

**ABBREVIATIONS**

(D)	DEMOLISHED
(E)	EXISTING
(R)	RELOCATED
Ø	PHASE
A	AMPERE
AC	ABOVE COUNTER
AF	AMP FRAME (CIRCUIT BREAKER)
AI	AMPERE INTERRUPTING CAPACITY
AL	ALUMINUM
AMP	AMPERE
AP	WIRELESS ACCESS POINT
AT	AMP TRIP (CIRCUIT BREAKER OR FUSE)
ATS	AUTOMATIC TRANSFER SWITCH
AV	AUDIO-VISUAL
AWG	AMERICAN WIRE GAUGE
BAS	BUILDING AUTOMATION SYSTEM
BJ	BONDING JUMPER
BKR	BREAKER
BMS	BUILDING MANAGEMENT SYSTEM
C	CONDUIT
CATV	CABLE TELEVISION
CB	CIRCUIT BREAKER
CCTV	CLOSED CIRCUIT TELEVISION
CFCI	CONTRACTOR FURNISHED CONTRACTOR INSTALLED
CKT	CIRCUIT
CTL	CONTROL
CU	COPPER
DB	DECEBEL
DC	DIRECT CURRENT
DISC	DISCONNECT
DP	DISTRIBUTION PANELBOARD
DW	DISHWASHER
ECS	EMERGENCY COMMUNICATION SYSTEM
EGB	ELECTRICAL GROUNDING BUSBAR
EMD	ESTIMATED MAXIMUM DEMAND
EMGB	ELECTRICAL MAIN GROUNDING BUSBAR
EP	EXPLOSION PROOF
ER	EXISTING (TO BE) RELOCATED
ERMS	ENERGY REDUCTION MAINTENANCE SWITCH
EWC	ELECTRIC WATER COOLER
FA	FIRE ALARM
FAA	FIRE ALARM ANNUNCIATOR
FACP	FIRE ALARM CONTROL PANEL
FC	FOOT CANDLE
FLA	FULL LOAD AMPS
FS	FLOW SWITCH
FSD	FIRE SMOKE DAMPER
G	EQUIPMENT GROUNDING CONDUCTOR
GEN	GENERATOR
GFI, GFCI	GROUND FAULT CIRCUIT INTERRUPTER
GFPE	GROUND FAULT PROTECTION OF EQUIPMENT
GND	EQUIPMENT GROUNDING CONDUCTOR
HH	HANDHOLE
HQA	HAND-OFF-AUTOMATIC
HP	HORSE POWER
IC	INTERCOM
IG	ISOLATED GROUND
JB	JUNCTION BOX
KAIC	THOUSAND AMPERE INTERRUPTING CIRCUIT
KV	KILOVOLT
KVA	KILOVOLT AMPERES
KW	KILOWATT
LT	LIGHT
LTG	LIGHTING
MCA	MINIMUM CIRCUIT AMPACITY
MCB	MAIN CIRCUIT BREAKER
MCC	MOTOR CONTROL CENTER
MH	MANHOLE
MLO	MAIN LUGS ONLY
MOCP	MAXIMUM OVERCURRENT PROTECTION
MRTS	MOTOR RATED TOGGLE SWITCH
MSB	MAIN SWITCHBOARD
MTD	MOUNTED
MTG	MOUNTING
MTS	MAIN TRANSFER SWITCH
N	NEUTRAL
N.C.	NORMALLY CLOSED
N.O.	NORMALLY OPEN
NF	NON-FUSED
NL	NIGHT LIGHT
OFCI	OWNER FURNISHED CONTRACTOR INSTALLED
OS&Y	OUTSIDE SCREW AND YOKE
P	POLE(S)
PA	PUBLIC ADDRESS
PB	PULL BOX
PH	PHASE
PV	POST INDICATOR VALVE
PNL	PANEL
PWR	POWER
RCP	REFLECTED CEILING PLAN
RECPT	RECEPTACLE
REF	REFERENCE
RESP	RESPONSIVE
SCCR	SHORT CIRCUIT CURRENT RATING
SD	SMOKE DAMPER
SEC	SECONDARY
SFD	SURGE PROTECTION DEVICE
SWBD	SWITCHBOARD
TBB	TELECOMMUNICATIONS BONDING BACKBONE
TC	TIME CLOCK
TGB	TELECOMMUNICATIONS GROUNDING BUSBAR
TMGB	TELECOMMUNICATIONS MAIN GROUNDING BUSBAR
TO	TELECOMMUNICATIONS OUTLET
TR	TELECOMMUNICATIONS ROOM
TS	TAMPER SWITCH
TV	TELEVISION
UG	UNDERGROUND
UPS	UNINTERRUPTIBLE POWER SUPPLY
V	VOLT
VA	VOLT-AMPERE
VFD	VARIABLE FREQUENCY DRIVE
W	WIRE
WA	TELECOMMUNICATIONS WORK AREA
WG	WIRE GUARD
WP	WEATHER-PROOF (NEMA 3R)
XFMR	TRANSFORMER

**TELECOM SHEET INDEX**

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**GENERAL SHEET NOTES**

**GENERAL SITE PLAN NOTES**

1. ALL COMMUNICATIONS CONDUIT AND CABLES SHALL BE INSTALLED 36" (MINIMUM) BELOW FINISHED GRADE.
2. SEE ES1.1A FOR MORE INFORMATION.

**GENERAL DEVICE BOX NOTES**

1. SEE SYMBOLS LEGEND THIS SHEET FOR MOUNTING HEIGHTS UNLESS NOTED OTHERWISE ON DRAWINGS.
2. ALL MOUNTING HEIGHTS ARE TO CENTERLINE OF BOXES UNLESS NOTED OTHERWISE.
3. PROVIDE BOX EXTENDER FOR FLUSH INSTALLATION OF DEVICES LOCATED IN ARCHITECTURAL CASEWORK THAT IS FLUSH WITH ADJACENT WALL (SUCH AS RECEPTACLES FOR GARBAGE DISPOSERS).
4. FLOOR BOXES: OBTAIN OWNER APPROVAL OF ALL BOX LOCATIONS PRIOR TO ROUGH IN. PROVIDE DEVICE PLATES AT DEVICES AND BLANK PLATES AT ALL UNUSED COMPARTMENTS.
5. COORDINATE LOCATION OF DEVICE BOXES FOR SWITCHES, RECEPTACLES, AND SYSTEMS DEVICES WITH MARKERBOARDS. ADJUST BOX LOCATIONS TO AVOID MARKERBOARDS.
6. COORDINATE LOCATION OF DEVICE BOXES FOR SWITCHES, RECEPTACLES, AND SYSTEMS DEVICES WITH TACKBOARDS. ADJUST BOX LOCATIONS TO AVOID TACKBOARDS. PROVIDE BOX EXTENDER FOR A FLUSH INSTALLATION WHERE DEVICES MUST BE MOUNTED AT TACKBOARD/TACKWALL.
7. CEILING MOUNTED RECEPTACLES: AT SUSPENDED CEILINGS, ROUTE POWER TO RECEPTACLE VIA FLEXIBLE METALLIC CONDUIT WITH 6-FOOT SERVICE LOOP. FEED FMC FROM A JOCK RIGIDLY SUPPORTED A MAXIMUM OF 24-INCHES ABOVE SUSPENDED CEILING OR AT BOTTOM OF STRUCTURE ABOVE, WHICHEVER IS LOWER. LOCATE J-BOX DIRECTLY ABOVE RECEPTACLE AND SUPPORT VIA STRUCTURE, OR VIA THREAD ROD AND UNISTRUT HUNG FROM STRUCTURE ABOVE IN HIGH STRUCTURE APPLICATIONS.
8. DEVICES RECESSED IN MULLIONS: BACK BOXES TO BE RECESSED FOR FLUSH INSTALLATION OF DEVICE AND WALLPLATE. EXTEND CONCEALED CONDUIT IN MULLION UP TO WALL ABOVE AND STUB OUT ABOVE ACCESSIBLE CEILING. IN AREAS WITH NO CEILING, EXTEND CONDUIT TOWARDS CABLING SOURCE TO ABOVE NEAREST ACCESSIBLE CEILING.

