

VA



# U.S. Department of Veterans Affairs

Office of Information and Technology

*IT Operations and Services*

| *Solution Delivery*

## COMMUNITY BASED OUTPATIENT CLINIC (CBOC) INSIDE PLANT INFORMATION TRANSPORT SYSTEMS SPECIFICATIONS

DEVELOPED BY:  
DATA CENTER ENGINEERING  
DATA CENTER & CLOUD ENGINEERING

Department of Veterans Affairs



*IT Operations and Services  
Solution Delivery*



### PROJECT:

*CBOC ITS  
SPECIFICATIONS*

### PROJECT No:

*N/A*

MARK	DATE	DESCRIPTION

### ISSUE:

### DRAWING No:

*FILE: CBOC INSIDE PLANT ITS SPEC V1.vsd*

*DRAWN BY: Kevin Grzelka*

*CHECKED BY: Michael Julian, RCDD*

*DOC VERSION No: 1.0*

*PRINT DATE: Oct 5, 2017*

*ISSUE DATE: Oct 5, 2017*

### SHEET TITLE

COVER PAGE

COVER

SHEET: 1 OF 15



FRONT MATTER

PURPOSE:

THIS DRAWING SET REPRESENTS THE COMPUTING AND PASSIVE INFRASTRUCTURE DESIGN AND RACK ELEVATIONS FOR A GENERIC HEALTHCARE FACILITY EQUIPMENT ROOM (ER) AND A GENERIC TELECOMMUNICATION ROOM (TR). UNLESS NOTED OTHERWISE, ACTIVE EQUIPMENT WILL BE FURNISHED AND INSTALLED BY VA OR VA CONTRACTORS. THE STRUCTURED CABLING PLANT INSTALLERS WILL FURNISH AND INSTALL PASSIVE CABLE PLANT INFRASTRUCTURE INCLUDING HORIZONTAL CABLE MANAGERS, UTP AND FO HORIZONTAL CABLE, PATCH PANELS, PATHWAY RACKS, FIBER DISTRIBUTION CABINETS AND FIBER CASSETTES.

DESIGN OBJECTIVES

1. MODULARITY: THIS DESIGN IS HIGHLY MODULAR.
2. FLEXIBLE: THIS DESIGN IS FLEXIBLE TO ACCOMMODATE CHANGES TO FLOOR PLANS.
- 3.CABLE PLANT: UTP CATEGORY 6A CABLE PLANT WILL SUPPORT 10 GIGABIT ETHERNET.  
FIBER PLANT WILL UTILIZE LASER ENHANCED OM4 40 GbE RATED 50/125 MULTIMODE.

THIS DRAWING IS SCALED TO 11X17 FORMAT.

DRAWING TYPE DEFINITIONS

- T0 - Campus or Site Plans - Exterior Pathways and Inter-Building Backbones
- T1 - Layout of complete building per floor - Serving Zone Boundaries, Backbone Systems, and Horizontal Pathways
- T2 - Serving Zones Drawings - Drop Locations and Cable ID's
- T3 - Communication Equipment Rooms - Plan Views - Tech and AMEP /Elevations - Racks and Walls Elevations
- T4 - Typical Detail Drawings - Faceplate Labeling, Firestopping, ADA, Safety, DOT, etc...
- T5 - Schedules (Cabling and Equipment Spreadsheets) for cutovers

Standard or Document Description

- ANSI/TIA-606-C, Administration Standard for Telecommunications Infrastructure
- ANSI/TIA-606-B-1, Administration Standard for Telecommunications Infrastructure Addendum 1- Automated Infrastructure Management Systems - Addendum to ANSI/TIA-606-B
- ANSI/TIA-607-C, Generic Telecommunications Bonding and Grounding (Earthing) for Customer Premises
- ANSI/TIA-607-C-1, Generic Telecommunications Bonding and Grounding (Earthing) for Customer Premises - Addendum to TIA-607-C
- ANSI/TIA-942-A, Telecommunications Infrastructure Standard for Data Centers
- ANSI/TIA-942-A-1, Telecommunications Infrastructure Standard for Data Centers Addendum 1- Cabling Guidelines for Data Center Fabrics - Addendum to TIA-942-A
- ANSI/TIA-1179, Healthcare Facility Telecommunications Infrastructure
- BICSI 002, Data Center Design and Implementation Best Practices
- BICSI ITSIMM, Information Technology Systems Installation Methods Manual (ITSIMM) - 7th Edition
- BICSI/NECA 568, Standard for Installing Commercial Building Telecommunications Cabling
- BICSI/NECA 607 Standard for Telecommunications Bonding and Grounding Planning and Installation Methods for Commercial Buildings 2011
- CSI MASTERFORMAT™ 2004 EDITION NUMBERS & TITLES Construction Specifications Institute (CSI)
- NFPA 70, National Electrical Code
- NFPA 75, Standard for the Fire Protection of Information Technology Equipment

