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ARCOS BULLITEN 2012-1

SUBJECT: IT Design

1. REFERENCE:

- a. Army Reserve IT Manual, Change 3
 - b. Army Reserve Design Process Submittal Requirements (DPSR)
 - c. USARC G-2/6 IT Design Whitepaper, 2 April 2012 (ENCLOSURE 1)
2. This memorandum is to serve as updated guidance currently defined in Army Reserve IT Manual, Change 3, and the Army Reserve DPSR. The attached whitepaper has been prepared and approved by USARC G-2/6 and provides updates applicable to the design of Army Reserve Facilities.
3. The whitepaper represents recent lessons learned and frequent IT design issues and omissions. This document will be incorporated into future updates of the Army Reserve IT Manual and DPSR and is intended to be utilized as interim requirements until those updates occur.

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USARC G-2/6 IT Design Whitepaper

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Last Updated: 2 April 2012

This whitepaper has been designed to be used as a tool in the creation and review of the Telecommunications Narrative and Design for all Army Reserve MILCON projects. This document is a bridging document that describes lessons learned and/or frequent or typical IT design issues. It will be periodically updated until the next major revision of the Army Reserve IT Manual is issued. It should also be noted that this document is not contractual in nature (unless already covered by the current Statement of Work).

IT Reference Documents

It is the desire of USARC G-2/6 that the Telecommunications Design and Construction for all MILCON projects follow not only basic industry standards, but are also fully compliant with the standards that the Army Reserve and ISEC have established.

To meet that goal, USARC G-2/6 is requesting that, in addition to the industry standard telecommunications references that are included in the Design Narrative, the following IT Reference Document titles should be included in the Design Narrative in the Electrical and Telecommunications sections as required Reference Documents.

1. Army Reserve IT Manual
2. Technical Criteria for the Installation Information Infrastructure Architecture (I3A)
3. UFC 4-171-05

Also, all references to UFC 3-580-1 as it pertains to Telecommunications must be removed from the Design Narrative as that UFC is obsolete for all Army Reserve MILCON projects (Per I3A ALARACT Dated February 2010).

IT Design Pitfalls

USARC G-2/6, in our review of hundreds of Telecommunications Design packages, has identified two design deficiencies that have occurred on a majority of the Telecommunications Designs we've reviewed. In order to assist the Telecommunications Designer in avoiding these IT design pitfalls, a description of the item and, as appropriate a suggested methods of avoiding the pitfall are listed below;

- **Pitfall:** No RCDD stamp on the Certified Final Telecommunications Design Package.
 - **Suggested Avoidance Method:** IAW I3A and the Army Reserve IT Manual, RCDD review, approval, certification, and stamp of telecommunications design before issuing Certified Final is required.
- **Pitfall:** Voice and Data outlet termination "serving areas" are not clearly defined on telecommunications drawings.
 - **Suggested Avoidance Method:** IAW I3A, in buildings with the TER and TR or multiple TRs on the same floor, each telecommunications floor plan sheet (i.e. 1T-XXX) should clearly indicate the TER/TR the voice and data outlets are to be terminated in. For example, a General Note which states, "All voice/data outlets on this sheet are to be terminated in TR 129)" could be added to each applicable sheet.
- **Pitfall:** Water, Gas, and Mechanical pipes that don't serve the EF, TER, and TR(s) are often designed to pass thru or above these spaces.
 - **Suggested Avoidance Method:** IAW the Army Reserve IT Manual, this is not allowed. To help avoid this issue, G-2/6 suggests adding the following General Note to the Fire Safety, Plumbing, and Mechanical drawings general notes pages: Equipment (piping, ductwork, machinery, etc) that does not serve the EF, TER, or TR(s) shall not be installed above or in these IT spaces nor will this equipment pass through or enter the EF, TER, or TR(s). In addition to adding this note, this is an important item for the Designer to be mindful of as the Fire Safety, Plumbing, and Mechanical designs are created.
- **Pitfall:** Motors, transformers, or other electrical devices greater than 5KVA are located within 47" of Category 6 horizontal cabling and/or copper backbone cabling. This can often cause an EMI issue. EMI issues are very difficult to isolate and often expensive to repair. That is why the BISCIT TDMM 12th Edition recommends avoiding all possible EMI situations.
 - **Suggested Avoidance Method:** To avoid the possibility of EMI, add the following General Note to the Mechanical and Electrical drawings general notes pages: Any motor, transformer, or other electrical device greater than 5KVA will have a minimum of a 47" buffer from any wall of the EF, TER, or TR(s). In addition to adding this note, this is an important item for the Designer to be mindful of as the Mechanical and Electrical designs are created.

