CAMP PENDLETON REQUIREMENTS SUPPLEMENT

MCIWEST G-6 TELECOMMUNICATION REQUIREMENTS SECTION 271500 (ISP)

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271500 TELECOMMUNICATION INSIDE PLANT STRUCTURAL CABLING

PART 1 GENERAL

1.1 REFERENCES

The publications listed below form a part of this specification to the extent referenced and are referenced within the text by the basic designation only.

TIA/EIA-568-C.1	Generic Telecommunications Cabling for Customer Premises
TIA/EIA-568-C.2	Commercial Building Telecommunications Cabling Standard
TIA/EIA-568-C.2	Balanced Twisted-Pair Telecommunication Cabling and Components Standard (Formally EIA/TIA 568-B)
TIA/EIA-568-C.3	Optical Fiber Cabling Components Standard
TIA/EIA-568-C.4	Coaxial Cabling Components
TIA/EIA -569	Commercial Building Standard for Telecommunications Pathways and Spaces
TIA/EIA -606	Administration Standard for the Telecommunications Infrastructure of Commercial Buildings
ANSI/J-STD-607-A	Commercial Building Ground and Bonding Requirements for Telecommunications
NFPA-70	National Electrical Code (NEC)
NFPA-75	Fire Protection of Information Technology Equipment
NFPA-76	Fire Protection of Telecommunication Facilities
UFC-3-580-1	Telecommunications Building Cabling System Planning, Design, and Estimating
UFC-3-580-10	Navy and Marine Corps (NMCI) Standard Construction Practices
TIA/EIA-942	Telecommunications Infrastructure Standard for Data Centers
UCR 2013	DOD Unified Capabilities Requirements (supersedes UCR 2008, Change 3)
UFC 4-010-01	DoD Minimum Antiterrorism Standards for Buildings

1.2 DEFINITIONS

BACKBONE CABLING
Cabling that connects the entrance facility to the equipment room or telecommunications rooms.

ENTRANCE FACILITY (EF)
An entrance facility to a building that can be used for both private and public network service cables (including antennae) including the entrance point at the building wall and continuing to the entrance room or space. Telecommunications Entrance Facility (TEF) The entrance facility is required to provide signal paths from the closest point of presence to the new facility, including free standing frames or backboards, interconnecting hardware, terminating cables, lightning and surge protection modules. The work consists of providing, testing and making operational cabling, interconnecting hardware and lightning and surge protection necessary to form a complete outside plant telecommunications system for continuous use. All entrance facilities must provide the correct interface between outside plant (cabling and infrastructure) to the structural (cabling and infrastructure).

EQUIPMENT ROOMS (ER)
An architectural centralized space for telecommunications equipment and other building automations that provide services the occupants of the building. Equipment housed therein is considered distinct from a telecommunications use because of the nature of its complexity. Electromagnetic Compatibility shall be considered when designing this space.

INSIDE PLANT (ISP) STRUCTURAL CABLING
Inside Plant (ISP) structural cabling design and installation is governed by a set of standards that specify wiring data centers, offices and multipurpose facilities for data and voice communications. These standards define how to install telecommunication cabling in a set government standards in order to meet the needs of the customer. Structural cabling connects the telecommunications rooms to individual work-area outlets usually through the cable trays, conduits or ceiling spaces of each floor.

STRUCTURAL CABLING PATHWAY
A pathway is the physical route and space taken by cables between their start and endpoints. The correct selection and design of pathways is vital to electrical code compliance, pathway optimization and future utility.

TELECOMMUNICATION MAIN GROUNDING BUSBAR (TMGB)
The busbar is placed in a convenient and accessible location, bonded by means of the conductor for telecommunications to a building service equipment (power) ground. The TMGB and TGBs are exothermically welded to the facility's ground ring via a single-point ground cabling. A TR has the same single-point ground requirement.

TELECOMMUNICATIONS ROOM (TR)
An enclosed architectural space for telecommunications equipment, cable terminations, and cross-connect wiring for horizontal cabling.

WORK-AREA OUTLETS
Components connect end-user equipment to outlets of the structural cabling system.

1.3 SUBMITTALS
Submit the following in accordance with Section 013300, "Submittal Procedures" within the Camp Pendleton Requirement (CPR).

SD-02 SHOP DRAWINGS
Telecommunications drawings include T0, T1, T2, T3, T4, T5 and a Telecommunications Change Sheet. A laminated copy of T1 and T2 will be placed in each Entrance Facility (EF) and within each Telecommunication Room (TR).

SD-03 PRODUCT DATA
Provide manufactures specifications on telecommunications cabling, telecommunications outlet/connector assemblies, equipment support frame, building protector assemblies, connector blocks, building entrance terminals, and other materials used.

