

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

APPENDIX E
VHABHS BOSTON MA RESEARCH
2018-06-29

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.rvt*

DRAWN BY: *Kevin Grzelka*

CHECKED BY: *Michael Julian, RCDD*

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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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SHEET TITLE
SYMBOLS
SYMBOLS
SHEET: 3 OF 15

T2 SYMBOLS

- DATA
- WALL PHONE
- FLOOR MOUNT
- FIRE ALARM PANEL
- EMERGENCY PHONE
- SECURITY OR FIRE ALARM DIALERS
- DATA / TELEPHONE
- TELEPHONE
- SECURITY SYSTEM CARD READER
- CLOSED CIRCUIT SURVEILLANCE CAMERA OUTLET
- MOTION DETECTOR

T3 SYMBOLS

- TWIST LOCK RECEPTACLE
- THERMOSTAT
- QUADRUPLEX OUTLET
- 110 RECEPTACLE
- TELECOMMUNICATIONS GROUNDING BUSBAR
- STRIP LIGHT
- SERVICE PANEL
- HORIZONTAL SLEEVE (SIZE AS INDICATED)
- CONDUIT (SIZE AS INDICATED)
- VERTICAL SLEEVE (SIZE AS INDICATED)
- CABLE RACEWAY

T4 SYMBOLS

- CHATSWORTH SERVER RACK. 24" WIDE X 47.5" DEEP
- PERFORATED FLOOR TILE
- OR-60401015
- OR-M2LCQ24-50E
- OR-MM6HM61RU
- FC01U-P
- zPDU (R/F)
- L21-30
- L21-20
- IEC 320-C19
- IEC 320-C20
- IEC 320-C13
- IEC 320-C14
- OR-MM20730-W. 30" DEEP CHANNEL 7H. 45RU. ORTRONICS MM20 CHANNEL RACK

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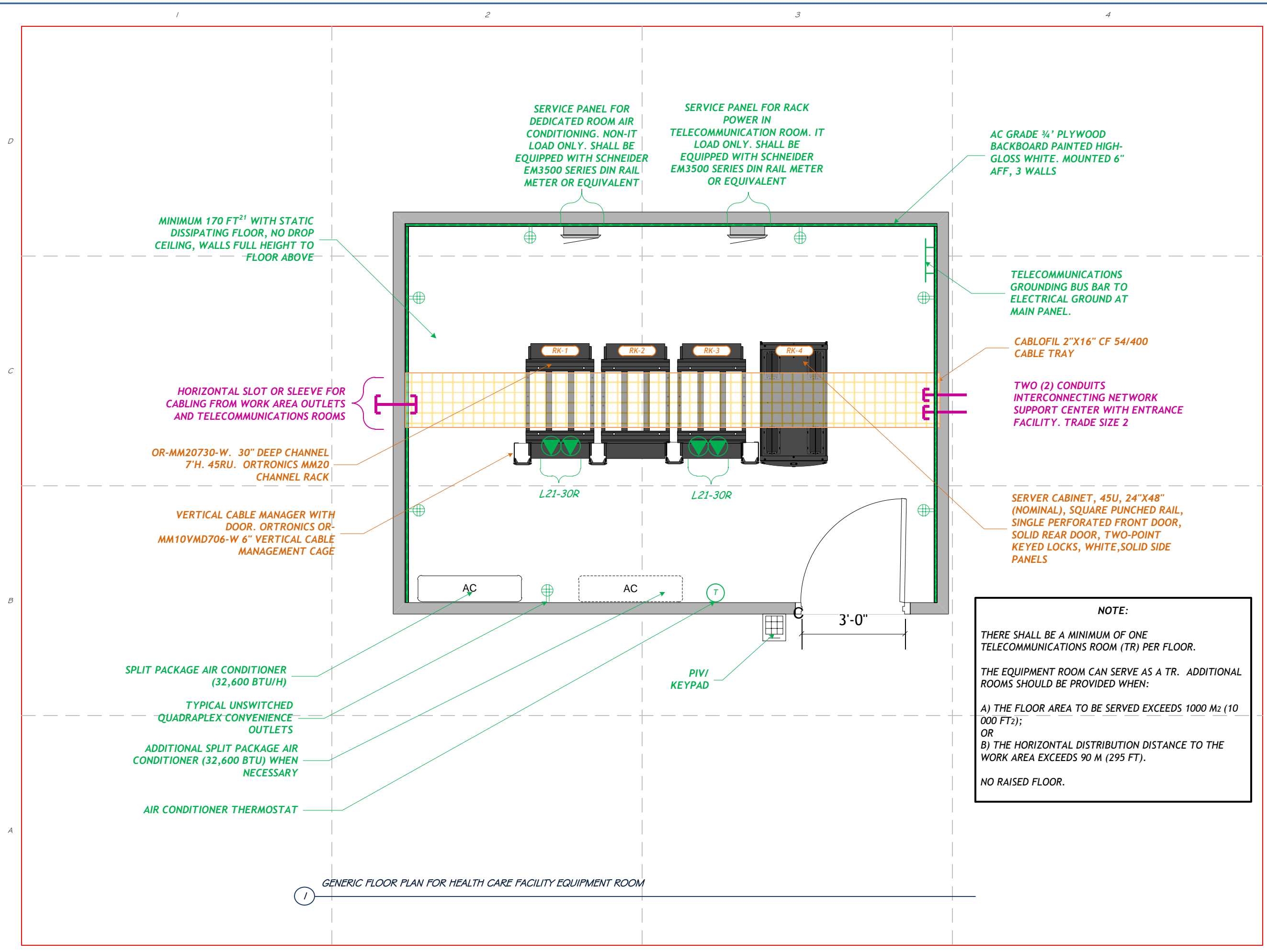
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SHEET TITLE
EQUIPMENT ROOM
T3- GENERIC HEALTH CARE FACILITY EQUIPMENT ROOM
SHEET: 4 OF 15