IT Design Changes and New IT Design Items

In the transition from one version of the Army Reserve IT Manual to the next version, there are always changes worth making special mention of. Also, in the ever changing world of IT, new IT Design methods and requirements often come to light. USARC G-2/6 would like to point out the following changes, clarifications, and new items;

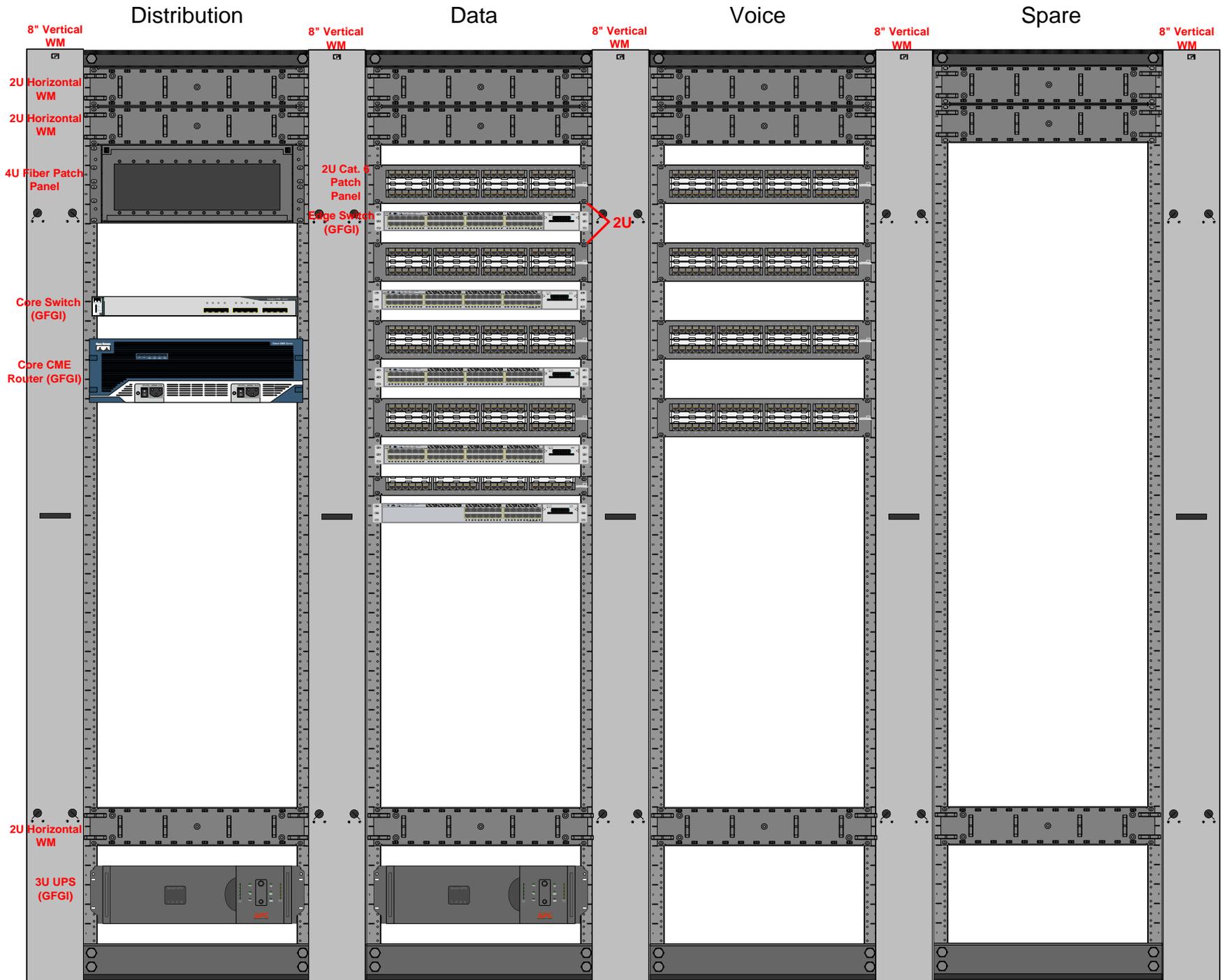
- The required cable jacket and outlet jack colors for data outlets is now blue. G-2/6 would also like to request this item be added as a General note on the Telecommunications general notes sheet. To help avoid any confusion, we would also like to request that a General note be added to indicate that white is the required cable jacket and outlet jack colors for voice outlets.
- The required size and specifications for IT wall-mounted cabinets have changed. The new requirement is that the cabinet be 24"W, 24"H, and 30"D (12 RU high), lockable, with louvers and fan. G-2/6 would like to request that a KeyNote be added to the design to indicate this requirement when IT cabinets are used in the design (i.e. SIPRNet Café).
- Copper and fiber patch cables are now GFGI items and do not need to be included in the telecommunications Design Narrative or the Telecommunications design.
- Wireless Access Point Outlet infrastructure is now required to be included in the Telecommunications Design. However, as this new IT Design item is introduced into the Army Reserve, USARC G-2/6 is only requiring it for the following areas;
 - Training Building
 - Classrooms
 - Assembly Hall
 - Conference Rooms
 - Library
 - Learning Center
 - OMS
 - Workbay
 - Guidance on wireless access point outlet placement for these specific areas can be found in the Army Reserve IT Manual w/change 3 Section 3.2.5.2.
- Electrical Outlet requirements for the EF, TER, and TR(s) have been significantly revised. The changes are as follows;
 - Entrance Facility – New requirements call for two dedicated 120V/20 Amp Clean Power circuits with one NEMA L5-20 and one double duplex NEMA 5-20 receptacle. These receptacles will be installed on the plywood backboard at 18" AFF near the Service Provider Conduits. Standard convenience receptacles are still required.
 - TER and all TR(s) - New requirements call for one dedicated 120V/20 Amp Clean Power circuit with one double duplex NEMA 5-20 receptacle for each 19 inch (480 mm) rack or cabinet in the TER and all TR(s). This receptacle shall be installed 15" AFF on the rear of the rack.

