

# **Data and Voice Installations**

## **Specifications and Execution**

**Revision Date: 24 September, 2015**

**This document is meant to supplement the VA master specifications. Any contradictions or inconsistencies shall be brought to the attention of the Contracting Officer's Representative.**

1. SCOPE: The contractor will work in various locations throughout the campus of Edward Hines, Jr. VA Hospital, 5000 South 5<sup>th</sup> Ave, Hines IL 60121. This project is defined as the management, design, materials, labor, and equipment to construct and/or renovate all structure, architecture, and utility features as required to perform the installation of voice and data communication lines. This will include, but is not limited to, the following:
  - a. Installation or relocation of various connection jacks including Voice Only, Data Only, and Full Locs. (voice and data) connections. Jacks may require tasks such as:
    - i. Cutting or drilling walls for jack box installations
    - ii. Terminating and certifying cable ends
    - iii. Installing faceplates and numbering systems including labeled cables
    - iv. Providing CAD as-built drawings
  - b. Pulling the physical transmission cabling
  - c. Installing conduit and hangers
  - d. Providing fire rated wall penetrations for cable runs and having COR approve
  - e. Installing and removing Infection Control measures per facility requirements

### **GENERAL REQUIREMENTS FROM OIT**

**All projects with network or telephone installations must have Hines OIT support through both planning and construction phases.**

2. WARRANTY: Obtain for the benefit of Hines VA a minimum of twenty (20) year Structured Connectivity Solutions (SCS) warranty from Systimax, or approved equal. The Contractor will submit any additional warranties offered by the manufacturer, at no additional cost, to the OIT / COR.
3. WARRANTY: If a voice/data closet contains existing equipment with a current manufacturer's warranty, then the contractor must be certified and use only approved equipment (i.e. cables, jacks, etc.) such that any additional work on that equipment will not void the current manufacturer's product warranty.
4. Due to the existing conditions, all work shall be performed by a Systimax Certified Business Partner. The Contractor shall follow the current design and installation guidelines in the specification and those of the VA Master Specifications, <http://www.cfm.va.gov/til/spec.asp>. Installers must be able to furnish proof that they are currently certified, to install the product in accordance with the requirements to meet the 20 year manufacturer's product warranty.

5. Insurance covering installed equipment from damage or loss is to be borne by the contractor until full acceptance of equipment and services.
6. If area is being remodeled, existing data and voice drops will be saved and re-used with original numbering system where economical. If any data or voice lines are not being re-used, contractor will remove all cable from station to phone closet.
7. Phone locations to be identified by numbering system provided by Hines OIT.
8. Upon completion of job all data closets, panels, and cable managers will be cleaned of dust and debris.
9. Upon completion of job all test results, warranties, and as built drawings shall be provided to OIT representative.
10. Work shall be performed per the Specifications in attached contract documents. When a situation is unclear the contractor shall proceed per OIT directions.
11. An Above Ceiling Permit must be obtained from the Facilities Management Service department prior to beginning work and must be displayed at all times work is in process.

## **SUBMITTAL REQUIREMENTS**

12. All work shall be performed by a Systimax Certified Business Partner or approved equal. Installers must be able to furnish proof that they are currently certified, by the product manufacture, to install the product in accordance with the requirements to meet a 20 year manufacturer's product warranty.
13. Cut-Sheets of Fire Stopping material and components shall be supplied when penetrations or other equipment passes between floors, walls, or subsystems.
14. Cut-Sheets shall be provided the COR for all proposed items used to implement a plan, to include: panels, cabinets, switches, racks, cabling, hangars, etc.
15. CAD and/or Shop Drawings, as specified by the Scope of Work, shall be submitted to the COR and OIT representative prior to installation of a system or subsystem, upon any recommended or directed deviation, and upon completion of installations for use as As-Built documentation. CAD Symbols and Documentation should follow those detailed in the Specifications document attached.

## **SPECIFICATIONS and EXECUTION**

### **CABLE REQUIREMENTS**

16. All work shall be installed with Cat-6 equipment and cables. In the case in which existing Cat-5 patch panels are available in the voice/data closets, and there is no further room on the racks to accommodate a new Cat-6 patch panel, then the Contractor will seek further guidance from OI&T and COTR on how to proceed.

17. All installed products shall be in compliance with Systimax 20 year warranty standards. Prior to use any alternative manufacturer or supplier must be approved.

18. Cables:

a. Copper.

- i. All data drops will use two white colored Category 6 or higher, four pair, 100 ohm UTP (24 AWG solid conductor), Systimax #.1071 1071004EWH, unless otherwise specified. All materials shall be supplied by the contractor
- ii. All voice drops will use gray colored Category 5 or higher, four pair, 100 ohm UTP (24 AWG solid conductor), unless otherwise specified. All materials shall be supplied by the contractor.

b. Fiber

- i. When fiber optics is required the minimum pull shall be 12 strands of 50 micron multimode terminated at both ends with fiber connectors to be determined by OI&T representative. All materials shall be provided by the contractor; every installation shall be tested and identified with documentation provided to the VA representative.

