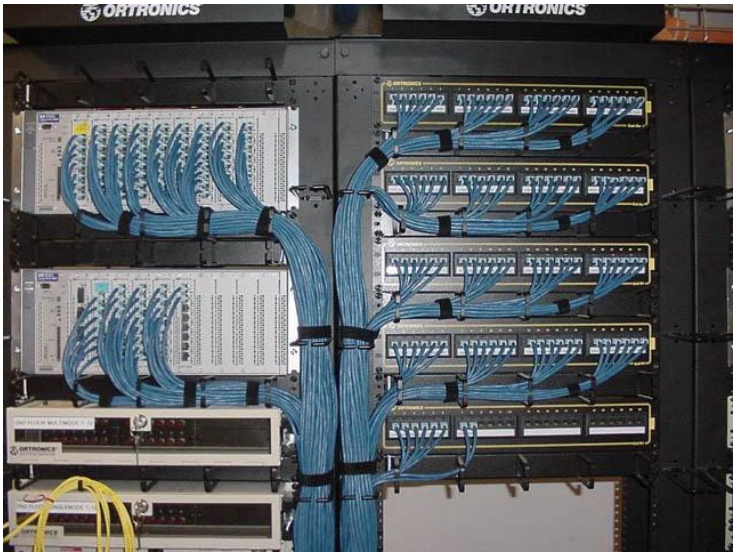
Pairs will not be untwisted more than .5 inch. Cable jacket will not be stripped back more than 1 inch. No nicks on the inner conductors.



This guide is supplemental in nature and not all inclusive.

CABLE MANAGEMENT

The Contractor shall ensure a neat and orderly installation utilizing proper cable management IAW current applicable standards. Data drops shall be routed in a manner to ensure the cables are protected and aesthetically pleasing along the cable path. Metal raceways (cable ladder or wire basket) shall be installed and/or utilized in all communication rooms.



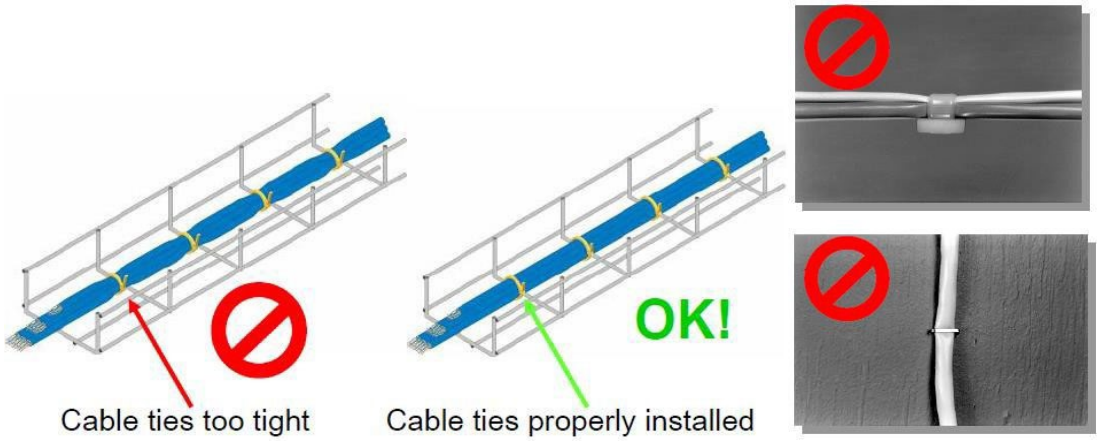
- Cable trays shall be installed and/or utilized in all communication rooms.

- Cables will be independently supported off the ceiling with supports no more than 60 inches apart.

