

Appendix E2 - IT Requirements

Community Based Outpatient Clinic
Missoula, Montana

VA



U.S. Department of Veterans Affairs

Office of Information and Technology
IT Operations and Services
| Solution Delivery

DRAFT
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:

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

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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 40Gb ERATED 50/125 MULTIMODE.

THIS DRAWING IS SCALED TO 11X17FORMAT.

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

BICSIIITSIMM, 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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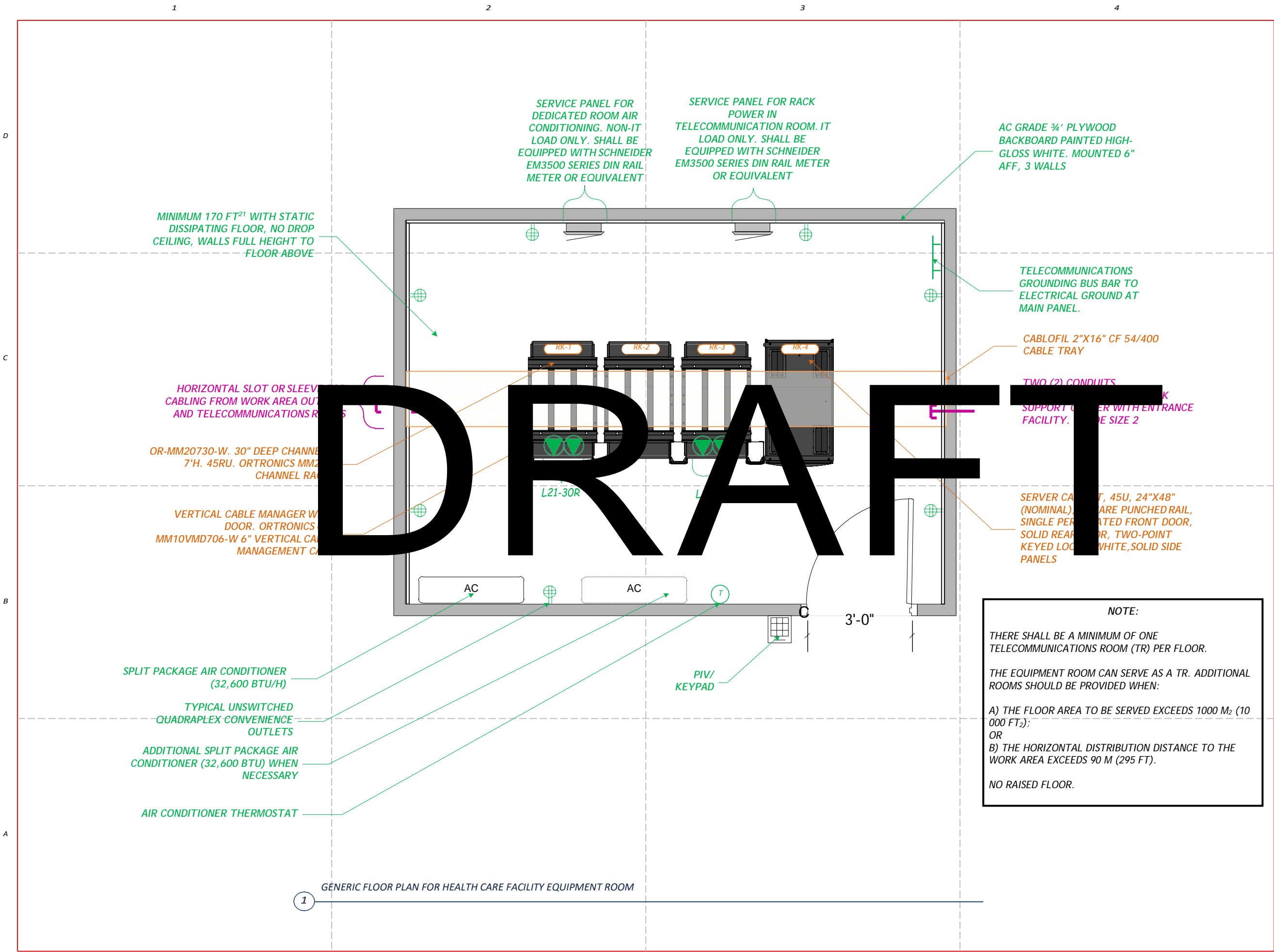
SHEET TITLE