19. All cable runs shall follow the cable trays that are above the suspended ceilings and terminated at the closet specified by design drawings, COR, and/or OIT.

20. All conduits for Voice or Data cabling shall be silver in color to match the established coloring system used on campus.

21. All cables entering the data/voice closets will be given a “drip loop” to allow for flexibility in closet layout or configuration.

22. Cables shall not be attached to removable ceiling grid supports or laid directly on the ceiling grid. Cables shall not be attached to or supported by fire sprinkler heads or delivery systems or any environmental sensor in the ceiling air space.

23. In areas where the cable does not traverse conduit, cable trays or ducts, the contractor shall bundle the cables in bundles of 48 (1 bundle per 48-port patch panel). Cable bundles shall then be supported by J-hooks attached to existing building structure at a maximum of five (5) foot intervals.

24. Ensure that the smoke and fire-rated structures (walls, ceiling, and floors) retain their existing smoke or fire-rating in accordance with VA Specification 078400 FIRESTOPPING. Contractors should be aware of any submittals required prior to work commencement. Refer to document located at <http://www.cfm.va.gov/til/spec.asp>.

25. All previously abandoned Voice and/or Data cable in construction area will be removed completely from end to end. If the cable that is to be removed is installed in such a way that it cannot be removed without damaging other cables or equipment, the Contractor shall notify the COR and OIT to allow

for further direction If the cable that is to be removed is installed in such a way that it cannot be removed without damaging other cables or equipment, the Contractor shall notify the COTR and OIT to allow for further direction.

## **JACK CONFIGURATIONS**

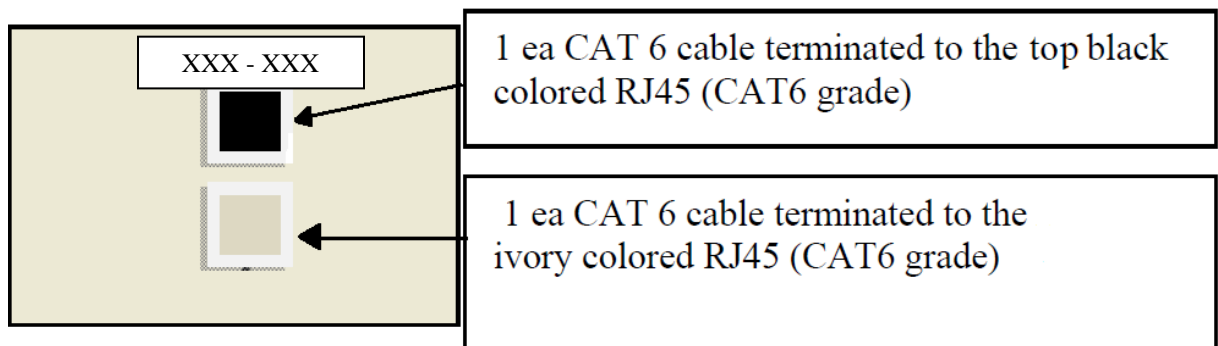
**All contractors must work with Hines OIT to properly number the installations.**

26. All components shall be approved by OIT via submittal of product information sheets prior to installation. The current acceptable standard and basis of design is Systimax. Use of other manufacturers may be allowed but must be approved prior to use.

27. All Jack faceplates will have electronically printed numbers provided from Hines OIT.

- a. Data only drops shall be in jack configurations as described below and shown in the figure:
  - i. Data Horizontal dual jack configuration, no phone: Face plate shall be an ivory colored, dual faceplate. Left side jack shall be 1 black colored RJ45 Cat-6 grade Systimax or approved equal. Right side jack shall be 1 ivory colored RJ45 Cat-6 grade.
  - i. Data vertical dual jack configuration, no phone: Face plate shall be an ivory colored, dual faceplate. Top jack shall be 1 black colored RJ45 Cat-6 grade Systimax or approved equal. Bottom jack shall be 1 ivory colored RJ45 Cat-6 grade.