- HVAC requirements for the TER and TR(s) have also been revised. The following is provided as additional guidance to help the HVAC Designer meet the requirements as listed in the Army Reserve IT Manual and I3A;
 - For heat load calculations use the heat dissipation information from the actual equipment to be installed in each rack. This information should be coordinated with the USARC G2/6 representative for the project. If it is determined this information is not available then 1650 Watts per IT rack should be used as a default value.

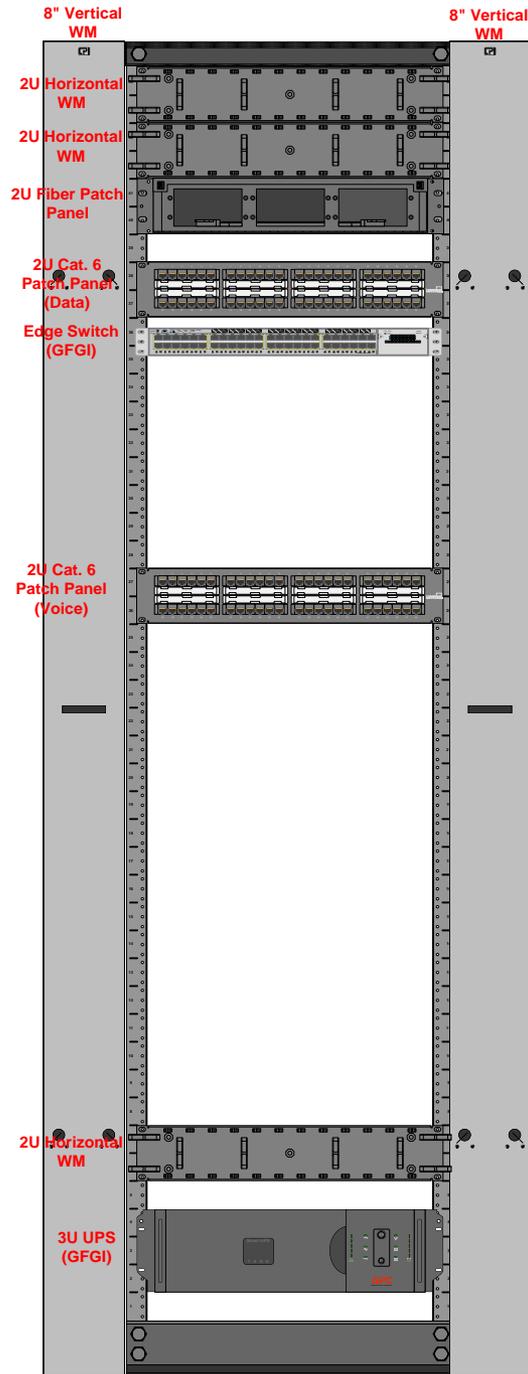
Helpful Diagrams

- The following pages contain diagrams of the Typical IT Rack Design for the TER, TR(s), and the OMS TR. There is also a Typical Army Reserve IT Backbone Cabling Diagram. These diagrams are designed to assist the Telecommunications Designer in their design of the Rack Elevation drawings, Telecommunications Site Plan, and Backbone Riser (One-Line) diagram.