SD-06 TEST REPORTS
Provide telecommunications cabling inspection, verification and performance testing in accordance with TIA/EIA-568 for all structural cabling, in accordance with TIA/EIA-758B for all outside plant copper cabling, and in accordance with TIA/EIA-526-7 (Methods A and B) for Single Mode Fiber Optical cabling. All Category 6 cabling will be tested utilizing a Level III tester. All Category 3 Outside Plant cabling will be tested with a DC Loop Tester and a Time-Domain Reflectometer (TDR). All Terminated Single Mode Fiber Optic cabling will be tested with a power source and light meter and for all unterminated Single Mode

Fiber Optic cable an Optical Time-Domain Reflectometer (OTDR) will be utilized. Provide a complete and detailed test plan for all telecommunications cabling as described including a complete list of test equipment for the UTP, optical fiber components and accessories 30 days prior to the proposed test date. Provide Copper and Fiber Optic Cable Test Reports to MCIWEST G-6 in PDF format within 10 business days from testing

1.3.1 TELECOMMUNICATIONS DRAWINGS

Provide Registered Communications Distribution Designer (RCDD) approved drawings complete with wiring diagrams and details required to prove that the distribution system shall properly support connectivity from the telecommunications equipment room to telecommunications work area outlets. Show the entrance facility and layout of cabling and pathway runs, distribution frame, cross connect points, single point ground system, and terminating block arrangements. Drawings shall depict final telecommunications cabling configuration, including location, and terminating blocks layout at cross connect points and patch panels after telecommunications cable installation.

- **a. T0** – Campus or site plan: exterior pathways and inter building backbone cable and pathways.
- **b. T1** – Layout of complete building per floor - Building Area/Serving Zone Boundaries, Backbone Systems, Structural Cabling System and Horizontal Pathways). The drawing indicates location of building areas, serving zones, vertical backbone diagrams, telecommunications rooms, access points, pathways, grounding system and other systems that need to be viewed from the complete building perspective.
- **c. T2** – Serving Zones/Building Area Drawings - Drop Locations and Cable Identification (ID'S). Show's the building area, and the serving zone within the building. These drawings show drop locations, telecommunications rooms, access points and detail call outs for common equipment rooms and other congested areas.
- **d. T3** – Telecommunications Equipment Room (ER): plan views of telecommunications racks, walls, equipment and power, plumbing elevations (racks and walls).
- **e. T4** – Typical Detail Drawings - Faceplate Labeling, Fire-stopping, and Americans with Disabilities Act (ADA), Safety and the Department of Transportation (DOT). The T4 will show detailed drawings of symbols and typical such as faceplate labeling, faceplate types, faceplate population installation procedures, detail racking, and raceways.
- **f. T5** – T5 drawings shall include schedules to show information for cut-over and cable plant management, patch panel layouts and cover plate assignments, cross-connect information and connecting terminal layout as a minimum. T5 drawings shall be provided in hard copy format on electronic media using Windows based computer cable management software, all drawings will be provided in an AutoCAD and Adobe Acrobat format. Provide the following T5 drawing documentation as a minimum.

1.4 TELECOMMUNICATIONS QUALIFICATIONS

The telecommunications contractor shall be a firm which is regularly and professionally engaged in the business of the applications, installation, and testing of the specified telecommunications systems and equipment. The telecommunications contractor shall demonstrate experience in providing successful telecommunications systems within the past 3 years. Submit documentation for a minimum of three and a maximum of five successful telecommunication system installations for the telecommunications contractor.

1.4.1 REGISTERED COMMUNICATIONS DISTRIBUTION DESIGNER (RCDD)
Telecommunications design must be performed and stamped by a Building Industry Consulting Service International (BICSI) Registered Consultant Distribution Design (RCDD) for all projects per UFC 3 580 01.

1.4.2 INSTALLERS QUALIFICATIONS
Prior to installation, submit data of installer's experience and qualifications which shall include 3 years of recent projects experience of similar complexity. Include names and locations of two projects successfully completed using fiber optic and copper communications cabling systems. Include specific experience in installing and testing structured telecommunications distribution systems using fiber optical and copper cabling systems. Supervisors and installers assigned to the installation of this system or any of its components shall have factory or factory approved certification from each equipment manufacturer indicating that they are qualified to install and test the provided products.

1.5 RECORD DOCUMENTATION
Provide electronic (AutoCAD and Adobe Acrobat formats) and a hard copy of all T-5 Telecommunication Drawings to include documentation of cables and termination hardware in accordance with ANSI/TIA/EIA-606-A. Marine Corps Base Camp Pendleton is a class 4 activity requiring all labeling schemes to be provided by MCIWEST G-6 Infrastructure Planning. T5 drawings shall include schemes to show information for cut-over and cable plant management, maintenance hole and conduit pathways (to include GIS coordinates) patch panel layouts and cover plate assignments, cross-connect information and connecting terminal layout as a minimum.