1 GENERIC FLOOR PLAN FOR HEALTH CARE FACILITY EQUIPMENT ROOM

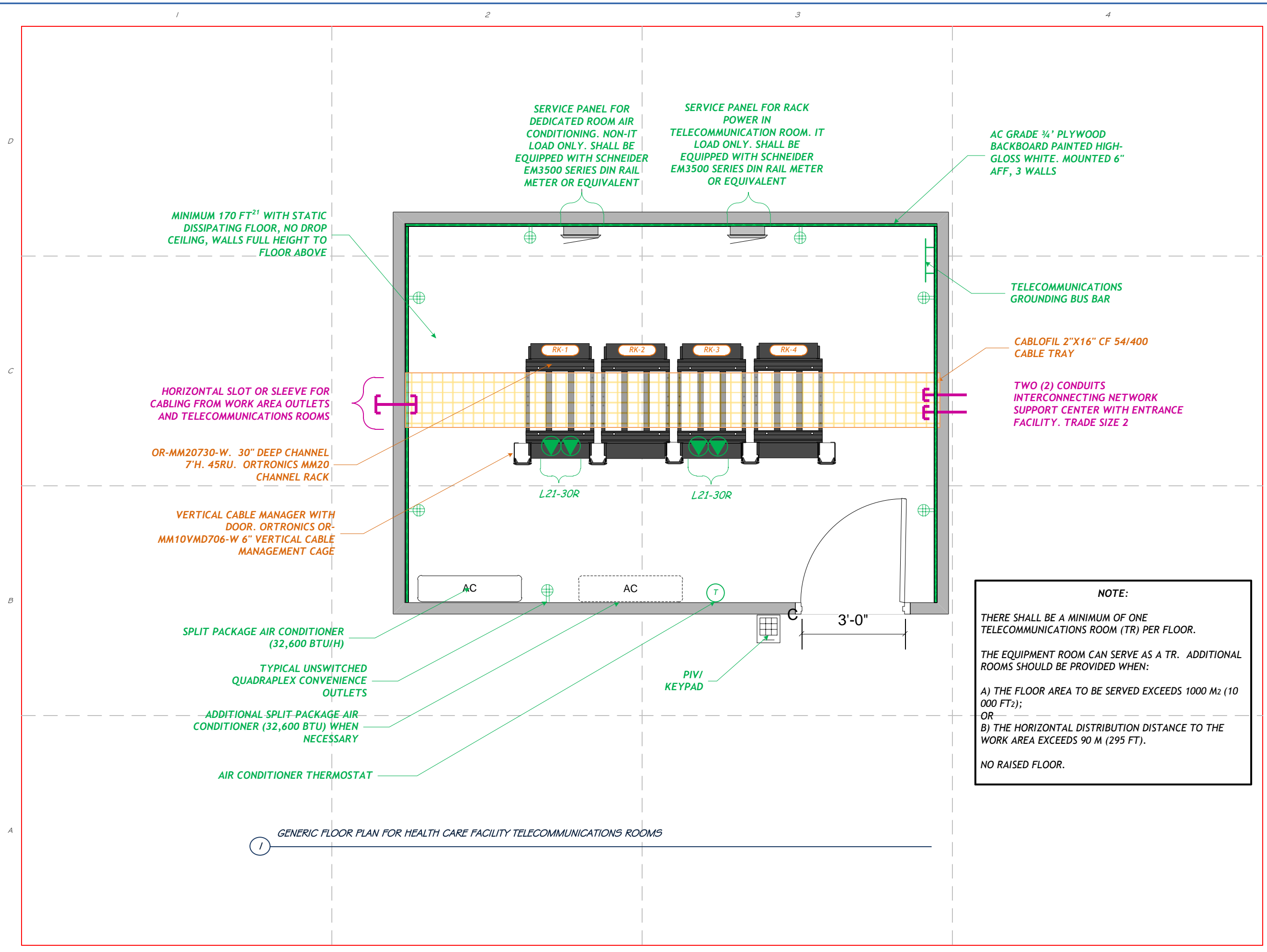


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SHEET TITLE
TELECOMMUNICATIONS ROOM
T3-GENERIC HEALTH CARE FACILITY TR
SHEET: 5 OF 15



NOTE:
THERE SHALL BE A MINIMUM OF ONE TELECOMMUNICATIONS ROOM (TR) PER FLOOR.
THE EQUIPMENT ROOM CAN SERVE AS A TR. ADDITIONAL ROOMS SHOULD BE PROVIDED WHEN:
A) THE FLOOR AREA TO BE SERVED EXCEEDS 1000 M² (10 000 FT²);
OR
B) THE HORIZONTAL DISTRIBUTION DISTANCE TO THE WORK AREA EXCEEDS 90 M (295 FT).
NO RAISED FLOOR.

