

VA



U. S. Department of Veterans Affairs

Office of Information and Technology

Infrastructure Operations (IO)

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

DEVELOPED BY:
DATA CENTER AND INFRASTRUCTURE ENGINEERING

DEPARTMENT OF VETERANS
AFFAIRS



OFFICE OF INFORMATION AND
TECHNOLOGY

INFRASTRUCTURE OPERATIONS -
APPLICATION HOSTING, CLOUD
AND EDGE SOLUTIONS



ENTERPRISE DATA CENTER AND
INFRASTRUCTURE ENGINEERING

EDCT
ENTERPRISE DATA CENTER
INFRASTRUCTURE COLLABORATION
TEAM

PROJECT:

CBOC INFORMATION
TRANSPORT SYSTEMS
SPECIFICATIONS

MARK	DATE	DESCRIPTION

ISSUE:

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FILE: CBOC DESIGN TEMPLATE v2.rvt

DESIGNED BY: KEVIN GRZELKA, CTDC

CHECKED BY: MICHAEL JULIAN, RCD
KELLY BATES

DOC VERSION No: 2

PRINT DATE: May 19, 2023

ISSUE DATE: May 17, 2023


SHEET TITLE

COVER

SHEET: 1 OF 20


1234				
D	GENERIC TELECOMMUNICATIONS MEDIA AND INTERFACE SPECIFICATIONS FOR TELECOMMUNICATION SPACES			
	ID	PRIMARY ATTRIBUTE	SECONDARY ATTRIBUTE	SPECIFICATION
C	1	COPPER PATCH PANELS	PERFORMANCE CATEGORY	CATEGORY 6A (10 GBE)
			POSITION COUNT	48
			FORM FACTOR	ANGLED
			SIZE	ONE RACK UNIT (RU)
			JACK COLOR CODING	A-SIDE BLUE / B-SIDE YELLOW FOR DUAL PATH DISTRO WITHIN COMPUTER ROOMS (DATA CENTERS); UTP DISTRO TO WAOs IS EXCLUDED
C	2	FIBER DISTRIBUTION PANELS	CASSETTE CAPACITY	12 CASSETTES OR 6 DOUBLE CASSETTES
			CASSETTE USER INTERFACES	LC DUPLEX CONNECTORS / MPO-8
			CASSETTE BACKBONE INTERFACES	MPO-24/ MPO-12
			PERFORMANCE CHARACTERISTICS	OM4 LASER OPTIMIZED 50/125 MULTIMODE (MM) / OS1(OS2) 9/125 SINGLE MODE (SM)
			FORM FACTOR	ONE RU
B	3	UNSHIELDED TWISTED PAIR (UTP) (HORIZONTAL AND FIRST LEVEL BACKBONE)	PERFORMANCE CATEGORY	CATEGORY 6A (10 GBE); 24-26 GAUGE
			PERFORMANCE SPECIFICATIONS	MEETS OR EXCEEDS TIA-EIA-568-C.2-10, TSB-155.
B	4	FIBER (HORIZONTAL AND FIRST LEVEL BACKBONE)	PERFORMANCE CATEGORY	OM4 LASER OPTIMIZED / OS1 / OS2
			PERFORMANCE SPECIFICATIONS	LASER OPTIMIZED 50/125 MM FIBERS WITH AT LEAST 4,700 MHZ·KM AT 850 NM / OS1 9/125 SM FIBERS (INTRA-BUILDING) / OS2 9/125 SM (INTER-BUILDING)
			MODE	MULTIMODE/SINGLE MODE
			JACKET COLOR	AQUA (OM4) / LIME (OM5) / YELLOW (SM) / BLACK (OSP)
			MEDIA CONNECTOR	PRE-TERMINATE WITH MULTI-FIBER PUSH ON (MPO), (FIELD TERMINATION AUTHORIZED FOR DISTRIBUTION LEAVING THE COMPUTER ROOM)
			STRAND COUNT	12 OR 24
			BUNDLING	LOOSE TUBE (OUTDOOR)/TIGHT BUFFERED (INDOOR)
A	5	UTP PATCH CORDS	PERFORMANCE CATEGORY	CATEGORY 6A, 26-28 GAUGE, STRANDED
			PERFORMANCE SPECIFICATIONS	CENTER TUNED TO HORIZONTAL MEDIA
			TERMINATION METHOD	FACTORY PRE-TERMINATED
A	6	FIBER PATCH CORDS	PERFORMANCE CATEGORY	OM5/ OM4 / OS1 / OS2
			PERFORMANCE SPECIFICATIONS	LASER OPTIMIZED 50/125 MM FIBERS WITH AT LEAST 4,700 MHZ·KM AT 850 NM / OS1 9/125 SM FIBERS (INTRA-BUILDING) / OS2 9/125 SM (INTER-BUILDING)
			MODE	MULTIMODE/SINGLE MODE
			JACKET COLOR	AQUA (OM4) / LIME (OM5) / YELLOW (SM)
			MEDIA CONNECTOR	PRE-TERMINATED WITH DUPLEX LC / MPO-8
1234				

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SPECIFICATIONS

SHEET: 3 OF 20

- MINIMUM 170 FT²
- STATIC DISSIPATING FLOOR
- NO DROP CEILING
- SLAB TO DECK ABOVE 12 FT MINIMUM (16 FT PREFERRED)
- WALLS FULL HEIGHT TO DECK ABOVE

TELECOMMUNICATIONS CHANNEL RACK, 19" RAILS, #12-24 TAPPED EIA HOLE PATTERN, MINIMUM 30" DEEP, 7' HIGH, 45RU, WHITE

4'X 8' AC GRADE 3/4" TRADE SIZE PLYWOOD BACKBOARD PAINTED HIGH-GLOSS WHITE WITH TWO COATS OF FIRE RESISTANT PAINT FOR SECURITY EQUIPMENT

CONDUIT OR SLEEVES WITH BUSHING AND FIRESTOP OR OTHER AHJ-APPROVED PENETRATION FOR HORIZONTAL DISTRIBUTION FROM WORK AREA OUTLETS AND TELECOMMUNICATION ROOMS

VERTICAL CABLE MANAGER WITH DOOR, 6" WIDE

SPLIT PACKAGE AIR CONDITIONER (32,600 BTU/H)

TYPICAL UNSWITCHED DUPLEX CONVENIENCE OUTLETS

ADDITIONAL SPLIT PACKAGE AIR CONDITIONER (32,600 BTU) WHEN NECESSARY

AIR CONDITIONER THERMOSTAT

SERVICE PANEL FOR A-SIDE POWER, GENERATOR BACKED IF THE FACILITY HAS GENERATION CAPABILITIES. SHALL BE EQUIPPED WITH POWER METER; PLACEMENT PER OTHERS

SERVICE PANEL FOR B-SIDE POWER, GENERATOR BACKED IF POSSIBLE. SHALL BE EQUIPPED WITH POWER METER; PLACEMENT PER OTHERS

4'X 8' AC GRADE 3/4" TRADE SIZE PLYWOOD BACKBOARD PAINTED HIGH-GLOSS WHITE WITH TWO COATS OF FIRE RESISTANT PAINT FOR SERVICE PROVIDER EQUIPMENT

PRIMARY OR SECONDARY BONDING BUSBAR (PBB/SBB)

WIRE MESH CABLE TRAY SIZE COMMENSURATE WITH REQUIREMENTS

TWO (2) CONDUITS INTERCONNECTING NETWORK SUPPORT CENTER WITH ENTRANCE FACILITY. TRADE SIZE 2

SERVER CABINET, 45U, 24"X48" (NOMINAL), SQUARE PUNCHED RAIL, SINGLE PERFORATED FRONT DOOR, SOLID REAR DOOR, TWO-POINT KEYED LOCKS, WHITE, SOLID SIDE PANELS

PIV/KEYPAD

NOTE:

THREE FEET CLEARANCE FROM WALL MOUNTED EQUIPMENT MUST BE MAINTAINED.