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FRONT MATTER

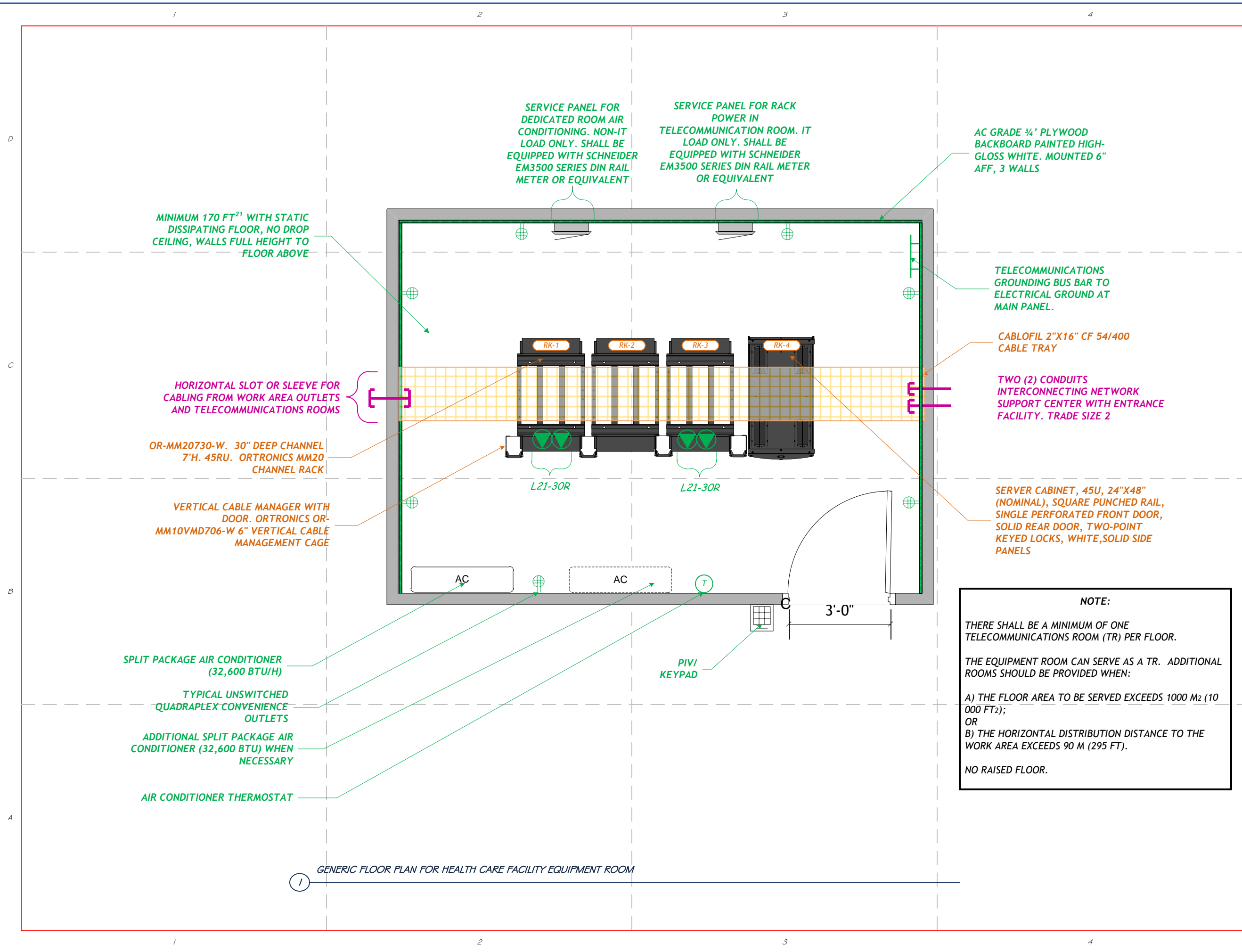
FRONT MATTER

SHEET: 2 OF 15









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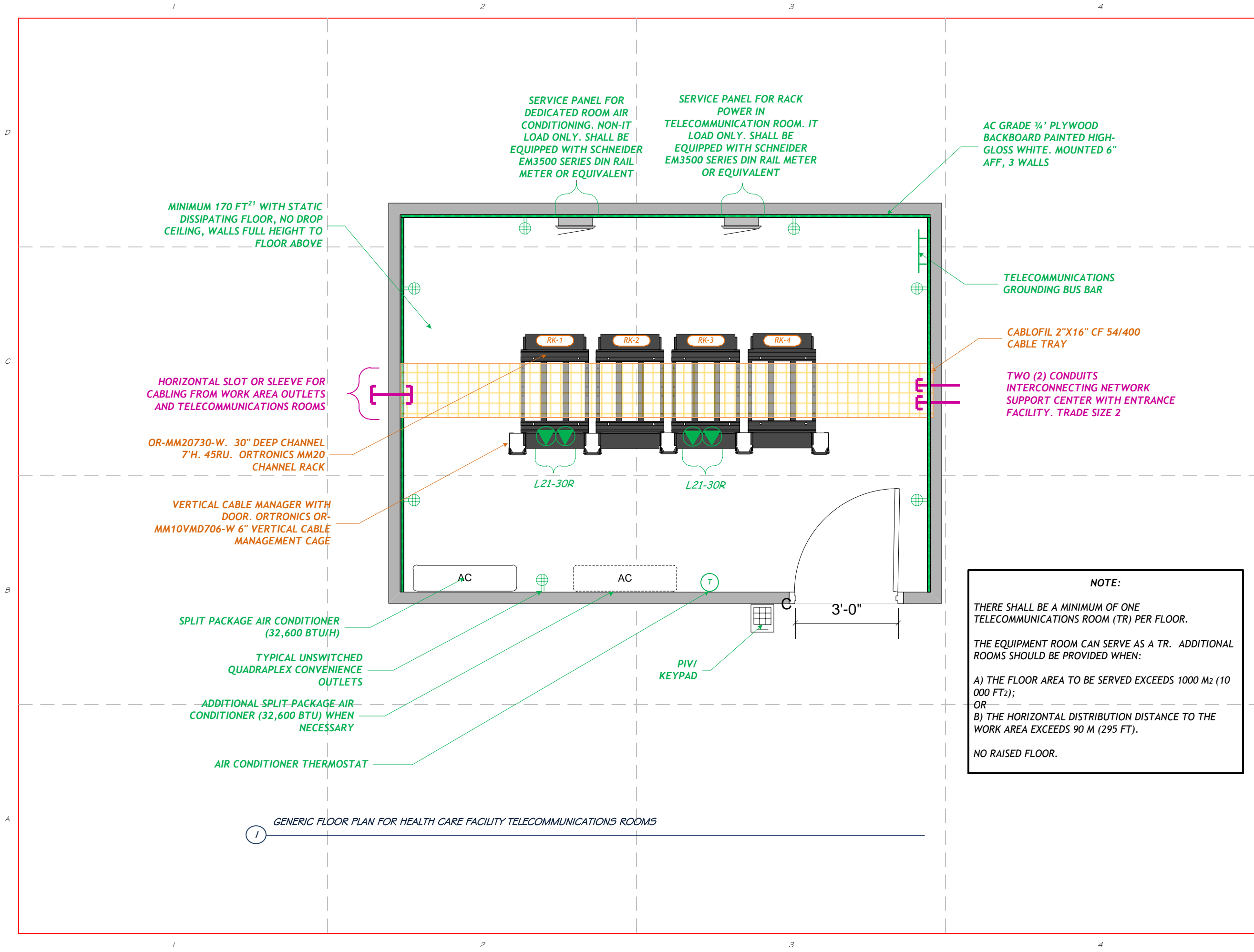
SHEET TITLE

