



SISTERS OF MERCY HEALTH SYSTEM

CONTRACTOR

GUIDELINES

FOR

VOICE/DATA COPPER CABLING

INSTALLATION

Revision Date: 3-1-10

Purpose

As a constantly growing and changing organization, Sisters of Mercy Health System (SMHS) has an ongoing need for voice and data cabling installations. In order to ensure uniformity and consistency throughout the organization, this guideline, based on industry-standard practices, has been developed to outline the standards and expectations set forth by Mercy Technology Services Data Cabling Services for voice and data wiring. *This guide is for the use of Data Cabling Services-approved wiring contractors only.*

Process

After review and acceptance of the quote by Mercy Technology Services Data Cabling Services, the wiring contractor will be hired as a sub-contractor by the general contractor of the project, and will report to and be managed by the general contractor. Management in this case refers to the overseeing of the scheduling, safety and general workmanship of the wiring contractor. The general contractor will follow contractual agreement and responsibility guidelines established by SMHS Planning, Design and Construction for hiring and managing sub-contractors.

All work shall be done under permit and be inspected for full compliance with all local building, electrical, fire, safety or other pertinent codes. Permits are the responsibility of the wiring contractor.

When the project is completed, the wiring contractor shall supply cable test results and drawings indicating jack numbers and locations to Data Cabling Services for inclusion into the wiring database and payment sign-off.

Standard Parts

Data Cabling Services has standardized on Panduit's **MINI-COM** cabling system and *blue* Belden DataTwist 350 plenum-rated enhanced Category 5 (5e) data cabling; refer to Table 1 for specific items and part numbers. Berk-Tek LANmark 350 or CommScope SYSTIMAX PowerSUM cabling may be priced as alternates.

Installation Of Cabling

Mercy now utilizes a "converged" wiring standard where cabling for both voice and data is a Category 5e data cable. For locations with IP phone systems, the standard complement of station cabling is two (2) Category 5e data cables into two (2) yellow RJ-45 jacks. For locations with traditional phone systems, the standard complement of station cabling is three (3) Category 5e data cables into three (3) yellow RJ-45 jacks. Data-only locations receive two Category 5e data cables unless it is for a time clock, which receives one Category 5e data cable. Voice-only and wall phone locations receive one Category 5e data cable. See Fig. 1 for faceplate layout. See Table 1 for parts descriptions and numbers. See Table 2 for the symbol legend.

The contractor shall install solid-copper plenum-rated blue-jacketed Category 5e data cabling for both voice and data such that it will originate at the nearest network closet on the same floor and shall be continuous, without splicing, and terminate at a specified jack. The contractor should consult the drawings for closet locations to use. **No cross-wiring between floors is allowed.**

Voice trunks for traditional phone systems shall be terminated into patch panels in the data racks. Non-terminated voice patch panels are also required with IP phone systems to interface analog phones and faxes to analog-to-IP gateways. Refer to the data closet drawings for quantity and location. See Table 1 for parts descriptions and numbers.

The routing of the data cabling shall be done in such a manner as to conform to the EIA/TIA-569 wiring standard, which states that the data wiring will not exceed ninety (90) meters from the patch panel to the jack nor have a bend radius of less than one (1) inch. The outer jacket of the Category 5e cabling shall not be stripped back more than one-half inch from the termination point. The cabling should be terminated as 568B at both ends.

The contractor shall install copper cabling in cable trays or independently secure a maximum of every four and a half feet or as necessary with J-hooks (preferred) or rings to keep it from laying on the ceiling, pipes, ducts or other equipment. Cabling must not be secured to existing conduit, pipes, cabling etc. Plastic cable ties are not allowed for horizontal support. Cables should be loosely bundled with removable Velcro-type ties. No cabling shall be exposed. Any exceptions must be approved by the MTS Data Cabling Services representative.

Sleeving/Sealing Fire-Rated Partitions

All wall penetrations shall be sleeved. The contractor is to adhere to all fire and safety codes when installing any cabling through walls. The contractor shall be responsible for fire-stopping at the proper rating any and all holes made or used through any wall, whether a firewall or not, immediately after installation of the cabling.

Service Loops

The contractor shall make every attempt to install cabling with a service loop of between five and ten feet. If the overall circuit length cannot allow for this, this requirement will be waived by the MTS Data Cabling Services representative. Test results shall show overall lengths for installed wiring.