**CAMERA LICENSING**

VIDEO ARCHIVER LICENSING					
DESCRIPTION	MANUF.	MODEL	FURNISHED / INSTALLED BY	UNIT OF MEASURE	NOTES
NVMS LICENSE ELITE	FLIR	LAT-NT-CHAN	CFOI	EA	LICENSE - SINGLE CAMERA SCENE CONNECTION FROM ENCODER (1) FOR EACH NON-PANO CAMERA
NVMS LICENSE 4I	FLIR	LAT-NT-CHAN-4I	CFOI	EA	LICENSE - PANORAMA CAMERA WITH (4) IMAGERS (ONE FOR EACH PANO CAMERA)
NVMS LICENSE DIRECT	FLIR	LAT-FD05	CFOI	EA	LICENSE - DIRECTORY FALL OVER (1) LICENSE TOTAL

**\*NOTE\***  
ALL NOTES ON THIS SHEET ARE APPLICABLE TO ALL OTHER SHEETS IN THIS SET.  
THE SYMBOLS AND ABBREVIATIONS SHOWN ON THIS SHEET MAY OR MAY NOT BE APPLICABLE IN THIS SET OF DRAWINGS.

**GENERAL SYSTEMS NOTES**

1. TELECOMMUNICATIONS OUTLETS: PROVIDE 4-11/16 SQUARE (2.25-INCH DEEP MINIMUM) WITH SINGLE-GANG PLASTER RING AND 1-1/4-INCH CONDUIT STUBBED INTO ACCESSIBLE SPACE ABOVE FINISHED CEILING.
2. MISCELLANEOUS LOW VOLTAGE OUTLETS (CALL STATIONS, HANDSETS, VOLUME CONTROL, MICROPHONE OUTLETS, SURFACE-MOUNT WALL SPEAKERS AND FIRE ALARM DEVICES): PROVIDE SINGLE-GANG BOX WITH 1-1/4-INCH CONDUIT STUBBED INTO ACCESSIBLE SPACE ABOVE FINISHED CEILING, UNLESS OTHERWISE NOTED. SEE AUDIO/VISUAL DRAWINGS FOR AV DEVICES.
3. INSULATED BUSHINGS: PROVIDE BUSHINGS ON ALL CONDUIT STUB UPS, INCLUDING BUT NOT LIMITED TO, OUTLETS FOR TELECOMMUNICATIONS, FIRE ALARM SECURITY, ACCESS CONTROL, MASS NOTIFICATION, PUBLIC ADDRESS, ALL OTHER LOW VOLTAGE INTERCOMMUNICATIONS AND UNUSED STUB-UPS OR STUB-UPS INDICATED FOR FUTURE USE.
4. FLOOR BOXES CONTAINING TELECOMMUNICATIONS OUTLETS: FOR EACH LOW-VOLTAGE COMPARTMENT, ROUTE 1-1/2-INCH CONDUIT WITH PULL STRING UNDERFLOOR, UP NEAREST WALL, AND STUB INTO ACCESSIBLE SPACE ABOVE FINISHED CEILING. LABEL CONDUIT END 'FLOOR BOX'.
5. SLEEVES FOR LOW VOLTAGE CABLES: PROVIDE 2-INCH SLEEVES UNLESS NOTED OTHERWISE. COORDINATE WITH PATH OF DUCTWORK AND CEILING TO ENSURE ACCESSIBILITY. EXTEND SLEEVES AS REQUIRED. INSTALL ALL SLEEVES 4-INCHES ABOVE HIGHER CEILING OF TWO ADJACENT SPACES. REFER TO ROOM FINISH SCHEDULES AND REFLECTED CEILING PLANS FOR CEILING HEIGHTS. STUB SLEEVES INTO JOIST SPACE OF FINISHED ROOMS WITH EXPOSED STRUCTURE. PROVIDE INSULATED BUSHINGS ON BOTH ENDS OF ALL SLEEVES, INCLUDING UNUSED SLEEVES. PROVIDE GROUT OR ESCUTCHEONS TO SECURE SLEEVES TO WALL. PROVIDE FIRE-RATED SLEEVES AT ALL FIRE-RATED WALLS.
6. PROVIDE ADDITIONAL CONDUIT, BOXES, CONDUCTORS AND OVERCURRENT PROTECTION FOR 120-VOLT BRANCH CIRCUITS NOT SPECIFICALLY COVERED UNDER DIVISION 26 WORK, BUT REQUIRED TO COMPLETE DIVISION 08 AND 28 WORK. DEVICES SHALL INCLUDE, BUT NOT BE LIMITED TO, POWER SUPPLIES FOR DOOR HARDWARE, ACCESS CONTROL, FIRE ALARM AND VIDEO SURVEILLANCE.
7. PROVIDE WATERFALL DROP-OUTS AT ALL CABLE TRAY LOCATIONS ABOVE RUNWAYS, WALL/FLOOR MOUNTED RACKS, AND EQUIPMENT ENCLOSURES.
8. AUDIO VISUAL (AV) SYSTEMS: PROVIDE RECESSED BOXES, CONDUIT AND PULL STRINGS FOR ALL SYSTEM COMPONENTS.
9. COORDINATE DEVICES AND PATHWAYS ON TELECOM DRAWINGS WITH AUDIO/VISUAL DRAWINGS AND NOTIFY DESIGNER OF ANY CONFLICTS IN WRITING.
10. PROVIDE SURFACE MOUNT ENCLOSURE AND BAFFLE FOR ALL SPEAKERS IN FINISHED SPACES WITH NO CEILINGS (EXPOSED STRUCTURE).
11. UTILIZE SLEEVES AND FIRE RATED SLEEVES AT RATED WALLS PROVIDED UNDER DIVISION 26 FOR INSTALLATION OF ALL LOW VOLTAGE CABLING. FOLLOW INDUSTRY STANDARDS TO MAINTAIN 40% FILL REQUIREMENTS IN ALL SLEEVES (SUPERSEDES NEC - DO NOT FILL SLEEVES TO CAPACITY). PROVIDE ADDITIONAL SLEEVES MEETING DIVISION 26 REQUIREMENTS AS REQUIRED.
12. SYSTEM PANEL LOCATIONS: AUXILIARY SYSTEM PANELS, POWER SUPPLIES OR OTHER EQUIPMENT ENCLOSURES SHALL BE LOCATED IN THE MDF UNLESS NOTED OTHERWISE. IF DRAWINGS DO NOT DEPICT LOCATIONS FOR AUXILIARY COMPONENTS, CONSULT OWNER OR A/E FOR APPROVED LOCATIONS PRIOR TO EQUIPMENT INSTALL.

**TELECOM SYMBOLS**

**COMMUNICATIONS**

- TELECOMMUNICATIONS OUTLETS:** MOUNT 18-INCHES AFF. UNO. AND WITHIN 8-INCHES OF ADJACENT RECEPTACLE WHERE DENOTED 'AC'; MOUNT ABOVE COUNTER WHERE DENOTED 'C'; MOUNT FLUSH IN CEILING.
- LOW VOLTAGE DEVICES:**
- ⊞ SPEAKER, WALL PROVIDE SINGLE-GANG JUNCTION BOX.
  - ⊞ SPEAKER, CEILING
  - ⊞ MICROPHONE OUTLET, CEILING PROVIDE SINGLE-GANG JUNCTION BOX.
- ◁X TELECOMMUNICATIONS OUTLET PROVIDE JACKS UNDER A COMMON FACEPLATE. X= QTY OF DATA JACKS SEE T6.07 FOR MORE INFORMATION.
- ◁R TELECOMMUNICATIONS OUTLET - ROUGH-IN PROVIDE BLANK FACEPLATE ON OUTLET BOX AND HOMERUN CONDUIT TO CLOSEST CONSOLIDATION POINT. SEE T6.07 FOR MORE INFORMATION.
- ⊞X TELECOMMUNICATIONS OUTLET MOUNTED IN FLOOR BOX
- ⊞X WALL-MOUNTED CONSOLIDATION POINT. PROVIDE HINGED TYPE BOX WITH (2) 24 PORT PATCH PANELS INSTALLED. SEE 2TB.1 FOR MORE INFORMATION. X=NUMBER OF CATEGORY CABLES TERMINATED AT PATCH PANEL WITHIN CP.
- AP WIRELESS ACCESS POINT SEE T6.07 FOR MORE INFORMATION.
- ◁DSP TELECOMMUNICATIONS OUTLET - DISPLAY SEE T6.07 FOR MORE INFORMATION. REFER TO AV DRAWINGS FOR SPECIFIC REQUIREMENTS.