30" WIDE BY 36" FRONT CLEARANCE REQUIRED AROUND 120/208V ELECTRICAL PANEL BOARDS



36" CLEARANCE REQUIRED AROUND FRONT, BACK AND SIDES OF RACKS AND CABINETS

TWO L21-20 BRANCH CIRCUITS PER RACK CAN BE USED FOR ALL RACKS ELIMINATING THE NEED FOR ZONE PDUs IF BREAKER SPACE IS NOT AN ISSUE (ALTERNATELY, zPDUs CAN SUPPORT EITHER TWO OR THREE RACKS EACH)

1 GENERIC FLOOR PLAN FOR HEALTH CARE FACILITY EQUIPMENT ROOM

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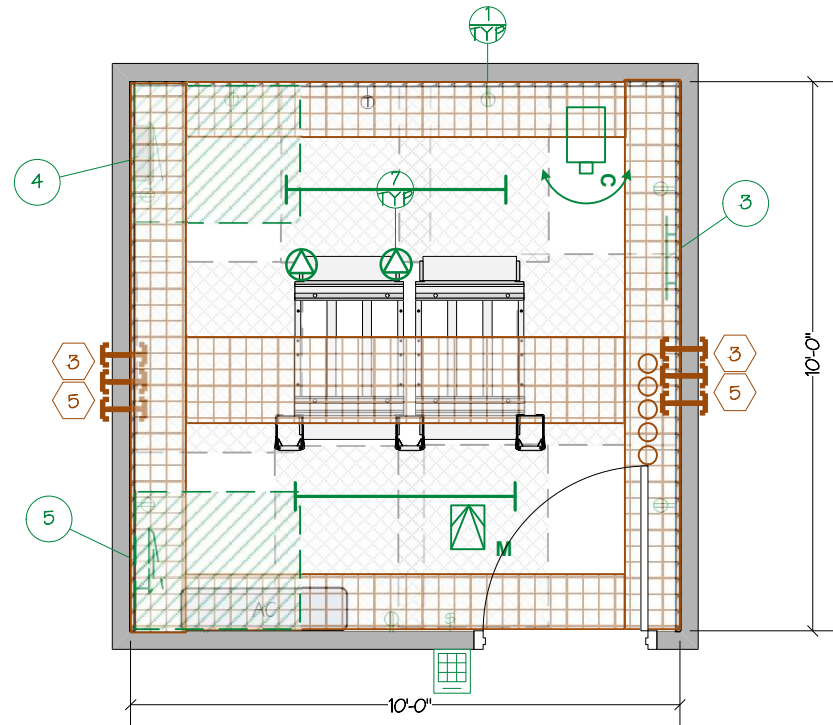
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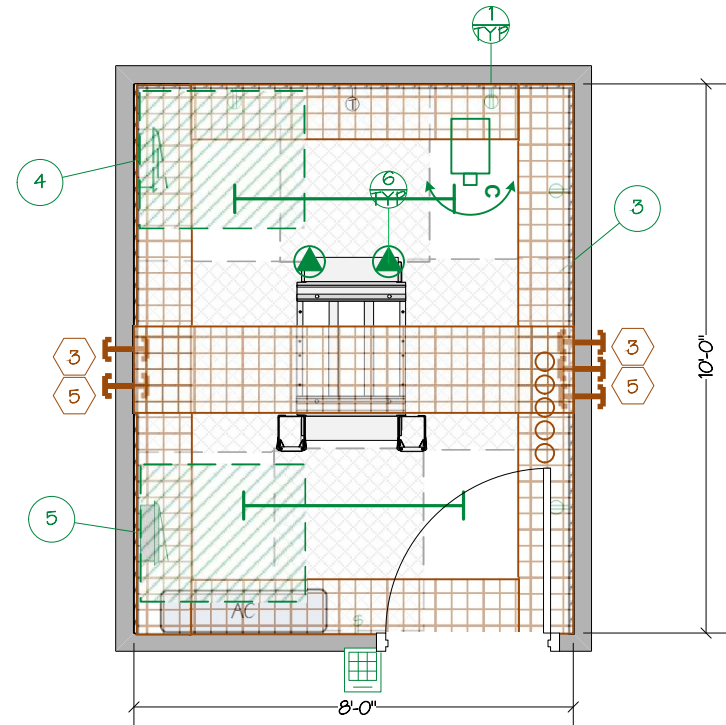
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GENERIC HEALTH CARE FACILITY
EQUIPMENT ROOM