1 ———— GENERIC FLOOR PLAN FOR HEALTH CARE FACILITY TELECOMMUNICATIONS ROOMS



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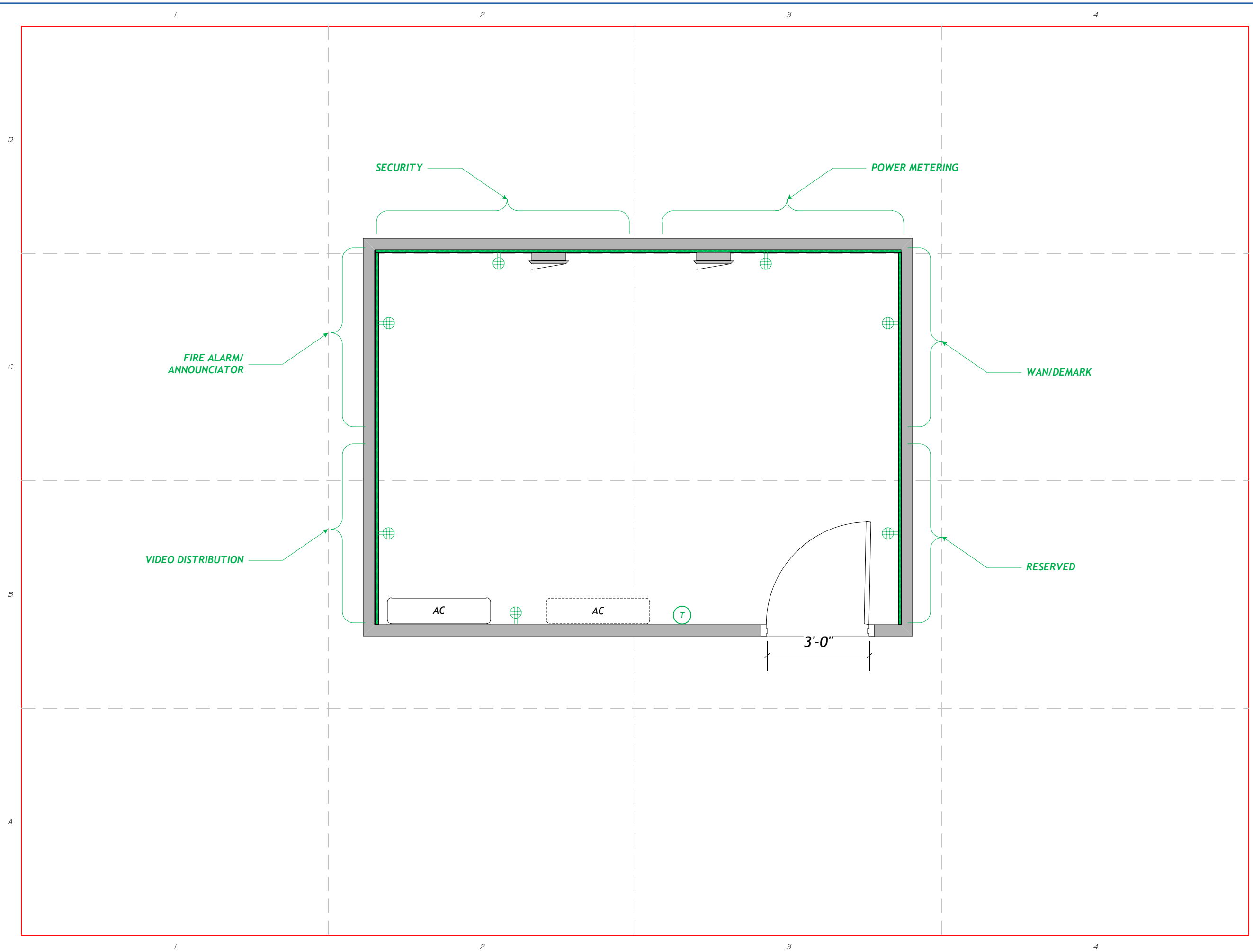
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SHEET TITLE

