

APPENDIX B CABLING SPECIFICATIONS

The information contained in Appendix B shall not be construed as an authorization for the Contractor to perform any work beyond the scope of that required by Section 5.2.4 and 5.3.1 of the PWS. Cable installation tasks performed by the Contractor shall conform to the standards specified in Appendix B. Installation of cable shall be in accordance with accepted EIA/TIA, BICSI and NCS standards and coordinated with the COR. The Contractor shall not construct any new or place any new entry or egress. All site preparation requirements except construction (i.e. penetrations, pathways, conduits) are the sole responsibility of the Contractor. The physical infrastructure/layout of the cable pathway shall be completed by a third party vendor.

CABLING AND QUAD DROP SPECIFICATIONS:

The Contractor shall conform to the requirements of ICEA Publications S-80-576-1988 (Ref.B1.6) as to size, color and installation for any replacement cable (outside plant, inside riser, and station cabling) provided during the performance of the maintenance services required in the Performance Work Statement.

INSIDE CABLE PLANT:

All new cable shall be labeled on each end in accordance with EIA/TIA 568A and 606 standards.

1. Standards:

The Contractor shall perform all telecommunications, maintenance, testing and labeling in compliance with the following standards and specifications:

- a. TIA/EIA 568A, "Commercial Building Wiring Standards"
- b. TIA/EIA 568 B3 Fiber Optic Cable Performance Standards
- c. TIA 568-B.1 Commercial Building Telecommunications Wiring Standard
- d. TIA/EIA 606, "Labeling and Marking of Telecommunications Cable and Infrastructure"
- e. National Electrical Code (NEC), NFPA 70 2008.
- f. Bay Pines VAHCS Site Preparation and Cabling Requirements Construction Standard, see Attachment A
- g. Section number 16744 Copper Communications Network.
- h. PG18-10 Electrical Design Manual – April 2009

2. Cable Termination Methods:

Installation and termination methods and procedures shall conform to the requirements of TIA/EIA 568A unless specified otherwise. Any method other than 66 type termination must be approved by the COR, through coordination with the telecommunications manager or designee prior to installation.

3. Labeling and Marking:

The marking and labeling of all installed cable shall conform to TIA/EIA-606 requirements and guidelines.

Cable labeling and station labeling shall be in accordance with the labeling plan outlined in the specifications. Should a labeling plan not be provided to the Contractor, the Contractor shall label all cables according to the EIA/TIA 606

standard. The markings shall be unambiguous and the use of marking pens is not permissible.

4. Installation of Twisted Pair and Fiber Cables:

All cable and wiring work to be performed in support of site-specific requirements shall include all labor, wire closet backboards, hole drilling, terminals, blocks, connectors, wire support rings, and all other hardware, supplies, and tools as necessary to cause the stations and/or cable to be installed in accordance with the specifications and methods specified in the most recent issue of the Building Industry Consulting Services International (BICSI) *Telecommunications Distribution Methods Manual*, installation practices and procedures.

All horizontal cable shall be routed and attached per the Building Industry Consulting Services International (BICSI) *Telecommunications Distribution Methods Manual* installation practices and procedures.

If any local, state, or federal regulatory code conflicts with the BICSI requirements or, VA PG18-10 Electrical Design Manual – April 2009 the regulatory code shall prevail.

At cut over, the Contractor shall be responsible for providing all data cross-connect patch cables at the closet end. A minimum 10-foot service loop shall be provided at all termination locations. The 10-foot loop shall be that loop which is available after all termination activity is performed. Additionally, a 10-foot service loop shall be left in all manhole locations.

5. Cable Distribution System and Sizing:

The Contractor shall utilize the site location's existing manholes and conduits except as noted by the COR. The Contractor shall install all fiber optic patches, jumpers, and other material at each facility to make the system completely operational. Exception: Patch cables are not to be provided at the station (drop) locations. The Contractor shall only replace existing hardware necessary to return the PBX system to a fully operational state. The Contractor shall not construct any new or place any new entry or egress. All site preparation requirements except construction are the sole responsibility of the Contractor.