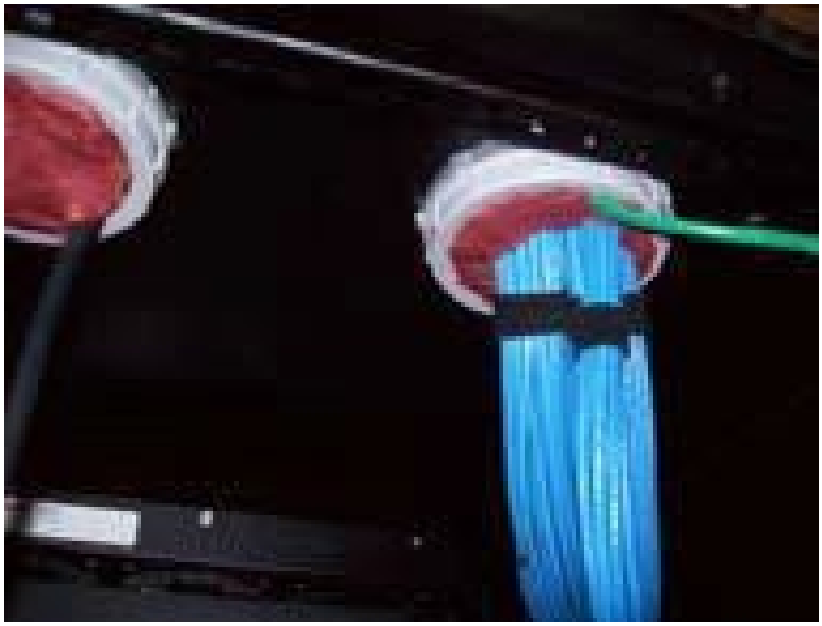
- Cable route should avoid fluorescent light ballasts, electrical cables and motors.

CABLE MANAGEMENT (continued)

- Cable jackets must not be distorted. Velcro or nylon are acceptable – **Velcro is better at protecting cable geometry**. Staples will not be used.



- Any building penetrations (to include wall, ceiling, or floor), shall be in compliance with National Fire Protection Agency (NFPA) regulations and coordinated with CSC's structural office and fire department.



OUTLETS

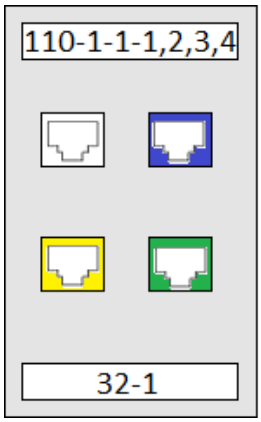
All labeling on outlets shall be machine generated, without serifs, uppercase and large enough to be easily read (TIA-606-D-2021, para 5.1.2.6).

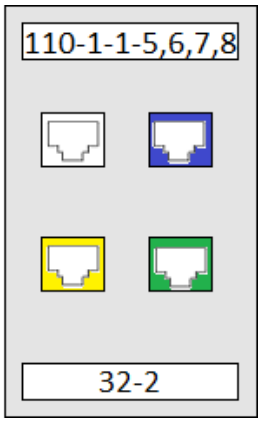
The **naming scheme** used on top of the outlet provides information on where the drop is terminated on the far end and is broken down into four sections. The naming should read:

"Comm Rm #" – Rack # - Panel # - Port # on Panel

If two drops are installed the top will be the first port number and the bottom will be the second port number. If more that two drops are installed then the numbering will be from left to right starting with the top row. See below for examples.

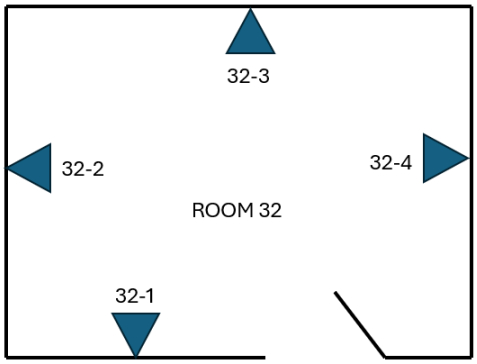
Example of a single quad data outlet located in room 32 and terminating in TR 110, Rack 1, Panel 1 and starting in port #1 of the patch panel