**TYPICAL BACKBOARD
ELEVATION**

T3 - TYPICAL BACKBOARD
ELEVATION

SHEET: 6 OF 15





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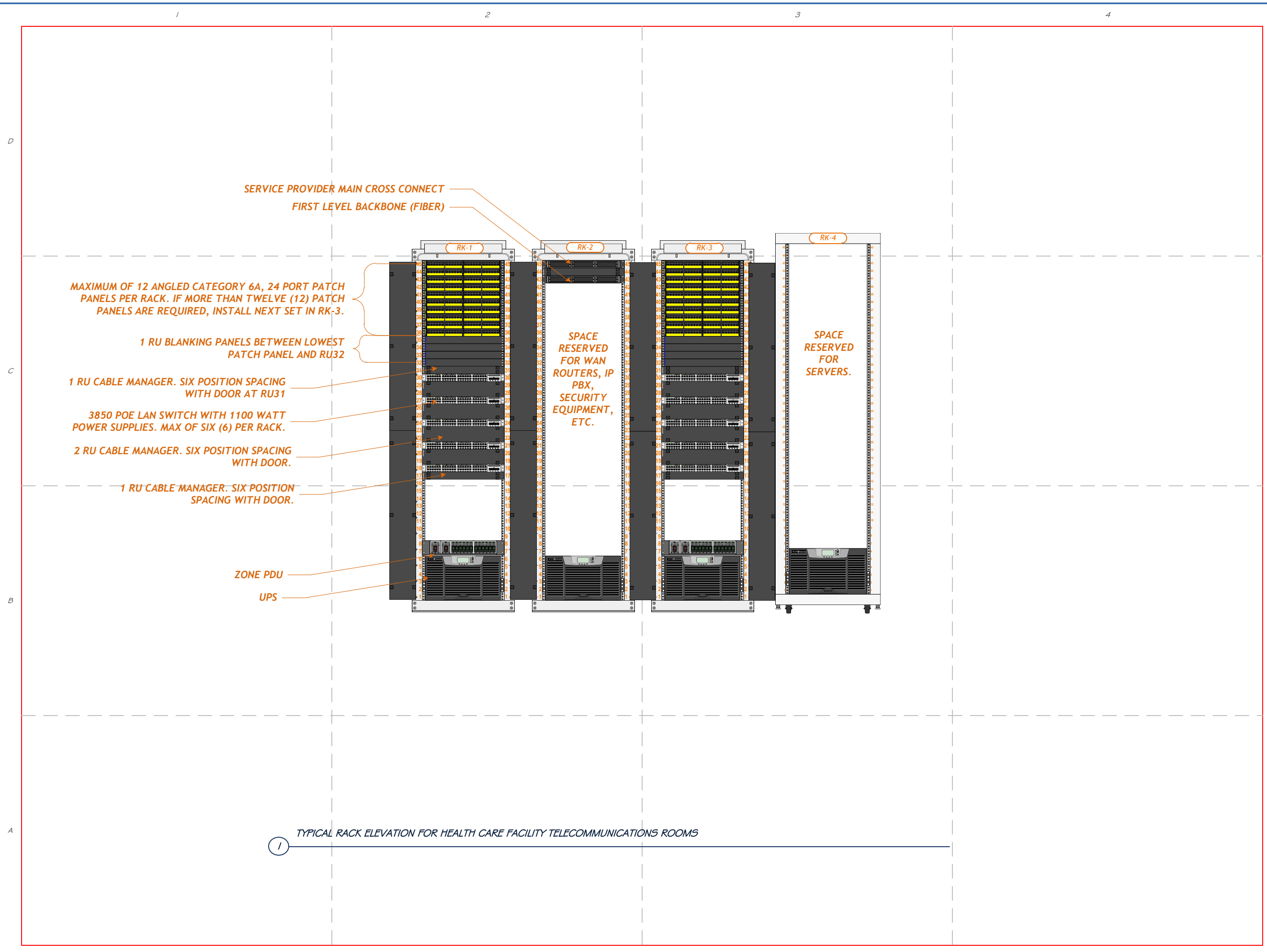