6. Building Distribution and Wiring System

Inside cable shall consist of enhanced data grade cable and/or optical fiber cable for inside the buildings as required in the Cable Plant Specifications. All cable, connectors, jacks, wall plates and patch panels shall meet TIA/EIA 568A standards.

7. Materials and Equipment

Materials and equipment shall be commercially available products, shall be the manufacturer's latest design, and meet or exceed EIA/TIA 568A standards. All cable and cable-related materials furnished by the Contractor shall be new and meet current industry standards. No obsolete material or items no longer supported by the manufacturer shall be used in the installation. A manufacturer's label or nameplate shall be secured to each major item or equipment or stenciled on cable.

8. Horizontal Cable

All horizontal cable shall be three (3) pair, Category 6 (CAT 6) unshielded twisted pair (UTP) cable, unless specified otherwise by the COR, through coordination with the onsite Telecommunications manager and shall be compliant with TIA/EIA 568A requirements for cable. The cable shall meet NEC requirements as a plenum grade cable. The cable shall be stenciled, at regular intervals throughout its entire length, with both Category 6 and NEC plenum designations. The cable shall be UL tested to meet EIA/TIA 568A requirements. Plant Drawings for each facility state approximately how many four (4)-cable Category 6 drops are required. Less cable may be required for locations that require voice connectivity only, such as wall phones. Due to this uncertainty, the Contractor should verify drawings and consult with facility local interface personnel for those exact locations that require less than three (3) cables.

Note: Due to existing infrastructure, Category 5, 5e, 6 may be in existence. Category 6 UTP cable shall be utilized unless specified otherwise by facility personnel or the onsite Telecommunications manager.

9. Patch Panel

The Contractor shall equip each telecommunications room/equipment room that serves as a horizontal wiring distribution location with data termination/patch panels for each horizontal data cable run. Each patch panel shall be Category 6, RJ45; EIA/TIA 568A, UTP four (4) pair such that cabling does not egress fire barriers where plenum cabling or Rural Development Utilities Program (RDUP) cable may be required. In such cases 4 pair 23 Gauge American Wire Gauge (AWG) Cat 6 communications plenum (CMP) shall be utilized and in cases where fire code and/or NFPA 70 requires, cabling shall be encased in existing fire rated Metal Clad (MC) or equivalent. In such cases where existing infrastructure does not meet fire code or NEC requirements the contractor shall notify the site Telecommunications Manager prior to any maintenance work proceeding. Patch panels shall be UTP Cat 6, 48 port, and/or OR-851000304, 24 port panels.

Note: The manufacturer's nomenclature is for representational purposes only. All materials must be approved prior to installation by COR through coordination with facility personnel.

The patch panel shall be of a modular design to allow the flexibility to connect a network circuit directly to any equipment circuit. Patch panels may be rack or wall mounted, as required. If rack mounted, fiber and copper patch panels may be installed in the same rack.

Fiber optic patch panels must be provided for all fiber optic cable terminations. Fiber optic patch panels shall be modular and provide adequate space for storing cable slack and for accommodating cable routing and fastenings. Modular patch panels with RJ45 type jacks (meeting EIA/TIA 568A standards) connected to Category 6 approved connecting blocks shall be installed.

Note: The above is indicative of replacement wiring; Category 6 will be utilized unless specified otherwise by the COR, through coordination with the onsite Telecommunications Manager.

10. Building Entrance Conduit/Duct

The entrance conduit shall extend from the equipment room/area as available through the building structure and through the building's exterior wall. The

entrance conduit shall then extend either a minimum of five (5) feet out from the building or beyond surface obstructions such as parking lots, equipment platforms, sidewalks, etc., to the nearest manhole/handhold for underground plant, or to a pole for each aerial plant. Building entrance conduit shall be no less than two (2) – four (4)" conduit. Type shall be determined by facility personnel.

11. Building Entrance Cables

All entrance cabling must be provided with a building entrance protection (BEP) or building underground protection (BUP) type National Electrical Manufacturers Association (NEMA) approved enclosure. The enclosure may be equipped with 710 or MS2 input configuration. This enclosure must be equipped with switch grade gas discharge tube fail-short protection. The protector modules shall consist of five (5) pin protectors. The BEP shall exceed the number of terminations in the enclosure. A fusible link shall be maintained at the BEP or BUP enclosure.