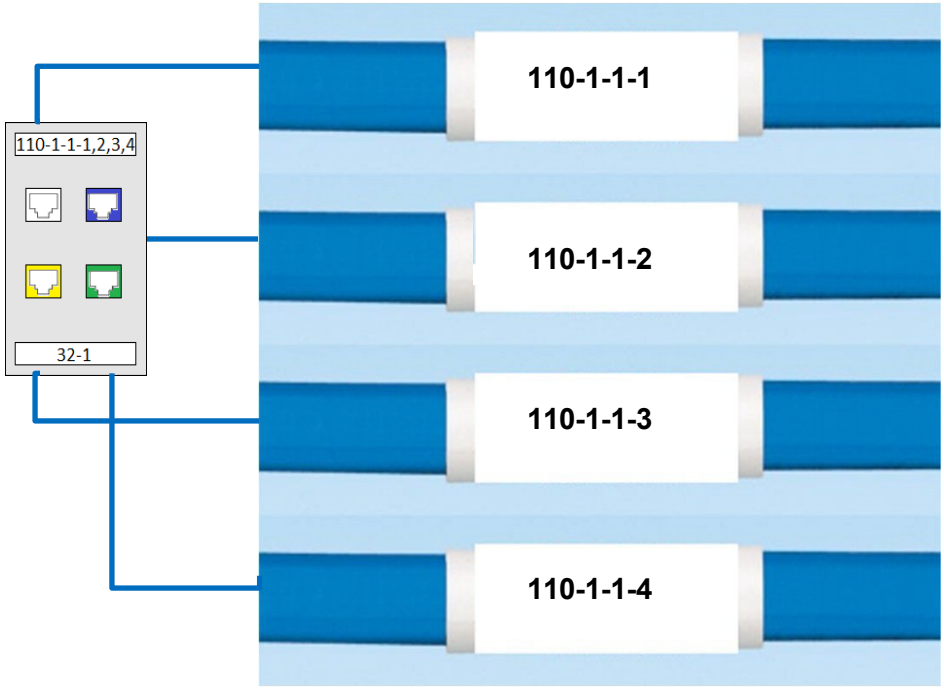
Example of a second quad data outlet located in room 32 and terminating in TR 110, Rack 1, Panel 1 and starting in port #5 of the patch panel

The bottom label identifies the room number and outlet number in that room. If there is only one drop in the room then the label should read "ROOM # - 1". If multiple outlets are installed in one room the first outlet shall be identified by standing at the entrance to the room and numbering in a clockwise direction from left to right. The example



Confirm with 81st Communications Squadron (81 CS/SCXP) on the naming of the outlets.

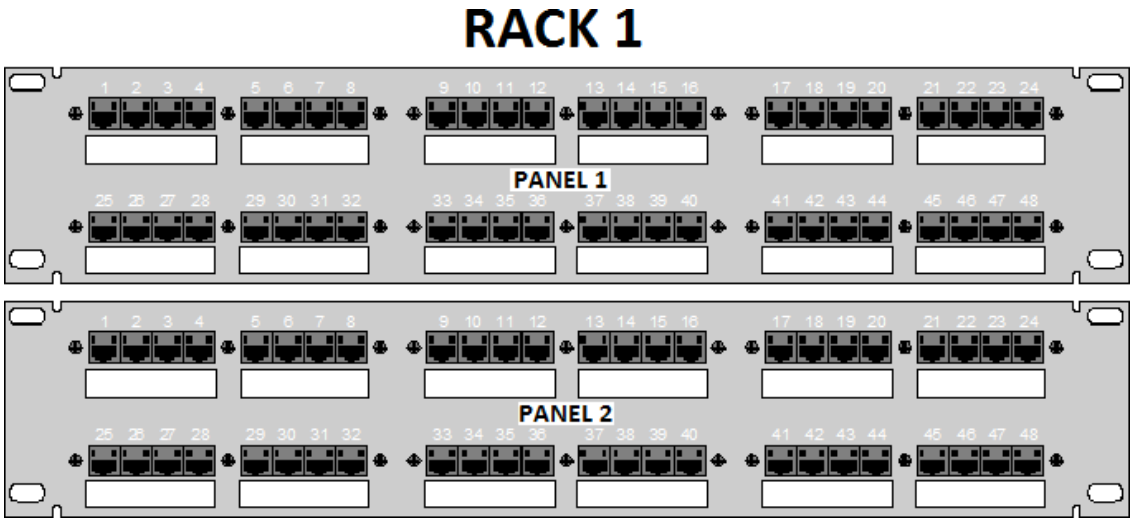
Behind the outlets the cables shall be labeled within 12 inches from the end of the cable jacket. Each cable will be identified by the **naming scheme** above for each port number where the cable is terminated on the panel.