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**TELECOM SYMBOLS, ABBREVIATIONS & NOTES**

SCALE: 1/8" = 1'-0"

SHEET NUMBER:  
**T0.1**

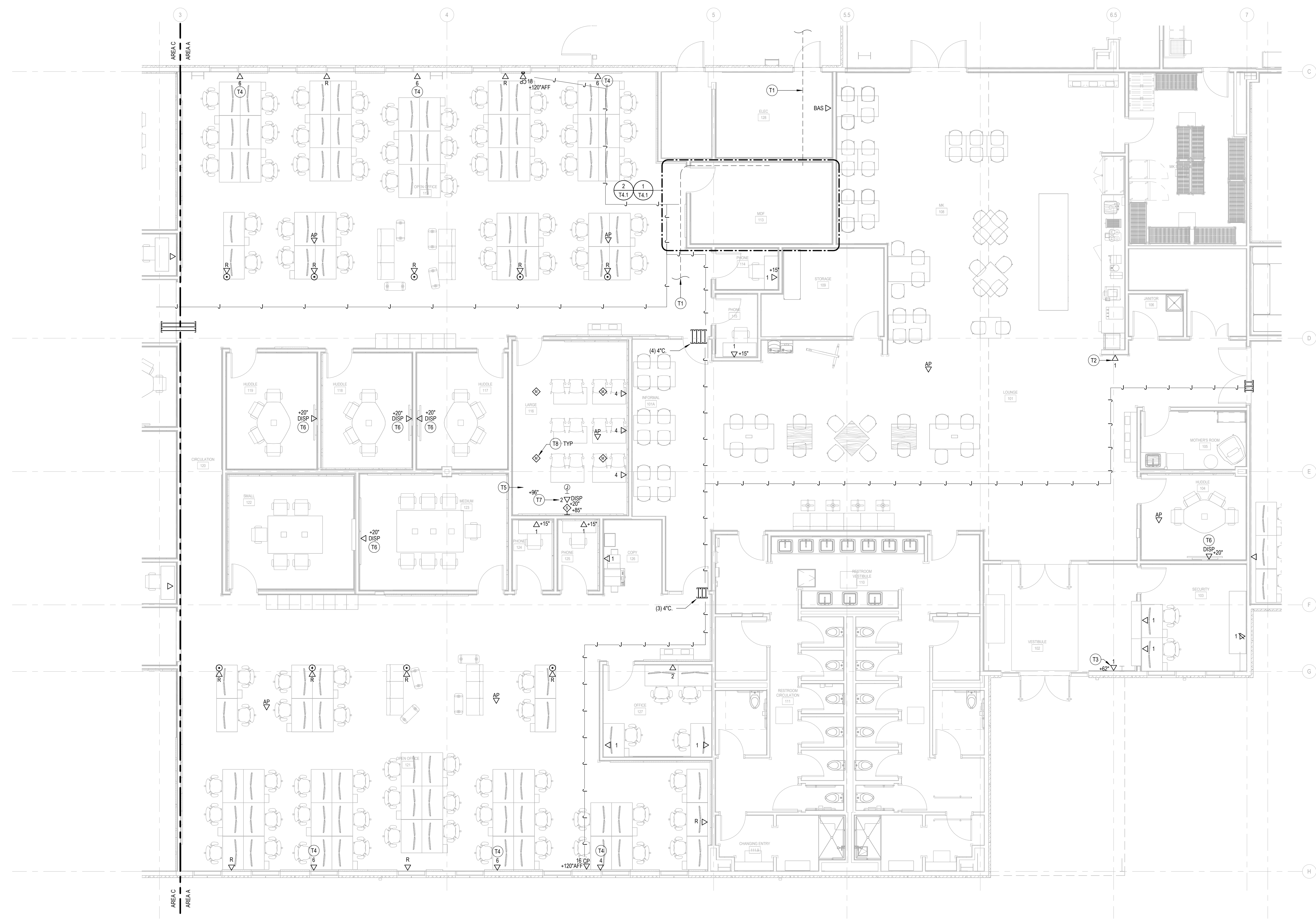
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**GENERAL NOTES**

- A EC SHALL COORDINATE ANY AND ALL NECESSARY INSTALLATION OF JUNCTION BOXES AND CONDUIT WITH LOW VOLTAGE, SECURITY, AV INSTALLERS PRIOR TO ROUGH-IN.
- B ALL CONDUIT PENETRATIONS THROUGH FIRE-RATED BARRIERS TO BE FILLED WITH FIRE-STOPPING MATERIAL TO MAINTAIN RATING OF ASSOCIATED BARRIER.
- C CONTRACTOR TO PROVIDE DEDICATED 120V/20A CIRCUIT TO DUCT MOUNTED SMOKE DETECTOR FOR EQUIPMENT SUPPLYING MORE THAN 2,000CFM OF AIRFLOW. COORDINATE WITH MECHANICAL CONTRACTOR FOR EXACT LOCATION AND REQUIREMENTS.

**SHEET NOTES**

- T1 (8) 2" SCHEDULE 80 PVC CONDUITS FROM MDF TO SITE FOR SERVICE ENTRY AND SITE CAMERAS. COORDINATE MEET-UP POINTS AND ROUTING WITH OWNER INFRASTRUCTURE TEAM.
- T2 PROVIDE DATA FOR KEYBOX DEVICE. CONFIRM ROUGH IN HEIGHT WITH MANUFACTURER'S INSTALLATION REQUIREMENTS.
- T3 PROVIDE DATA FOR BIOMETRIC SECURITY DEVICE AND TERMINATE ON USTAR PANEL. CONFIRM ROUGH IN HEIGHT WITH MANUFACTURER'S INSTALLATION REQUIREMENTS.
- T4 PROVIDE CABLING FROM DATA OUTLET TO CONSIDERATION POINT IN THIS SPACE.
- T5 PROVIDE SINGLE GANG JUNCTION BOX FOR IR EMITTER. SEE AV DRAWINGS FOR EXACT REQUIREMENTS.
- T6 PROVIDE PATHWAYS FROM DISPLAY WALL TO CONFERENCE TABLE PER AV DRAWINGS.
- T7 PROVIDE (2) CATEGORY CABLES/JACKS AT THIS LOCATION.
- T8 SPEAKERS AND MICROPHONE OUTLETS IN THIS SPACE SHOWN AS REFERENCE FOR COORDINATION. SEE AV DRAWINGS FOR EXACT REQUIREMENTS.



**SPECIAL SYSTEMS PLAN - AREA A**  
SCALE: 3/16" = 1'-0"

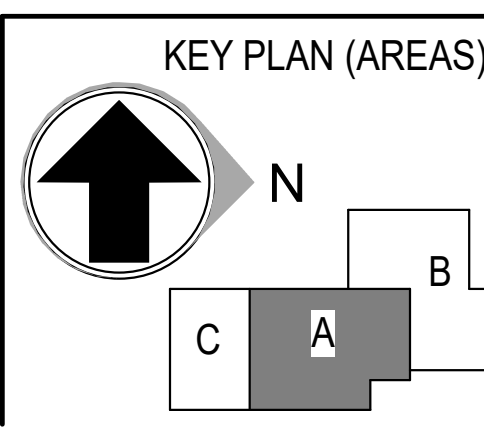
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**TELECOM PLAN - AREA A**  
SCALE: 3/16" = 1'-0"

SHEET NUMBER:  
**T2.11**  
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- B ALL CONDUIT PENETRATIONS THROUGH FIRE-RATED BARRIERS TO BE FILLED WITH FIRE-STOPPING MATERIAL TO MAINTAIN RATING OF ASSOCIATED BARRIER.
- C CONTRACTOR TO PROVIDE DEDICATED 120V/20A CIRCUIT TO DUCT MOUNTED SMOKE DETECTOR FOR EQUIPMENT SUPPLYING MORE THAN 2,000CFM OF AIRFLOW. COORDINATE WITH MECHANICAL CONTRACTOR FOR EXACT LOCATION AND REQUIREMENTS.