EQUIPMENT ROOM

T3- GENERIC HEALTH CARE  
FACILITY EQUIPMENT ROOM

SHEET: 4 OF 15





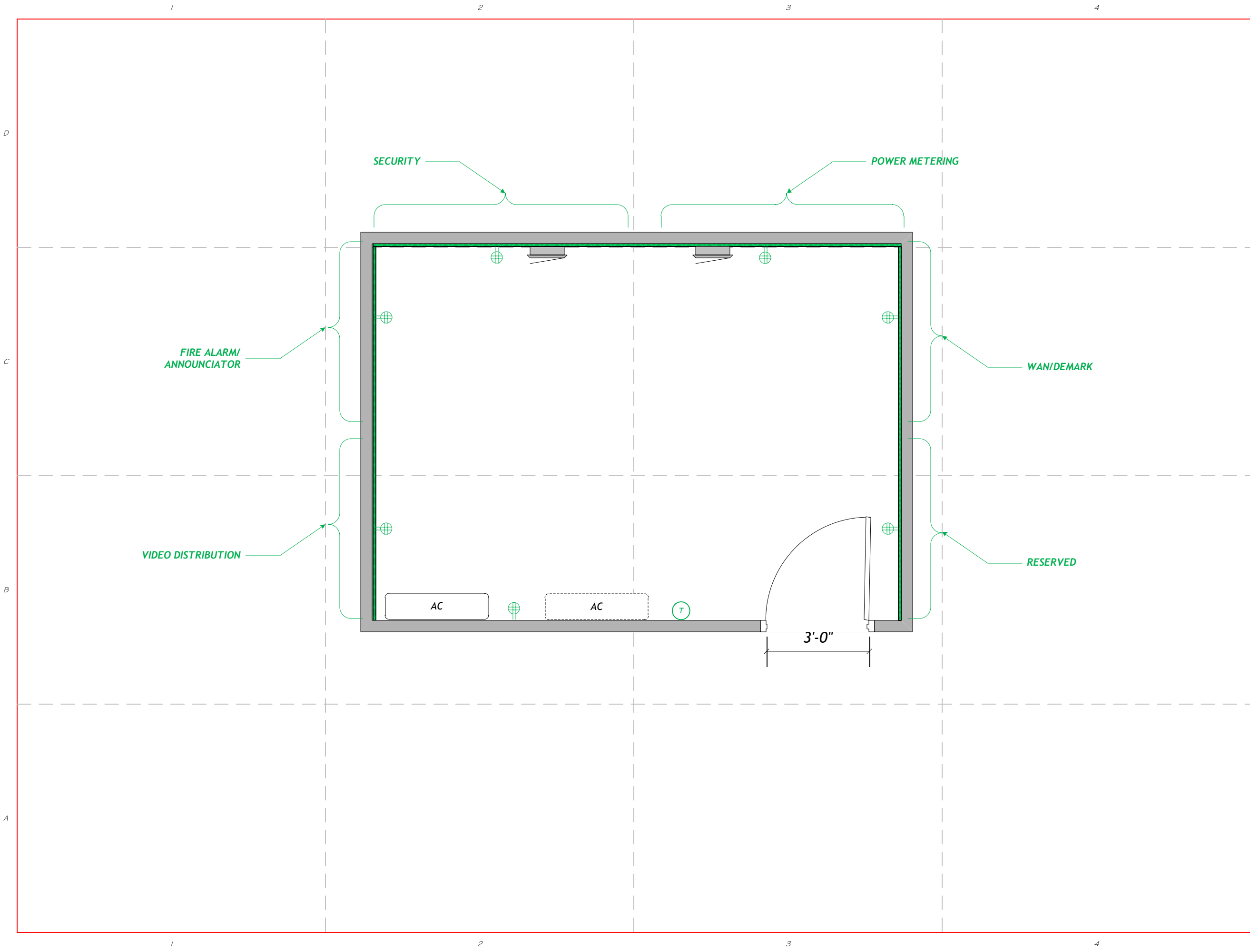
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SHEET TITLE  
TELECOMMUNICATIONS  
ROOM  
T3-GENERIC HEALTH CARE  
FACILITY TR  
SHEET: 5 OF 15





PROJECT:  
CBOC ITS  
SPECIFICATIONS

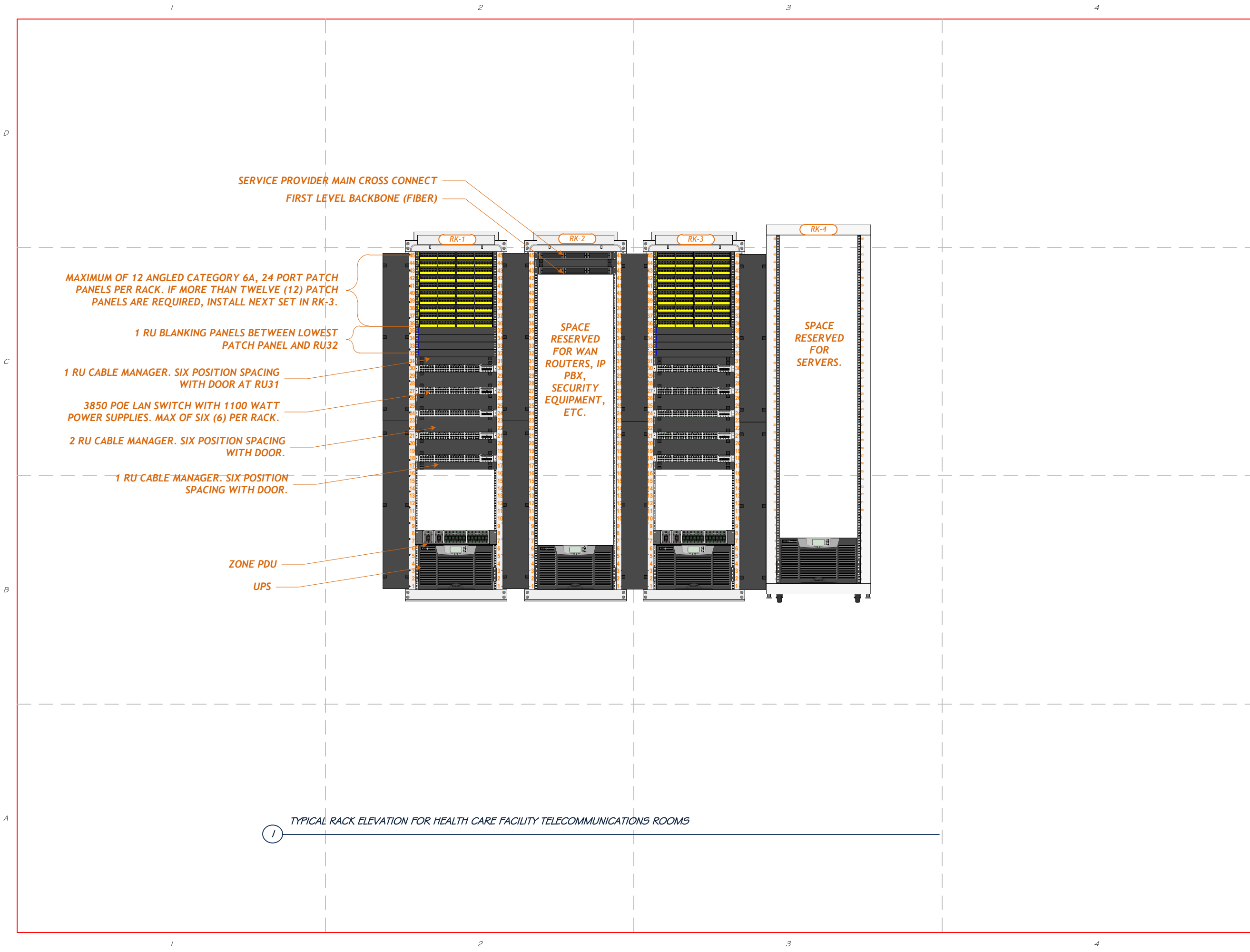
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SHEET TITLE	