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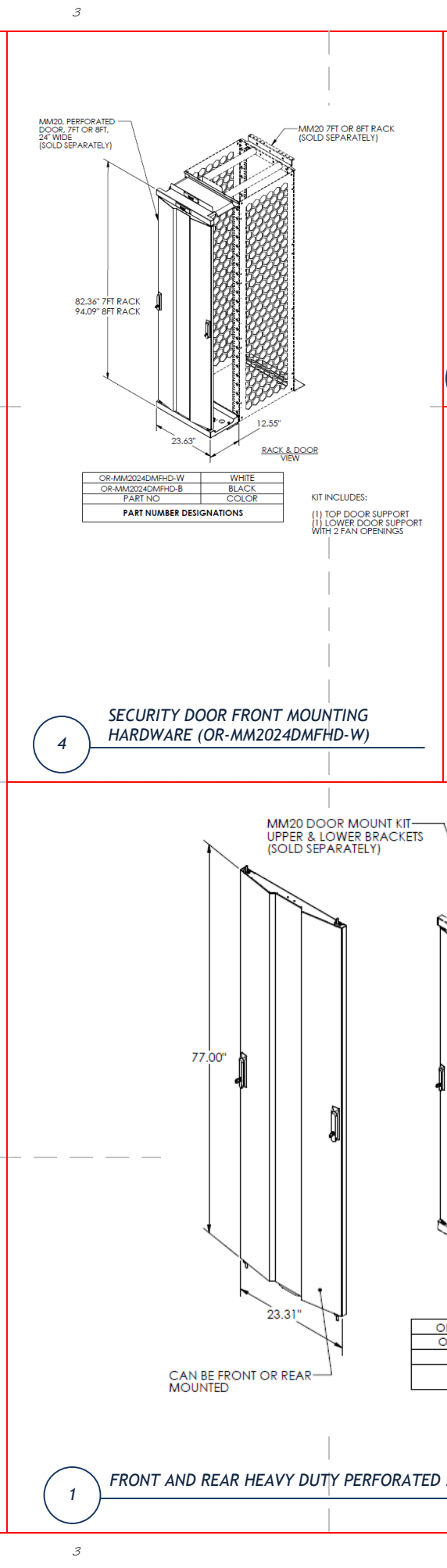
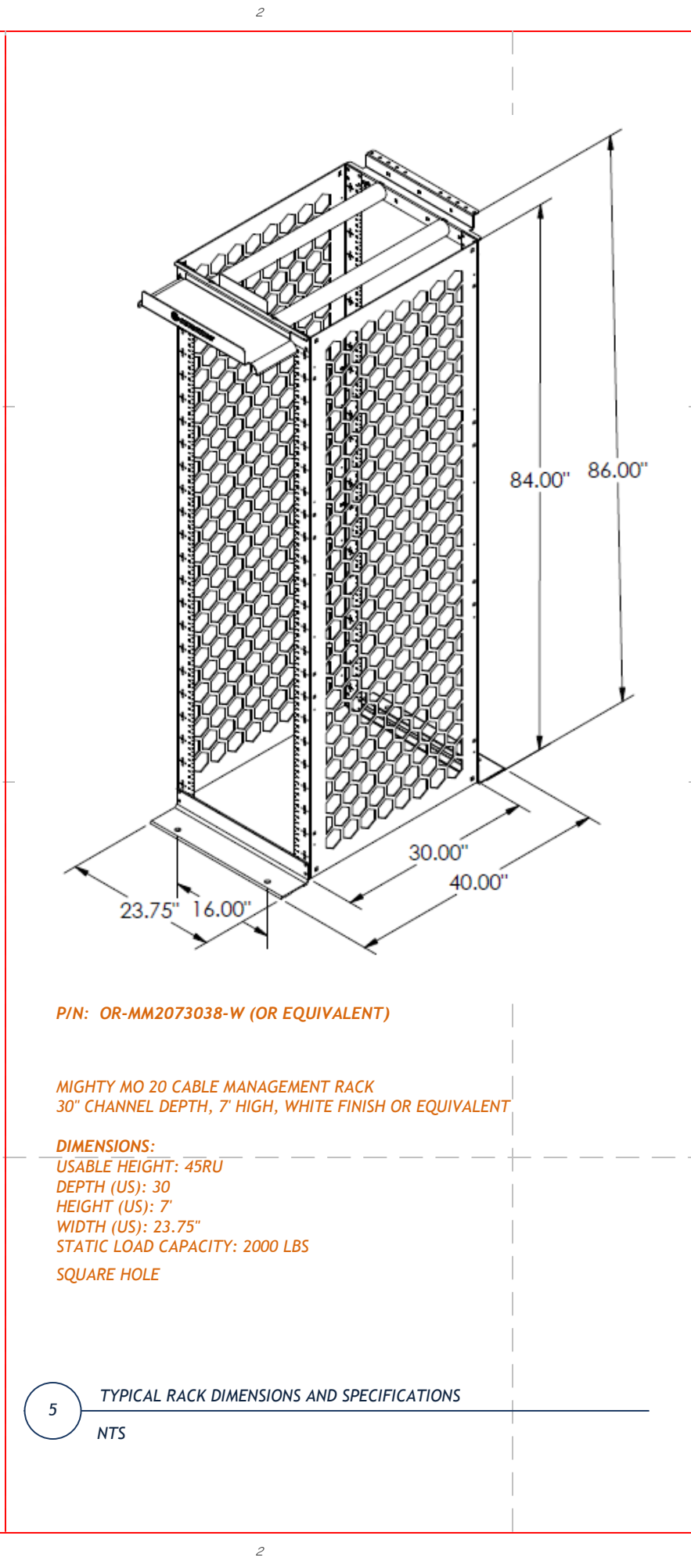
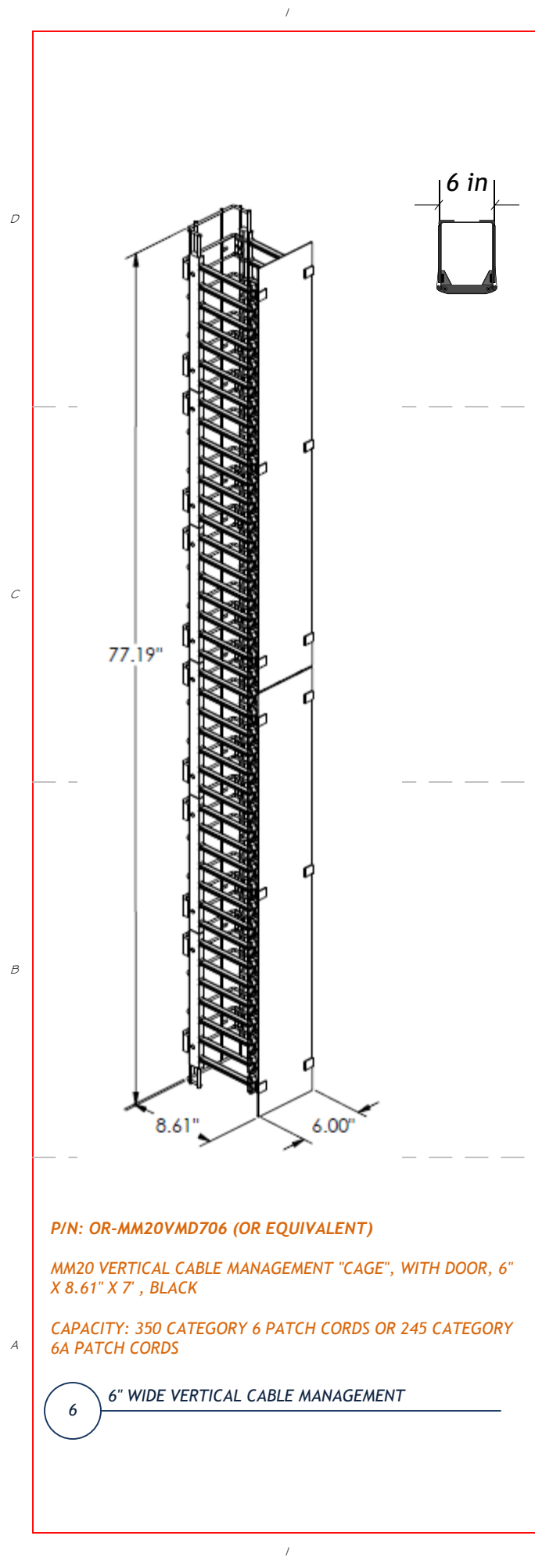
SHEET TITLE