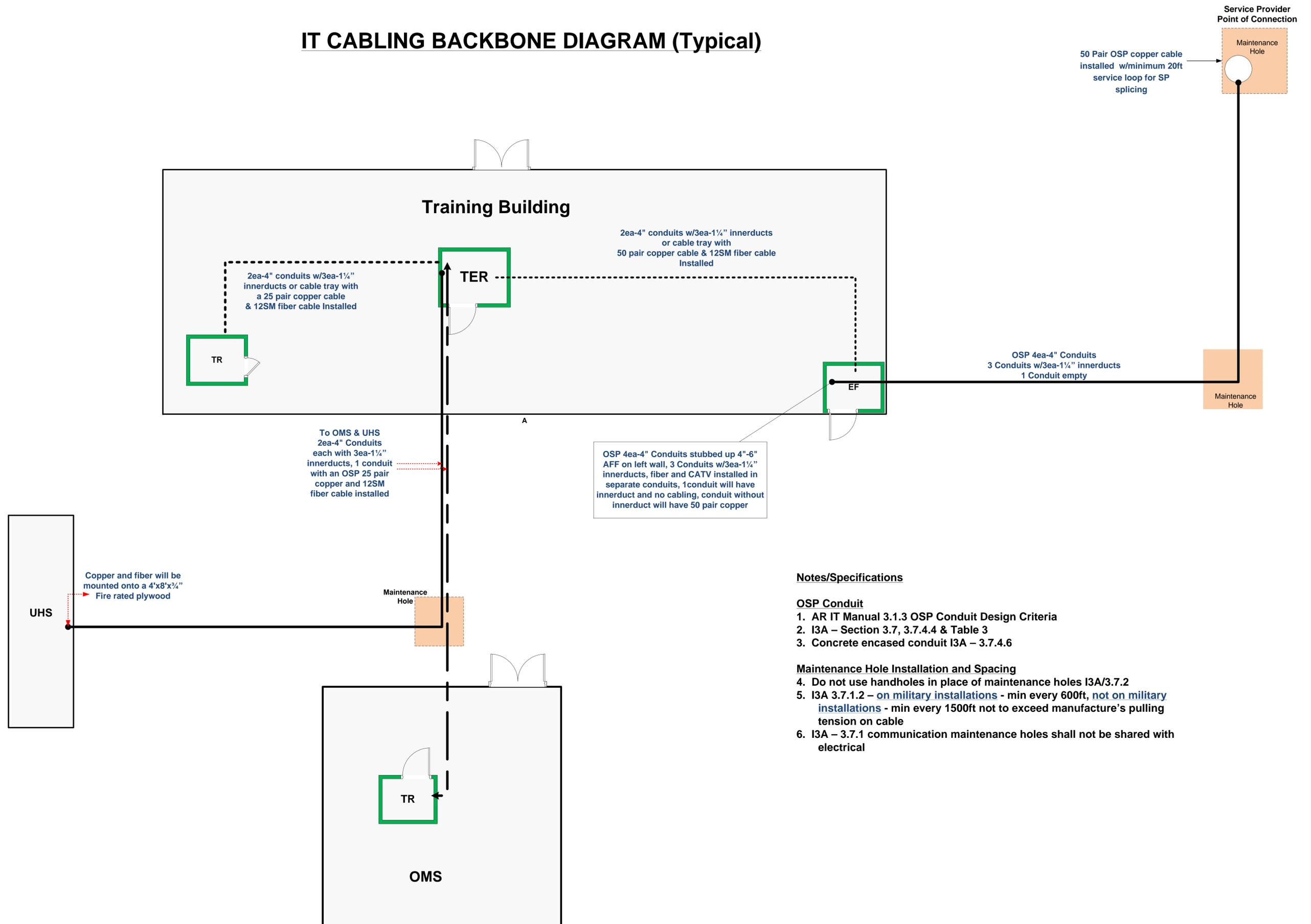
TER IT Racks (Typical)



OMS TR IT Rack (Typical)



IT CABLING BACKBONE DIAGRAM (Typical)



Notes/Specifications

OSP Conduit

1. AR IT Manual 3.1.3 OSP Conduit Design Criteria
2. I3A – Section 3.7, 3.7.4.4 & Table 3
3. Concrete encased conduit I3A – 3.7.4.6

Maintenance Hole Installation and Spacing

4. Do not use handholes in place of maintenance holes I3A/3.7.2
5. I3A 3.7.1.2 – on military installations - min every 600ft, not on military installations - min every 1500ft not to exceed manufacture's pulling tension on cable
6. I3A – 3.7.1 communication maintenance holes shall not be shared with electrical

Telecommunications Drawings

The following is a list of the Standard telecommunications drawings that USARC G-2/6 is requesting. These drawings should be in their own indexed section apart from the electrical section. The standardized drawings should be IAW TIA/EIA-606-A and include;

- General notes page
- Legend and symbols
- Telecommunications Site Utility plan
- Telecommunications Site Utilities Detail
- Telecommunications Floor Plans with cable pathways (show cable tray) and outlet locations to include designated serving areas (see Common IT Issues above)
- Detailed/enlarged drawings of all EF, TER, TR(s), and SIPRnet Café. These should include separate drawings for:
 - Detailed/enlarged aerial view
 - Detailed/enlarged wall view
 - Detailed/enlarged view on IT rack/cabinet layouts
- Detailed/enlarged diagrams of all cabling pathways, including conduits under slab and conduits for all modular furniture locations
- Detailed/enlarged view of faceplates
- Detailed/enlarged diagrams of telecommunications grounding plan to include enlarged typical of - TMGB, TGB, VRGB
- Detailed/enlarged backbone cabling riser diagrams
- All other drawings required by TIA/EIA-606-A to include all T1, T2, T3, and T4 drawings not already included in above requests