TYPICAL BACKBOARD  
ELEVATION





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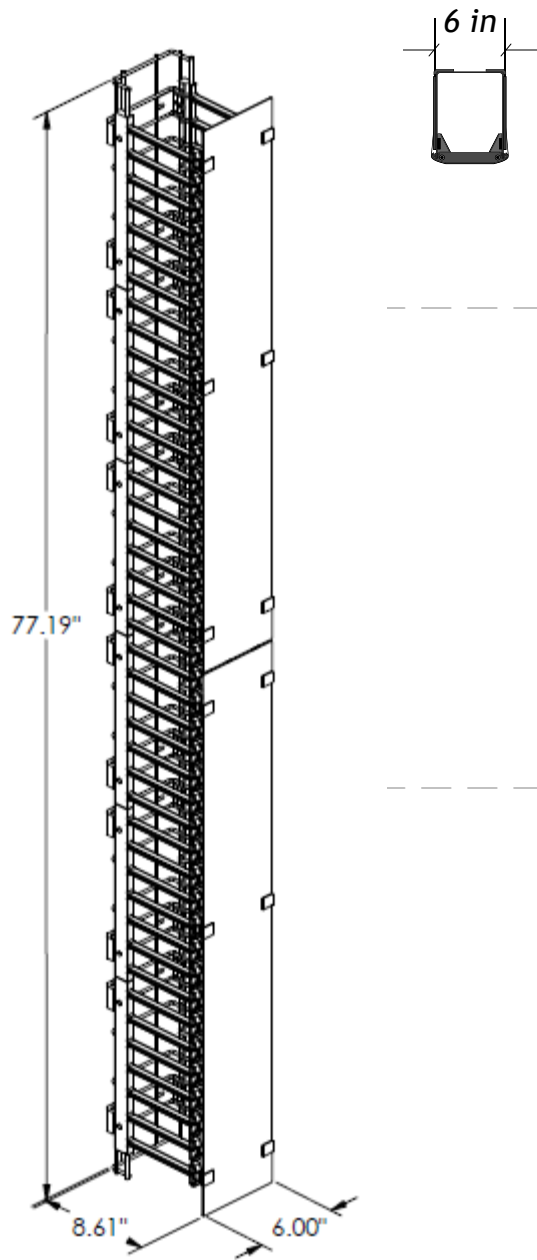
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**SHEET TITLE**

**TYPICAL RACK ELEVATION**

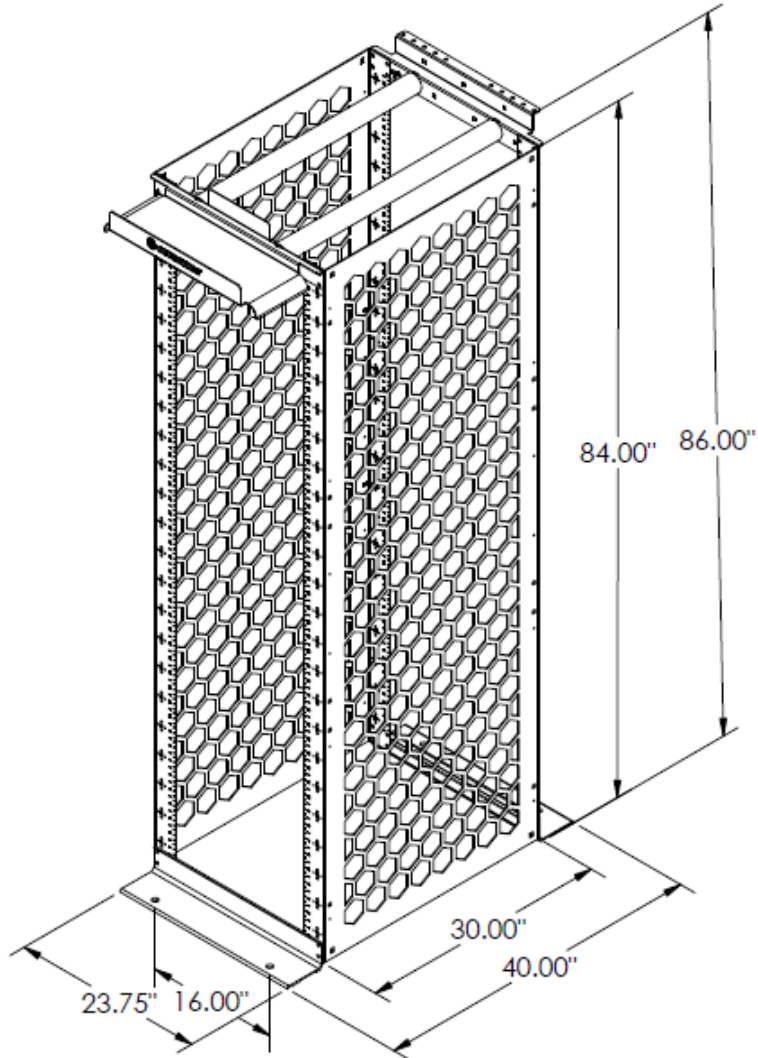


D  
C  
B  
A



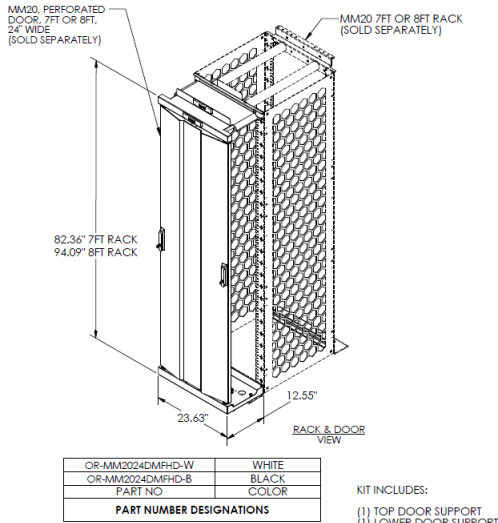
**P/N: OR-MM20VMD706 (OR EQUIVALENT)**  
**MM20 VERTICAL CABLE MANAGEMENT "CAGE", WITH DOOR, 6" X 8.61" X 7" , BLACK**  
**CAPACITY: 350 CATEGORY 6 PATCH CORDS OR 245 CATEGORY 6A PATCH CORDS**

6 6" WIDE VERTICAL CABLE MANAGEMENT



**P/N: OR-MM2073038-W (OR EQUIVALENT)**  
**MIGHTY MO 20 CABLE MANAGEMENT RACK**  
**30" CHANNEL DEPTH, 7" HIGH, WHITE FINISH OR EQUIVALENT**  
**DIMENSIONS:**  
**USABLE HEIGHT: 45RU**  
**DEPTH (US): 30**  
**HEIGHT (US): 7"**  
**WIDTH (US): 23.75"**  
**STATIC LOAD CAPACITY: 2000 LBS**  
**SQUARE HOLE**

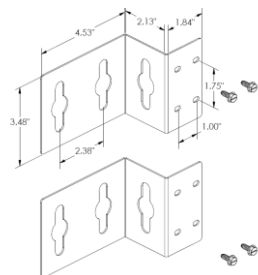
5 TYPICAL RACK DIMENSIONS AND SPECIFICATIONS  
NTS