12. Distribution Cable Type 2

Unless specified otherwise by the COR, through coordination with the Telecommunications Manager or designee, the following copper distribution cable shall be used as a minimum; Copper distribution shall be ANMW-100 for inter or intra-building construction. RDUP may be substituted in certain applications on approval of the Telecommunications Manager or designee. No filled cable or type substitution will be permitted without prior written approval of the Telecommunications Manager or designee. Compliance shall be IAW (RDUP) 7 CFR 1755.390 (RUS PE-39), (Bellcore) specification GR-421-CORE

13. Fiber Distribution Cable Type

Unless specified otherwise by the COR in writing, through coordination with the local area network (LAN) Manager, Telecommunications Manager or designee the following fiber distribution cable shall be used as a minimum; 24 strand riser 50 um (multi-mode). This cable must be compliant with TIA-598, ICEA S-104-696, optical fiber, nonconductive, plenum cable (OFNP) and Flame Test 6 (FT-6) (plenum), optical fiber, nonconductive, riser (OFNR) and FT-4 (riser) as a minimum. All fiber terminations shall use a straight tip (ST) type connection in an approved metallic NEMA type fiber optic interface unit (FOIU) enclosure. Unless specified otherwise by the LAN Manager, Telecommunications Manager or designee in writing the termination shall be Rack mounted on a standard 23 inch frame. No wall mounting is approved unless previously authorized in writing. Entrance of cabling will be augmented with a compression type grommet, front mounted jumper management, and includes adapter panels for 48 Lucent connector (LC), 24 subscriber connector (SC) or 24 ST terminations. Under no circumstances will 62.5 and 50 um strand be spliced without prior approval by the LAN Manager, Telecommunications Manager or designee in writing

14. General Considerations

- a. Cable installation shall also include a pull string (mule tape or similar). Ten (10) foot service loop shall be placed in ceiling above cable management rack and securely fastened IAW industry standards.
- b. Any underground cable placement is meant to be continuous and unbroken.

- All underground copper cable placed shall be as a minimum: type ALMW. Upon building entrance, cable must be placed in metallic conduit or raceway. Any splices, closures, and termination in underground plant must be approved and be given final inspection by the COR through coordination with the Providence VAMC telecommunications manager.
- c. All underground fiber cable placements will meet as a minimum the provisions of item # 3 above, with the exception of cable type.
 - d. All fiber cable placements must be approved by the COR through coordination with the Bay Pines VAHCS Telecommunications Manager and the Bay Pines VAHCS LAN manager for type, size and scope of project. Inner duct is a requirement in underground cabling. Substitution of rigid fiber rated for underground applications must be approved prior to placement in lieu of inner duct.
 - e. Telephony cables and fiber network cabling shall be separated and run in separate conduit/raceways.
 - f. Any exposed fiber cables must be enclosed in metallic conduit/raceway. In the event of horizontal and vertical building runs plenum type may be substituted only if delineated by a fiber termination and given prior approval by the COR through coordination with the Telecommunications Manager.
 - g. Termination shall be in accordance with provided dimensional detail to be determined and or manufacturers' specifications. Any modifications must be approved by COR through coordination with the Bay Pines VAHCS Telecommunications Manager.
 - h. Last pair in each 25 pair complement shall be pigtailed with two (2) foot slack and neatly secured to preclude any interference with working conductors.
 - i. After cable placement, a fire and vapor retardant duct plug must be installed inside any entrance conduit, plenum, vertical risers, fire suppression areas, and the telecommunications closet. Type must be non-corrosive and meet with all municipal, state and federal fire code regulations. Fire stopping materials must also be placed around perimeter of conduit and cabling as per aforementioned regulations.
 - j. Cable placement in basement must be done with approved and suitable hangers IAW industry and local practices. All cable placement must be in approved metallic conduit where stipulated per VA, NEC, State, or local code practice.
 - k. Cable placement in basement and termination shall be no more than two (2) feet from telecommunications primary network interface (PNI) if applicable. Only IRM staff or VA designee shall determine other suitable location in areas of conflict. COR must be notified of all determination before proceeding.
 - l. Terminations shall be adjacent. Each pair of each complement shall have slack neatly wrapped and/or tucked into block so not as to cause any interference with working conductors. Substitutions shall only be made with approval by COR through coordination with VA IT and telecommunications personnel.
 - m. Cable group separation shall be maintained neatly IAW industry standards.
 - n. All service drops shall be Category 6 24 AWG plenum rated wire as a