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

LEASE NO. 36C10F18L3401 INITIALS: LESSOR: GOVERNMENT:



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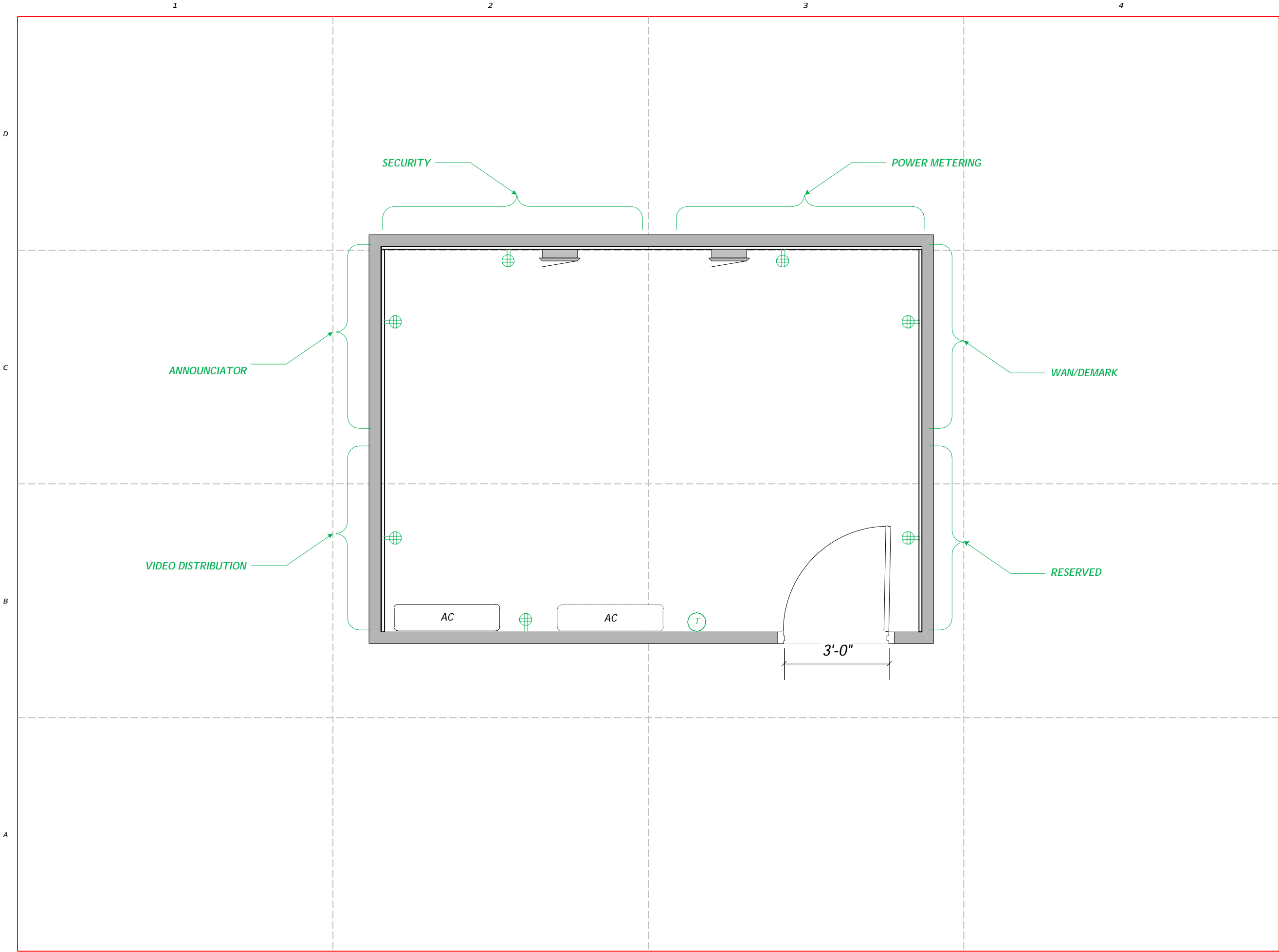
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SHEET TITLE