OR-MM2024DMRHD-W	WHITE
OR-MM2024DMRHD-B	BLACK
PART NO	COLOR
PART NUMBER DESIGNATIONS	

KIT INCLUDES:  
(1) TOP DOOR SUPPORT  
(1) LOWER DOOR SUPPORT WITH 2 FAN OPENINGS

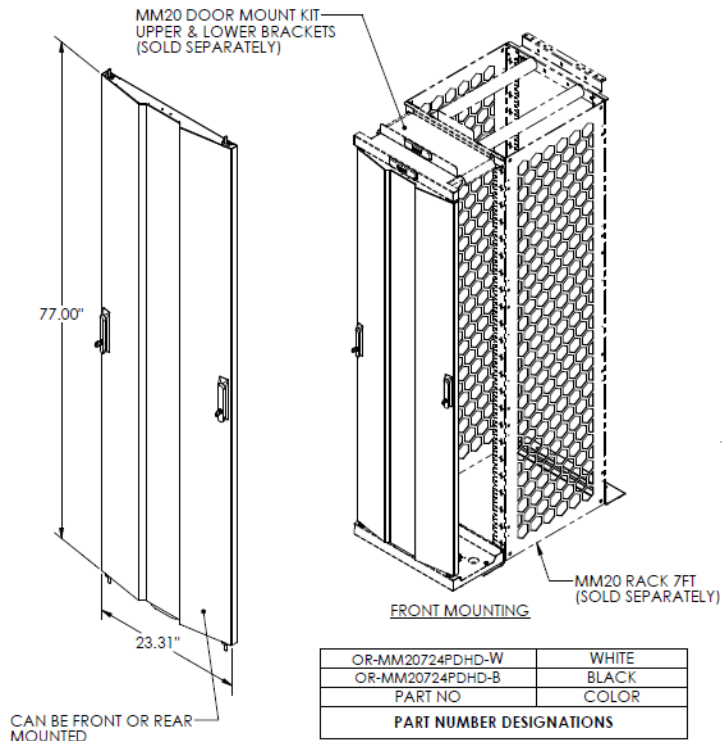
4 SECURITY DOOR FRONT MOUNTING HARDWARE (OR-MM2024DMFHD-W)



3 PDU MOUNTING BRACKET KIT (TWO KITS PER RACK)  
P/N: OR-MM20PDUMB1D2W-W



2 SECURITY DOOR REAR MOUNTING HARDWARE (OR-MM2024DMRHD-W)



OR-MM20724PDHD-W	WHITE
OR-MM20724PDHD-B	BLACK
PART NO	COLOR
PART NUMBER DESIGNATIONS	

1 FRONT AND REAR HEAVY DUTY PERFORATED SECURITY DOOR (OR-MM20724PDHD-W)



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**TYPICAL RACK PARTS LIST**





NTS

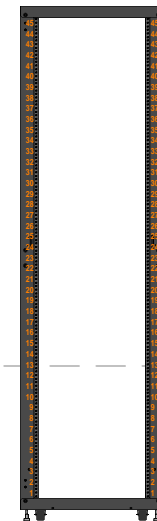


*NTS*



NTS

(VENDOR TO PROVIDE 45 RU OF PLENAFILL BLANKING PANEL PER ENCLOSURE)



NTS



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### TYPICAL ENCLOSURE PARTS LIST

T4 - TYPICAL CABINET DETAIL

SHEET: 9 OF 15





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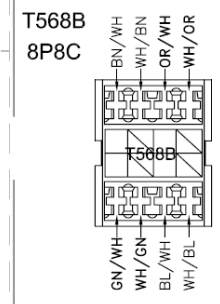
T4 - TYPICAL WORK AREA  
OUTLETS

SHEET: 10 OF 15

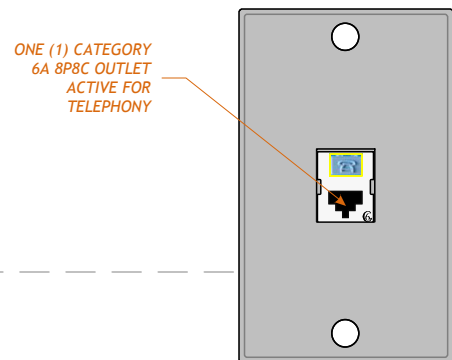
NOTES:

TYPICAL WORK AREA OUTLET FACEPLATE WILL BE INSTALLED WITH CATEGORY 6A COMPONENT-COMPLIANT 8P8C MEDIA INTERFACE CONNECTORS (RJ45). EACH CONNECTOR WILL BE TERMINATED TO HIGH QUALITY CATEGORY 6A HORIZONTAL CABLING WHICH WILL TERMINATE IN THE TELECOMMUNICATIONS ROOM AS SPECIFIED ELSEWHERE IN THIS DESIGN PACKAGE. ALL HORIZONTAL UTP SHALL BE CATEGORY 6A AND TERMINATED TO T568B.

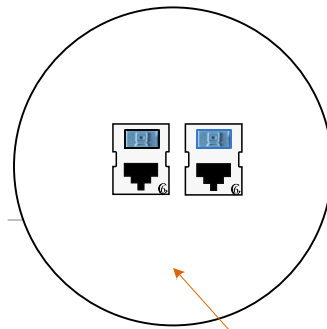
TYPICAL FACEPLATE WILL BE INSTALLED WITH TWO (2) RJ45s. HIGH DENSITY FACEPLATES WILL BE INSTALLED WITH FOUR (4) RJ45s.



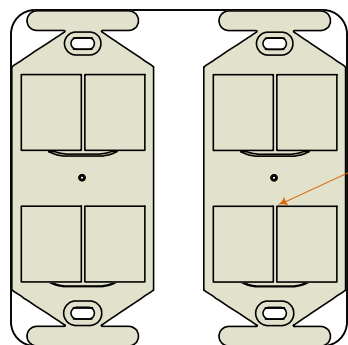
ALL LABELING SHALL BE ANSI/TIA/EIA/606C COMPLIANT. BLACK LETTERING ON WHITE FIELD. MACHINE PRINTED. FURTHER GUIDANCE ON ADMINISTRATION MAY BE SPECIFIED IN OTHER SECTIONS OF THIS DESIGN PACKAGE.



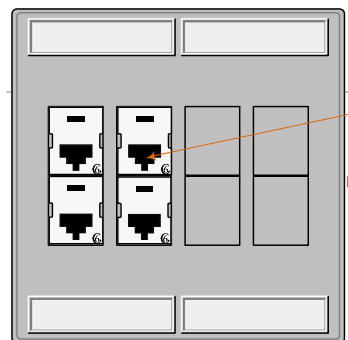
3 TYPICAL WALL MOUNT PHONE OUTLET  
NTS



1 TYPICAL WORK FLOOR MOUNT OUTLET  
NTS



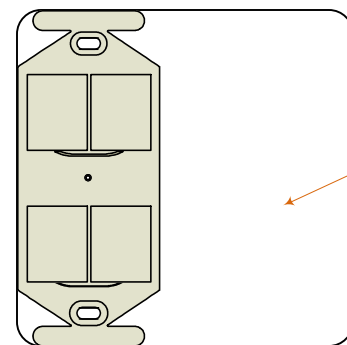
DUAL GANG WORKBOX  
WITH TWO CONNECTOR  
CHASSIS.