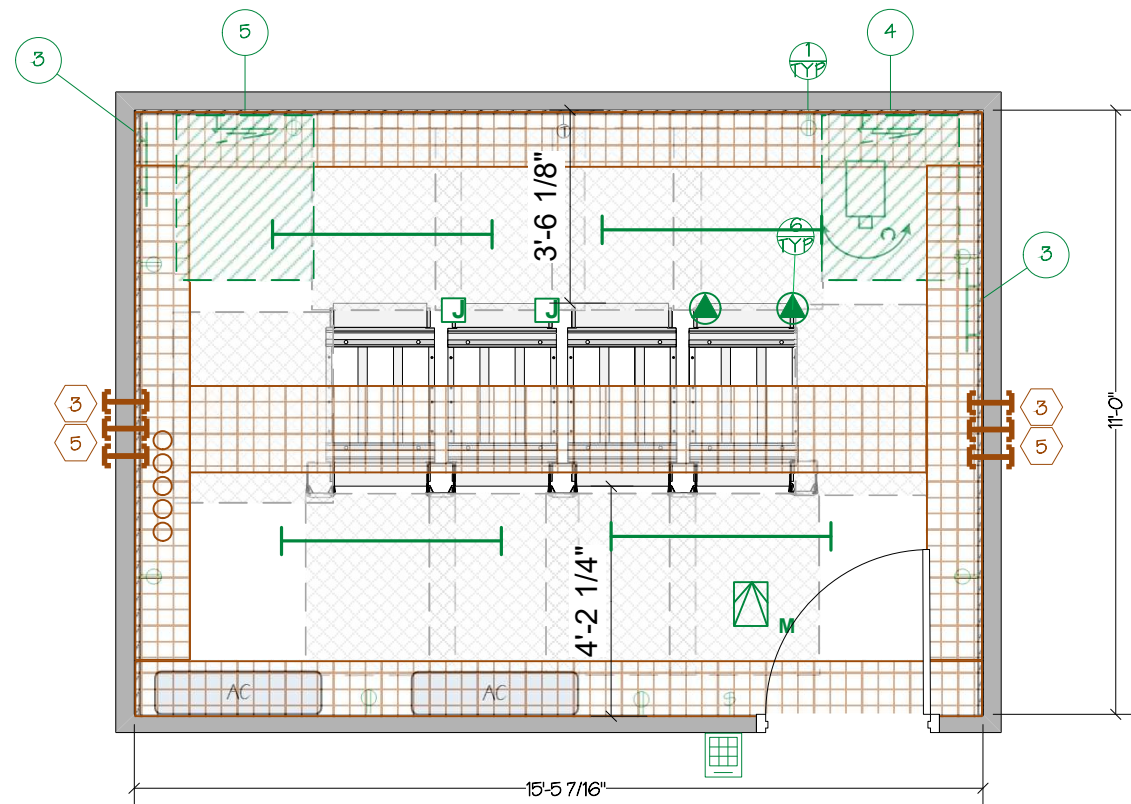
SHEET: 4 OF 20



3 GENERIC FLOOR PLAN FOR TELECOMMUNICATIONS ROOMS (TWO RACK REQUIREMENT)
(TELECOMMUNICATIONS SPACE SUPPORTING NETWORK DISTRIBUTION TO WORK AREA OUTLETS)
MINIMUM REQUIREMENT FOR HEALTHCARE FACILITY REMODELS



4 GENERIC FLOOR PLAN FOR TELECOMMUNICATIONS ROOMS (ONE RACK REQUIREMENT)
(TELECOMMUNICATIONS SPACE SUPPORTING NETWORK DISTRIBUTION TO WORK AREA OUTLETS)



2 GENERIC FLOOR PLAN FOR HEALTH CARE FACILITY TELECOMMUNICATIONS ROOMS

NOTE:

- THERE SHALL BE A MINIMUM OF ONE TELECOMMUNICATIONS ROOM (TR) PER FLOOR.
- ADDITIONAL ROOMS SHOULD BE PROVIDED WHEN THE HORIZONTAL DISTRIBUTION DISTANCE TO THE WORK AREA EXCEEDS 90 M (295 FT) OR THE ROOM SIZE CAN'T SUPPORT ALL WORK AREA OUTLETS.

FLOOR SPACE REQUIREMENT:

- FOR FACILITIES FROM 1 TO 3,000 SQ. FT., PROVIDE A STANDARD 26U TELECOMMUNICATIONS ENCLOSURE LOCATED IN A SECURED SPACE THAT IS NOT NECESSARILY DEDICATED TO TELECOMMUNICATIONS PURPOSES. SEE SHEETS 16-19.
- FOR FACILITIES FROM 3,001 TO 6,000 SQ. FT., PROVIDE A 1-RACK TR (80SF, 10'X8' FORM FACTOR).
- FOR FACILITIES FROM 6,001 TO 10,000 SQ. FT., PROVIDE A 2-RACK TR (100SF, 10'X10' FORM FACTOR).
- FOR FACILITIES FROM 10,001 TO 25,000 SQ. FT., PROVIDE A 3-RACK TR (120SF, 10'X12' FORM FACTOR).
- FOR FACILITIES GREATER THAN 25,000 SQ. FT., PROVIDE TRS IN ADDITION TO THE MCR PER THE SIZING AND QUANTITY DETERMINED BY THE TR DESIGN CHECKLIST IN ACCORDANCE WITH THE SERVING ZONE SIZE OF EACH PLANNED TR.
- 3' OF CLEARANCE ON THREE SIDES OF THE RACKS MUST BE MAINTAINED.
- THE FOURTH SIDE MUST BE AT LEAST 12" FROM A WALL.
- 30" WIDE BY 36" FRONT CLEARANCE REQUIRED AROUND ELECTRICAL PANEL BOARDS.

A MINIMUM OF FIVE METRIC DESIGNATOR 103 (TRADE SIZE 4) CONDUITS OR SLEEVES SHOULD BE PROVIDED TO SERVICE UP TO 40,000 SQ FT OF USABLE FLOOR SPACE. ONE ADDITIONAL CONDUIT OR SLEEVE SHOULD BE PROVIDED FOR EACH ADDITIONAL 40,000 SQ FT OF USABLE FLOOR SPACE.

EACH RACK MUST BE CAPABLE OF SUPPORTING 5KW OF LOAD. HOWEVER, IN AGGREGATE FOR TRS WITH MORE THAN ONE RACK, THE FULL 5KW OF HEAT REJECTION PER RACK IS NOT REQUIRED. SEE BELOW:

- 1 RACK TR = 5KW COOLING
- 2 RACK TR = 7KW COOLING
- 3 RACK TR = 8.5KW COOLING
- 4 RACK TR = 10KW COOLING

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1 TELECOMMUNICATION ROOM NOTES



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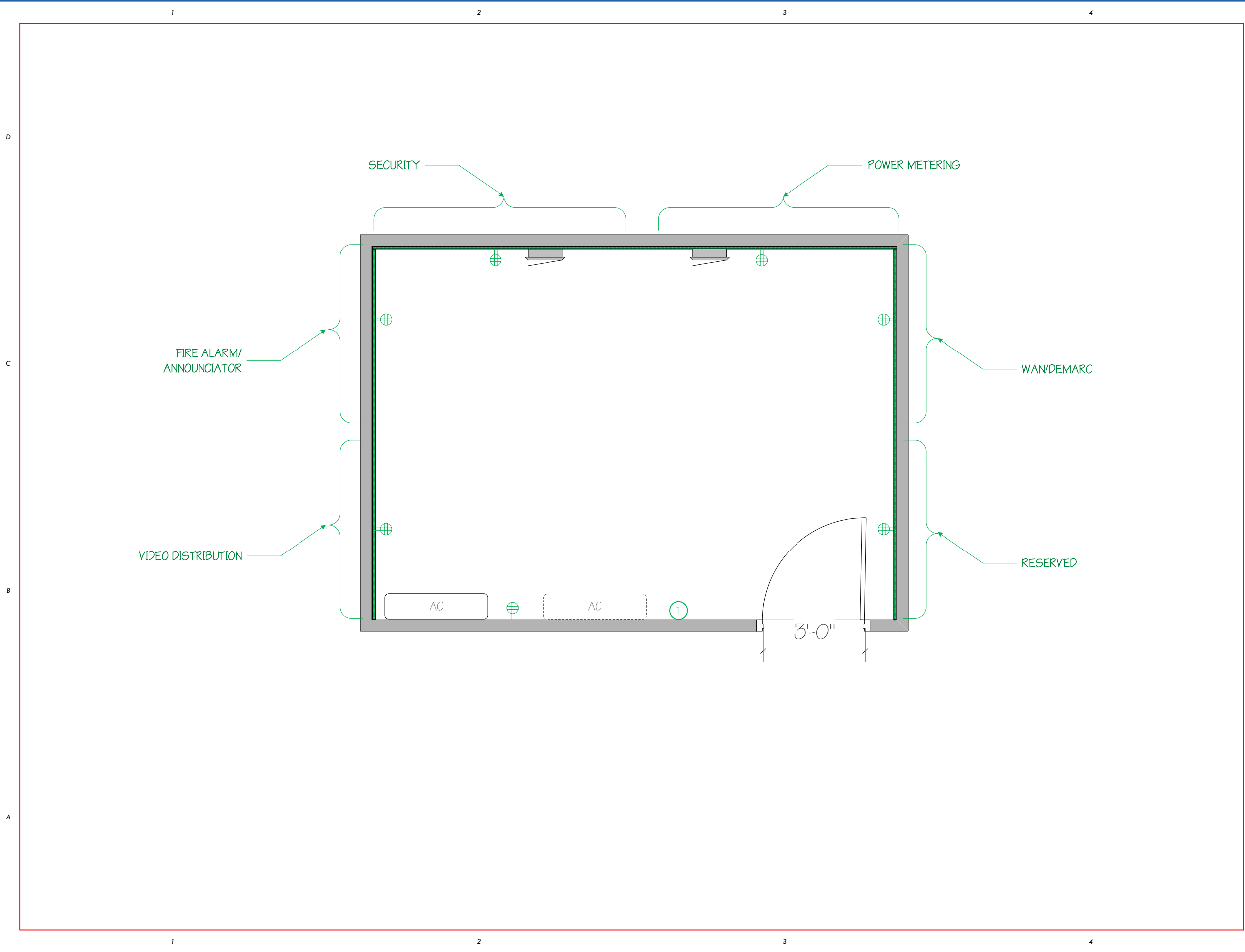
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TELECOMMUNICATIONS ROOMS