**SHEET NOTES**

- T4 PROVIDE CABLING FROM DATA OUTLET TO CONSOLIDATION POINT IN THIS SPACE.
- T5 PROVIDE SINGLE GANG JUNCTION BOX FOR IR EMITTER. SEE AV DRAWINGS FOR EXACT REQUIREMENTS.
- T6 PROVIDE PATHWAYS FROM DISPLAY WALL TO CONFERENCE TABLE PER AV DRAWINGS. SPEAKERS AND MICROPHONE OUTLETS IN THIS SPACE SHOWN AS REFERENCE FOR COORDINATION. SEE AV DRAWINGS FOR EXACT REQUIREMENTS.
- T10 PROVIDE DOUBLE GANG BOX WITH GROMMET PLATE AND (2) 1-1/2" CONDUITS TO CEILING CABLE PATH CONTAINMENT FOR SPEAKER AND LECTERN AV CABLING. SEE T401 FOR MORE INFORMATION.
- T11 PROVIDE SINGLE GANG AV JUNCTION BOX. PROVIDE SINGLE GANG AV JUNCTION BOX. COORDINATE PATHWAYS WITH AV DRAWINGS.
- T12 DATA OUTLET FOR TABLE CONNECTION AT TDESIGN TABLE SHELF (HTTPS://WWW.AMAZON.COM/TXDESIGN-ADHESIVE-TABLET-SMARTPHONE-READER(P/B07H41581)REF=SR\_1\_07TH+1). COORDINATE EXACT REQUIREMENTS WITH AV DRAWINGS.
- T13 WIRELESS ACCESS POINT TO BE WALL MOUNTED AT 12'-0" AFF. PROVIDE WITH SLEEVE TO EXTERIOR WALL TO ALLOW FOR MOUNTING OF EXTERIOR EXTERNAL ANTENNA. ARUBA-WAP-ANT-48.



**SPECIAL SYSTEMS PLAN - AREA B**  
SCALE: 3/16" = 1'-0"



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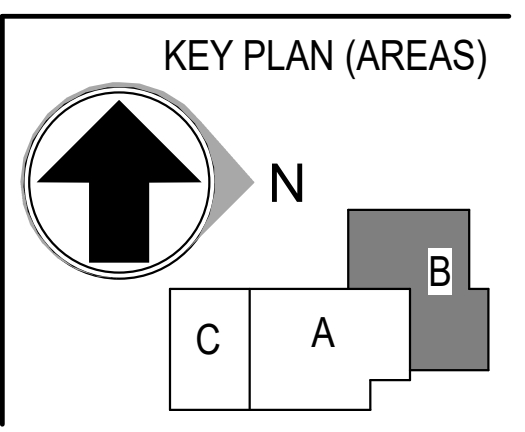


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**TELECOM PLAN - AREA B (4.0)**  
SCALE: 3/16" = 1'-0"

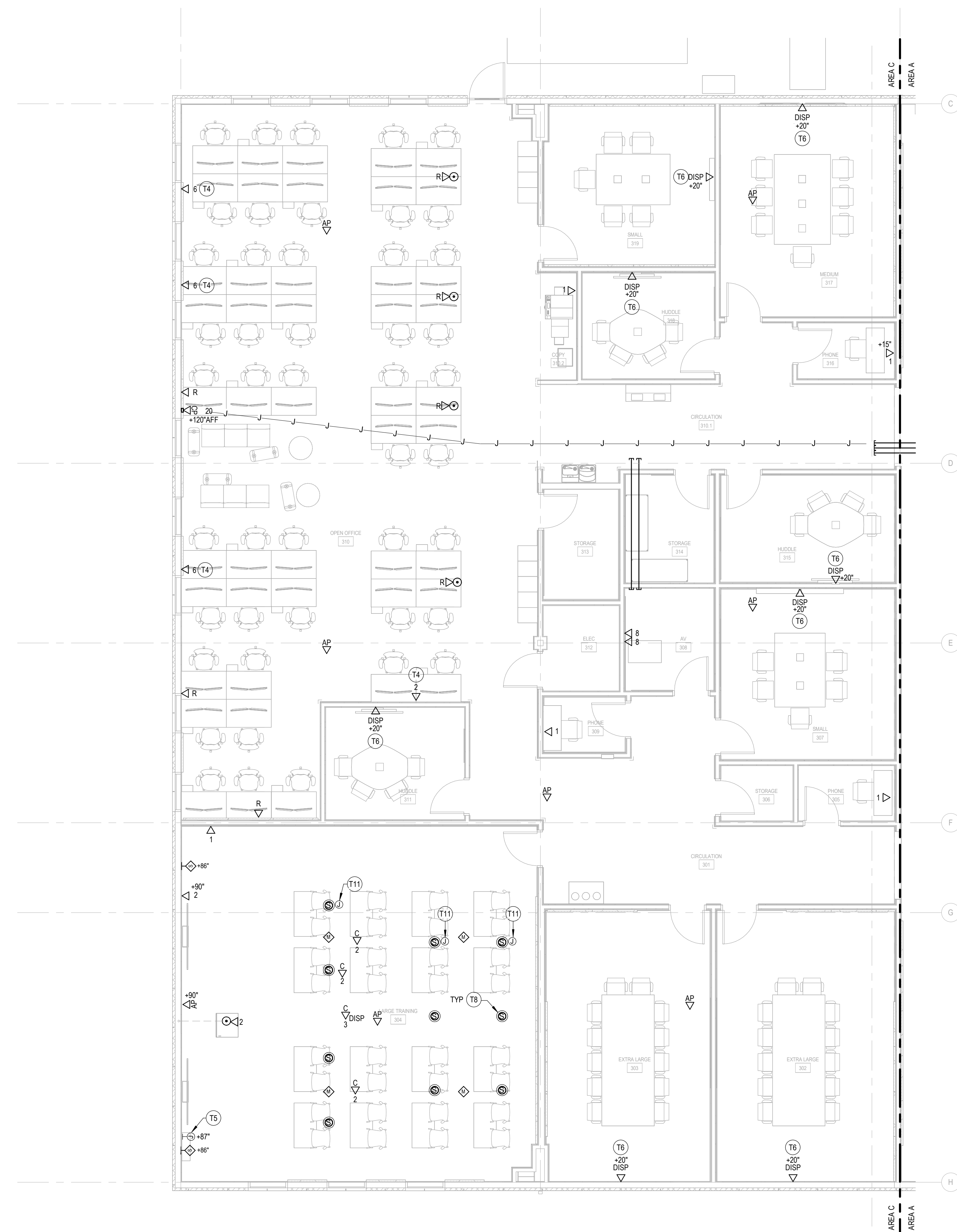
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- B ALL CONDUIT PENETRATIONS THROUGH FIRE-RATED BARRIERS TO BE FILLED WITH FIRE-STOPPING MATERIAL TO MAINTAIN RATING OF ASSOCIATED BARRIER.
- C CONTRACTOR TO PROVIDE DEDICATED 120V/20A CIRCUIT TO DUCT MOUNTED SMOKE DETECTOR FOR EQUIPMENT SUPPLYING MORE THAN 2,000CFM OF AIRFLOW. COORDINATE WITH MECHANICAL CONTRACTOR FOR EXACT LOCATION AND REQUIREMENTS.

**SHEET NOTES**

- T4 PROVIDE CABLING FROM DATA OUTLET TO CONSOLIDATION POINT IN THIS SPACE.
- T5 PROVIDE SINGLE GANG JUNCTION BOX FOR IR EMITTER. SEE AV DRAWINGS FOR EXACT REQUIREMENTS.
- T6 PROVIDE PATHWAYS FROM DISPLAY WALL TO CONFERENCE TABLE PER AV DRAWINGS.
- T8 PROVIDE PATHWAYS FROM DISPLAY WALL TO SPEAKERS AND MICROPHONE OUTLETS IN THIS SPACE SHOWN AS REFERENCE FOR COORDINATION. SEE AV DRAWINGS FOR EXACT REQUIREMENTS.
- T11 PROVIDE SINGLE GANG AV JUNCTION BOX. PROVIDE SINGLE GANG AV JUNCTION BOX. COORDINATE PATHWAYS WITH AV DRAWINGS.