PART 2 PRODUCTS

2.1 BACKBOARDS
Install 2 walls of interior grade void free plywood 3/4 inch thick in 4 foot by 8 foot sheets, painted (2 coats of fire retardant paint white in color) on all 6 sides. Ref EIA/TIA-569.

2.2 GROUNDING AND BONDING PRODUCTS
Comply with TIA/EIA-JSTD-607 and NFPA 70.

2.3 LABELING
Types and materials: Labels shall be a weather-resistance material such as a rigid plastic/vinyl tag or a flexible vinyl “stick-on” label with polyester over-laminate that is able to receive and sustain permanent identification lettering without fading or discoloration.

2.4 STRUCTURAL BACKBONE COMPONETS

2.4.1 BACKBONE CABLING
Copper cabling shall be a solid conductors multi-pair minimum Category 3, 24 AWG, formed into 25-pair binder groups covered with an indoor rated (plenum where required) thermoplastic jacket. All optical fiber in the backbone shall be single-mode indoor rated (plenum where required) optical fiber terminated with SC connectors.

2.4.2 COPPER PATCH PANEL
A connecting hardware system that facilitates cable termination and cabling administration using patch cords. Provide ports for the number of pairs terminated on the panel plus 25% spare (See APPENDIX A).

2.4.3 FIBER OPTIC PATCH PANEL
Install rack mounted optical fiber patch panels with Duplex SC panel connectors with blank inserts provided to fill the unused spaces of the fiber patch panel (See APPENDIX B).

2.5 INSIDE PLANT STRUCTURED CABLE SYSTEM / COMPONETS

2.5.1 EQUIPMENT SUPPORT

2.5.1.1 EQUIPMENT SUPPORT FRAME
Shall be steel construction and treated to resist corrosion. 19-inch open face equipment racks shall be installed. Equipment support frames will be floor mounted unless the facility has 12 or less users in which case the frame may be wall mounted (See APPENDIX C).

2.5.1.2 EQUIPMENT SUPPORT CABINET
Shall be steel construction and treated to resist corrosion. Within the cabinet is a 19-inch open face equipment support frame. The cabinet will also have horizontally split side panels allowing for convenient access to installed and maintain the networking equipment. Quick release, field reversible single piece front and split rear doors (See APPENDIX C).

2.5.2 INSIDE PLANT STRUCTURAL CABLING
Category 6, 24 AWG, four pair cable Blue for data and Gray for voice, shall be used for all horizontal cabling. All permanent cable termination shall be labeled at each end.

2.5.3 PATCH PANEL
A connecting hardware system that facilitates cable termination and cabling administration using Category 6 patch cords. Provide ports for the number of horizontal cables terminated on the panel plus 25% spare (See APPENDIX D, E, F and G).

2.5.3.1 COPPER PATCH CABLES
Copper patch cables must be 4-pair 24 American Wire Gage (AWG) stranded UTP cable, rated for Category 6, with 8-pin modular connectors at each end. Provide sufficient copper patch cables of various appropriate lengths to terminate all copper patch panel appearances with a 10% spare of each length.

2.6 PATHWAYS

2.6.1 CABLE TRAY
Main distribution pathway will contain a cable tray solution. Solid bottom, slotted bottom, or welded wire cable tray should be used to provide a centralized cable management/distribution system. Provide 1 square inch cross sectional area of the tray or wire-way for each outlet location served. Cable trays shall be designed to accommodate maximum calculated fill ratio of 50% to a maximum inside depth of 6 inches. For barracks, the designer should provide 1 square inch cross sectional area of the tray or wire-way for each barracks unit, and to exceed the 50% fill ratio. Ladder cable tray should be avoided for horizontal distribution. All cable bundles must be laced together and to the cable tray using an approved non-metallic/non-pinching material. Provide 12 inches of clearance above cable trays for future access. Designers must coordinate with other disciplines to insure clearances can be achieved (See APPENDIX H).

2.6.2 J-HOOKS
From the main distribution pathway transitioning to the work-area conduit the use of J-Hooks are within the standards to be installed no more than 5 feet apart.

2.6.3 CONDUITS
Conduit supporting a work-area outlet is a minimum of 1 inch rigid steel.

2.7 WORK-AREA OUTLET

2.7.1 WORK-AREA OUTLET BOXES
Utilize standard type 4 inches square by (2) 1/8 inches deep device boxes with mud ring for single port plate.

2.7.2 WORK-AREA OUTLET
UTP jacks shall be keystone type RJ-45 eight position quad port face plates rated for Category 6 service. All unused ports shall be filled with blue for data and gray for voice blank inserts (See APPENDIX I).