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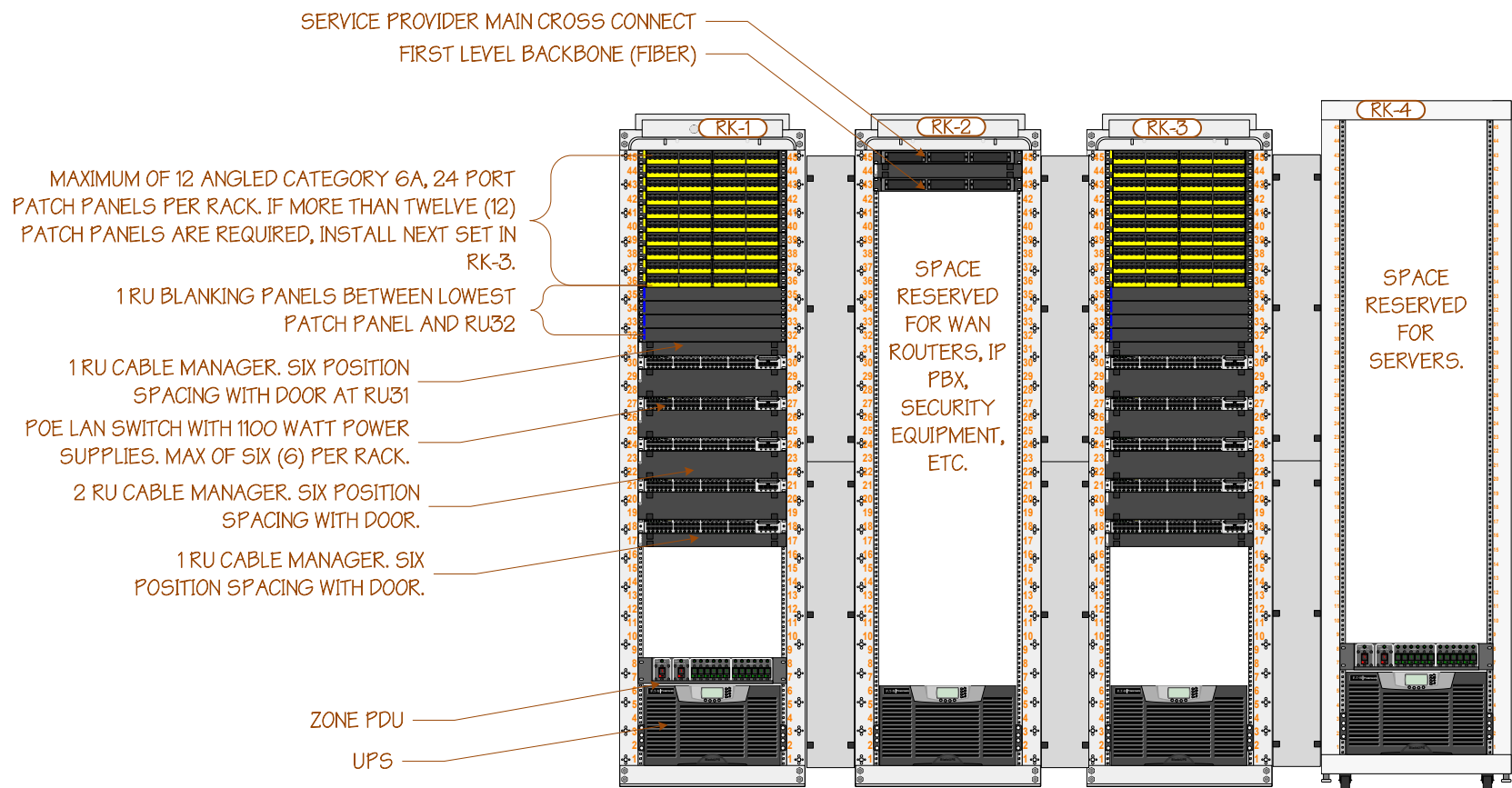
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SHEET TITLE

TYPICAL BACKBOARD RESERVATIONS

SHEET: 6 OF 20

1 TYPICAL RACK ELEVATION FOR HEALTH CARE FACILITY TELECOMMUNICATIONS ROOMS



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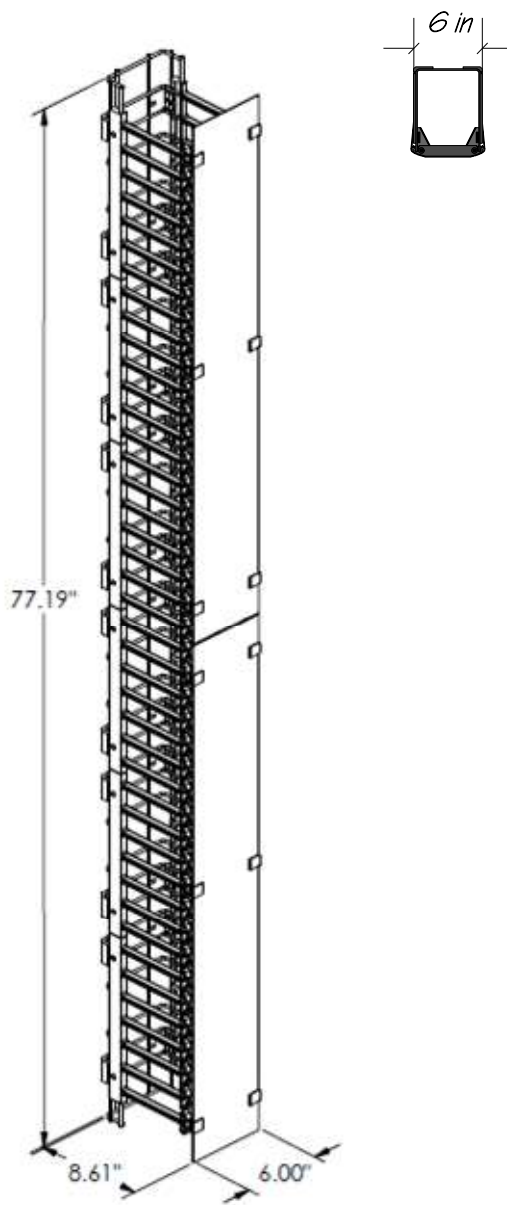
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TYPICAL RACK ELEVATION