**SPECIAL SYSTEMS PLAN - AREA C**  
SCALE: 3/16" = 1'-0"

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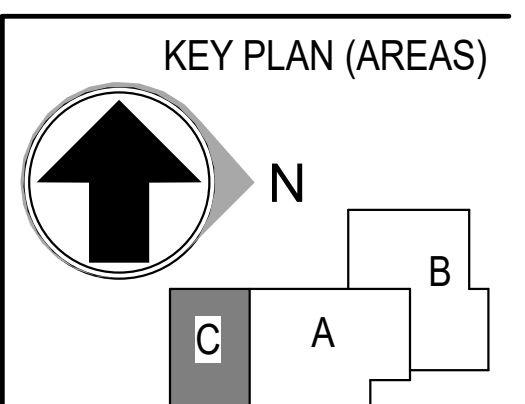


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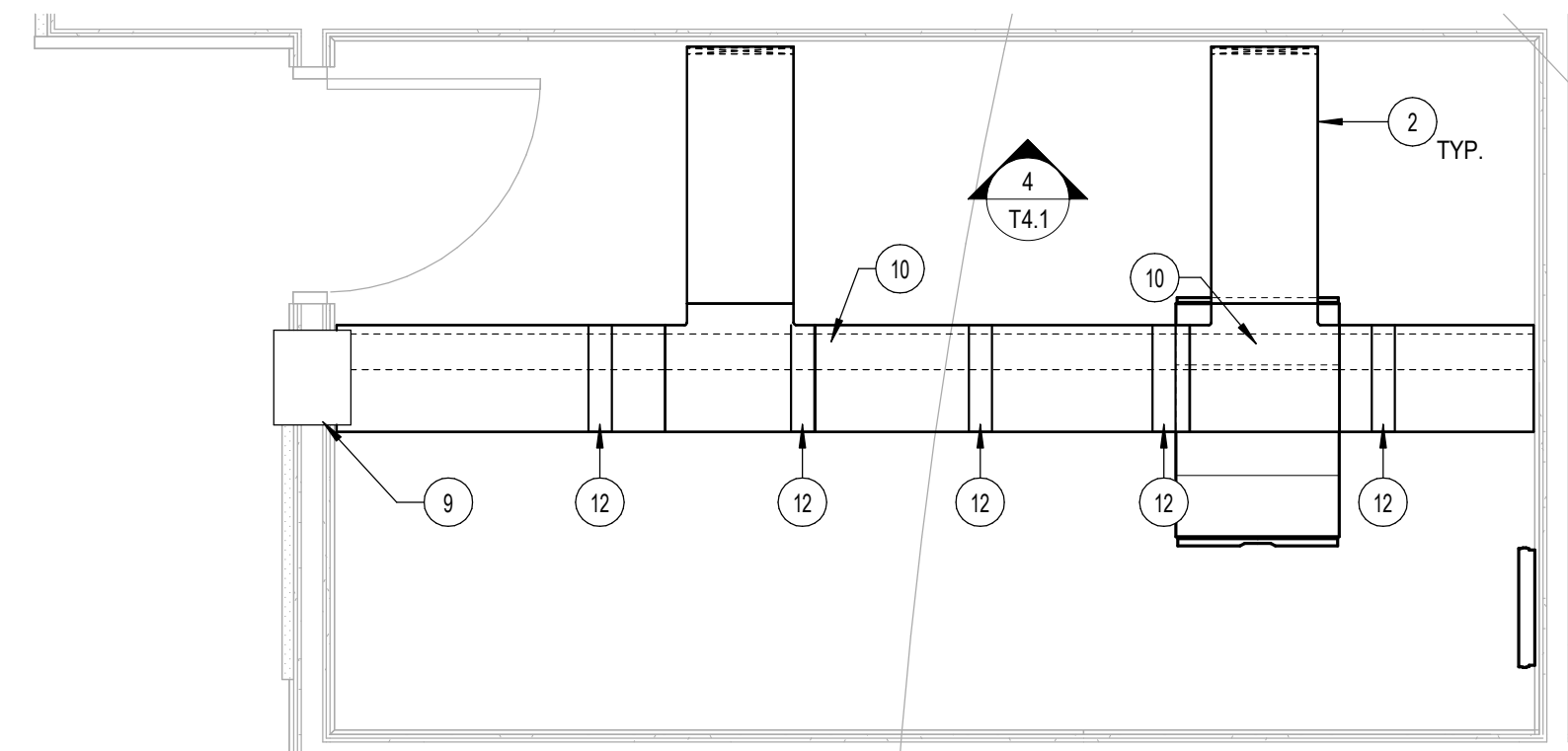
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**TELECOM PLAN - AREA C**  
  
SCALE: 3/16" = 1'-0"

SHEET NUMBER:  
**T2.33**  
  
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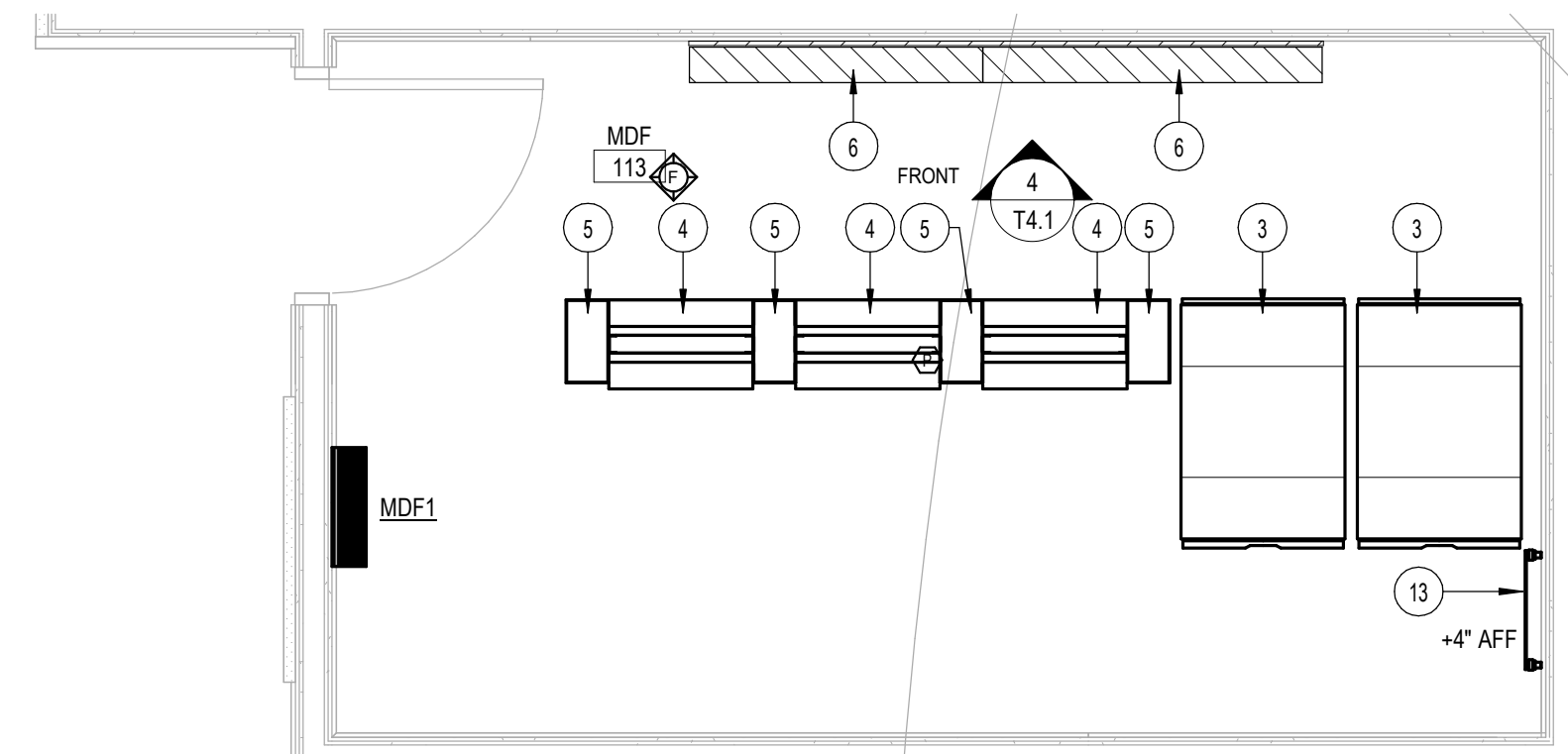
**GENERAL NOTES**

- A. SEE SHEET E4.1 FOR POWER REQUIREMENTS WITHIN MDF.
- B. SEE DRAWING T2-002 FOR RACK ELEVATIONS.