(Example of data cables labeled within 12 inches from faceplate behind outlet)

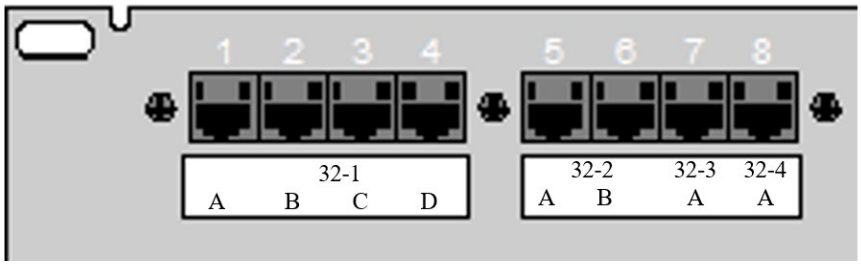
PATCH PANELS

All labeling on patch panels shall be machine generated, without serifs, uppercase and large enough to be easily read (TIA-606-D-2021, para 5.1.2.6). The numbering of the panels will start from the top of the rack, or cabinet, down to the last panel installed and shall be installed in the center of the panel.

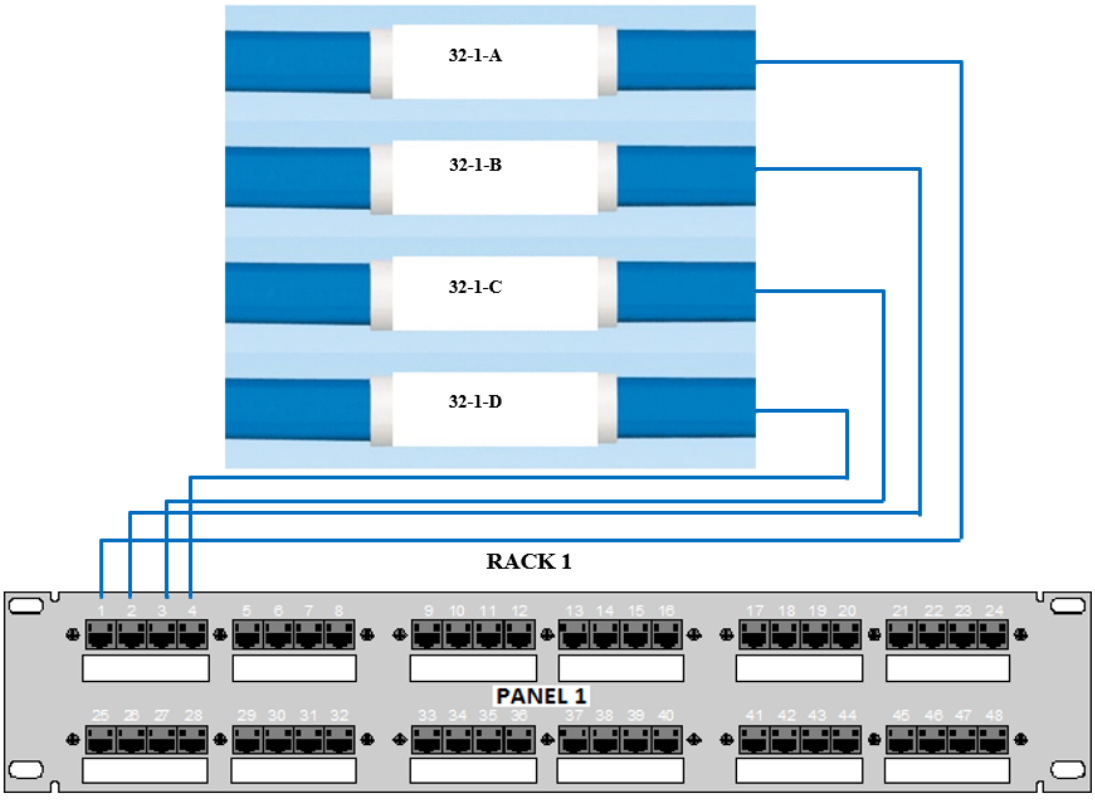


This guide is supplemental in nature and not all inclusive.

The front of the panels will have the room number, outlet number and network drop identifier under the corresponding port number. See example below for multiple options for labeling ports on a patch panel.



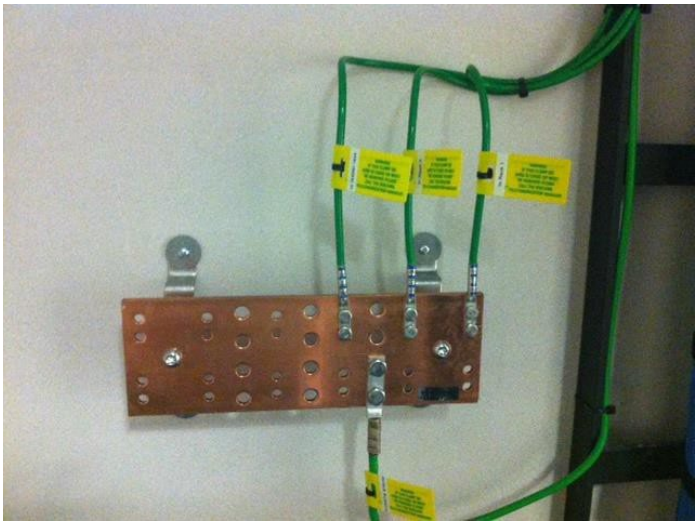
