**VA248-17-R-0952 - EXHIBIT J**

**Telecommunications Closet and Telephone/Data System**

The telephone system shall be Voice over IP. All telephone/data outlets within the building shall be installed by the Lessor. Telephone/data outlet locations shall be determined by VA.

All modifications to this standard must be approved by the VA. Lessor shall supply all labor and material needed to accomplish the installation of the Telephone/Data System. All work shall be done in a clean and professional manner, and comply with ANSI/EIA/TIA Technical Specifications and Standards.

NON-GOVERNMENT STANDARDS:

The contractor shall operate under, but not limited to, the following national codes,

telecommunications industry standards and practices, and in accordance with accepted EIA/TIA, and NCS standards.

National Electric Code (NEC), part 800 article 250.

Building Industry Consulting Service International (BICSI) standards.

Electronic Industries Association/Telecommunications Industry Assoc. EIA/TIA 569 Standard for telecommunications pathways and spaces requirements.

Telecommunications Industry Assoc/Electronic Industries Association TIA/EIA 568A (Telecommunications cabling standard).

ICEA Publications S-80-576-1988.

Telecommunications Industry Assoc/Electronic Industries Association TIA/EIA 607 (Building grounding and bonding requirements).

Telecommunications Industry Assoc/Electronic Industries Association TIA/EIA 606 (Standard for records, labeling and space & pathway administration)

Installation of outside plant, inside riser, and station cabling shall conform to meet the requirements of ICEA Publications S-80-576-1988 (Ref.B1.6) as to size and installation practice.

The installation of the cable shall conform to appropriate OEM, ANSI/EIA/TIA recommendations.

Federal Communications Commission (FCC) part 68.

Americans with Disabilities Act (ADA).

National Fire Protection Association (NFPA).

Underwriters Laboratories (UL).

An end-to-end certification test will be performed on all telephone/data cables in accordance with **EIA**/**TIA** 568B.2 and ISO/IEC 11801 certification.  Both ends of cables shall be labeled to identify outlet supplied. Telephone/Data outlets shall be labeled with identifier to identify connection point in Telephone/Data room. Labeling scheme: Starting with the back right corner of suite and working clockwise, cables will start at the number 1 and continue to highest number, proceeding in one direction systematically. Inside of rooms, work from left to right from doorway when entering room. Certification test results to be provided to the VA in an electronic format that can be read without the need to purchase/use special software.

**TELEPHONE/DATA ROOM:**

Provide a centrally located telephone/data room with a minimum of 180 sf for contiguous tenant space.

Ceiling shall be a minimum of 9 ft. above finished floor, if space permits. Room shall have hard ceiling, with no opening greater than 96 square inches. Vents, ducts, and similar openings that enter or pass through the space, and which are greater than 96 square inches, shall be protected with either bars or grills. If one dimension of the duct measures less than six inches (150 mm) or duct is less than 96 square inches (620 cm2), bars or grills are not required; however. If bars are used, they must be 1/2 inch (12.7 mm) diameter steel welded vertically and horizontally six (6) inches (150 mm) on center; if grills are used, they must be of 9-gauge expanded steel.

Telephone/Data Room shall fully support BICSI standards.

Telephone/Data Room shall be for use only for VA OI&T equipment and shall not be used for any other purposes.

Telephone/Data Room shall have door fitted with the following hardware:

1. Automatic door-closer
2. Mortise lock, with an auxiliary security dead latch, where the latch bolt is operated by key from outside or by rotating inside lever. Outside lever is always fixed.
3. Deadlock, with a minimum ¾ inch dead bolt and inside thumb turn, where the dead bolt is operated by key from outside and thumb turn from inside. Thumb turn will retract dead bolt, but will not project dead bolt.
4. A PIV Class, RPK40EKNR, SRD Model RPK40-H, Model 921PHRNEK0002D (dual factor), 13.56 MHZ only, 200 bit, manufactured by HID, or approved equal. Operation of the card reader will disengage the mortise lock.
5. Mortise lock and dead bolt shall be keyed alike and individually from other locks in building.

 Any slab or rated wall penetrations must be sleeved and the appropriate fire rated protection used.

  Installation of the cable in conduit, raceway and cable tray(s) will not exceed the standard of 60% fill ratio.

 Layout of Telephone/Data Room shall be approved by VA prior to any work being done on installation of equipment racks, patch panels, electrical outlets, backboard and termination of cables.  There shall be a signed and dated layout plan between the VA and the Lessor.

Provide ¾” fire treated, painted, plywood 8 ft. high on all walls with the bottom one foot above the finished floor.

Provide four (4) each 20-amp double-duplex (quad) electrical outlets, each on a dedicated circuit, and two each 208 volt receptacles, each on a dedicated circuit, at the top of each rack. Coordinate location of receptacles with VA.