SHEET: 7 OF 20

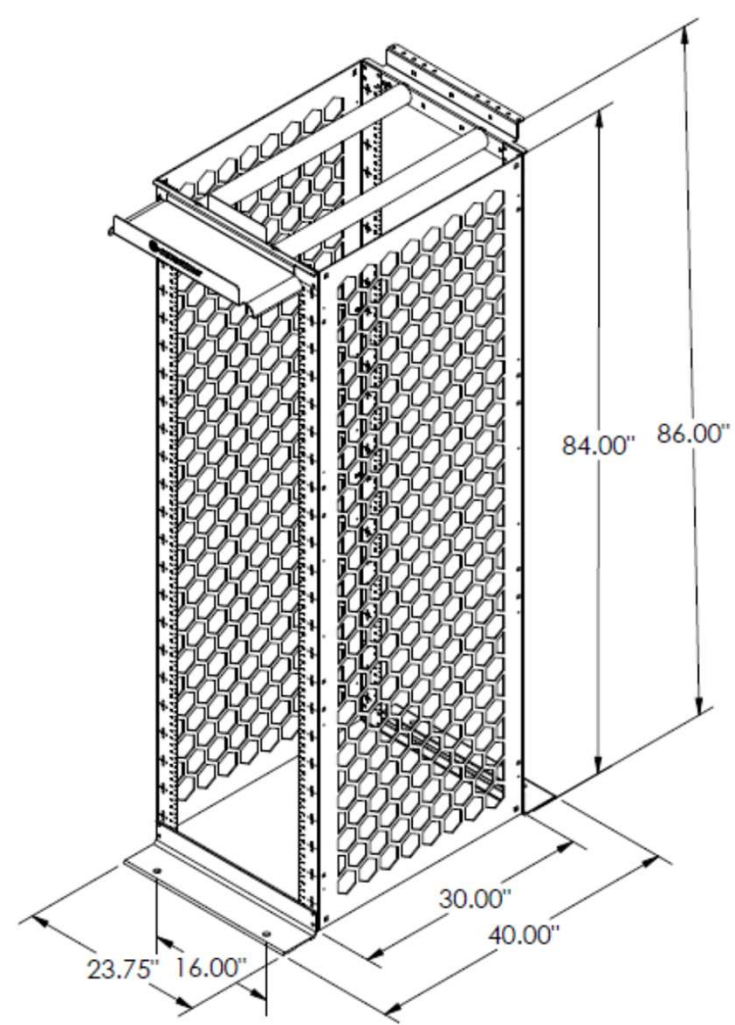


P/N: OR-MM20VMD706 (OR EQUIVALENT)

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

3 6" WIDE VERTICAL CABLE MANAGEMENT

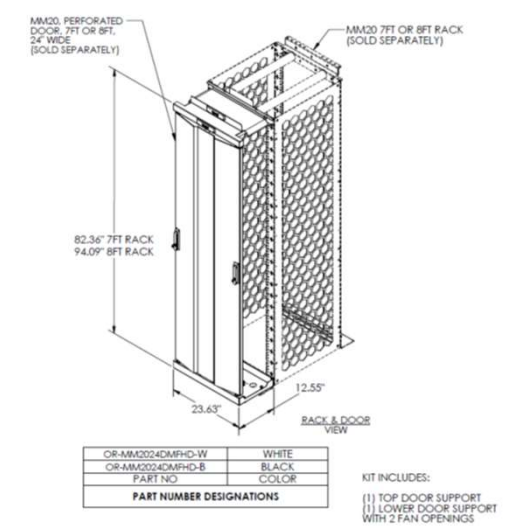


MIGHTY M0 20 CABLE MANAGEMENT RACK
30" CHANNEL DEPTH, 7' HIGH, WHITE FINISH OR EQUIVALENT

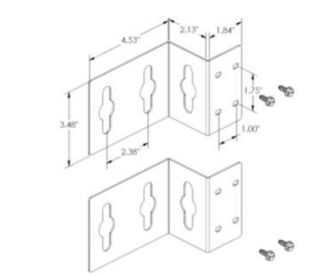
DIMENSIONS:
USABLE HEIGHT: 45RU
DEPTH (US): 30
HEIGHT (US): 7'
WIDTH (US): 23.75"
STATIC LOAD CAPACITY: 2000 LBS

SQUARE HOLE

2 TYPICAL RACK DIMENSIONS AND SPECIFICATIONS
NTS



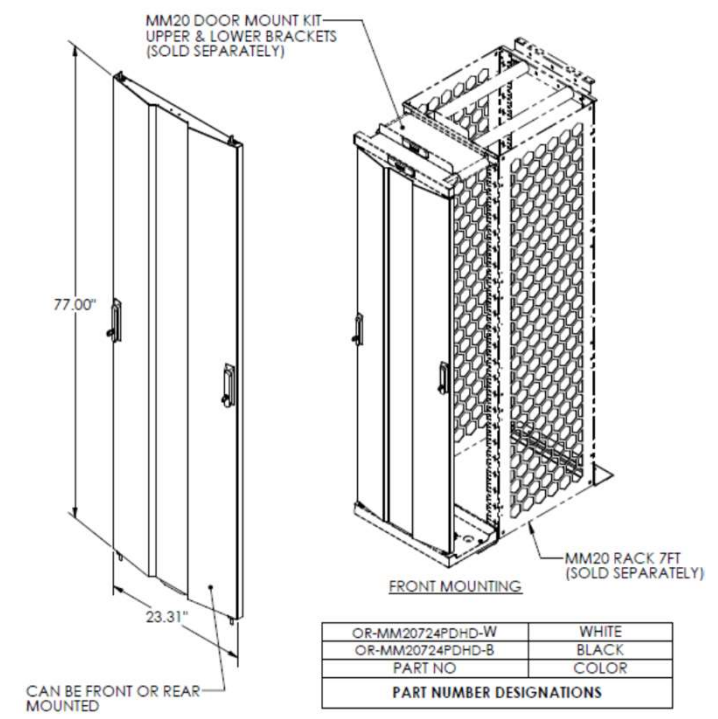
4 SECURITY DOOR FRONT MOUNTING HARDWARE (OR-MM2024DMFHD-W) OR EQUIVALENT