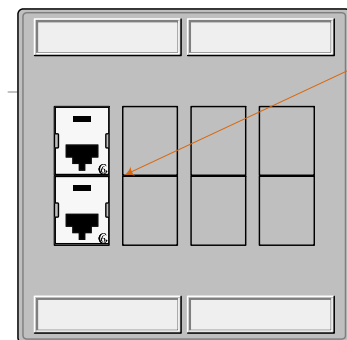
FOUR (4) CATEGORY 6A  
8P8C OUTLETS ACTIVE  
FOR TELEPHONY/DATA

EIGHT (8) POSITION  
FACEPLATE MOUNTED ON  
DUAL GANG WORKBOX.  
FACEPLATE COLOR  
SPECIFIED BY OTHERS.

4 TYPICAL HIGH DENSITY WALL MOUNTED WORK AREA OUTLET  
CONFIGURATION



DUAL GANG WORKBOX  
WITH ONE CONNECTOR  
CHASSIS.

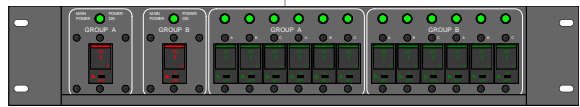


TWO (2) CATEGORY 6A  
8P8C OUTLETS ACTIVE  
FOR TELEPHONY/DATA

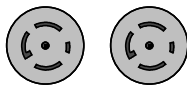
EIGHT (8) POSITION  
FACEPLATE MOUNTED ON  
DUAL GANG WORKBOX.  
FACEPLATE COLOR  
SPECIFIED BY OTHERS.

2 STANDARD DENSITY WALL MOUNTED WORK AREA OUTLET  
CONFIGURATION





30 Amp 3-Phase PDU BASE UNIT - FRONT  
(ZONIT ZON-C-ZPDU1)  
REQUIRES TWO 30 AMP 3-PHASE (WYE) CIRCUITS WITH L21-30R RECEPTACLES (OR EQUIVALENT)



PDU INPUTS REQUIRE TWO L21-30Rs



30 Amp 3-Phase PDU BASE UNIT - REAR  
FOUR (4) L21-20R  
SIX (6) NEMA 5-15/20 T-SLOT  
(OR EQUIVALENT)

NOTE: The correct specification for the PDU is to feed it with a two power sources. Power inputs should originate from two independent power sources. Each input will use identical specs: WYE (5-wire) configured, 208V, 30A, three-phase, terminating in a NEMA L21-30R locking receptacle. The neutral conductor should be upsized one gauge to match the upsized neutral conductors in the PDU units. The neutral "upsizing" should ideally be continued in the power distribution system back to the UPS or transformer winding pole. This increases the efficiency of the power distribution system and suppresses harmonics in the system.

5 TYPICAL MAIN PDU UNIT WITH REAR DETAIL AND ADAPTORS REQUIRED FOR VERTICAL PDU



APC AP7900 Rack PDU, Switched, 1U, 15A, 100/120V, (8)5-15 APC Switched Rack PDU , Input: 120V (OR EQUIVALENT)

4 110 Volt PDU FOR PLACEMENT AS NEEDED

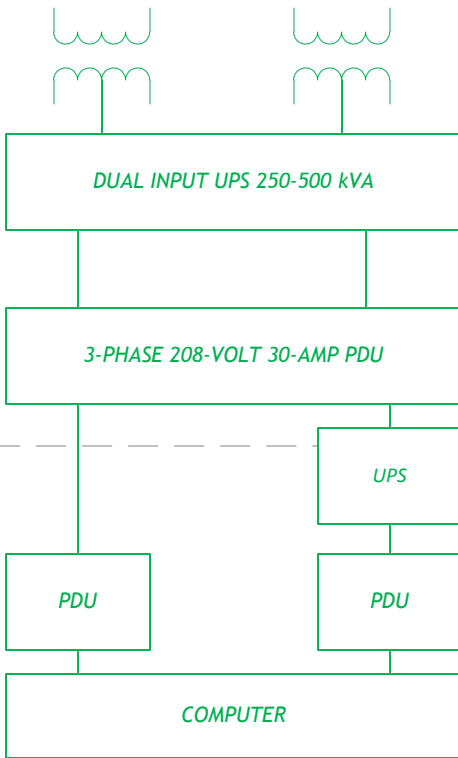


APC AP8961 Rack PDU 2G, Switched, Zero U, 5.7kW, 200/208V, (21)C13 & (3)C19, 6' cord



REQUIRES ONE (1) L21-20R

3 208 VOLT PDU FOR EQUIPMENT POWER - TO BE ENERGIZED BY ZONE PDU



DUAL 3-PHASE 480 VOLT INPUTS  
(WITH 480 - 208 TRANSFORMER)

BUS OR FEEDER

ZONE PDU

RACK MOUNT UPS

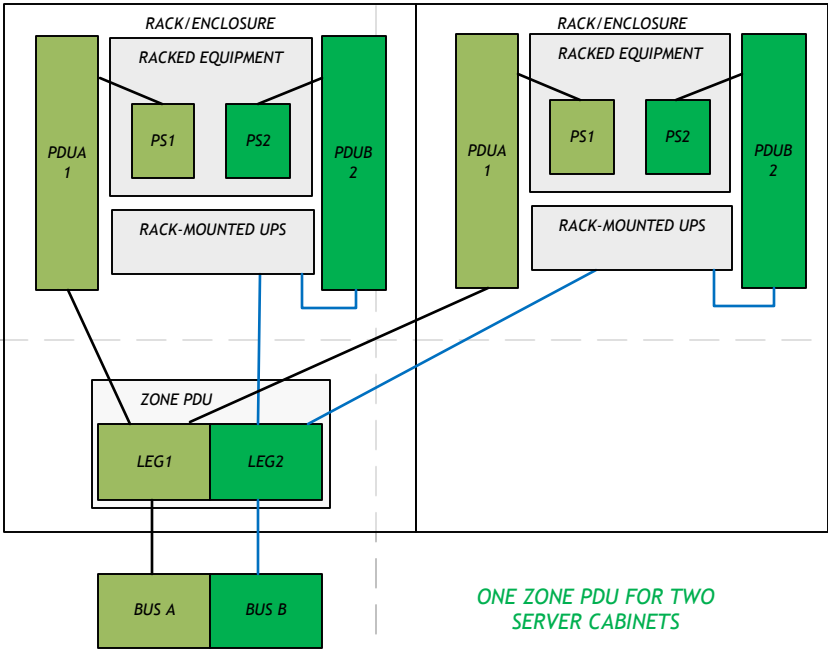
"ZERO U" VERTICAL PDU

DUAL POWER SUPPLY

2 NOTIONAL POWER SCHEMATIC FOR INFORMATION ONLY - NOT FOR CONSTRUCTION

NOTE:

THIS DESIGN PROVIDES DIVERSE POWER INPUTS FOR ACTIVE EQUIPMENT BY SPLITTING THE SOURCE POWER ACROSS TWO INPUTS ON THE ZONE PDU. EACH INPUT WILL SUPPORT TWO EQUIPMENT-FACING PDUs. EACH SERVER CABINET WILL CONTAIN A MINIMUM OF TWO EQUIPMENT-FACING PDUs - EACH WILL BE ENERGIZED BY SEPARATE ZONE PDU INPUTS.