PART 3 EXECUTIONS

3.1 INSTALLATION
Telecommunications cabling and pathway systems, including the horizontal and backbone cable, pathway systems, telecommunications outlet/connector assemblies, and associated hardware shall be installed in accordance with TIA/EIA-568, TIA/EIA-569, NFPA 70, and UL standards as applicable. Reference UFC 3-580-01 and UFC 3-580-10.

3.2 TELECOMMUNICATIONS ROOM
The Telecommunications Room (TR) shall be designed in accordance with UFC 3-580-10 Chapter 2-4.1 through 2-4.9. The default starting size for a TR is 10' X 12' that is rectangle in shape. The placement of Intrusion Detection System (IDS) within the Telecommunication Room (TR) requires an additional 9 square feet in support of additional equipment rack, cabling and working area requirements. Closed Circuit Television (CCTV) is not a part of communications and will not be installed in the TR. The TR shall be a dedicated room not shared with electrical or mechanical utility distribution, or storage, or commercial enterprises. UFC-3-580-01 Telecommunications Building Cabling System Planning and Design, Section 2-5 states to design by TIA-569b. TIA-569B Section 5.5.2.2 Heating, ventilation and air conditioning (HVAC) requires HVAC 24/7. Temperature and humidity shall be controlled to provide continuous operating ranges of 18 C (65 F) to 24 C (75 F) with 30% to 55% relative humidity. The ambient temperature and humidity shall be measured at a distance of 1.5 m (5 ft) above the floor level. A positive pressure differential with respect to surrounding areas should be provided (See APPENDIX J).

3.2.1 FLOORING
The floor covering inside rooms dedicated for Telecommunications purposes require a static dissipative material to effectively discharge or neutralize static electricity. Static Dissipative materials, in order of preference, include Epoxy resin, Solid Vinyl Tile (SVT), or Vinyl Coated Tile (VCT), provided the material and installation conform within the following standards: ANSI ESD-S20.20, ANSI ESD-S7.1, and NFPA 99.

Note: VCT is least preferred due to it requiring periodic treatments to sustain its static-dissipative properties.

- **a.** Preferred color is white for its light-reflecting properties, but a light gray may also suffice. No dark colors may be used unless otherwise directed.
- **b.** Typical static dissipative resistivity (in ohms) is $1x10^{6}$ to $1x10^{11}$ with $1x10^{8-9}$, being typical.

c. Conductive materials (≤$1x10^4$) shall not be used.
d. Bare and untreated concrete, brick, stone, ceramic, plastic, metal, wood, or carpet shall not be used.

3.2.2 NAMEPLATES
Provide nameplate (Letter size minimum 1 inch) on the door or each Telecommunications Room to read "Telecommunications" in accordance with finishing schedule signage plan.

3.2.3 EQUIPMENT RACK
A minimum of a 4 foot clearance is required at the centerline of each equipment rack and at one end of each row granting maximum access to all equipment mounted without any obstruction. The terminations placed onto the equipment rack starting from the top shall contain space for a fiber optic patch panel of sufficient size (minimum 2RU) to terminate all horizontal or outside plant fiber optic cabling. The outside plant copper cabling will be extended from the Building Entrance Terminal on an RJ-45 rack mounted patch panel (extending one pair per port) just below the fiber optic patch panel. All Category 6 terminations shall conform to the **T-568A** wiring standard mounted on a RJ-45 rack mounted patch panel just below the extended outside plant cabling. If the quantity of patch panels and horizontal cable management in a rack exceed 50% of that rack's Rack Unit (RU) count, install a second rack for the placement of network equipment, uninterrupted power supplies and the bottom wire management panel. The telecommunication rack shall have dual (front and rear) vertical cable management to keep all patch cables and wiring organized and neat in appearance. There shall be cable trays/runways on the top of the rack with wall support kits. Equipment racks and wall mounted enclosures shall be designed with appropriate Seismic Zone considerations.

3.3 BACKBONE TERMINATION
Install backbone copper and optical fiber cable between the Entrance Facility (EF) and the Telecommunication Room (TR) or between two or more TRs. MCIWEST G-6 will determine the copper pair and fiber optic counts.

3.3.1 BACKBONE COPPER PANEL
Terminate copper cable on an approved rack mounted RJ-45 panel to the T-568-A. The designer shall coordinate with MCIWEST G-6 for the termination locations in the Telecommunications Rooms.

3.3.2 FIBER OPTIC ENCLOSURE RACK
Patch panels shall be rack mounted at the highest point within the cabinet or on open faced rack with sufficient ports to accommodate the installed of the fiber optic cable termination with a 25 % spare capability. Within the enclosure the fiber optic cable loop shall be 3 feet in length with the outer cable jacket secured to the enclosure to prevent movement utilizing clamps or brackets as recommended by the manufacturer. Optical fiber shall be terminated utilizing SC connectors.