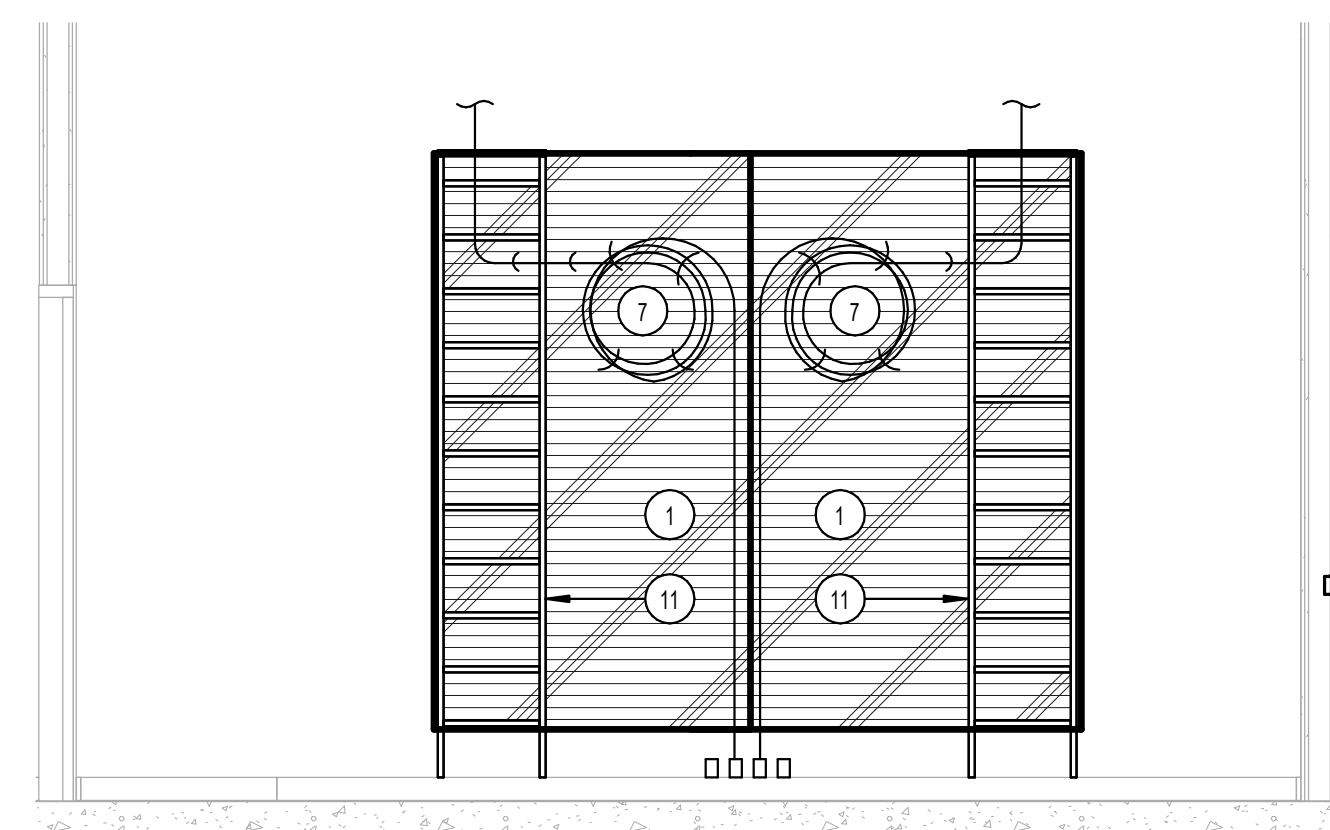
**SYSTEMS PLAN - ENLARGED MDF 113**

SCALE: 3/8" = 1'-0"



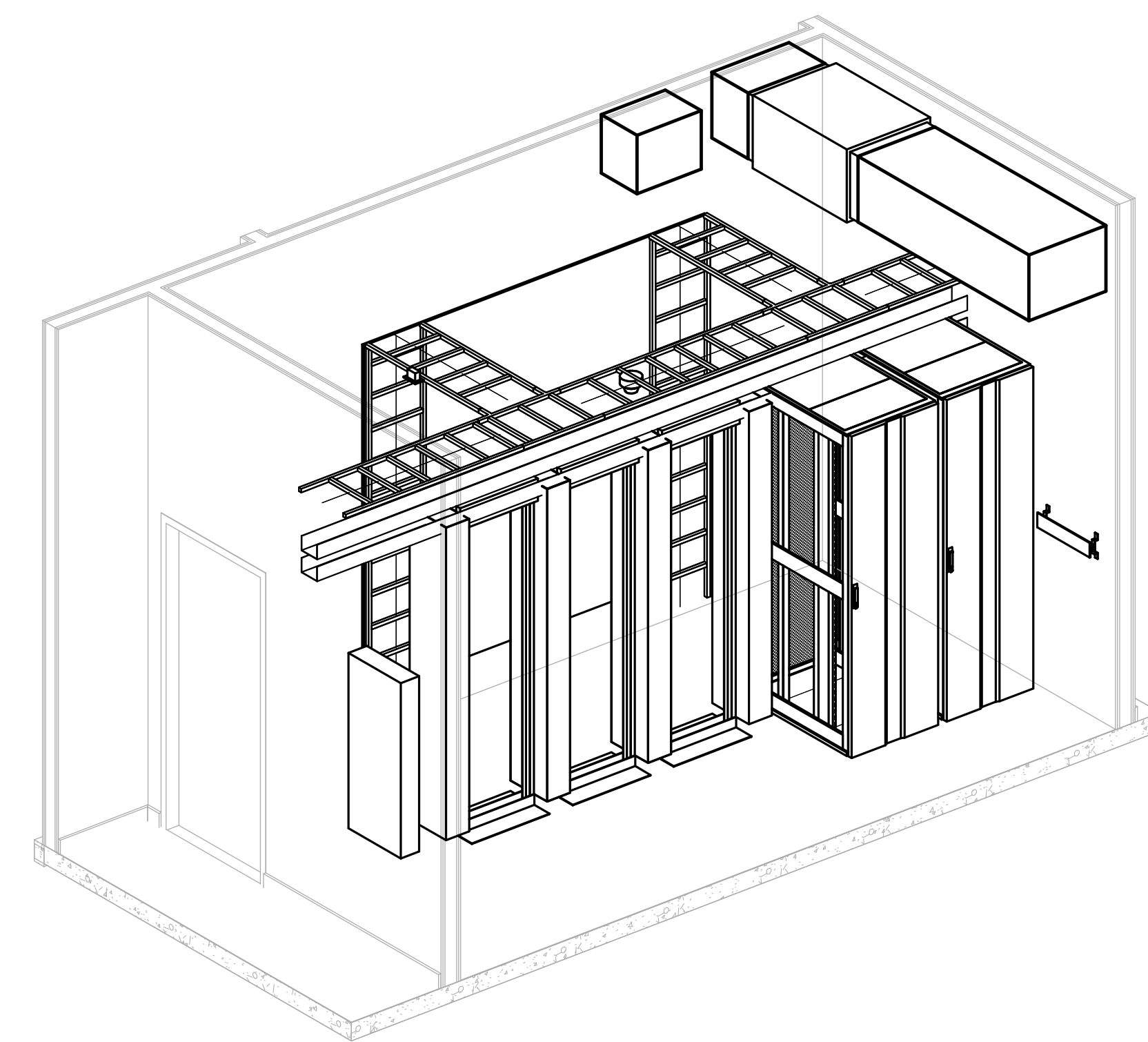
**SYSTEMS PLAN - ENLARGED MDF 113**

SCALE: 3/8" = 1'-0"