Provide a rack mounted UPS battery backup unit with 208V input and 120/208V output. UPS shall provide backup for four hours. UPS shall have two 120V, 30A outputs and two 208V, 50A outputs. UPS shall provide battery backup for 120V and 208V receptacles that are mounted at top of racks. UPS shall be manufactured for use with telecommunications equipment. UPS shall have brownout, surge and transient protection, precision output voltage regulation, input power factor correction, pure sine wave output, and eliminates generator frequency and voltage drift.

Provide ground bus bar, grounded to building ground at the source.  Bus bar shall be copper, a minimum of 1/8 inch thick X 1 inch wide X 6 inches long, and shall be mounted on stand offs on plywood backboard.

Provide two (2) standard 19" relay rack(s), floor mounted type. All associated cable trays, ladder racks, vertical and horizontal wire, patch cords, and cable management are to be supplied.  Ladder rack shall be installed around the perimeter of the Telephone/Data Room.

Provide one (1) equipment cabinet manufactured by Wrightline, Model No. 40U with features and options listed below.

Cat 6 cables from data outlets shall be terminated in the Telephone/Data Room Category 6 patch panels using 568B standard. Provide four (4) each 48 port patch panels, located in the 40U Wrightline cabinet in the Telephone/Data Room for termination of data cables. Color coding for Cat 6 cables shall be green. Cabling shall be installed in conduit or cable trays which will provide physical security for the cables in accordance with VA requirements. Cabling to telephone/data outlets in individual rooms may be installed with J-Hooks.

Provide one (1) 7’ Cat 6 patch cable for each Cat 6 cable feeding data outlets.

Provide two each 4 inch conduits, with pull strings, from Telephone/Data Room to public utility demarcation point.

**OI&T Preferred equipment list:**

Ortronics        48 Port Patch panel                 OR-PHD66U48

Ortronics        Series 2 wall jack            For Cat 6 Cable

Chatsworth    19” Standard Rack 3” Deep        55053-703

Chatsworth     Universal Horizontal Cable Manager 30130-719

Chatsworth      Global Vertical Cabling 30130-703

Wrightline 40U Paramount cabinet consisting of:

* + Frame: 40U x24”Wx40”D welded Paramount frame (JW772440)
	+ Frame Trim Kit: 24”W Paramount Frame Trim Kit (JFTK24)
	+ Left side panel: 40Ux40”D solid side panel (JSPS7740)
	+ Right side panel: 40Ux24”W solid side panel (JSPS7440)
	+ Front door: 40Ux24”W Std. door frame-left hinged (JDF7724L)
	+ Front Dr Insert: 40Ux24”W Fully perforated insert (JDP77242)
	+ Front door lock: removable core locking with 2 Key (WL100)
	+ Rear Door: 40Ux24”W split door-Fan-120V (JDD17722)
	+ Top Panel: Top panel-OH CM Trough-Perforated-24 (JTPPCMT2440)
	+ Rack-Mount Rails: Rm Rail – 19”EIA-40U-0.375” sq (JRM10003)
	+ Options: caster kit-40”D Frame- 1-600lbs (JCSTR40)
	+ Options: cable pass –thru devices – set of 8 (JCPT08)
	+ Options: molded cable rings – set of 4 (JCR04)
	+ 1 -Standard Duty fixed shelf – black (EAFS19241U20)

Sharpie Ultra Fine Point SHPE 23 BK

Provide two telephone/data outlets in each room, except toilets and janitor closets. Outlet locations shall be coordinated with VA. Telephone/data outlet locations shall have three (3) Cat 6 cables and shall be terminated on RJ-45 female type flush mounted data wall jacks. A 25 foot service loop shall be maintained at the outlet end. Each telecommunications outlet (TCO) shall consist of three data multi pin jacks for a triplex outlet. Outlet; shall be mounted with a faceplate that shall be industrial grade plastic with clear permanent labels. The TCO shall be triplex type jacks, with a four position, flush mounted faceplate. The triplex wall outlet shall include a minimum eight positions RJ-45 female type unkeyed (sometimes called centered keyed) jacks. The TCO shall support the following minimum operating parameters:

VOICE:

1. Isolation 24db

2. Impedance 600 ohms, balanced

3. Signal Level 0 decibel per milli-volt (dBmV) + 0.1 dBmV

4. System Speed Minimum 100 mBps

5. System Data Error Minimum 10 to the -6 Bps

DATA:

1. Isolation (outlet-outlet) 24db

2. Impedance 600 ohms, balanced

3. Signal Level 0 decibel per milli-volt (dBmV) + 0.1 dBmV

4. System Speed Minimum 120 mBps

5. System Data Error Minimum 10 to the -8 Bps

Items Lessor to supply :

* All cabling
* All telephone/data jacks, wall plate spacers, and wall plates.
* 2 - 48 Port Patch panels mounted in Wrightline cabinet.
* 4’x8’x3/4” fire treated plywood backboards, painted.
* Grounding busbar, wiring for ground, and related mounting hardware.
* Wrightline 40U Paramount cabinet, with options listed above.
* Other items not listed, but indicated herein.

At the completion of this work, an accurate and legible location drawing in .pdf format for the telephone/data system shall be provided to VA by the Lessor.