TYPICAL RACK ELEVATION

T3 - TYPICAL RACK ELEVATION

SHEET: 7 OF 15





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SHEET TITLE

TYPICAL RACK PARTS LIST

T4 - TYPICAL RACK DETAIL

SHEET: 8 OF 15



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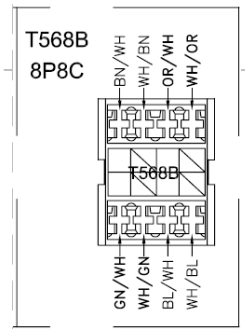
T4 - TYPICAL WORK AREA
OUTLETS

SHEET: 10 OF 15

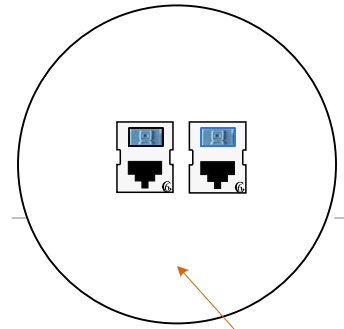
NOTES:

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.

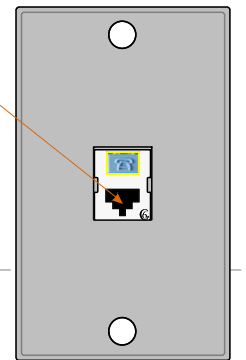


ALL LABELING SHALL BE ANSI/TIA/EIA/606C COMPLIANT. BLACK LETTERING ON WHITE FIELD. MACHINE PRINTED. FURTHER GUIDANCE ON ADMINISTRATION MAY BE SPECIFIED IN OTHER SECTIONS OF THIS DESIGN PACKAGE.



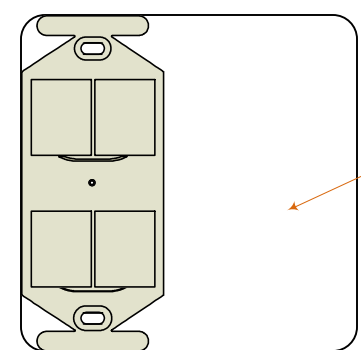
MINIMUM OF TWO CATEGORY 6A 8P8C OUTLETS FOR DATA OR TELEPHONY

1 TYPICAL WORK FLOOR MOUNT OUTLET
NTS

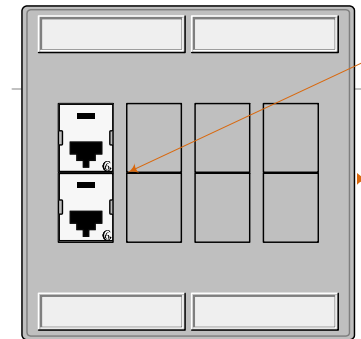


ONE (1) CATEGORY 6A 8P8C OUTLET ACTIVE FOR TELEPHONY

3 TYPICAL WALL MOUNT PHONE OUTLET
NTS

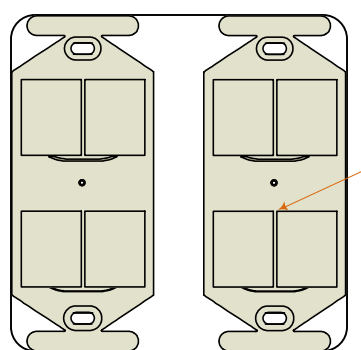


DUAL GANG WORKBOX WITH ONE CONNECTOR CHASSIS.

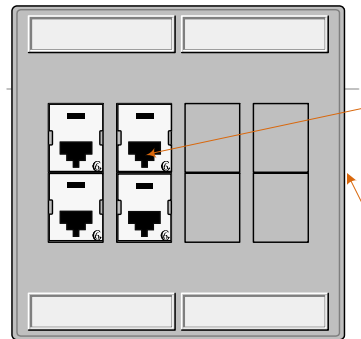


TWO (2) CATEGORY 6A 8P8C OUTLETS ACTIVE FOR TELEPHONY/DATA

2 STANDARD DENSITY WALL MOUNTED WORK AREA OUTLET
CONFIGURATION



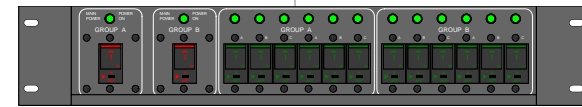
DUAL GANG WORKBOX WITH TWO CONNECTOR CHASSIS.



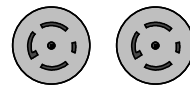
FOUR (4) CATEGORY 6A 8P8C OUTLETS ACTIVE FOR TELEPHONY/DATA

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

4 TYPICAL HIGH DENSITY WALL MOUNTED WORK AREA OUTLET
CONFIGURATION



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)