TELECOMMUNICATIONS
ROOM

T3-GENERIC HEALTH CARE FACILITY TR

SHEET: 5 OF 15



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SHEET TITLE

TYPICAL BACKBOARD
ELEVATION

T3 - TYPICAL BACKBOARD
ELEVATION

SHEET: 6 OF 15

D

D

SERVICE PROVIDER MAIN CROSS CONNECT
FIRST LEVEL BACKBONE (FIBER)

MAXIMUM OF 12 ANGLED CATEGORY 6A, 24 PORT PATCH
PANELS PER RACK. IF MORE THAN TWELVE (12) PATCH
PANELS ARE REQUIRED, INSTALL NEXT SET IN RK-3.

1 RU BLANKING PANELS BETWEEN LOWEST
PATCH PANEL AND RU32

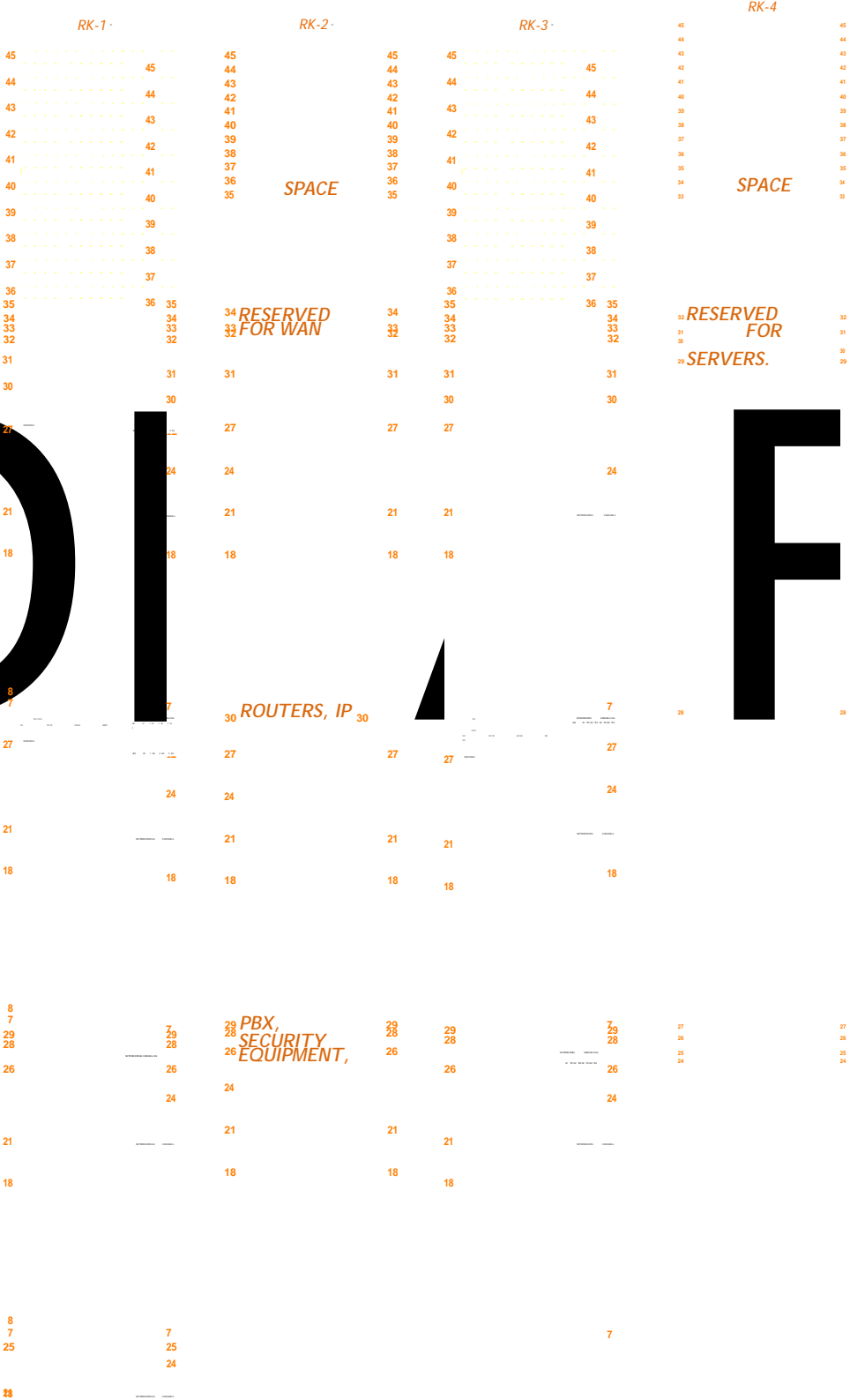
2 RU CABLE MANAGER. SIX POSITION SPACING