ONE ZONE PDU FOR TWO SERVER CABINETS

1 POWER SCHEMATIC FOR POWER RACK- LEVEL REDUNDANCY



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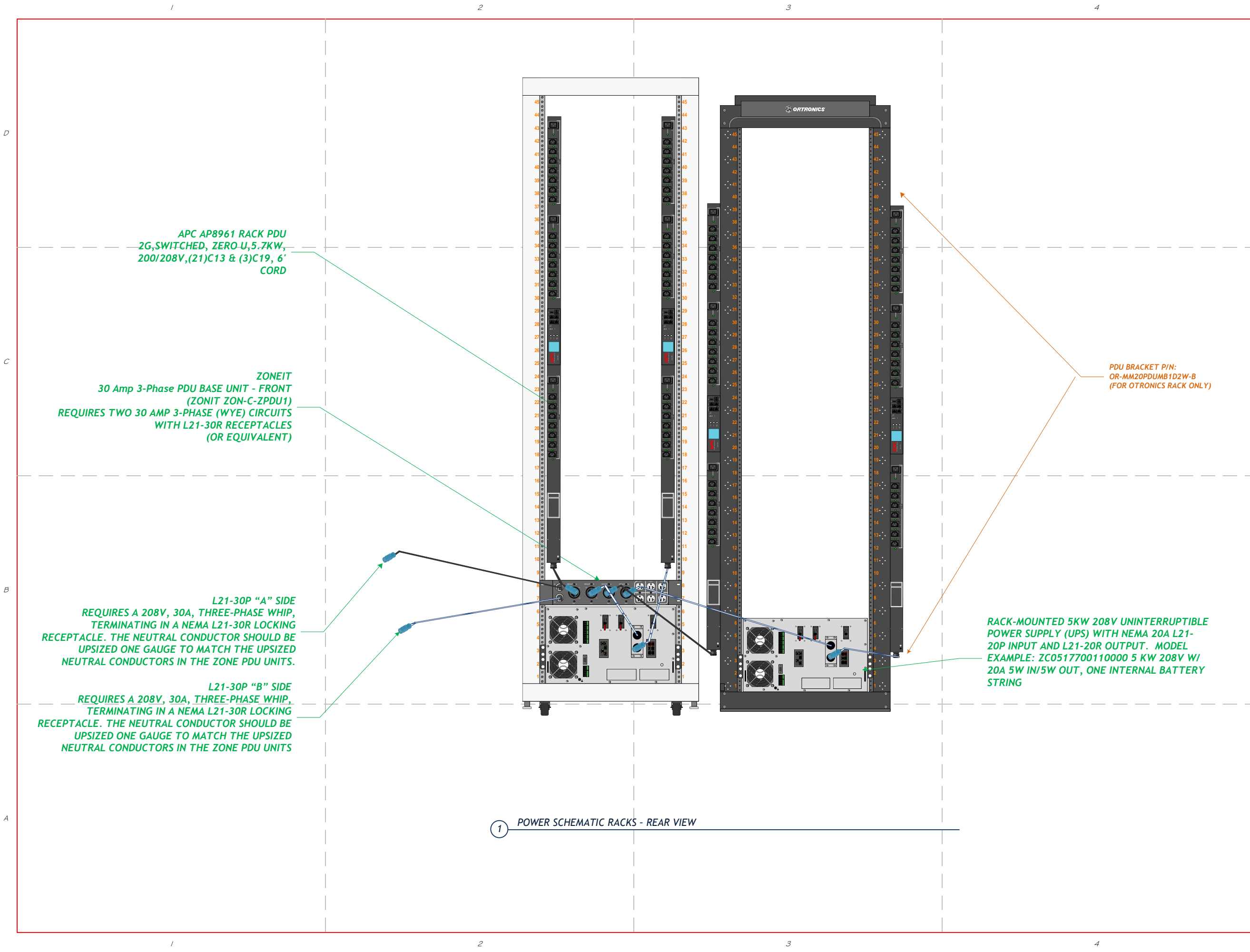
SHEET TITLE

TYPICAL POWER  
DISTRIBUTION

T4 - TYPICAL RACK POWER  
DISTRIBUTION

SHEET: 11 OF 15





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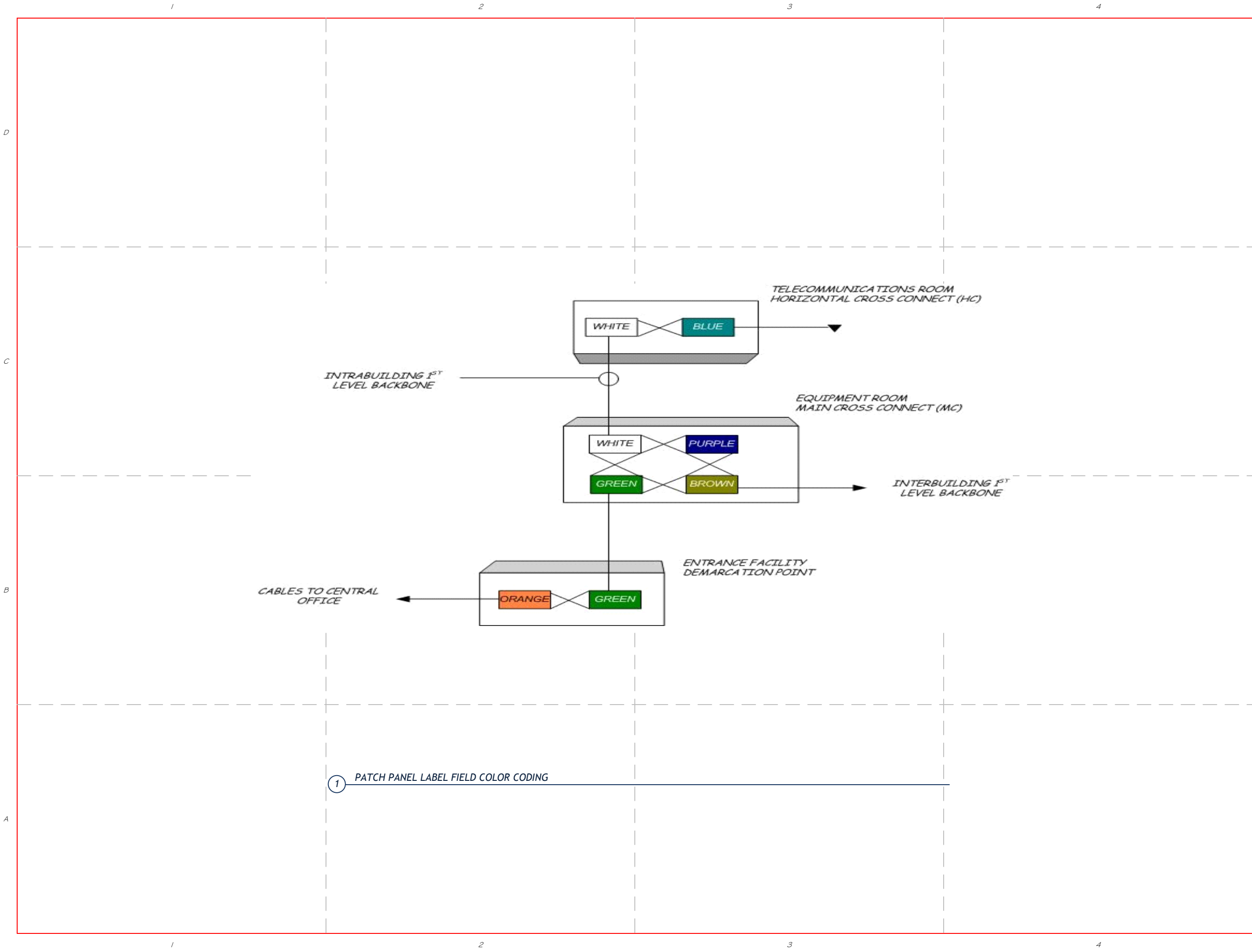
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POWER DISTRIBUTION