Cables behind the patch panels shall be labeled within 12 inches from the termination point behind the panel. The labels will identify the room number, outlet number and port that the cable is terminated at the far end. Below is an example of what labels should look like behind a patch panel.



This guide is supplemental in nature and not all inclusive.

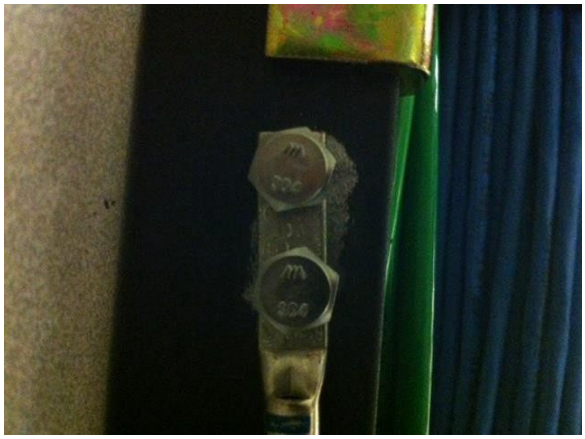
GROUNDING

If installed, all grounds will be labeled with information tags similar to the examples below (ANSI/TIA-607-E-2024 para 6.5.2).



Example tag, Panduit LTYK Label Kit. Not endorsed

All ground connections will have a clear margin of bare metal-to-metal contact (ANSI/TIA-607-B para 7.6).



Cabinets, racks and other enclosures shall not be bonded serially, each shall have their own dedicated bonding conductor (ANSI/TIA-607-E, para 7.1.4).