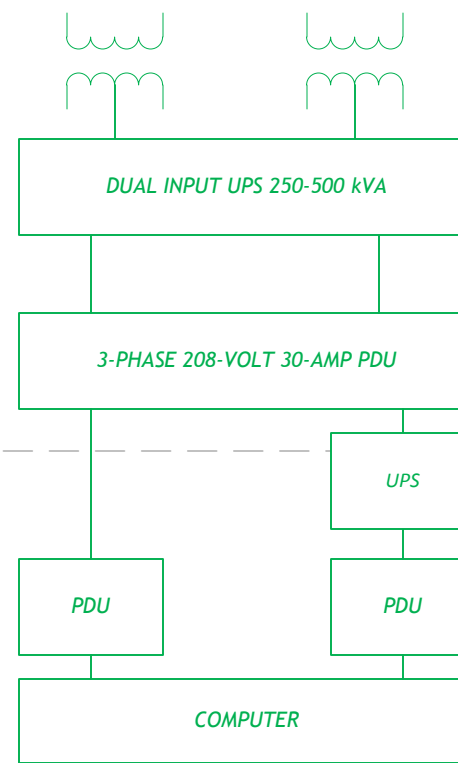
PDU INPUTS REQUIRE TWO L21-30Rs



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



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

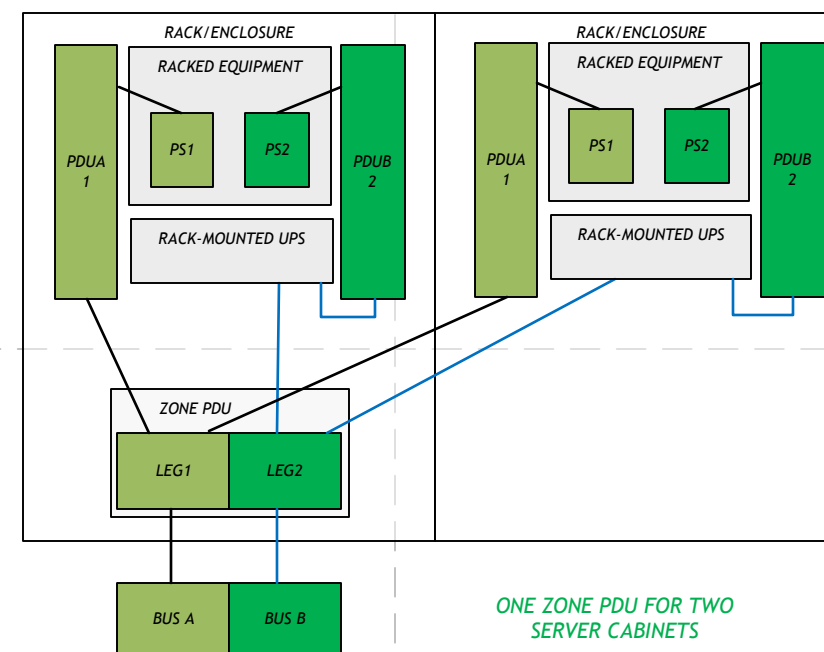
2 NOTIONAL POWER SCHEMATIC FOR INFORMATION ONLY - NOT FOR CONSTRUCTION



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

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



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



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SHEET TITLE

TYPICAL POWER DISTRIBUTION

T4 - TYPICAL RACK POWER DISTRIBUTION

SHEET: 11 OF 15



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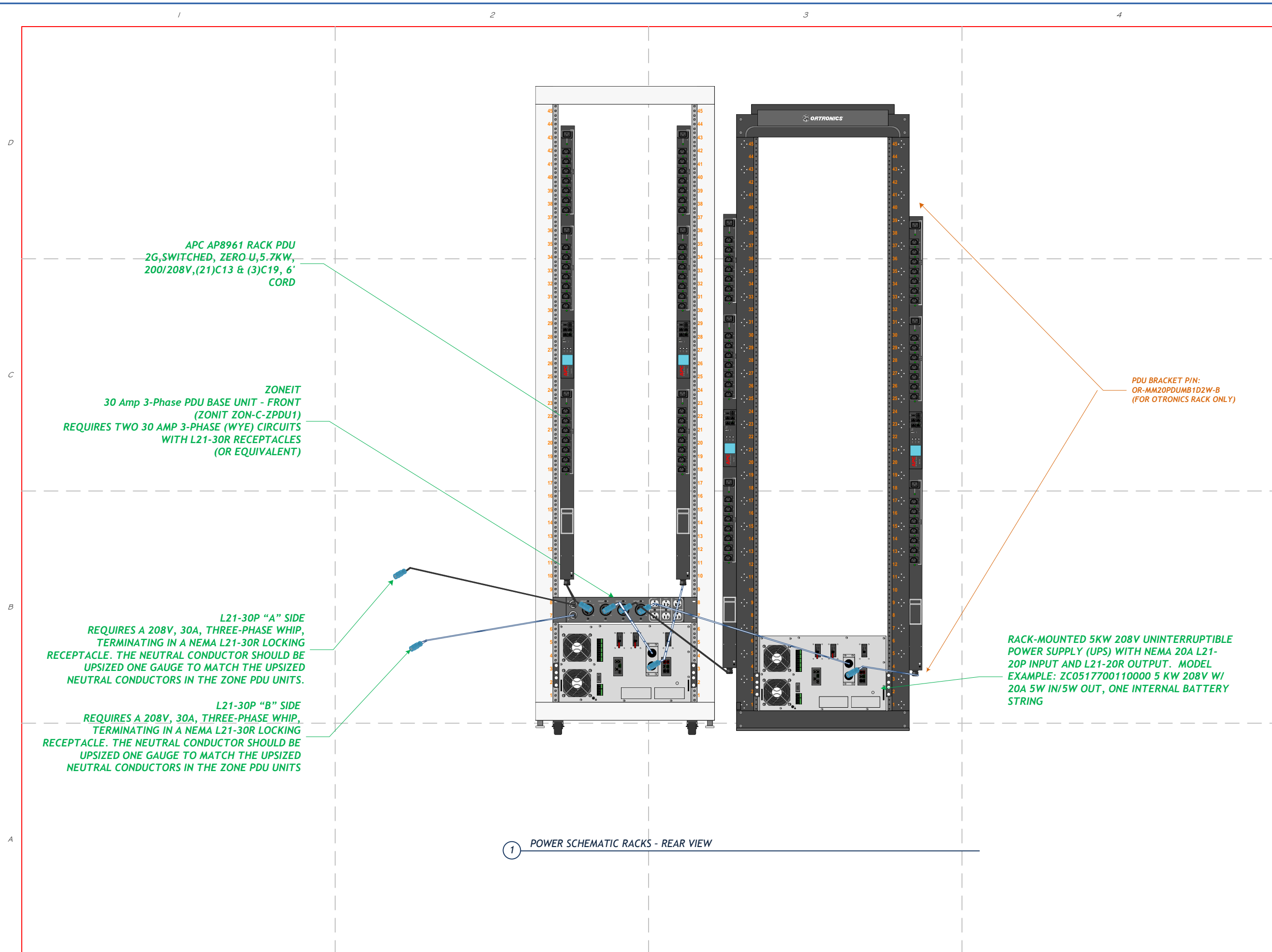
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POWER DISTRIBUTION