The panel shall be attached with two push-pull latches to allow quick installation and removal. Blank connector panels shall be available to fill unused space within the housings. The blank connector panel shall be attached with at least two push-pull latches to allow quick installation and removal. The blank panels shall be manufactured from injection-molded polycarbonate. Panels shall be manufactured from 16 gauge cold rolled steel or injection-molded polycarbonate for structural integrity.

The Fiber Panel Adapters shall accommodate applications requiring specified labeling and connector identification. Fiber Panel Adapters shall be labeled in the RIC alphabetically A-L and oriented vertically within the RIC. The housing and/or packaging shall include a hardware accessory kit that includes the following components: 1) installation instructions,

2) fiber optics label, 3) 8 inch cable ties, 4) 4 inch cable ties, 5) #12-24 mounting screws. Housings shall be manufactured using materials and colors for structural integrity and shall be finished with a wrinkled black powder coat for durability on exterior metal. Installation fasteners shall be included and shall be black in color.

3.4 GROUNDING AND BONDING

Designer should verify the existence of grounding facilities. It is essential that all grounding facilities, new and existing, conform to ANSI-J-STD-607. The ANSI-J-STD-607-A provides telecommunications grounding practices and acceptable electrical characteristics. The following are MCIWEST G-6 preferred practices regarding Telecommunication Grounding utilizing a single-point ground system.

3.4.1 TELECOMMUNICATIONS MAIN GROUNDING BAR (TMGB)

The TMGB is the hub of the basic telecommunications grounding and bonding system providing a common point of connection for ground from outside cable to the building and equipment. Establish a TMGB where the OSP cables enter the building at 19 inches above Finish Floor (AFF) as close as possible to OSP entrance terminal. All pathways, equipment racks, and metallic components shall be connected to the TMGB (See APPENDIX K).

3.4.2 TELECOMMUNICATION GROUNDING PRACTICE

The Telecommunications Main Ground Bus-bar (TMGB) in a Telecommunication Room (TR) shall be connected directly to the facility's telecommunication ground ring using a single point ground cable. The ground cable is secured to the TMGB using a two hole, double crimped lug. The cable is secured to the ground ring using an exothermic weld. An inspection well at the point of the weld is required for quality assurance and periodic testing of the telecommunication grounding system. Whenever practical, a Telecommunications Ground Bus-bar (TGB) located inside another TR in the same facility shall be either exothermically welded directly to the Telecommunication Ground Ring or routed directly back to the TMGB (whichever is closer) and connected using a single point ground cable. Do not connect the Telecommunication ground only to the facility's power panel ground or a metallic structural support.

Single Point Grounding - Class II Equipment grounding practices inside a Telecom Room (TR), Entrance Facility (EF), and Area Distribution Node (ADN) shall use single-point ground connected directly to the room's Telecommunications Ground Bus-bar (TGB). When practical, use the shortest distance between the equipment and the TGB. For example: metallic cable tray sections shall be linked together using 6 AWG cabling terminated with dual-hole, double-crimp lugs. The tray's bare metal shall be exposed at the lug to ensure solid continuity between sections. A cable tray's endpoint closest to the TGB shall be connected to the TGB. Each equipment rack (stand alone or in a row) shall have a ground cable that can be connected to a single cable that ties directly to the TGB. 10 AWG cables with single lugs can be used to connect each PET and LEN block to the Main Distribution Frame (MDF) chassis, whose ground cable ties directly to the TGB. All single point grounds shall connect to the TMGB or TGB. Do not connect the telecommunication ground to the Class 3 Telecom equipment power ground.

3.5 CABLE TRAY

Cable trays shall be installed within Telecommunications Rooms allowing cables transitions/routing from the equipment racks/cabinets, backboards, conduit, stubs, sleeves or other pathways that enter or exit the space. Velcro shall be the only acceptable material used to maintain cable management. Cable trays shall have a minimum of 12 inch separation from any other cable tray, equipment rack, cabinet or conduits, ducts, structural ceiling or from the drop ceiling.

3.6 CONDUITS (STRUCTURAL CABLING)

All conduits installed shall have a pull rope placed in them for future use. The minimum size of a conduit is 1 inch in horizontal pathways, 4 inches in sleeve's leaving the Telecommunications Room, 4 inch continuous conduit between telecommunications spaces and 4 inches for building entrance. Fire-stop and seal all cable access penetrations in floor, walls, ceilings and other parts of the building to their designed fire rating. Use approved clay, putty or other suitable fire-rated materials to seal used and unused conduit openings. Fire-stop all openings around electrical penetrations through fire resistance-rated wall, partitions, floors, or ceilings. Install conduits with a minimum 4 inch separation from parallel runs of electrical, gas, water, flues, steam, and hot water conduits/pipes. Install conduit parallel with or at right angles to ceilings, walls, and structural members where located above accessible ceilings and where conduit is visible after completion of project. Run conduits in crawl spaces and under floor slabs as if exposed. Conduits shall be a minimum of 1 inch with no more than two 90 degree bends. Use only lubricants approved by cable manufacturer.