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



5 SECURITY DOOR REAR MOUNTING HARDWARE (OR-MM2024DMRHD-W) OR EQUIVALENT



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

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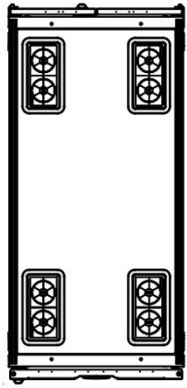
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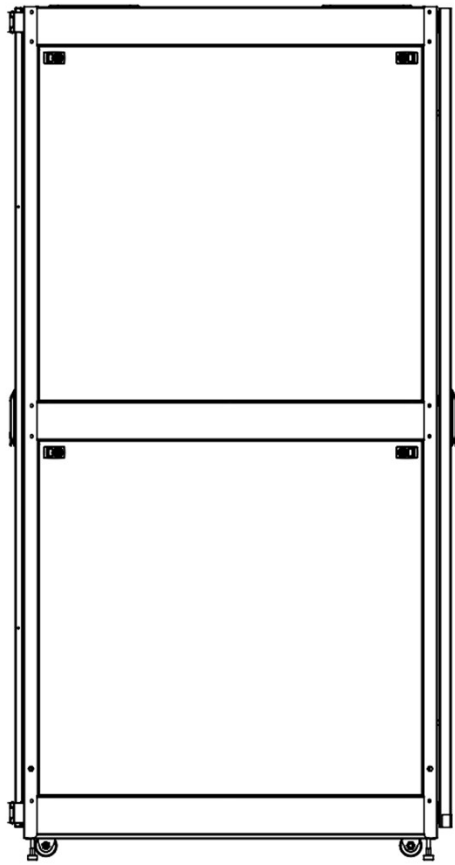
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TYPICAL RACK DETAIL

SHEET: 8 OF 20

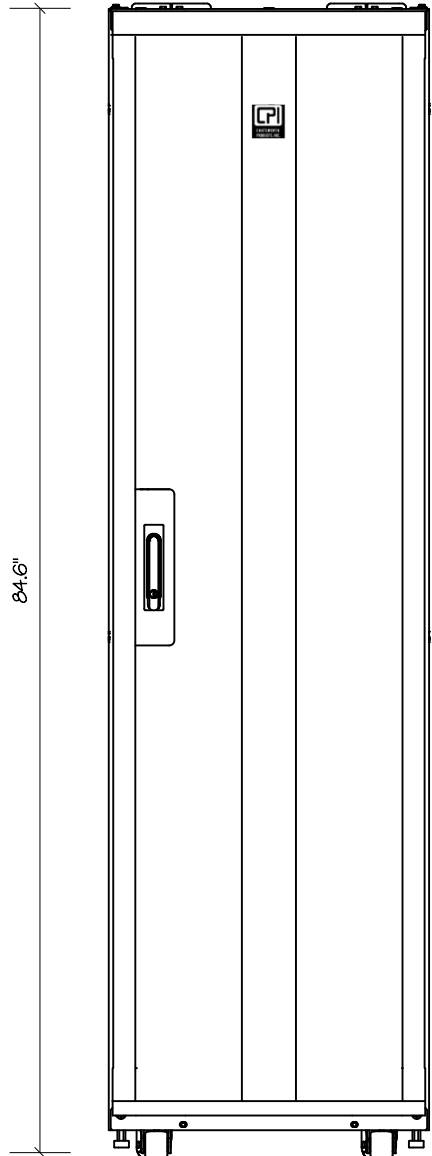


4 TYPICAL SERVER CABINET TOP VIEW WITH FOUR (4) BRUSHED GROMMET CABLE OPENINGS



3 TYPICAL SERVER CABINET SIDE VIEW

NOTE: SERVER CABINETS MAY ONLY HOUSE SERVER AND STORAGE EQUIPMENT AND SUPPORTING PATCH PANELS. SERVER CABINETS MAY NOT HOUSE TELECOMMUNICATIONS (NETWORK) EQUIPMENT



2 TYPICAL SERVER CABINET FRONT

CHATSWORTH ZETAFRAME™ CABINET (PN:ZB14-A222A-E1) OR EQUIVALENT

23.6IN(600MM)W X 43.3IN(1100MM)D X 45RMU;GLACIER WHITE;(1) CASTER ONLY KIT;(1) LEVELER ONLY KIT;(4) SQUARE PUNCHED RAILS WITH NO CABLE OPENINGS;(2) SOLID SIDE PANEL;(1) ZETAFRAME PERFORATED METAL DOOR, GLACIER WHITE;(1) SINGLE-POINT KEYED LOCK;(1) DOUBLE PERFORATED METAL DOOR;(1) THREE-POINT KEYED LOCK;(1) TOP PANEL WITH FOUR (4) BRUSH-SEALED CABLE OPENINGS;(1) BOTTOM PANEL WITH TWO (2) BRUSHED-SEALED CABLE OPENINGS ;(1) AIR DAM KIT;(1) STANDARD DUAL 2-PIECE PDU BRACKET KIT;(1) COMMON PARTS KIT, ZF, UL;(1) PACKAGING KIT

Z	1	2	3	-	4	5	6	7	8	-	9	10
1. Height												
U	in	mm										
42	79.4	2017										
45	84.6	2149										
48	89.9	2283										
52	96.9	2461										
2. Width												
in	mm											
23.6	600	1										
27.6	700	2										
29.5	750	3										
31.5	800	4										
3. Depth												
in	mm											
31.5	800	1										
39.4	1000	2										
41.3	1050	3										
43.3	1100	4										
47.2	1200	5										
4. Doors												
None		0										
Single Perforated Front/ Double Perforated Rear		A										
No Front/ Double Perforated Rear		B										
5. Top Panel												
None		0										
Grommet-Sealed		1										
Brush-Sealed		2										
6. Side Panel												
None		0										
1 Side		1										
2 Sides		2										
7. Bottom Panel												
None		0										
Grommet-Sealed		1										
Brush-Sealed		2										
8. Thermal Management												
None		0										
Air Dam		A										
Air Dam, Brushed-Sealed Rail		B										
9. Color												
Black		7										
Glacier White		E										
10. Shipping												
Standard Pallet		1										
Shock Pallet		2										

Height includes casters.

Shock Pallet is available for 42U, 45U, 48U cabinet heights and 43.3"D (1100 mm) and 47.2"D (1200 mm) cabinet depths.

Brush-Sealed Front Rails are not available for 23.6"W (600 mm) cabinets.



1 TYPICAL SERVER CABINET SPECIFICATION

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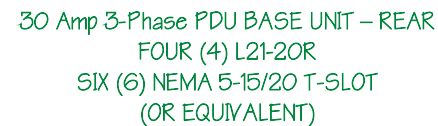
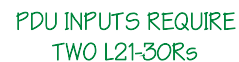
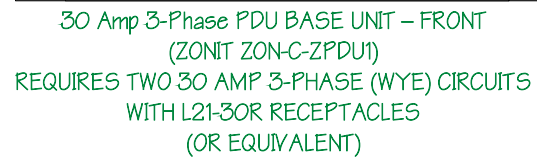
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TYPICAL CABINET DETAIL

SHEET: 9 OF 20



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 ZONE PDU UNIT WITH REAR DETAIL AND ADAPTORS REQUIRED FOR VERTICAL PDU



NOTE: USED IN TELECOMMUNICATIONS ENCLOSURES ONLY

④ 120 Volt PDU FOR PLACEMENT AS NEEDED



APC AP8861 RPDU OR EQUIVALENT; RACK PDU 2G, METERED; L21-20 PLUG;
THREE PHASE; 120/208V INPUT; 20A; ZERO U,
5.7 KW, 208V, (36) C13 & (6) C19 & (2) 5-20 OUTLETS; FOR USE IN
TELECOMMUNICATION ROOMS AND LOCATIONS WITH LEGACY 110V ONLY
EQUIPMENT

REQUIRES ONE (1) L21-
20R

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



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.