T4 - POWER DISTRIBUTION

SHEET: 12 OF 15



1 POWER SCHEMATIC RACKS - REAR VIEW

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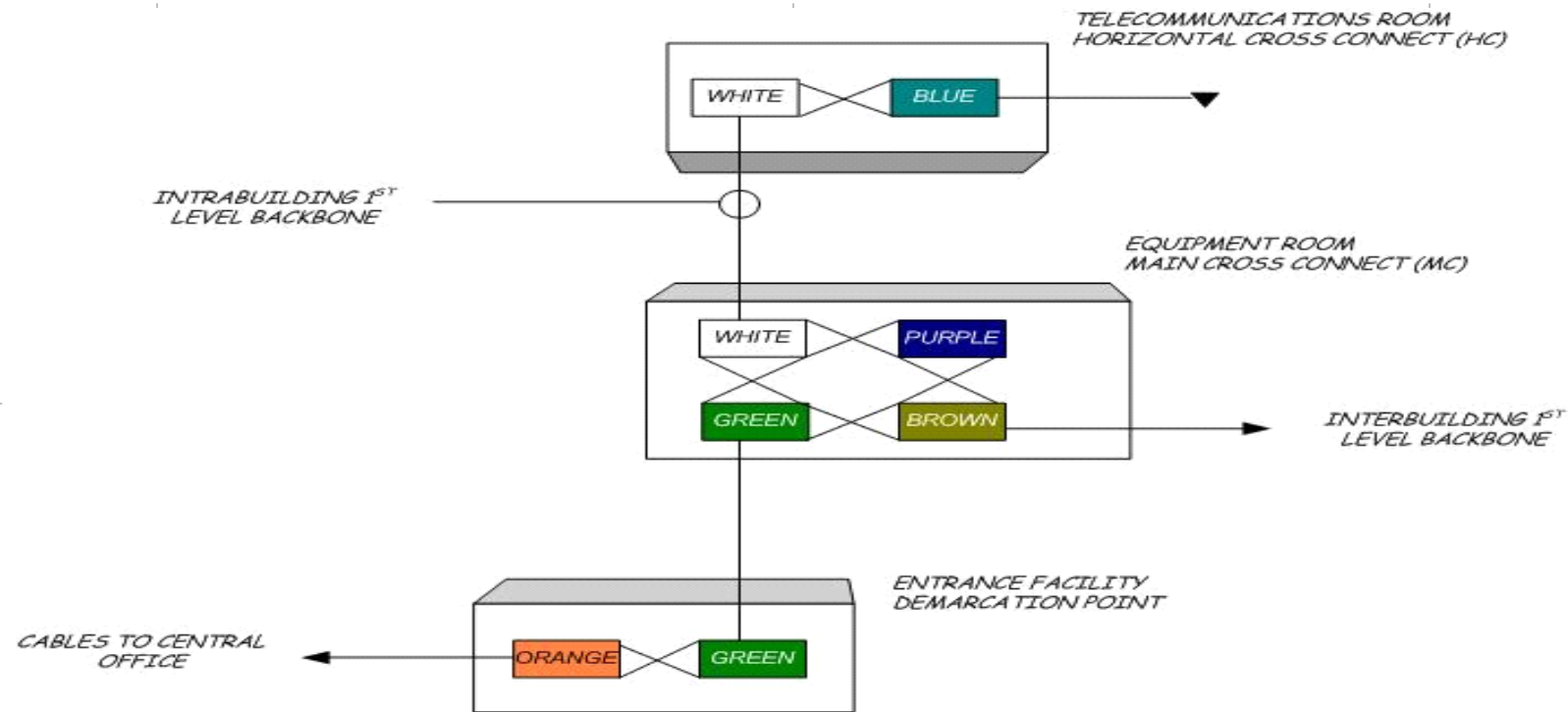
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① PATCH PANEL LABEL FIELD COLOR CODING

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T5 - COLOR CODING

SHEET: 13 OF 15

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- **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



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T5 - CBOC ITS NAMING STANDARDS

SHEET: 14 OF 15



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T5 - SPECIFICATIONS
SHEET: 15 OF 15

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 ST 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
		PERFORMANCE CATEGORY	OM4 LASER ENHANCED TO 40 GIGABIT ETHERNET (GBE)
6	FIBER PATCH CORDS	PERFORMANCE SPECIFICATIONS	OM4
		MODE	MULTIMODE
		JACKET COLOR	AQUA
		MEDIA CONNECTOR	PRE-TERMINATED WITH DUPLEX LC