3.7 INSIDE PLANT STRUCTURAL CABLING

Install Category 6 UTP cabling following the T568A standard while utilize the approved Insulation Displacement Connection (IDC) tool kit. Do not untwist Category 6 cables more than 1/2 inch from the point of termination to maintain cable geometry. Provide a 10 foot service loop within the TR, a 3 foot service loop above the work-area outlet within the overhead ceiling and 1 foot of excess cable in the work-area outlet box. Do not exceed manufacturers' cable pull tensions for copper cables without chafing or damaging the outer cable jacket. When open-top wire supports ("J" hooks) are used for wire distribution in an open or dropped ceiling installation, they shall be spaced 4-5 feet apart. There shall be no more than (6) Category 6 cables drops per location when serving multiple work-area outlets with one conduit stubbed into the ceiling cavity.

3.8 WORK AREA OUTLETS

Terminate Category 6 cable in accordance with TIA/EIA-568 wiring configuration T-568-A using Blue Category 6 cable for Data services and Gray Category 6 cabling for Voice services. All work area horizontal cabling shall be terminated in quad-port face plate and mounted at the same elevation as the electrical outlets. Un-used ports will have blank inserts placed in the faceplate.

3.9 LABELING

All Indoor labeling shall consist of an adhesive-backed, non-fade material such as vinyl or plastic, approximately 0.375 inch to 0.5 inch wide. The lettering standard shall include uppercase black letters and numbers on a white background.

3.10 TELECOMMUNICATIONS CABLE TESTING

3.10.1 BACKBONE CABLING TESTING

Provide to MCIWEST G-6 test plan that defines the test required to ensure that the system meets technical, operational and performance specifications. Time Domain Reflectometry (TDR) shall be used on the backbone copper cabling. Optical Time Domain Reflectometry (OTDR) and Power Meter/Light Source shall be used on the backbone optical fiber. Test results shall be provided in a pdf format, so that they are non-editable. (2) Electronic copies of the test reports shall be provided to the MCIWEST G-6 for database records within 10 business days of testing.

3.10.2 INSIDE PLANT STRUCTURAL CABLING TESTING

Provide to MCIWEST G-6 test plan that defines the test required to ensure that the system meets technical, operational and performance specifications. Level III testers shall be used on all Category 6 horizontal cable. Perform acceptance tests in accordance with most current version of TIA/EIA-568. Provide a PDF electronic file of the Structural Cabling tests report to MCIWEST G6 within 10 business days of testing.

PART 4 DAMAGE OF TELECOMMUNICATION INFRASTRUCTURE

4.1 CONTRACTOR DAMAGE

In the event of damage to a telecommunication pathway or cabling the contractor must **IMMEDIATELY contact the MCIWEST G-6 Help Desk at (760) 763-0173.** Restoration of services must be completed within **24 HOUR** of outage origination. Promptly repair indicated telecommunication pathways and infrastructure damaged during site preparation or construction. Damages to telecommunication pathways or infrastructure that was not indicated by as-built provided or not identified by third party locating services, which are caused by contractor operations, shall be treated as Changes under the terms of the Contract Clauses. When Contractor is advised in writing of the location of a non-indicated line or system, such notice shall provide that portion of the line or system with "indicated" status in determining liability for damages. **All repairs MUST be approved by the MCIWEST G-6.** Compounds or tape are not acceptable substitutes for heat shrinkable end caps and will not be approved.

PART 5 ACCESSES TO CONTROLLED SPACES

5.1 REFERENCES

DISA CCRI	Command Cyber Readiness Inspection Regulations
MCO 5530.14A	Marine Corps Physical Security Program
SECNAV M-5510.36	Physical Security Program
CVS HSPD-12	Homeland Security Protection Directive (Vetting of all DoD, Federal, Active and Contractors)
HSDP-7	Critical Infrastructure Protection Program