① POWER SCHEMATIC FOR POWER RACK-LEVEL REDUNDANCY



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DESIGNED BY: KEVIN GRZELKA, CTDC

CHECKED BY: MICHAEL JULIAN, RCDD
KELLY BATES

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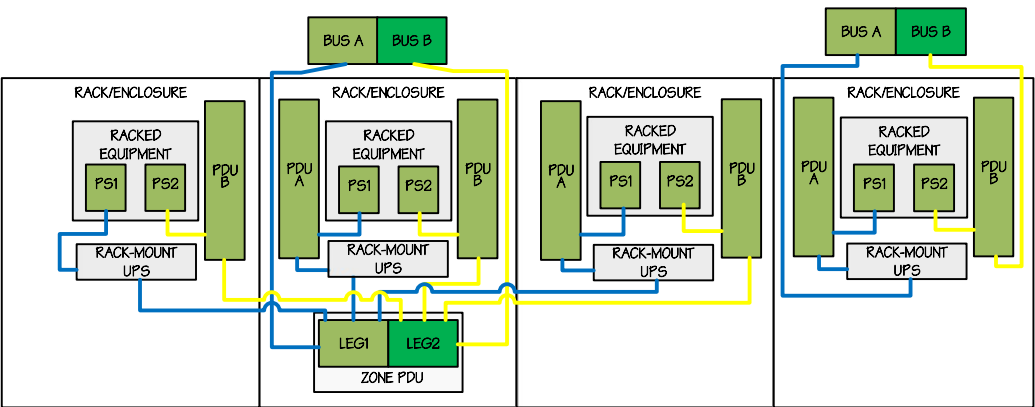
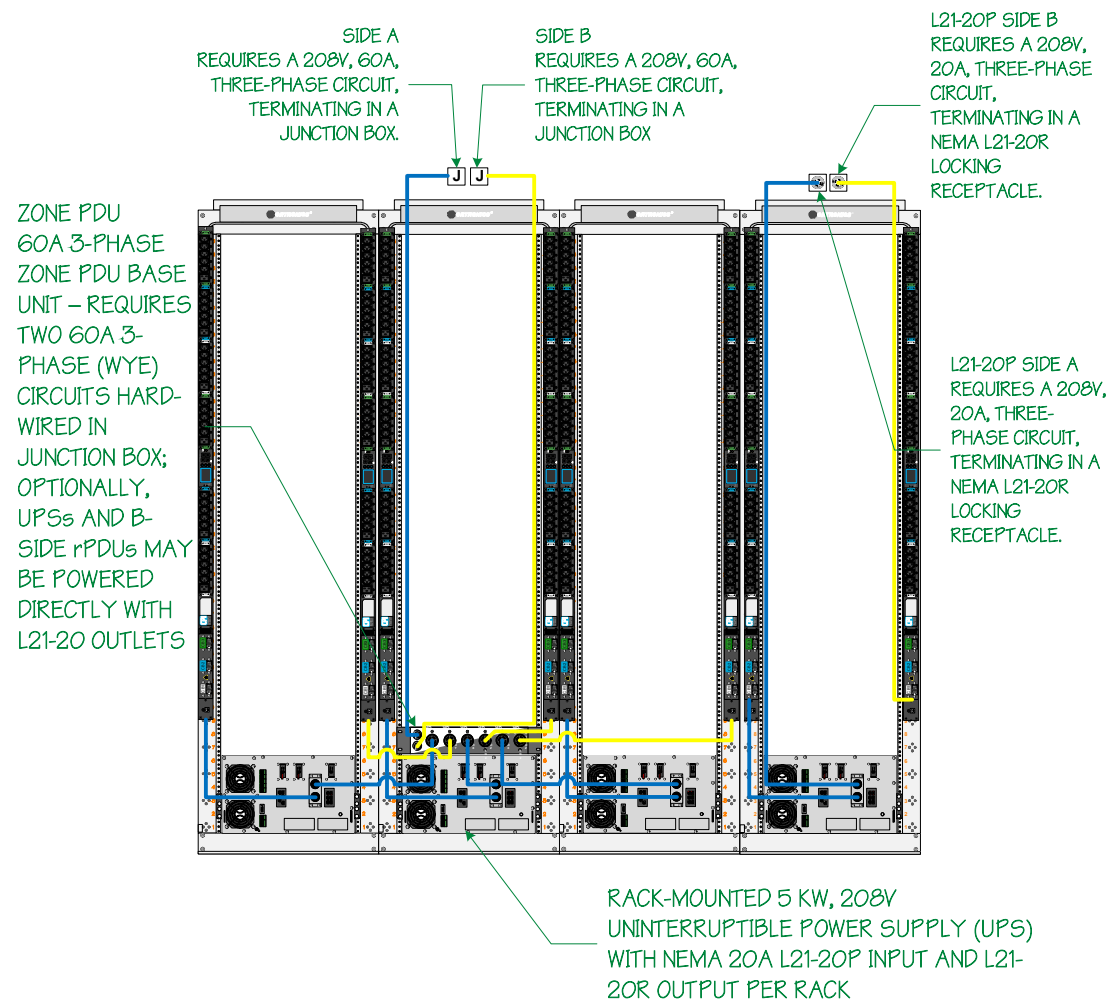
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SHEET TITLE

TYPICAL RACK POWER DISTRIBUTION

SHEET: 11 OF 20



ONE ZONE PDU
60A 3-PHASE ZONE PDU BASE UNIT –
REQUIRES TWO 60A 3-PHASE (WYE)
CIRCUITS HARD-WIRED IN JUNCTION BOX TO
SUPPORT THREE RACKS

REQUIRES TWO 20A 3-
PHASE (WYE) CIRCUITS
TERMINATING IN L21-20Rs

1 POWER ELEVATION AND SCHEMATIC FOR A FOUR RACK TR

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OFFICE OF INFORMATION AND TECHNOLOGY

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ENTERPRISE DATA CENTER INFRASTRUCTURE COLLABORATION TEAM

PROJECT:

CBOC INFORMATION TRANSPORT SYSTEMS SPECIFICATIONS

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POWER DISTRIBUTION (4 RACK TR)

SHEET: 13 OF 20

- 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 = FDP-RACK NAME-01 THROUGH 45. EXAMPLE: FDP-RK1-01 FOR THE PANEL IN RACK UNIT #1 RACK #1.
- FIBER DISTRIBUTION CASSETTE = FDC-RACK NAME-01 THROUGH 45.1 THROUGH 3. EXAMPLE: FDC-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 LABELING REQUIREMENTS