1 RU CABLE MANAGER. SIX POSITION SPACING

2 RU CABLE MANAGER. SIX POSITION SPACING

WITH DOOR AT RU31

3850 POE LAN SWITCH WITH 1100 WATT



C

C

7 7

POWER SUPPLIES. MAX OF SIX (6) PER RACK.

2 RU CABLE MANAGER. SIX POSITION SPACING

WITH DOOR.

1 RU CABLE MANAGER. SIX POSITION
SPACING WITH DOOR.

ZONE PDU
UPS

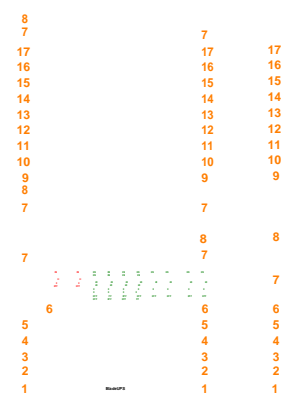
8 21 18



8 7 23 22 18



8 7 20 19 18



21

ETC.

23 22 21

18

20 19 18



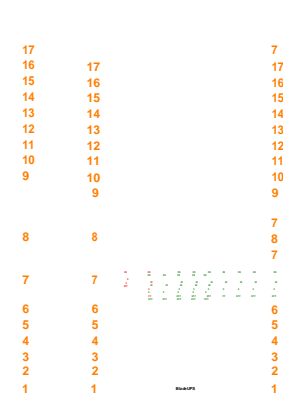
21 18



23 22 21 18



20 19 18 7 20 19 18



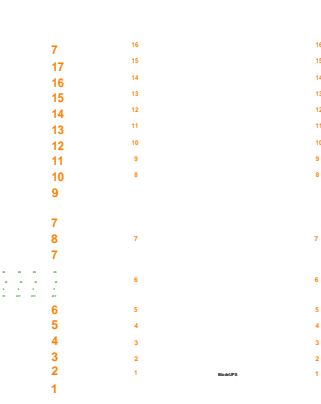
21

24 24 7 23 22

23 22 21 7 23 22 21 20 20



20 19 18 7 20 19 17 16 15



LEASE NO. 36C10F18L3401 INITIALS:

TYPICAL RACK ELEVATION FOR HEALTH CARE FACILITY TELECOMMUNICATIONS ROOMS



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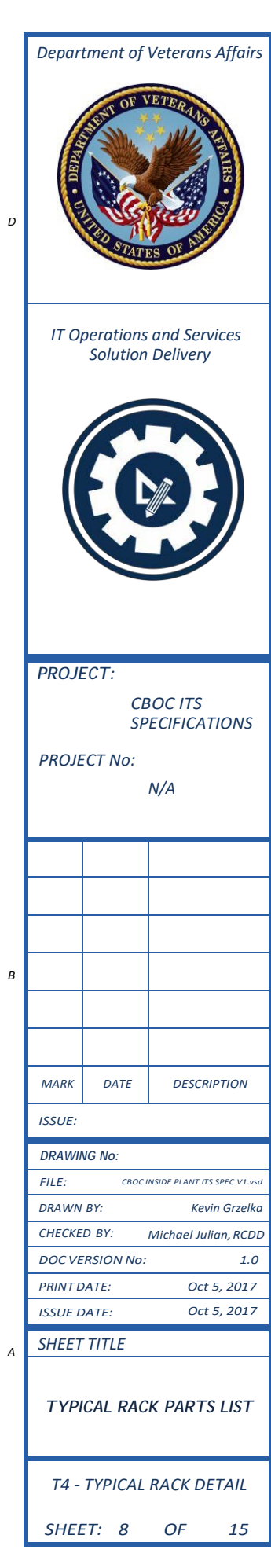
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SHEET TITLE

TYPICAL RACK ELEVATION

T3 - TYPICAL RACK
ELEVATION

SHEET: 7 OF 15





NTS



N/A

SHEET: 9 OF 15



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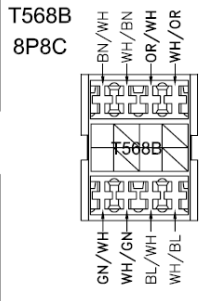
T4 - TYPICAL WORK AREA
OUTLETS

SHEET: 10 OF 15

NOTES:

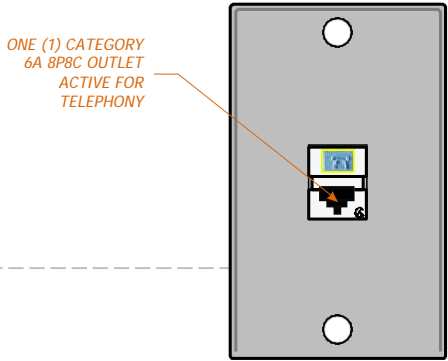
TYPICAL WORK AREA OUTLET FACEPLATE WILL BE INSTALLED WITH CATEGORY 6A COMPONENT-COMPLIANT 8P8C MEDIA INTERFACE CONNECTORS (RJ45). EACH CONNECTOR WILL BE TERMINATED TO HIGH QUALITY CATEGORY 6A HORIZONTAL CABLING WHICH WILL TERMINATE IN THE TELECOMMUNICATIONS ROOM AS SPECIFIED ELSEWHERE IN THIS DESIGN 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 ISNTALLED WITH FOUR (4) RJ45s.

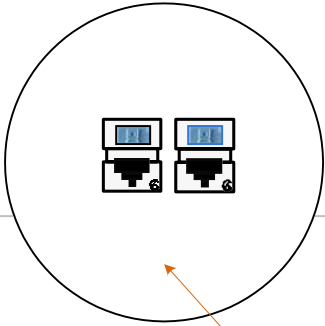


LABELING SHALL BE ANSI/TIA/EIA/606C COMPLIANT. BLACK LETTERING ON WHITE FIELD. MAKE SURE PRINTED FOR FURTHER GUIDANCE ON ADMINISTRATION BE SPECIFIED IN OTHER SECTIONS OF THIS DESIGN PACKAGE.