- minimum. The service drops shall consist of one yellow, one white, one blue, and one green color coded service drop to correspond to the four (4) port jack installation. Each color designation will terminate on a Category 6 rated 48 port high density patch panel. All color designations will be grouped categorically together and separated by a wire management system.
- o. The cable/wire termination rack shall be grounded to an isolated building ground. The minimum conductor size shall be #6 AWG solid grounds. It shall be attached to a suitable and acceptable grounding means IAW industry standard, NEC, VA, TIA/EIA 568A local, state and federal standards. The Contractor shall verify and make available a suitable ground attachment at the delineation point. In areas of conflict the most stringent regulation shall apply. The ground shall be unbroken and securely fastened, following the route of the cable as conditions permit. In the telecommunications closet, the ground wire shall follow the route of the cable as conditions permit, and also be unbroken. The ground shall be bonded to the ladder rack and grounded to the patch panel frame with a suitable means to preclude electrolysis. The attachment to the ladder rack and frame must not use any clamps or devices that may be detached inadvertently.
 - p. All entrance cable must be provided with suitable high voltage protection IAW industry standard, NEC, VA, TIA/EIA 568A local, state and federal standards. This high voltage protection must provide a fusible link (at the protector) generally assumed to be a gauge change at the point of protection. If the cable entrance exceeds 125 feet, an insulated joint must also be additionally provided. All bonding and grounding must also meet as a minimum the aforementioned requirements. The high voltage protection system must also prevent against "sneak" current as well as sealing current.
 - q. All fiber terminations supplied by the Contractor shall be new and meet or exceed EIA/TIA 568A, VA or NEC standards. Fiber termination trays / Light Interface Units (LIUs) shall be approved by COR through coordination with the VA telecommunications and IT personnel prior to installation.
 - r. All riser/entrance conduits shall be as a minimum 4" Electrical Metallic Tubing (EMT) type as a minimum. Where code or requirements dictate otherwise, 4" rigid metallic conduit shall be used. In no instance shall Polyvinyl chloride (PVC) type or similar be accepted. All cable/wire placements in conduit shall conform as a minimum to NEC, VA, and TIA/EIA 568A local, state and federal standards.
 - s. In those cases where the Contractor is responsible for materials it will be the Contractor's responsibility to guarantee 100% quality and conformance reliability. Should there be any defects in materials and or nonstandard, NEC, VA, TIA/EIA 568A local, state the Contractor shall correct the defect and assure full conformance in writing as per contractual obligations.
 - t. In those cases where the Contractor is responsible for materials, all materials supplied by the Contractor shall be new and meet or exceed EIA/TIA 568A, VA or NEC standards. In the event of any material substitution, a written sign-off must be given to the Contractor by the VA project manager or his/her designee prior.

- u. All wire runs must be uniformly bundled per color scheme and wire management on the ladder rack to and including termination shall be properly secured with appropriate cable fasteners IAW industry standards.
- v. All quad (service drops) plates will consist of one yellow, one blue, one white, and one green port consistently installed in color scheme.
- w. All service drops shall be enclosed in a metallic raceway when on an exposed surface
- x. All telecommunications / IT closets will be equipped with as a minimum two (2) separate quad-plex receptacles each on a dedicated isolated circuit. They are to be located no more than six (6) feet from the telecommunications / IT frame rack. Also a separate and dedicated isolated 240 /208 volts alternating current power (VAC) wall mounted disconnect housed in a NEMA type enclosure rated at a minimum of 60 Amps.
- y. Any telecommunications / IT closet must be equipped with redundant heating, ventilation, and air conditioning (HVAC) and humidity control as required by VA regulation. The HVAC and humidity control must allow for remote monitoring by Bay Pines VAHCS personnel.
- z. It is expected that all contractors and vendors will conduct housekeeping during and upon completion of work. No materials shall be placed in or near the telephony equipment once installed.
- aa. It is understood by the Contractor that the above representations or materials are not all inclusive and are to be used as a guideline for minimum standards. Any deviations from industry best practice must be brought to attention of the COR.