Premise Wiring References

NUMBER	TITLE	WEBSITE OR LOCATION
BICSI TDM Manual	Building Industries Consulting Services International (BICSI) Telecommunications Distribution Methods (TDM) Manual	http://www.bicsi.org/
NFPA 70 (2023)	National Fire Protection Association (NFPA), National Electric Code (NEC)	http://www.nfpa.org/
29 CFR 1910.268	Occupational Safety and Health Standards, Telecommunications	http://www.osha.gov
ANSI	American National Standards Institute (ANSI) and Internet Standards Resources	http://www.ansi.org/
TIA	Telecommunications Industry Association (TIA): TIA Standards See Commodity Specific Appendices and Individual Task Orders	https://tiaonline.org/
TIA-526-7-A (Jul 2015)	Measurement of Optical Power Loss of Installed Single-Mode Fiber Cable Plant	https://global.ihs.com/csf_home.cfm?&csf=TIA
TIA-568.0-E (Mar 2020)	Generic Telecommunications Cabling for Customer Premises	https://global.ihs.com/csf_home.cfm?&csf=TIA
TIA-568 SET (Mar 2020)	Commercial Building Telecommunications Cabling Standard	https://global.ihs.com/csf_home.cfm?&csf=TIA
TIA-568.2-D (Sep 2018)	Balanced Twisted-Pair Telecommunications Cabling and Components Standard	http://www.tiaonline.org/
TIA-568.3-E (Sep 2022)	Optical Fiber Cabling and Components Standard	https://global.ihs.com/csf_home.cfm?&csf=TIA
ASTM D4566-20	Standard Test Methods for Electrical Performance Properties of Insulations and Jackets for Telecommunications Wire and Cable	http://webstore.ansi.org/
TIA-569-E (May 2019)	Telecommunications Pathways and Spaces	https://global.ihs.com/csf_home.cfm?&csf=TIA
TIA-570-E (May 2024)	Residential Telecommunications Cabling Standard	https://global.ihs.com/csf_home.cfm?&csf=TIA
TIA-598-D (Jul 2014)	Optical Fiber Cable Color Coding	https://global.ihs.com/csf_home.cfm?&csf=TIA
TIA-606-D (Oct 2021)	Administration Standard for Telecommunications Infrastructure	https://global.ihs.com/csf_home.cfm?&csf=TIA

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TIA-607-E (May 2024)	Telecommunications Bonding and Grounding (Earthing) for Customer Premises	https://global.ihs.com/csf_home.cfm?&csf=TIA
TIA/EIA-758-B (Mar 2012)	Customer-Owned Outside Plant Telecommunications Infrastructure Standard	https://global.ihs.com/csf_home.cfm?&csf=TIA
EIA/ECA-310-E (Dec 2005)	Racks, Panels and Associated Equipment	https://standards.globalspec.com/std/195405/EIA/ECA-310
ICEA S-80-576 (2002)	Category 1 & 2 Individually Unshielded Twisted Pair Indoor Cables for Use in Communications Wiring Systems	https://www.techstreet.com/icea/searches/33123596
ICEA S-83-596-2016	Fiber Optic Premises Distribution Cable	https://www.techstreet.com/icea/subgroups/54441
GR-409, Issue 2 (Nov 2008)	Generic Requirements for Indoor Fiber Optic Cable	https://telecom-info.njdepot.ericsson.net/site-cgi/ido/docs.cgi?ID=215531315SEARCH&DOCUMENT=gr
GR-20, Issue 4 (July 2013)	Generic Requirements for Optical Fiber and Optical Fiber Cable	https://telecom-info.njdepot.ericsson.net/site-cgi/ido/docs.cgi?ID=215531315SEARCH&DOCUMENT=gr
NEMA TC 2-2020	Electrical Polyvinyl Chloride (PVC) Conduit	http://www.nema.org/stds/tc2.cfm
NEMA TC 6&8-2020	PVC Plastic Utilities Duct for Underground Installations	http://www.nema.org/stds/tc6_8.cfm
NEMA TC 9-2020	Fittings for PVC Plastic Utilities Duct for Underground Installation	http://www.nema.org/stds/tc9.cfm
RUS Bulletin 1751F-643	Underground Plant Design	https://www.rd.usda.gov/sites/default/files/UTP_Bulletins_1751F-643.pdf
RUS Bulletin 1751F-644	Underground Plant Construction	https://www.rd.usda.gov/sites/default/files/UTP_Bulletins_1751F-644.pdf
RUS Bulletin 1753F-801(PC-5A)	RUS Standard for Service Installations at Customer Access Locations	https://www.rd.usda.gov/sites/default/files/UTP_Bulletins_1753F-801.pdf
RUS Bulletin 1753F-401 (PC-2)	RUS Standards for Splicing Copper and Fiber Optic Cable	https://www.rd.usda.gov/sites/default/files/UTP_Bulletins_1753F-401.pdf
RUS Bulletin 1753F-601a	RUS Specifications for Fiber Optic Cables (PE-90a)	https://www.rd.usda.gov/files/UTP_Bulletins_1753F-601a.pdf