**MDF WALL ELEVATION - NORTH**

SCALE: 3/8" = 1'-0"



**MDF ISOMETRIC VIEW**

SCALE:

**SHEET NOTES**

- 1. PROVIDE FIRE TREATED PLYWOOD BACKBOARD AS SHOWN.
- 2. PROVIDE 18" X 1.5" LADDER CABLE RUNWAY AT 9' AFF.
- 3. PROVIDE LOCKABLE TELECOMMUNICATIONS CABINET WITH INTEGRATED VERTICAL CABLE MANAGEMENT.
- 4. PROVIDE TWO-POST TELECOMMUNICATIONS RACK.
- 5. PROVIDE 8" WIDE VERTICAL CABLE MANAGER.
- 6. WALL SPACE RESERVED FOR SERVICE ENTRY TO THE BUILDING.
- 7. WALL SPACE RESERVED FOR FIBER SERVICE LOOPS.
- 8. NOT USED.
- 9. PROVIDE (4) EZ PATH 44- SLEEVES.
- 10. PROVIDE 6" WIDE PLASTIC FIBER TROUGH AT 7'-10" AFF. PROVIDE WATERFALL DROP FROM TROUGH TO EACH RACK. CONFIRM FINAL MOUNTING HEIGHT AND LOCATION WITH OWNER PRIOR TO INSTALLATION.
- 11. VERTICAL LADDER CABLE RUNWAY.
- 12. PROVIDE CABLE WATERFALLS TO RACKS.
- 13. PRIMARY BONDING BUSBAR.

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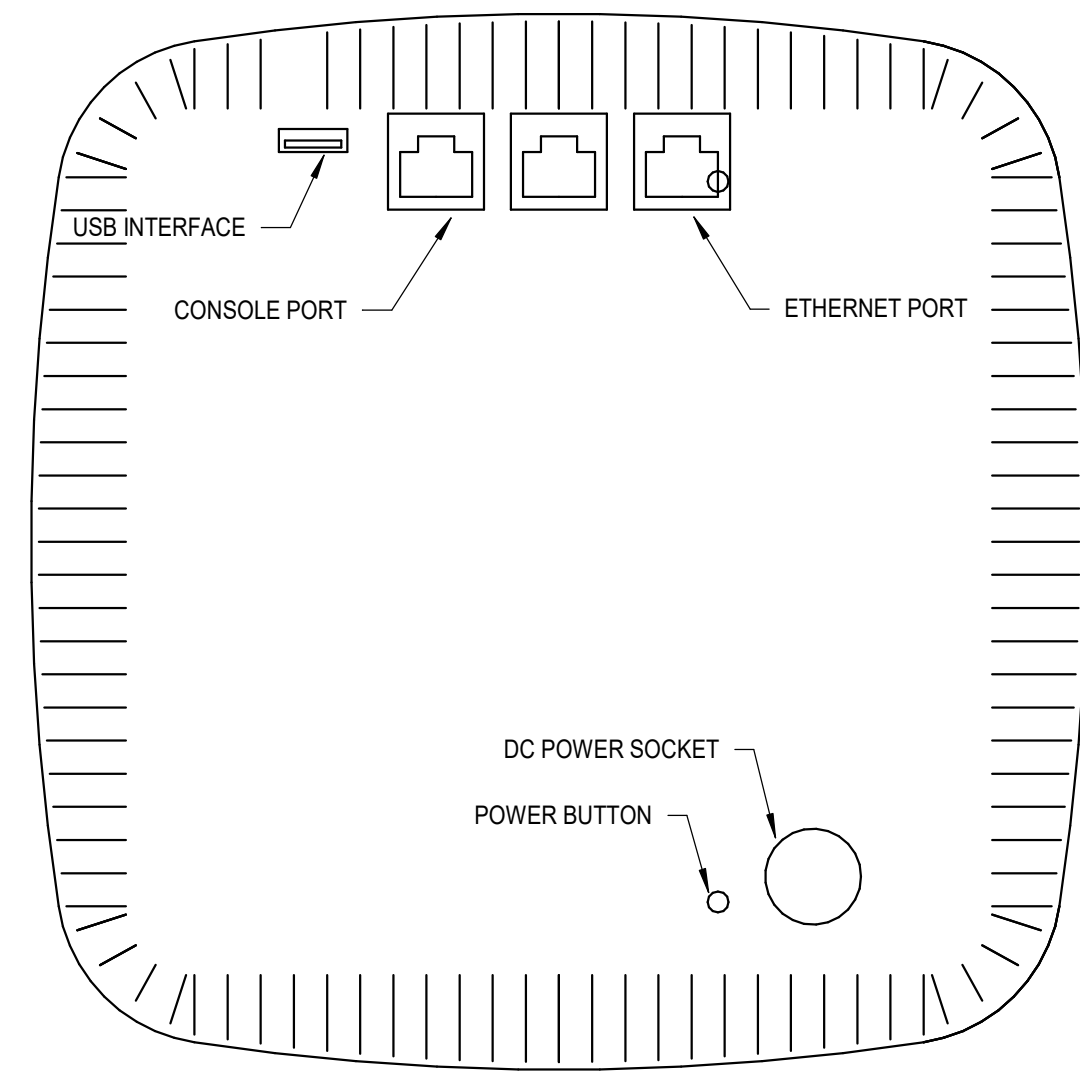
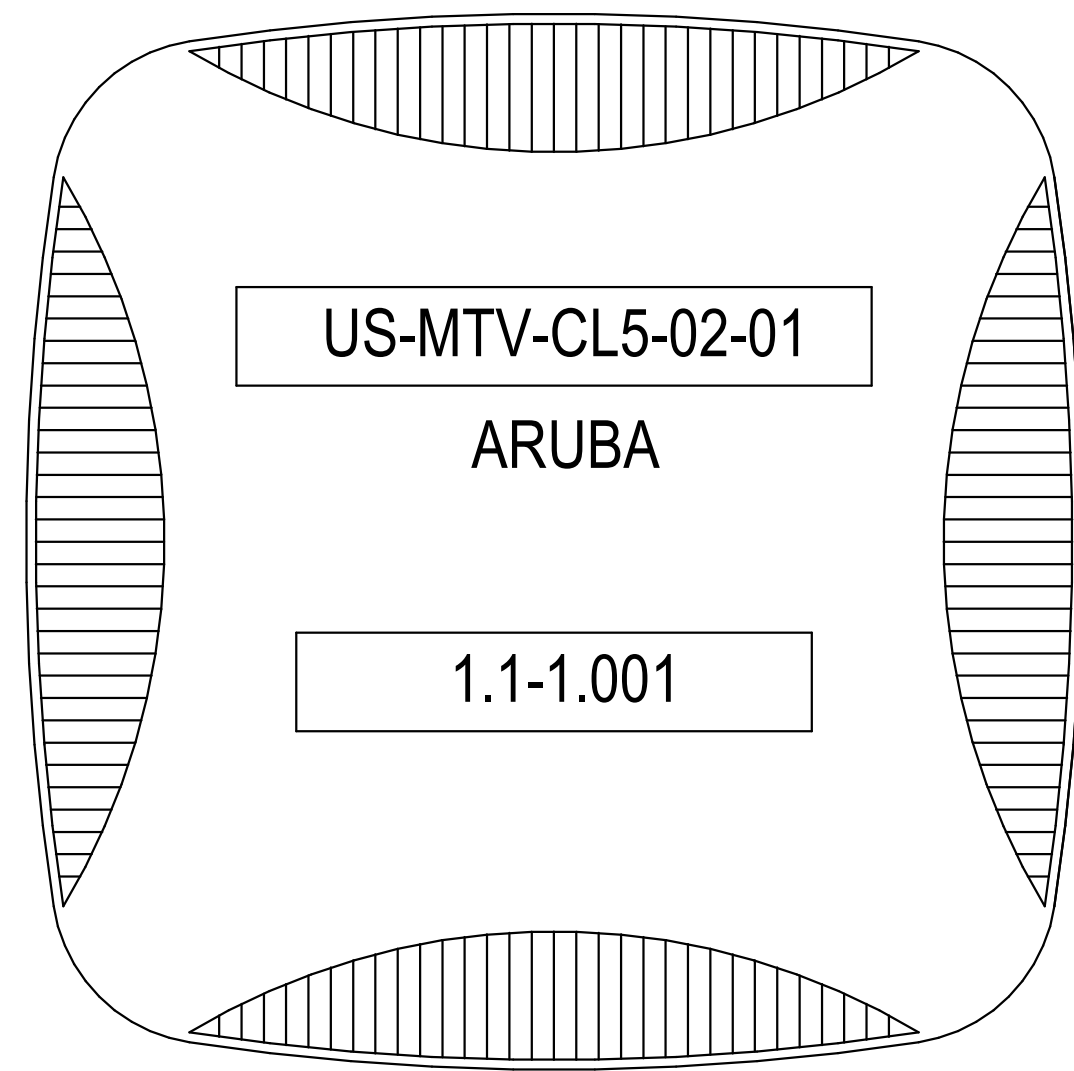
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Author  
APPRVD:  
Approver