5.2 REQUESTING ACCESS TO A CONTROL MCIWEST G-6 SPACE

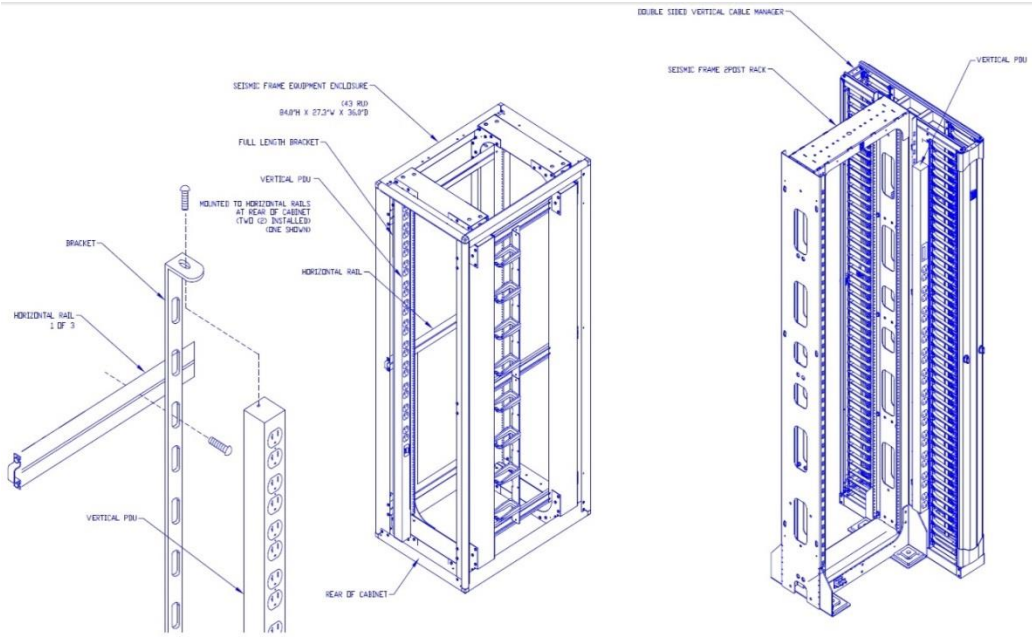
All contractors requiring access to Restricted Area (LEVEL II) or Secure Spaces must follow and be familiar with HSPD-12 regulations and Industrial Security Program DD-254 Regulations for access to secure spaces Ref: SECNAVISNT M-5530.36. Those contractors that meet these regulations may obtain a DOD CAC card under the CVS Program; this will eliminate the G-6 having to escort those contractors that require access to controlled spaces. Once a contractor is properly vetted he/she will receive a proper credential and receive a security brief prior to given access to MCIWEST G-6 controlled spaces. That DOD CAC also allows him/her to obtain a base DECAL for the duration of the contract. Not all contractors require a DOD CAC. There can be a few that can escort the remaining contractors that require access to controlled spaces, those security measures will be covered during the security brief. Access will be coordinated through the MCIWEST G-6 Information Technology Security Manager (ITSM) (760) 763-1975 or the Customer Service Desk (760) 763-0173.

Any questions pertaining to this document please contact MCIWEST G-6 Infrastructure Planning (760) 763-5263.

APPENDIX A BACKBONE COPPER CABLE PATCH PANEL/LABELING

APPENDIX B BACKBONE FIBER OPTIC PATCH PANEL/LABELING

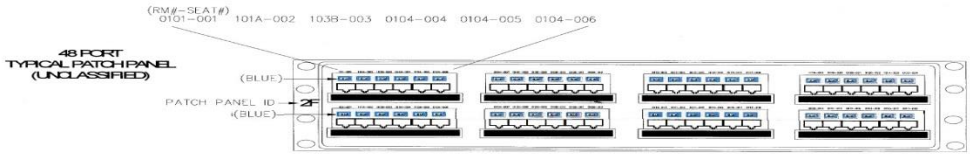
APPENDIX C EQUIPMENT SUPPORT CABINET/FRAME