Physical Aesthetics In The Closet

All installed circuits terminating at the patch panel or punch down block shall be routed and dressed in a neat manner that will allow for easy tracing. Wire management panels shall be used on the racks for data cabling and D-rings for voice cabling. Dressing is to include all hardware necessary to comply with industry standards and safety codes governing grounding, strain relief and bend ratios. Cables should be loosely bundled with removable Velcro-type ties. All wire cuttings, stripped insulation, paper and other debris shall be removed.

Physical Appearance At The Desktop

The cabling contractor shall ensure that the user end of each installed circuit is aesthetic in nature. All cabling shall terminate in a jack in the faceplate; there shall be no cables coming out of or around a faceplate. Temporary or existing cabling exiting the faceplate through the side is not acceptable. All wire cuttings, stripped insulation, paper and other debris shall be removed. Testing of cabling shall be conducted after dressing in their final position.

Use of Panduit Raceway

In areas that have walls that are not “fishable”, Panduit Raceway products shall be used; the contractor should obtain the approval of the MTS Data Cabling Services representative before initiating installation of that circuit. The contractor should make every effort to route the Panduit Raceway down the nearest corner of the room. Raceway installed in the center of the wall and terminated directly into the raised circuit box below the entry point into the room is not allowed.

The minimum Panduit Raceway hardware required per location should consist of three pieces of raceway, two couplers, and one “L-shaped” coupler. The contractor should install the raceway down the nearest corner to no less than 16” from the floor then proceed 90 degrees to the final circuit location. The metal ceiling grid should be cut to the width of the raceway to allow the raceway to protrude above the ceiling tile so that no cabling is visible between the ceiling and the raceway. In cases where the contractor feels that the integrity of the ceiling will be reduced by cutting the grid, the MTS Data Cabling Services representative should be informed before initiating installation of that circuit.

Labeling of Circuits

All cabling shall be labeled in accordance with the following SMHS Naming Convention using a label maker instead of handwritten labels. Before an installation is started, the contractor shall contact the MTS Data Cabling Services representative to discuss the specifics of the Naming Convention for the particular facility being installed.

All data and voice jacks shall be labeled in the manner described below using the naming conventions listed.

A. General Naming Scheme For Data

The general naming scheme includes abbreviations for the facility, building, floor, closet, patch panel and port. For example,

Facility (3 letters) ROL

Building	(1 letter) Start with A
Floor	(2 digit alpha-numeric) floors: 01, 02, 11; multiple basements: 0B, LL, GR
Closet	(1 letter) A = 1 st closet on floor, B = 2 nd closet on floor, etc.
Patch Panel	(up to two letters) Start with A
Port	(2 numbers up to 24 or 48)

B. Numbering Examples

a. Closet (IDF) example: ROLA01A

b. Panel example: ROLA03AA

c. Faceplate example: A09 A10 A11 B17 B18 B19 C45 C46 C47

1. The contractor shall label each end of the cable with the patch panel and port number using permanent marker, and supply the Network Group with accurate cable records (both hard and soft copies) upon completion of the project.
2. The first patch panel starts in the left rack and shall be labeled A. The second patch panel starts in the right rack and shall be labeled B. The third patch panel goes below the A panel in the left rack and shall be labeled C. Continue with additional panels in a left-to-right and down manner and label by consecutive letter.
2. The faceplate shall be labeled using the SMHS naming convention and a machine-generated black-on-white label using a label-making device, such as the Brother “P-touch” labeler or equivalent (see Fig. 2 for exact placement). **Handwritten labeling on the faceplate is not allowed.** A non-serif font of sufficient size that is easily read should be used.

Testing and Reporting

Each Category 5e data cable shall be tested in its final position from the patch panel to the desktop jack to meet EIA/TIA standards for Category 5e wiring at 100 MHz or higher and the test results provided to MTS. Proper labeling should also be verified.

For large projects, the contractor shall return one hard copy and one soft copy (emailed or on ZIP disk in AutoCad 2005 format) of the drawings with all routes and circuit IDs annotated on them. The contractor shall submit one hard copy and one soft copy (emailed or on disk in tab-delimited or Excel spreadsheet format) of test results for Category 5e wiring installed. This information will be used by the Network Group to update their wiring databases.

Payment For Work Performed

Final payment will not be made until all inspections have been completed and deliverables, such as maps and test results have been provided by the contractor. In addition, a final site visit will be coordinated with the general contractor and wiring contractor to ensure that ALL circuits have been installed as requested before final signoff.