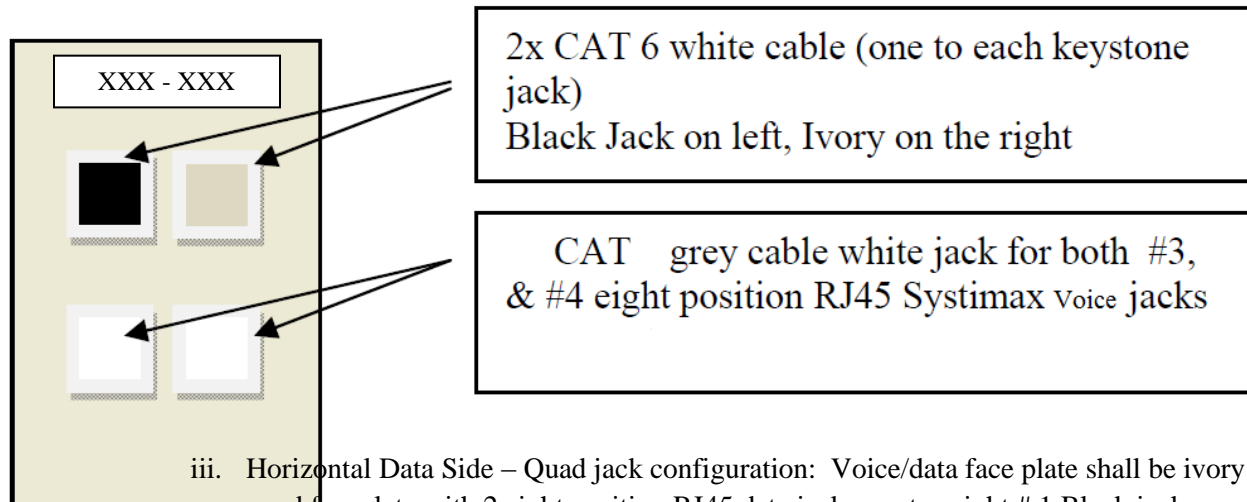
Example:



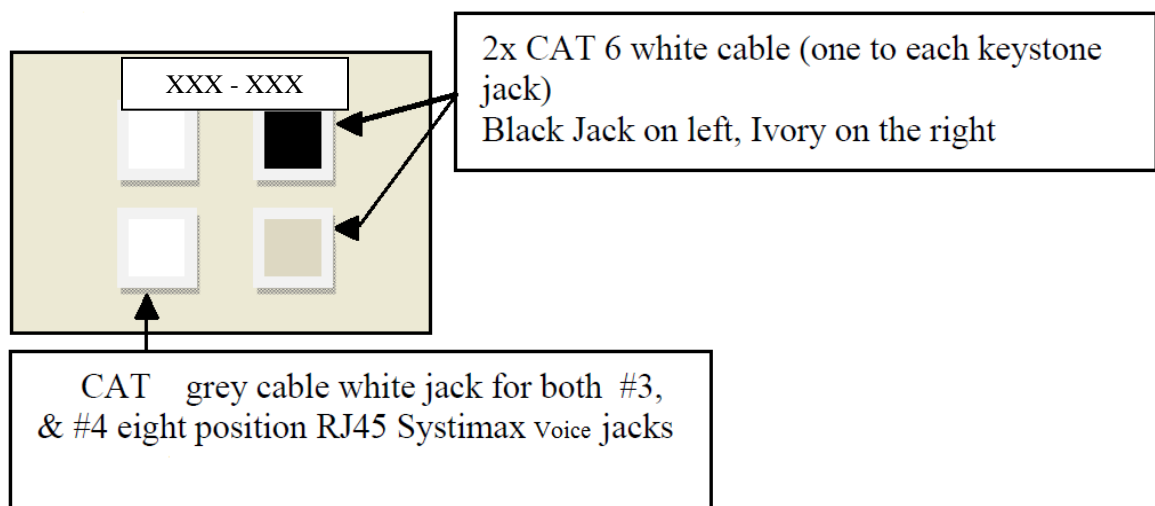
- b. Voice / Data Drops (Full Locs) shall be in quad jack configurations as described below:

- ii. Vertical Data Top - Quad jack configuration: Voice/data face plate shall be ivory quad faceplate with 2 eight position RJ45 data jacks; on top position #1 Black jack MGS-400-003 and position #2 Ivory jack MGS-400-246, one data cable for each jack. Bottom two jacks in positions #3 and #4 shall be white voice RJ45 Systimax MGS-400-262 jack. Data cables to be terminated on Systimax 48 Port CAT6 Patch Panel1100GS3-48.

Example Full Loc. (2 Data / 2 Voice):



- iii. Horizontal Data Side – Quad jack configuration: Voice/data face plate shall be ivory quad faceplate with 2 eight position RJ45 data jacks; on top right #.1 Black jack MGS-400-003 and bottom right #2 Ivory jack MGS-400-246, one data cable for each jack. Left two jacks #3, and #4 shall be white voice RJ45 Systimax MGS-400-262, one voice cable for each jack. To be terminated on Systimax 48 Port CAT6 Patch Panel1100GS3-48.