Premise Wiring Guide Checklist

Below is a complementary checklist base on this guidance to assist on what could be inspected by a Quality Assurance Evaluator. Consult the Statement of Objectives and the 81CS/SCXP Plans and Programs Office as this checklist is may not be all-inclusive to the work agree upon.

	YES	NO	N/A
RACKS/CABINETS			
Is the rack/cabinet that was installed labeled on the front and rear at the top and bottom on a permanent part of the rack/cabinet?			
Are the placed labels machine printed without serifs, uppercased and large to read while standing near the rack/cabinet?			
Does the label color contrast with the surface of the rack/cabinet?			
PREMISE POWER REQUIREMENTS			
Does the installed power outlets match the switch/equipment requirements as identified by 81CS/SCXP?			
CABLING			
Are all copper cables, connectors, ports, jacks, outlets and patch panels rated for TIA/EIA Category 6?			
Are all copper cables, connectors, ports, jacks and outlets compatible with Panduit Mini-Com RJ45 TG jack Modules?			
Are installed cables matching the appropriate color code as outlined on page 5 of this guide?			
TERMINATIONS			
Are premise cabling supporting a LAN terminated using the T-568B standard on the connector(s) AND/OR patch panel(s)?			
Are all conductor pairs NOT untwisted more that .5 inches?			
Are all cable jacked NOT stripped back more that 1 inch?			
CABLE MANAGEMENT			
Are all network cables laid neat and orderly during installation, utilizing proper cable management IAW current applicable standards?			
Are data drops routed in a manner to ensure the cables are protected and aesthetically pleasing along the cable path?			
Are metal raceways (cable ladders or wire baskets) installed and/or utilized in all communication rooms?			
Are cables trays installed and/or utilized in all communication rooms?			
Are installed cables independently supported off the ceiling with supports no more than 60 inches apart?			
If able, are cables routed to avoid fluorescent light ballasts, electrical cables and motors?			
Are Velcro or nylon cable ties installed in a manner to avoid distorting the cable jacket?			
Are all building penetrations that were utilized during installation compliant with NFPA regulations and coordinated with CSC's structural office and fire department?			

(CONTINUED)	YES	NO	N/A
OUTLETS			
Are all labels machine generated, without serifs, uppercase and large enough to be easily read?			
Are all outlets labeled using the approved naming scheme and following the examples on page 9 of this guide?			
Are outlets numbered appropriately to the location in the room as instructed on page 9 of this guide?			
Are machine generated labels placed on each cable within 12 inches from the faceplate as instructed on page 10 of this guide?			
PATCH PANELS			
Are all labels machine generated, without serifs, uppercase and large enough to be easily read?			
Are panel numbered in order starting from the top of the rack down to the last panel?			
Are the front panel ports labeled with room number, outlet number and network drop identifier under the corresponding port number?			
Are terminated cables labeled within 12 inches from the end of the cable with the room number, outlet number and port identifier?			
GROUNDING			
Are newly installed grounds labeled with information tags?			
Do ground connections have a clear margin of bare metal-to-metal contact?			
Are newly installed cabinets, racks and/or other enclosures bonded with their own dedicated bonding conductor and NOT serially?			