Compliance

SMHS requires installers to comply with the standards and practices set forth above and be in full compliance with all local building, electrical, fire, safety or other pertinent codes. Contractors failing to follow these guidelines, up to three “incidences” per calendar year, will be re-evaluated and may be restricted from providing cabling installation services to SMHS. Installations should be warranted for quality and performance for one year; contractors will be held accountable for correcting improper installations, code violations and any physical damage that might occur during installation.

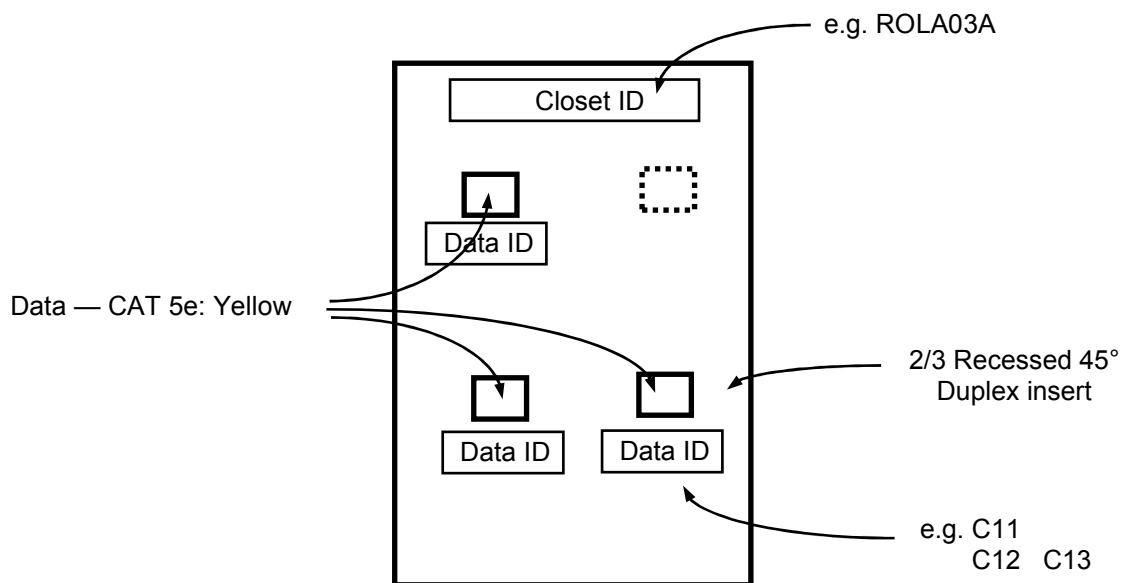


Fig. 2
Table 1

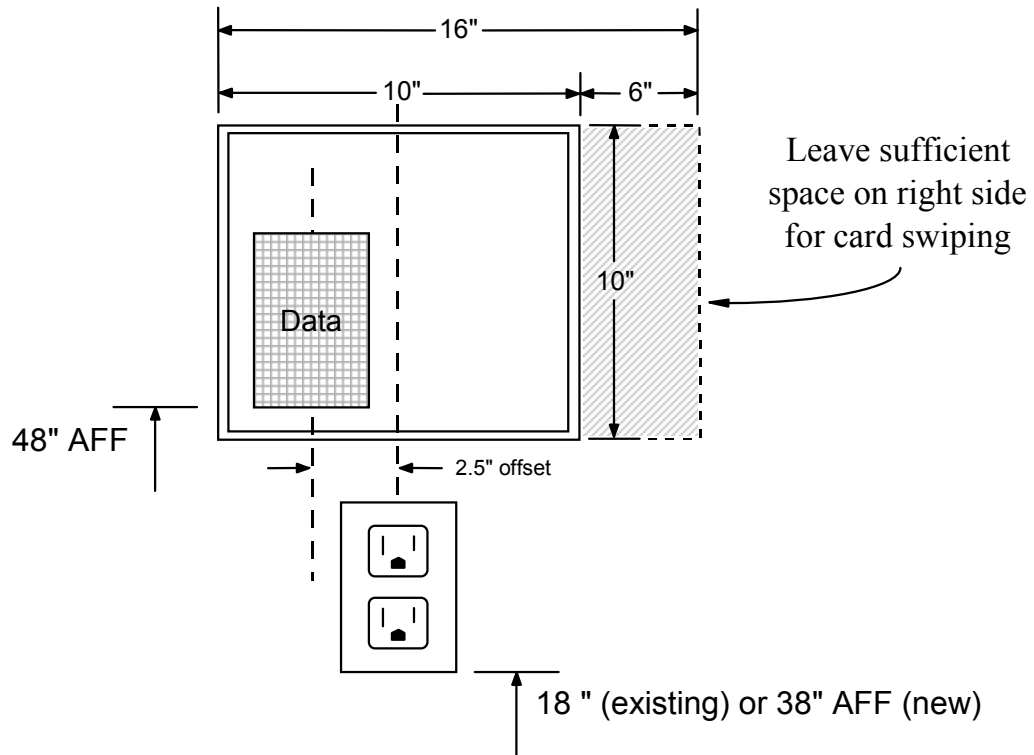
Panduit Ultra CAT 5e/6 Data/Voice Wiring Parts List	
Panduit P/N	Part Description
Wall Plate parts	
CBE-EI*	Single Gang Bezel-Electric Ivory (* For White, change EI to WH)
CBX4EI-A*	4 Module Space Surface Mount Box-Electric Ivory
CHB2MEI-X*	1/3 Size Blank-Electric Ivory (or CHB2EI-X* 1/2 Size Blank)
CHF2MEI-X*	1/3 Size Duplex Insert-Electric Ivory (or CHF2EI-X* 1/2 Size Duplex)
CHS2R2EI-X*	2/3 Size Recessed (45°) Duplex Insert-Electric Ivory
CF106EI*	4-port "106" frame adapter
CMBEI-X*	Module, blank insert-Electric Ivory
CJ5E88TYL	Yellow CAT 5e Jack-Universal - 568A/B (Corp Data) (wire as 568B)
CJ5E88TOR	Orange CAT 5e Jack-Universal - 568A/B (Public Data) (wire as 568B)
CJ5E88TVL	Violet CAT 5e Jack-Universal - 568A/B (Private Data) (wire as 568B)
CJ5E88TIG	International Gray CAT 5e Jack-Universal - (Video Conference)
CJ688TPWH	White CAT 6 Jack-Universal - 568A/B (Corp Data) (wire as 568B)
CMFBAIG	International Gray F-Type coupler Jack (Video)
Fiber and CAT 5e/6 Patch Panel Parts	
CPP48WBL	Modular 48 Port Patch Panel, modular, w/insert faceplates