## INSTALLATION REQUIREMENTS

28. The Contractor is responsible for grounding and bonding all infrastructure provided in this project. Specifically:


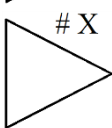
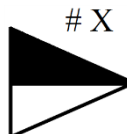
- a. Use #6 grounding conductors and two-hole irreversible compression connectors to bond racks to the room's telecommunications grounding bus-bar (TGB).
- b. The contractor shall provide and install the proper grounding kits for the Telco and Patch Panels as required by manufacturer.
- c. The contractor shall ground and bond the telecommunications rack.

29. The Contractor is responsible to completely clean and dust all areas that work was performed, whether installing or removing cabling or equipment.

30. The Contractor is responsible for electronically printed labeling of the following:

- a. Terminated Cables – at both ends of each cable (the label shall be installed 3 inches from the termination).
- b. One sequential # location number for each Faceplate.
- c. Voice Panels to be sequentially numbered with electronic labels of OIT number scheme #.3#.4. on 19 inch rack.
- d. Data panels with number scheme #.1 #.2 to be grouped sequentially below sequentially grouped voice terminations number scheme #.3, #.4 with no omissions or duplications.
- e. **OIT will provide the appropriate location numbers to the COR, and contractors will only use those numbers to label the jack, cable, and panel.**

31. All data/voice locations on the design plans will use Hines standard symbols as follows:

- a. For 1 wire( 2 jacks) voice only – 
- b. For 2 wire (2 jacks) Data Only- 
- c. For 1 Voice wire and 2 Data wires at a single location- 

**Important Note: All CBOCs utilize voice over IP and generally do not require an analog voice line.**

32. The Contractor shall certify the data cables as a TIA Cat6 Permanent Link and test the cables using Fluke DTX1800 or approved equal tester. Test results shall be furnished to OI&T upon completion of testing via pdf compatible format.
33. If the connected cable in the faceplate does not pass certification, the cable from the faceplate shall be re-terminated and re-certified. If any line should not PASS, the contractor shall install a new Cat6 cable.
34. Any alteration to a data closet layout must be approved by OIT and follow these guidelines:
  - a. Rack will be installed 18 inches below any ceiling mounted sprinkler head. The data racks shall be standard 'free' standing 2 post data racks or 'wall mounted cabinet' types.
  - b. Rack layout will be such that T1 extension shall be the topmost panel with all additional Telco rack mountable installations directly below. The Point of Presence (POP) pairs required for staffing needs will be next on the rack and subsequent VOIP cat-6 panels will be below the Telco provider gear and shall alternate between Patch Panels and Cable Management Panels (3-1/2" patch panels to be separated by 3-1/2" cable management panels). 6 U rack spaces are typically reserved for Switch and Router equipment. Data termination panels to be installed below switch and router space.
  - c. A drip loop of all wires will be provided from closet sleeve to closet floor before terminating in rack panels. Additionally, vertical cable management systems shall be provided for both sides of the rack - front and rear cable management - from the floor to top of rack. Panels shall be sequentially numbered with electronically printed labels per OIT's number scheme (#.1 #.2), with no omissions or duplications.
35. All information system closets – shall be designed and/or constructed to provide, at the minimum, unobstructed access to:
  - a. One (1) ivory colored duplex or quad 110vac, 15 or 20-amp electrical outlet with an ivory colored cover plate, on a dedicated circuit with isolated ground, for use in the normal power circuitry.
  - b. One (1) red colored duplex or quad 110vac, 15 or 20-amp electrical outlet with red colored cover plate, on a dedicated circuit with isolated ground for use on the hospital's critical power circuitry. The location of the outlets will be determined by the COR and OIT.
  - c. All cable will be fished through the wall and above the suspended ceiling (if applicable). If construction is to be performed where there is no suspended ceiling or access above and through the suspended ceiling or walls is severely limited, the Contractor may use an approved "surface mounted raceway" (to be approved in submittal, and shall have accompanying surface mounted jacks.
  - d. Terminate the data and VOIP using Systimax 48 Port CAT6 Patch Panel1100GS3-48 or approved equal, IAW the 20 year product manufacturer's warranty.

- e. The Contractor shall be required to install a new Cat-6 patch panel in any cases where new Cat-6 wires are being pulled into an existing closet that currently has only Cat-5 patch panels. At no time will the Contractor terminate Cat-6 cables on to a Cat-5 patch panel. If there is a density issue on the patch panel which prevents the additional Cat-6 patch panel, the cable contractor will work with the COR and OI&T representative to develop solutions.
  - f. In the case of renovations where Cat-6 cabling exists, the cat-6 data cable can be saved and re-used with original numbering system where feasible and approved by the COTR and OI&T representative. In this instance, if any of the data lines are not being re-used, the Contractor shall remove all abandoned cable from the station side to data closet.
36. Phone closet should be terminated using Systimax 48 Port CAT6 Patch Panel 1100GS3-48 or approved equal, IAW the 20 year product manufacturer's warranty.

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End OIT Requirements

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