VERTICAL PDU TO CABINET MOUNTING DETAILS

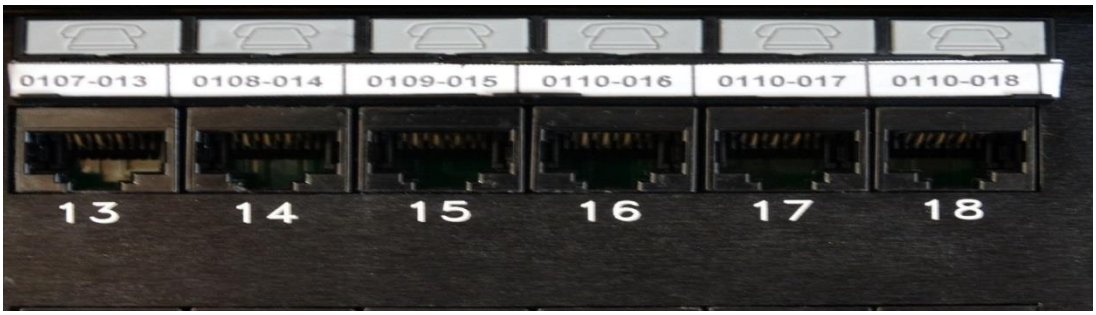
VERTICAL PDU TO RACK MOUNTING DETAIL

APPENDIX D STRUCTURAL CABLING PATCH-PANEL / LABELING

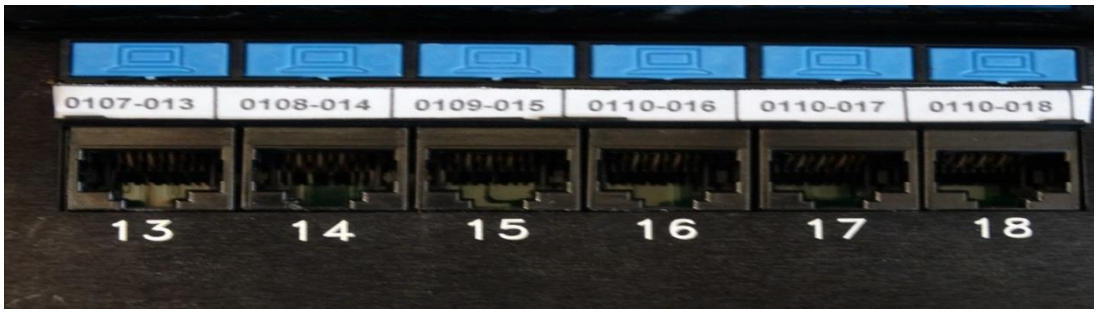


APPENDIX E HORIZONTAL CABLE MANAGEMENT (BACKSIDE)

APPENDIX F VOICE PATCH-PANEL / LABELING

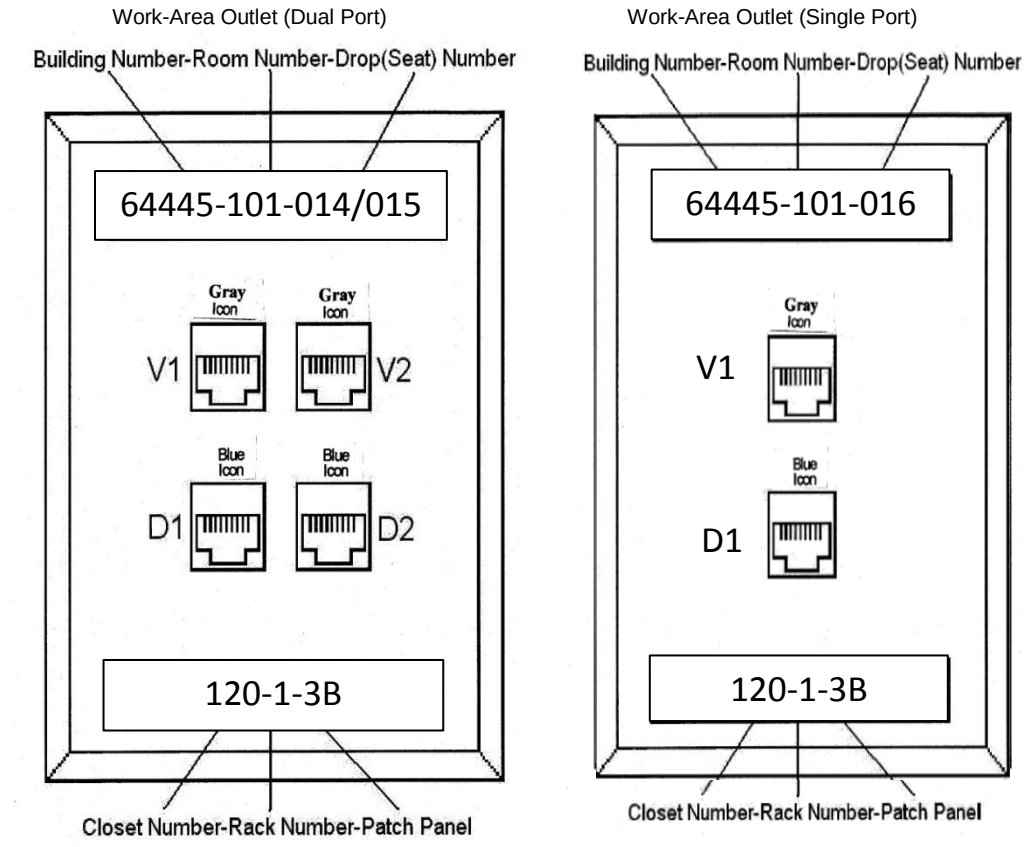


APPENDIX G DATA PATCH PANEL / LABELING



APPENDIX H CABLE TRAY

APPENDIX I WORK-AREA OUTLETS



APPENDIX J TELECOMMUNICATION AIR CONDITIONING UNIT

APPENDIX K TELECOMMUNICATION MAIN GROUNDING BUSBAR (TMGB)