Substitutions in the above representative materials may be made only with the prior written approval of the VAMC Telecommunications Manager and COR. The Telecommunications Manager or COR cannot modify the terms and conditions or make any financial representations on behalf of the VAMC. All matters pertaining to any fiduciary changes can only be administered by the COR.

OUTLET JACKS/STATION CABLE:

- a. All new voice and data jacks requested under MAC shall be Category 6-compliant or Facility compliant Category 6 eight (8) positions RJ-45 non-keyed (EIA/TIA 568A) unless identified otherwise by the VA telephone manager at the site. One (1) unshielded twisted pair 24 AWG station wiring shall be installed for each jack (in accordance with EIA/TIA 568A Standard "T568A" and EIA/TIA 606) to the telecommunication closet and shall be of a type designed to support Level Five (5) data communications (not less than 100 MHz/100 Mbps).
- b. All new outlets shall be quadplex jacks with a quadplex flush mounted faceplate unless identified otherwise by the VA telephone manager at the site. For new surface mounted installations the Contractor shall provide outlet boxes and wire molding. The top two (2) RJ-45 inserts are designated for voice applications only and are a different color to distinguish them from the data jacks. The bottom two (2) jacks are designated for data. New outlets shall follow this same scheme.

- c. New station wiring for telephone jacks under MAC shall meet the requirements in this subparagraph. At the telecommunication closet, the station wiring for the telephone jack is terminated on Category 6-compliant RJ-45, eight (8)-wire, 66 type modular patch panels, which are dedicated to voice applications, unless identified otherwise by the VA telephone manager at the site. The telephone station wiring is a different color to distinguish it from the data wiring. Wire management shall be provided for cross-connects/patch management. Color-coding of the jacks, cables and labeling at each Intermediate Distribution Frame (IDF) and MDF conform to the EIA/TIA 606 standard.
- d. New station wiring for data jacks under MAC shall meet the requirements in this subparagraph. At the Telecommunication closet, the station wiring for the data jacks is terminated on appropriately sized Category 6-compliant RJ-45, eight (8)-wire, 66 type modular patch panels unless identified otherwise by the VA telephone manager at the site. Wire management shall be provided for cross-connects/patch management. Color coding of the jacks, cables and labeling at each IDF and MDF conform to the EIA/TIA 606 standard.
- e. New wall telephone instruments under MAC shall meet the requirements in this subparagraph. Wall telephone instruments are installed on a single wall mounted Category 6-compliant RJ-45. At the wire closet, all four (4) pairs are terminated on Category 6-compliant RJ-45, eight (8)-wire, 66 type modular patch panels, which are dedicated to voice applications unless identified otherwise by the VA telephone manager at the site.
- f. All new installation work shall be in conformance with VA engineering and industry installation practices.
- g. Refer to Appendix B

Note: due to existing infrastructure Category 5, 5e or 6 may be in existence. Category 6 UTP cable shall be utilized unless specified otherwise by facility personnel or the onsite Telecommunications manager.

Note: each facility requirement may vary from site to site. As such the facility Telecommunications Manager shall determine the specific requirements for that site.

FIRE WALL/SMOKE BARRIER POLICIES AND PROCEDURES

In no way, whatsoever, is construction permitted under this contract. The Contractor shall comply with the following codes and procedures as applicable for non-construction work performed.

FIRE WALL/SMOKE BARRIER PERMITS

As previously stated, the information contained in Appendix B shall not be construed as an authorization for the Contractor to perform any work beyond the scope of that required by Section 5.5.2 of the PWS. The Contractor shall not construct any new or place any new entry or egress. All site preparation requirements except those deemed construction by the Government (e.g. wall and ceiling removal and penetration (unless

the walls are NOT load bearing), pathways, conduits, etc.) is the sole responsibility of the Contractor. The physical infrastructure/layout of the cable pathway shall be completed by a third party vendor. Installation of cable shall be completed in accordance with the fire wall and smoke barrier standards contained in NFPA 101, Chapter 8.