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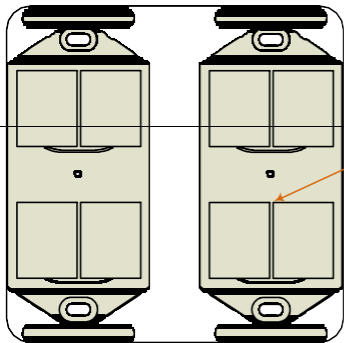
ONE (1) CATEGORY 6A 8P8C OUTLET ACTIVE FOR TELEPHONY



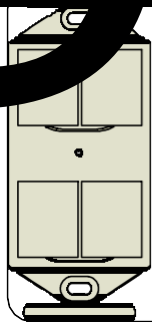
MINIMUM OF TWO CATEGORY 6A 8P8C OUTLETS FOR DATA OR TELEPHONY

3 TYPICAL WALL MOUNT PHONE OUTLET NTS

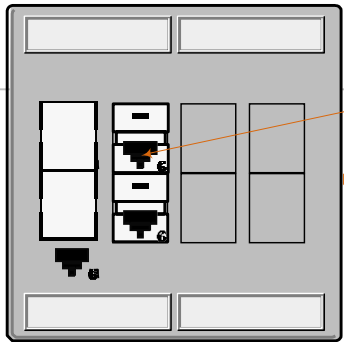
1 TYPICAL WORK AREA MOUNT OUTLET NTS



DUAL-GANG WORKBOX WITH TWO CONNECTOR CHASSIS.



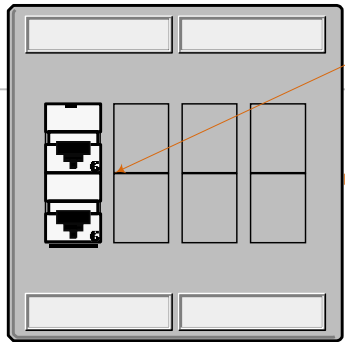
DUAL-GANG WORKBOX WITH ONE CONNECTOR CHASSIS.



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



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

LEASE NO. 36C10F18L3401 INITIALS: _____ LESSOR: _____ GOVERNMENT: _____

D

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)

DUAL INPUT UPS 250-500 kVA

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

BUS OR FEEDER

D

C

PDU INPUTS REQUIRE TWO
L21-30Rs

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

3-PHASE 208-VOLT 30 AMP

UPS

RACK MOUNTED

"ZERO U" VERTICAL PDU

NOTE: The correct specification for the PDU is to feed it with a two power sources. Power input should only come from two independent power sources. Each input will use identical specs: WYE (5-wire) configured 48V, 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 completed 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.

C

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RACKED EQUIPMENT
COMPUTER

DUAL POWER SUPPLY

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

2 NOTIONAL POWER SCHEMATIC FOR INFORMATION ONLY - NOT FOR CONSTRUCTION

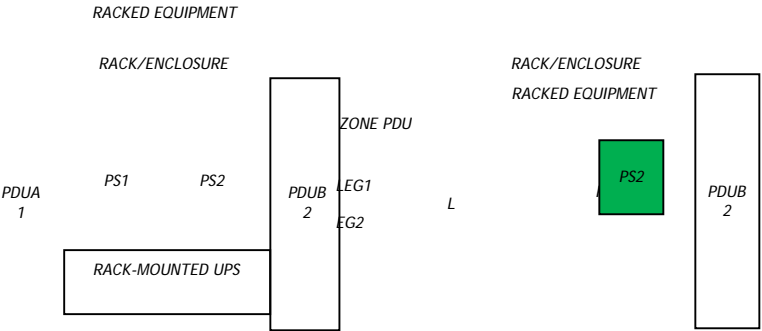
NOTE:

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.