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## T5 - CBOC ITS NAMING STANDARDS

SHEET: 14 OF 15

- **RACK** = RK1 THROUGH RK4, LABELED LEFT TO RIGHT WHEN LOOKING AT THE FRONT OF THE RACK. APPLIES TO RACKS AND CABINETS.
- **UTP PATCH PANEL** = CPL-RACK NAME-01 THROUGH 45. EXAMPLE: CPL-RK1-01 FOR THE PANEL LOCATED IN RACK UNIT #1 IN RACK #1.
- **UTP PATCH PANEL POSITION** = PANEL ID.01 THROUGH 24. EXAMPLE CPL-RK1-01.01
- **FIBER DISTRIBUTION PANEL** = FPL-RACK NAME-01 THROUGH 45. EXAMPLE: FPL-RK1-01 FOR THE PANEL IN RACK UNIT #1 RACK #1.
- **FIBER DISTRIBUTION CASSETTE** = FCS-RACK NAME-01 THROUGH 45.1 THROUGH 3. EXAMPLE: FCS-RK1-01.1 FOR THE CASSETTE IN POSITION #1 IN PANEL LOCATED IN RACK UNIT #1 IN RACK #1.
- **UTP PATCH CORDS** = CCA[SOURCE.PORT]/[DESTINATION.PORT]. EXAMPLE CCA[CPL-RK1-01.01]/[CPL-RK2-02.02] AS A PATCH CORD CONNECTING PORT #1 IN THE COPPER PATCH PANEL LOCATED IN RACK #1, RACK UNIT #1 WITH PORT 2 LOCATED IN RACK 2, RACK UNIT #2.
- **FIBER PATCH CORDS** = FCA[SOURCE.PORT]/[DESTINATION.PORT]. EXAMPLE FCA[FDP-RK1-01.01.01]/[FDP-RK2-02.02.02] AS A PATCH CORD CONNECTING PORT #1 IN THE FIBER PATCH PANEL LOCATED IN RACK #1, RACK UNIT #1 WITH PORT 2 LOCATED IN RACK 2, RACK UNIT #2.
- **FACEPLATE** = TR ROOM NUMBER-PATCH PANEL ID.PORT. EXAMPLE. 1A-CPL-RK1-01.1 FOR TELECOMMUNICATIONS ROOM 1, UTP PANEL IN RACK #1, RACK UNIT #1, PORT POSITION #1.

### 1 EXAMPLE INSIDE PLANT ADMINISTRATION



TELECOMMUNICATIONS MEDIA AND INTERFACES SPECIFICATION			
ID	PRIMARY ATTRIBUTE	SECONDARY ATTRIBUTE	SPECIFICATION
1	COPPER PATCH PANELS	PERFORMANCE CATEGORY	CATEGORY 6A (10 GBE)
		POSITION COUNT	24 (4 SIX-PORT MODULES)
		FORM FACTOR	ANGLED
		SIZE	ONE RACK UNIT
		COLOR CODING	BLACK
2	FIBER DISTRIBUTION CASSETTES	CASSETTE CAPACITY	24 STRAND (TWO 12-STRAND MULTI-FIBER PUSH ON (MPO))
		CASSETTE USER INTERFACES	LC QUAD CONNECTORS
		CASSETTE BACKBONE INTERFACES	MPO
		PERFORMANCE CHARACTERISTICS	OM4 LASER ENHANCED 40 GBE 50/ 125 MULTIMODE
		FORM FACTOR	ONE (1) RU
3	UTP (HORIZONTAL AND FIRST LEVEL BACKBONE)	PERFORMANCE CATEGORY	CATEGORY 6A (10 GBE)
		PERFORMANCE SPECIFICATIONS	MEETS OR EXCEEDS TIA-EIA-568-C.2-10, TSB-155.
		JACKET COLOR	BLUE (HORIZONTAL), WHITE (1 <sup>ST</sup> LEVEL BACKBONE)
		SIZE	ONE RACK UNIT
		COLOR CODING	BLACK
4	FIBER (HORIZONTAL AND FIRST LEVEL BACKBONE)	PERFORMANCE CATEGORY	OM4 LASER ENHANCED TO 40 GIGABIT ETHERNET (GBE
		PERFORMANCE SPECIFICATIONS	LASER OPTIMIZED 50/ 125 MM FIBERS WITH EFFECTIVE MODAL BANDWIDTH OF AT LEAST 4,700 MHZ·KM AT 850 NM
		MODE	MULTIMODE
		JACKET COLOR	AQUA
		MEDIA CONNECTOR	PRE-TERMINATED WITH MPO, TYPE A
		STRAND COUNT	12
		BUNDLING	LOOSE TUBE
5	UTP PATCH CORDS	PERFORMANCE CATEGORY	CATEGORY 6A, 26-GAUGE, STRANDED
		PERFORMANCE SPECIFICATIONS	CENTER TUNED TO HORIZONTAL MEDIA
		JACKET COLOR	BLUE
		TERMINATION METHOD	FACTORY PRE-TERMINATED
6	FIBER PATCH CORDS	PERFORMANCE CATEGORY	OM4 LASER ENHANCED TO 40 GIGABIT ETHERNET (GBE
		PERFORMANCE SPECIFICATIONS	OM4
		MODE	MULTIMODE
		JACKET COLOR	AQUA
		MEDIA CONNECTOR	PRE-TERMINATED WITH DUPLEX LC



PROJECT:  
CBOC ITS SPECIFICATIONS  
PROJECT No:  
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MARK	DATE	DESCRIPTION

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