SPECIFICATIONS FOR COMMUNICATION CABLE SYSTEM DESIGN

All cable installers must be trained and certified meeting certification standards, i.e., EIA, TIA, ANSI, BICSI, TDM, ITU-t, NFPA, NEC and NCS. No persons shall conduct any installations that have not met these certification standards of training and installation.

I. CABLE DESCRIPTION FOR STATION CABLES:

   a. All cables will be Unshielded Twisted 4-Pair, rated Cat 6 or higher.
   b. Data cable sheath shall be "Dark Blue" in color.
   c. Voice cable sheath shall be "Gray" in color
   d. Wireless Network sheath shall be "Bright Green" in color
   e. Nurse Call System sheath shall be "Light Green" in color
   f. Get Well Network sheath shall be "Bright Orange" in color
   g. Biomedical Systems and Badge Access System sheath shall be "Purple" in color
   h. All cables must be one continuous run between work station and communications closet – NO SPLICES.
   i.   All cables will be installed in conduit from wall jack to ceiling and stubbed out above false ceiling and run in cable trays or other designated cable support to telecom closets

II. TERMINATING COPPER CABLE – IN COMMUNICATION ROOM

   a. All data cables will be terminated onto CAT-6 rated patch panels…RJ-45
       Data cables will be terminated using EIA/TIA-568B wiring configuration.
       Data cables will be terminated into patch panels mounted on a standard 19" data rack
   b.   All voice cables will be terminated into CAT-5E 110 Blocks and wall mounted onto fire rated plywood.
   c. All cables will be numerically labeled at both ends of terminations.(Reference Section V below)
       Note: 110 Blocks may be used when already installed in an existing closet

III. TERMINATING COPPER CABLE - AT WORK STATION

   a. All data cables will be terminated on CAT-6 rated RJ-45 Jack inserts, using EIA/TIA-568B wiring configuration.
   b. All data jack inserts will be Black in color.
   c. All voice cables will be terminated onto RJ-11 Jack inserts using standard USOC wiring configuration.
   d. All voice jack inserts will be Office White in color.
   e. All jack inserts will be installed unto flush wall mounted face plates. Face plates shall be Office White in color. Each face plate will be a 4-port configuration.
   f. Each work station will be wired with 2-data cables and 1-voice cable.
   g. A communications outlet will be installed on all walls designated as administrative floor space.
   *Note: In areas designated for systems furniture, communications cabling will be installed into the furniture onto faceplates mounted onto the prefabricated cutouts on system furniture baseboards. Cables will be pulled down inside walls in areas

best determined suitable to feed entire sections with minimal wall penetrations or entry points into furniture. Cables in most of these cases will need to be pulled and set aside for later installation into furniture once furniture has been installed.

IV. **TERMINATION OF FIBER OPTIC CABLE**

a. Fiber terminations must be in compliance with BICSI standards of installation. Must be installed in bright colored orange inner-duct appropriate for size of fiber being pulled

b. Fiber must be terminated in an enclosed fiber box with service loop mounted into a 19" data rack that for service to network switch equipment (switch provided by government) **Terminations must be ST type connections in fiber termination box.**

c. Unless otherwise designated, fiber cable will be a minimum multi-mode OM3 50 micron. Testing of each fiber must be conducted with no failures -100% Pass for all fibers. Test results must be furnished to government in either paper or electronic format.

V. **CABLE LABELING (NUMBERS ONLY)**

a. All cables will be numbered sequentially and mechanically stenciled with black ink – NOT HAND WRITTEN. Cable number labels will be placed at both ends of each cable, on patch panels, and wall mounted face plates.
b. If cable numbers already exist in communications rooms, number labeling sequence will be a continuation of existing cable numbers already in place on data patch panels and voice cables.
c. If there are discrepancies in the labeling scheme Martinsburg OIT staff will have the final say in how labeling will be completed.

VI. CABLE MANAGEMENT

a.   All cables will be home run from each work-station area to the designated communications room.
b.   All cables will be suspended in ceiling using J-type hooks or placed in cable trays.
d.   In office areas all cables will be installed inside conduit. Conduit will be run from wall jack to extend above false ceiling where conduit maybe stubbed out. (Unless security specifications require enclosed conduit for entire cable run)
e.   All wall penetrations made above ceilings through fire rated walls must be sealed with fire rated materials.   If existing conduits are used and fire stopper material is removed from conduits, conduits will be resealed with rated materials once cables are installed. All penetrations will be sleeved IAW, VA Office of Construction & Facilities Management Electrical Design Manual (EDM)* table 7.1 and Office of Information Technology(OIT) design guide.**
f.   Cables in communication rooms will be neatly run into rack compatible cable management systems raceways.

   *Link for EDM: http://www.cfm.va.gov/til/dManual/dmELhosp.pdf
   ** Link for OIT design guide: http://www.cfm.va.gov/til/dguide/dgOIT.pdf

VII. SELECTION OF MATERIAL

    a. All materials selected for use by installation contractor must be approved by VA Telecommunications personnel prior to installation.

VIII. TESTING CABLE

    a. All cables installed must be tested and verified for full 100Mb/1Gb transmission speed and continuity to verify that all pairs are functional to support voice and data systems. Test results must be printed or emailed and provided to VA OIT Field Operations personnel prior to acceptance of the work that was performed.

IX. ENVIRONMENTAL CONTROLS

Communications rooms containing electronic network equipment must be adequately capable to maintain air flow to cool equipment to avoid overheating. Optimum room temperature shouldn't exceed 75 degrees Fahrenheit per OIT Design guide*.

    * http://www.cfm.va.gov/til/dguide/dgOIT.pdf   Pg. 4-89

X. SECURITY CONTROLS

    a. Communications Closet must be designated for the sole purpose of supporting Information Technology system equipment, i.e., Local Area Network switches and servers and telephone systems equipment and its related cable. No other systems or equipment is allowed that would compromise security of the installed IT systems and access control by OIT personnel.

XI. Main Telco Fiber Optic or Copper Cable

    a. All Telco, fiber, or copper cable must be pulled into the building from the nearest distribution point as determined by construction site design and OIT.

    b. Capacity of both fiber optic and copper cable pairs will be determined by the government Telecom/OIT representative.

XII. Demolishing Old Cable

    a. All old or unused telecommunications data and voice cable is to be removed from the the station wall jack through the ceiling into the telecommunications closet and removed from patch panels and 110 blocks.

XIII. New Network or Telecom Closet Construction

    a. Room dimensions, at a minimum, shall be 10' x 10'
    b. Room shall have proper HVAC to maintain specified temperature (Section IX, Environmental Controls)
    c. Room shall have slightly positive pressure to adjacent area(s)

d. Room shall have adequate security controls, to include Badge Access (Section X, Security Controls)
e. Room shall have two (2) separate 220VAC circuits on Emergency Power. Plug type and Amperage will be determined by OIT designated staff based on the infrastructure needed to support the project.
f. Room shall have a minimum fire rating of 2 hours.
g. Walls will be lined with ¾ inch fire rated plywood.