DPPF1	Filler Panel - one rack space
FAPB	Blank Panel - without Fiber Adapters
FAP6WEISC	6 Port Panel with SC Fiber Adapters
FMD1	24 Port Fiber Interconnect Drawer
OR-808004389	Ortronics 24-port RJ45-to-50 pr Telco, pins 4-5 (voice trunks)
OR-808004041	Ortronics 48-port RJ45-to-50 pr Telco, pins 4-5 (voice trunks)
Equipment Racks, Wire and Wire Management Parts	
19-84-T2SD*B	Equipment rack, Homaco, 19"x84", black, or equivalent
WMPH2E or NCMH2	Horizontal Wire Mgt-2 Rack Space, Front and Back
WMPV20 or WMPV45	Vertical Wire Mgt — Front and Back, rear mount
WMPVCB	Vertical Wire Mgt. center mount kit
1701A (BLUE)	Belden DataTwist 350 CAT 5e Cable, Blue
10032065	Berk-Tek LANmark-350 CAT 5e Cable, Blue

Table 2: VOICE/DATA Symbols

The following symbols should be used:

▽	3 Data loc at 18" AFF or as noted	Standard converged wiring configuration
▽	3 Data loc above counter	As needed
▽ ^X	Data loc with X data jacks (up to 6)	Rarely used except in printer rooms, computer rooms
▼	2 Data loc at 18" AFF or as noted	Patient monitoring, Epic in exam rooms
▼	2 Data loc above counter	As needed
▽	1 Data loc at 18" AFF	Telephones in waiting rooms
▽	1 Data loc above counter	As needed
▽ ^W	Wall phone at 48" (ADA) AFF	Where indicated
▽ ^P	1 Data loc for wireless phone	Where indicated
▽ ^{WAP}	Wireless access point loc in ceiling	Mount in biscuit jack on nearest support above ceiling grid
▽ ^T	Time clock loc at 48" AFF	See Kronos mounting instructions

KRONOS Time Clock Installation Guide



Data opening in case is offset to the left. For proper appearance, offset the data stub-in 2.5" from the electrical stub-in. Leave sufficient room on the right side from door frames or cabinetry to allow for card swiping. Remove the knockout panel for the data stub-in before mounting the case.