1. PURPOSE

To establish policy and procedures regarding penetrations in ceilings, floors, pipe chases, fire walls, and smoke barriers for the purpose of maintaining the integrity of the Type II-222 construction as required in NFPA 101, Chapter 8 and the Joint Commission to provide for the safety of occupants during fire incidents. (The equivalent Construction Type per ICC Building Code is Type 1B).

2. POLICY

All penetrations made in floors, fire barriers, and smoke partitions for the purpose of installation/removal of pipe, conduit, cable, ductwork or other modifications including incidental damage, or the removal of such items, will be repaired and fire-stopped upon the completion of the work, and documented as repaired. This policy applies to all vertical and horizontal penetrations and to all medical center staff and contractors.

3. DEFINITIONS

- a. Penetrations are any holes, openings, or faults created in a fire barrier or smoke partition that compromises the integrity of the smoke or fire rating of the penetrated structure.
- b. Fire stopping materials are any materials used to replace or repair any penetrations. Materials used must meet specifications and tested assemblies by Factory Mutual (FM) or Underwriters Laboratory (UL) that ensure the original integrity and rating of the penetrated surface will be restored.
- c. Fire barriers are floor/ceiling assemblies, and walls, including supporting construction, that meet the conditions of acceptance of NFPA 251, Standard Methods of Tests of Fire Endurance of Building Construction and Materials. Fire barriers are designed to form fire compartments and are constructed to be continuous from outside wall to outside wall, floor to floor or ceiling, from one fire barrier to another or a combination thereof, including continuity through concealed spaces.
- d. Smoke barrier is a continuous membrane designed and constructed to restrict the movement of smoke. Smoke barriers are designed to form smoke compartments and are constructed to be continuous from outside wall to outside wall, floor to floor or ceiling, from one fire or smoke barrier to another or a combination thereof, including continuity through concealed spaces.
- e. Submittals are manufacturer's literature, data, installation instructions, and detail drawings for each type of penetrating item and the construction of the barrier it is passing through, indicating the type of fire-stopping and/or smoke stopping

material used. Manufacturer's details shall indicate the listing number given by FM, or UL for each fire-stopping system. Alternate submittals can be a Certified Laboratory test report for ASTM E 814 test of systems not listed by FM or UL. (ASTM E814 is the Standard Test Method for fire tests of through penetration fire stops). Another type of submittal is a written Manufacturer's Engineering Judgment, derived from a similar UL system, that a modified design meets the required protection level of a UL listed test.

- f. Products used are either factory built fire-stop devices or field erected through penetration fire-stop systems to form a specific listed fire-stop system that will maintain the required integrity of the fire or smoke barrier and stop the passage of gases or smoke. Through penetration fire-stop systems and fire-stop devices, tested in accordance with ASTM E814 or UL1479 use the "F" or "T" rating to maintain the same rating and integrity as the fire barrier being sealed. "T" ratings are not required for penetrations smaller than or equal to 4 inch nominal pipe or 16 square inches over all cross sectional area. Products requiring heat activation to seal an opening by its intumescence shall exhibit a tested and demonstrated ability to function as designed to maintain the fire or smoke barrier. Fire stop sealants used for fire-stopping or smoke sealing shall have the following properties:
 - (1) Contain no flammable or toxic solvents;
 - (2) Have no dangerous or flammable out-gassing during the drying or curing of products;
 - (3) Water resistant after drying or curing and unaffected by high humidity, condensation or transient water exposure;
 - (4) When used in exposed areas, shall be capable of being sanded and finished with similar surface treatments as used on the surrounding wall, ceiling or floor surface, and
 - (5) Materials shall be asbestos free.
- g. Fire stopping system or devices used for penetrations by glass pipe, plastic pipe or conduits, unenclosed cables, or other non-metallic materials shall have the following properties:
 - (1) Classified for use with the type of penetrating material used, and be asbestos free.
 - (2) Penetrations containing loose electrical and/or computer data cables and other non-metallic communication cables shall be protected using fire-stopping systems that allow unrestricted cable changes without danger to the seal.
 - (3) Intumescent products which would expand to seal the opening shall act as a fire, smoke, toxic fume and water sealant.
 - (4) Products used shall have maximum flame spread of 25 and smoke development of 50 when tested in accordance with ASTM E84 and shall be FM or UL rated or tested by an approved laboratory in accordance with ASTM E814.