B

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

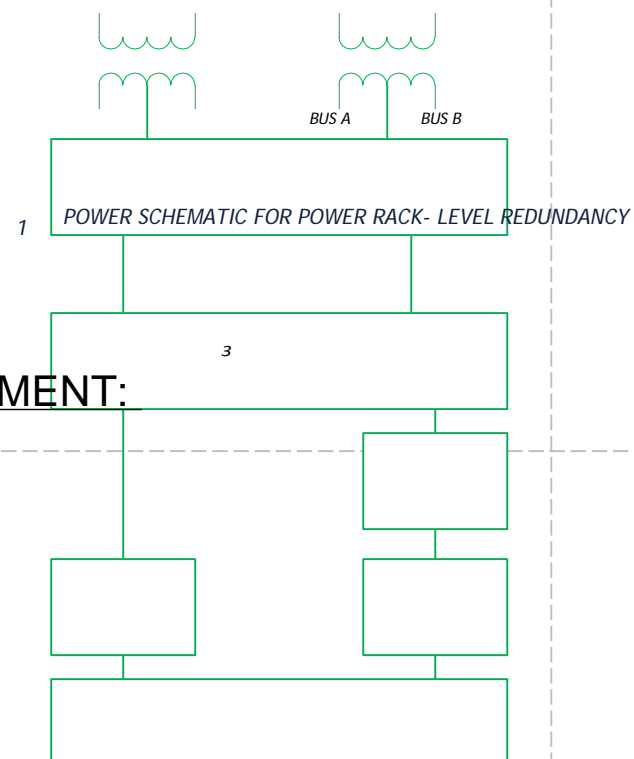




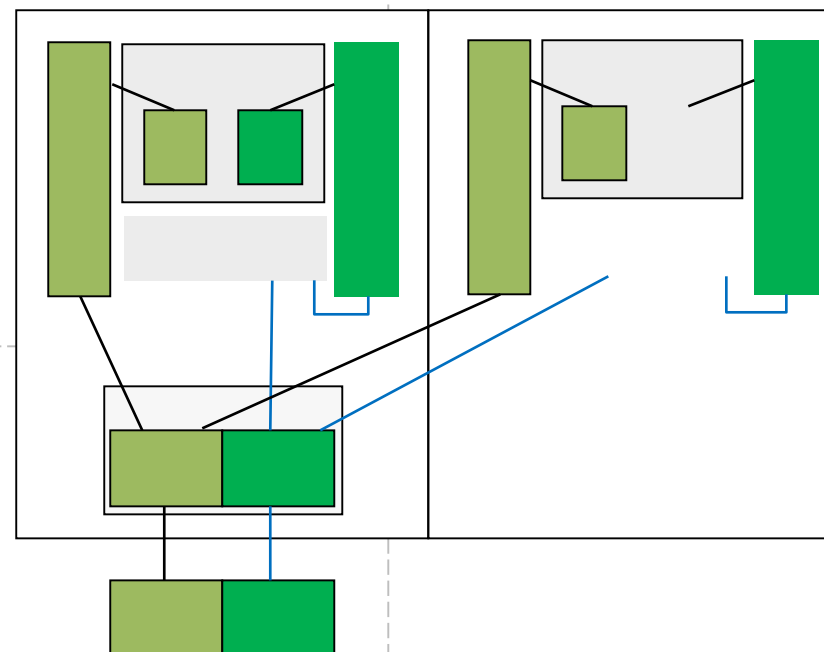
3 208 VOLT PDU FOR EQUIPMENT POWER - TO BE ENERGIZED BY ZONE PDU



LEASE NO. 36C10F18L3401 INITIALS: LESSOR: GOVERNMENT:



ONE ZONE PDU FOR TWO SERVER CABINETS



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SHEET TITLE

TYPICAL POWER DISTRIBUTION

T4 - TYPICAL RACK POWER DISTRIBUTION

SHEET: 11 OF 15

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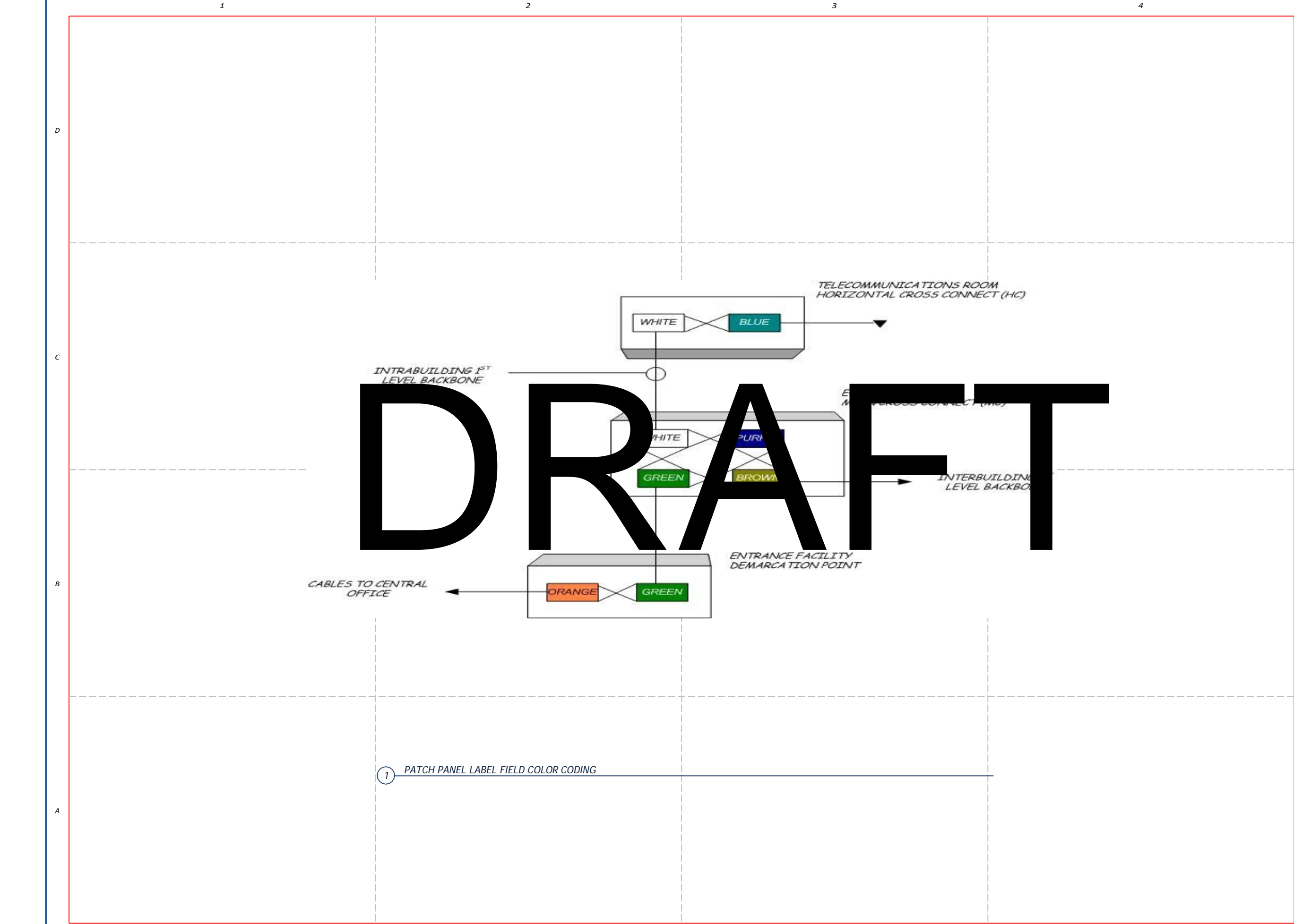
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SHEET TITLE

POWER DISTRIBUTION

T4 - POWER DISTRIBUTION

SHEET: 12 OF 15



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T5 - COLOR CODING

SHEET: 13 OF 15

4

A

- **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-RACKNAME-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 CASSSETTE** = FCS-RACKNAME-01 THROUGH 45. EXAMPLE: FPL-RK1-01 FOR THE PANEL LOCATED IN RACK UNIT #1 IN RACK #1.
- **FIBER DISTRIBUTION CASSETTE** = FCS-RACKNAME-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

4

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SHEET TITLE

T5 - CBOC ITS NAMING STANDARDS


SHEET: 14 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
		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

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T5 - SPECIFICATIONS

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