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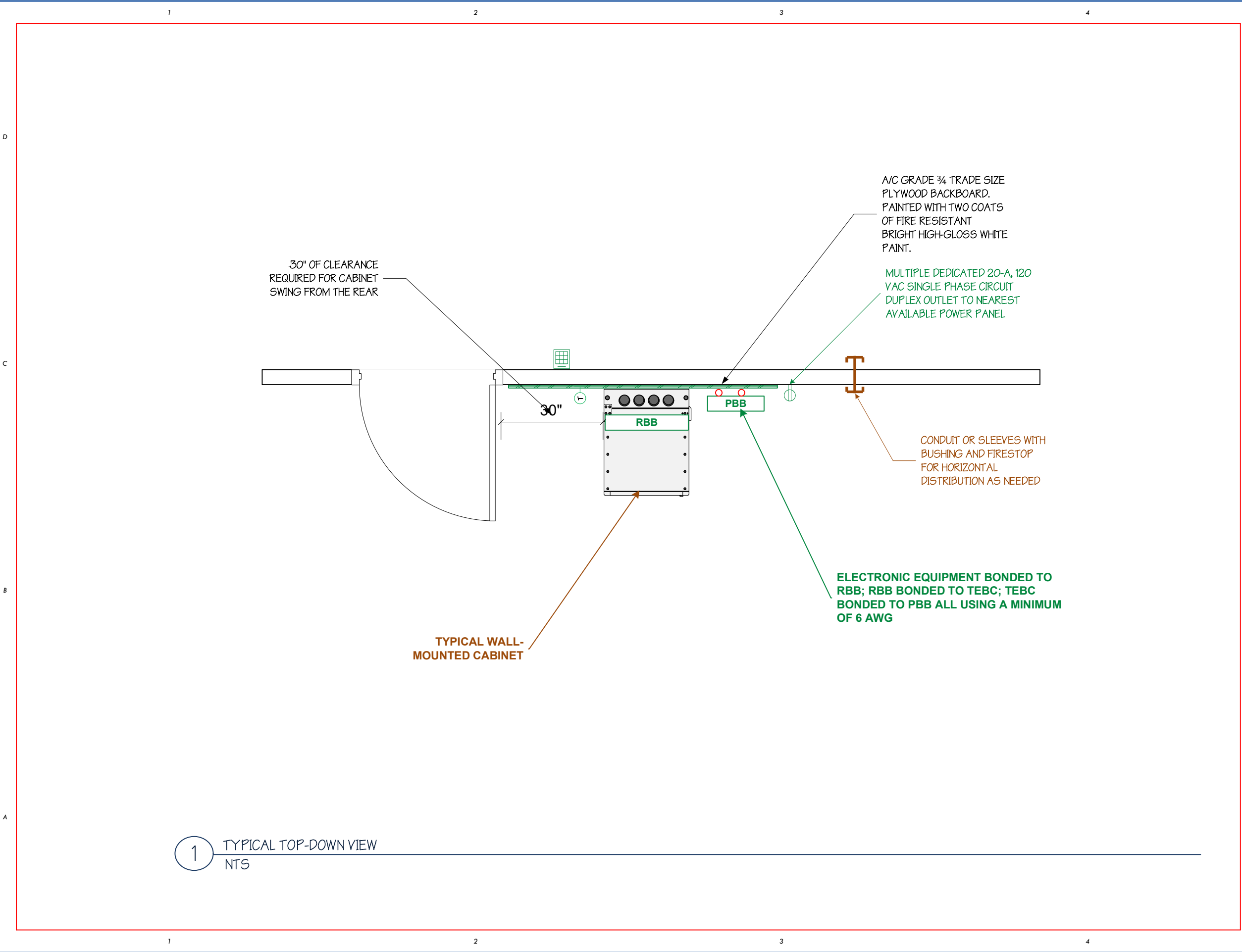
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SHEET TITLE

CBOC ITS NAMING STANDARDS

SHEET: 15 OF 20




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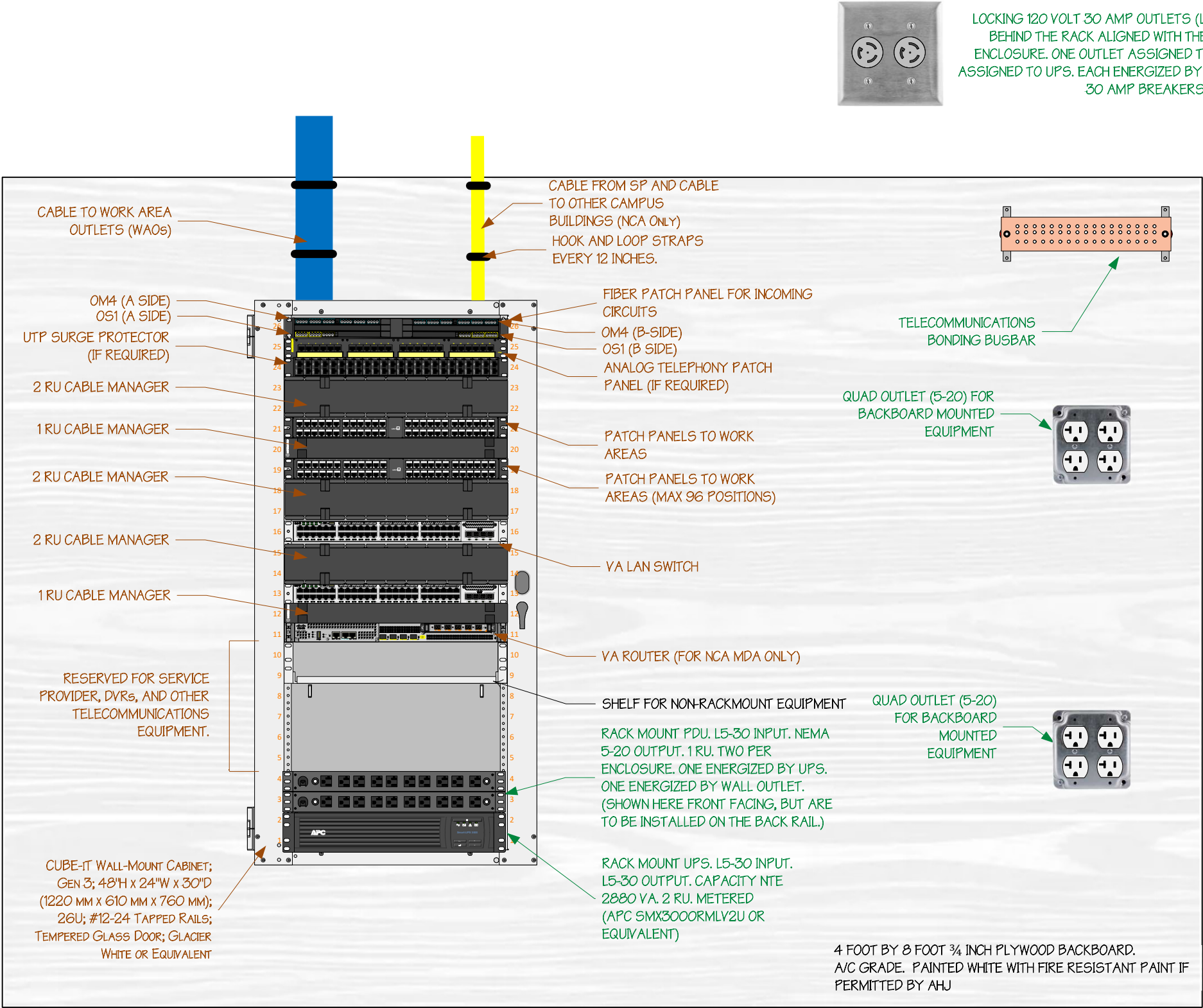
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SHEET TITLE

TELECOMMUNICATIONS ENCLOSURE (TOP VIEW)

SHEET: 16 OF 20



1 ELEVATION FOR TELECOMMUNICATIONS ENCLOSURE

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TELECOMMUNICATIONS ENCLOSURE (ELEVATION VIEW)

SHEET: 17 OF 20