4. PROCEDURES

a. Prior to performing any fire-stopping, submit for approval all product data drawings and installation instructions, as required by "Submittals" after examining the Contract Documents and performing an on-site careful examination of the areas to receive fire-stopping. If there is any doubt about the location of fire or smoke rated partitions, request or refer to information contained in the current Statement of Condition (SOC) drawings that are available in the Facilities Management Service (FMS) office. In all cases when a ceiling, floor, wall or partition designated as a fire or smoke barrier is compromised for the purpose of installation, repair, or other modification, the following steps are required:

- (1) All penetration contracted work, including Information Resource Management (IRM) projects, is to be submitted and approved by Facilities Management Service's Project Manager of FMS Maintenance & Operations or the Safety Manager.
- (2) A penetration permit must be secured from a FMS Project Manager or FMS Maintenance & Operations Supervisor prior to disturbing the integrity of any wall or floor/ceiling barrier. The permit must be available for inspection at the subject location. (See Attachment A).
- (3) Provide temporary fire-stopping, smoke seal and waterproofing of all penetrations in smoke and fire rated floor and wall assemblies immediately following core drilling or cutting if permanent work and fire-stopping measures will follow at a later time.
- (4) Where penetrations are created in existing floors and/or partitions, they shall be temporarily fire-stopped by the close of construction each day. In the case of major projects requiring the prolonged existence of floor and/or partition openings, temporary fire-stopping shall be provided at the end of each work day. Temporary fire-stopping may constitute a single layer of fire rated gypsum board secured in place over the opening or mineral fiber may be placed in the opening. Fiber thickness shall be sufficient to meet or exceed the inherent fire resistance rating of the building material being penetrated and shall be secured in place with non-combustible material or fasteners.
- (5) After the final work is completed, the penetration must be fire-stopped according to the submitted and approved UL or FM listed through penetration fire-stopping materials or system that meet the original smoke barrier or fire rated construction requirements.
- (6) Upon completion of any penetration repair, a visual inspection for approval shall be requested from and completed by a FMS Project Manager or FMS Maintenance & Operations Supervisor.
- (7) After completion of the field inspection, the completed permit will be signed by the Contractor/Installer and the inspecting FMS Project Manager or FMS Maintenance Supervisor. That signed document shall then become the official Document or Record and be distributed as indicated on the Permit Form.

5. RESPONSIBILITY

- a. It is the responsibility of the Project Section/FMS Maintenance/Safety to ensure that penetration permits are issued and final inspections are conducted. Any deficiencies found remaining will be discussed with the COR and remedied by the fire-stop installer.
- b. Chief, Facilities Management Service is responsible for ensuring that any VA Medical Center staff making penetrations into fire and/or smoke barriers shall secure penetration permits prior to beginning work, properly fire-stop the wall/ceiling/floor penetration, and sign off the permit after inspection and completion of the work.
- c. Contractors are responsible for assuring that they properly fire stop any penetrations that they made in ceiling, floor, pipe chases, fire rated walls, and smoke barriers in accordance with submitted and approved fire-stop materials and/or systems.
- d. Contracting Officer Representatives (COR's) are responsible for ensuring that all Contractors and FMS personnel adhere to this policy during construction, renovation or demolition activities, including pulling electrical and/or data cables. The COR is also responsible for verifying that all holes and penetrations made during the construction activities are properly sealed. The COR is also responsible for ensuring that this memorandum is properly inserted in applicable Contracts and Work Orders issued by Facilities Management Service.

6. REFERENCES

NFPA 101, Chapter 8, dated 2009.