**CLY-HUB**  
PROJECT ADDRESS:  
TULSA COUNTY, OK  
PROJ. NO. 10438332

**TELECOM ENLARGED PLANS**  
SCALE: 3/8" = 1'-0"

SHEET NUMBER:  
**T4.1**  
PHASE: ISSUE FOR CONSTRUCTION - HUB





1 WIRELESS ACCESS POINT LABELLING GUIDE  
T6.2 NO SCALE

### 1 CODES FOR SBP HUB1

DCPMG Project Code : SBP HUB 1  
Metro Code : IAD  
POP Code: POP## : IAD-SBP HUB1  
REWS CODE : US-IAD-SBP HUB1

NOTE:  
DCPMG PROJECT CODE IS USED FOR DRAWING SETS.  
ALL INFRASTRUCTURE LABELS SHOULD USE NETOPS CODES.  
CODES SHOULD BE CONFIRMED WITH OWNER REPRESENTATIVE  
AT START OF PROJECT

### 2 CABLE VAULT

First field is the METRO code;  
Second field is the cable vault number.

## IAD-CV120

Label Type: Surface Marker or Post.  
See Spec 27 05 53 For More Info

Example: IAD, Cable Vault # 120

### 3 VAULT MANHOLE COVER

Top field is Cable Vault Label

Below Vault Label is a Directional Arrow.

Adjacent to Arrow list Connecting Cable Vault and Approximate Distance To Vault in Feet Or Meters.

Placard shall Be Oriented So Connecting Vaults Are Aligned.

When There Are No Vaults Connecting On a Side, Use Label N/A.

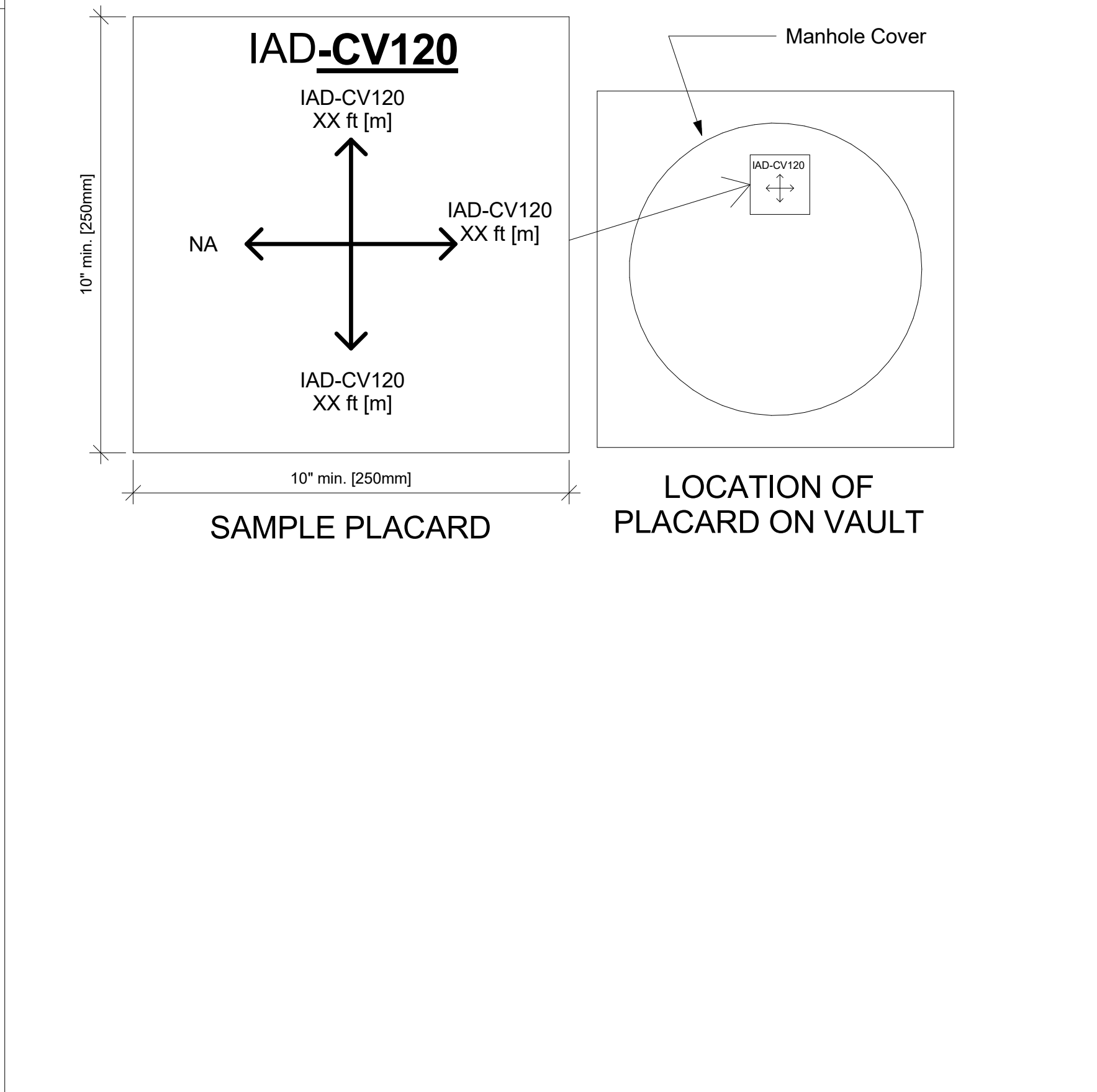
Label Type: Engraved Metal Placard .  
Mechanically fastened or Adhered To Manhole.  
See Spec 27 05 53 For More Info

### 2.5 EXTERIOR PULLBOX CONNECTING TO CABLE VAULT

First field is the METRO code;  
Second field is the cable vault number pullbox connects to .

## IAD-JB120

Label Type: Engraved or embossed metal.  
See Spec 27 05 53 For More Info.



### 4 UNDERGROUND CONDUIT PATH MARKERS

Place within five feet [1.52m] of each cable route.

Label Type: Surface Marker or Post.  
See Spec 27 05 53 For More Info

72HRS BEFORE DIGGING  
US CALL: 1-800-340-1239  
EU CALL: ###-###-#####

### 5 CABLE VAULT TO CABLE VAULT (HDPE CONDUIT)

Both lines: First field is the METRO code ; second field is the cable vault number; third field is the conduit sequence number.

Example: The first conduit between cable vaults 120 and 370.

Label Type: See Spec 27 05 53 For More Info

### 6 CABLE VAULT PLACARDS

Mount Placards At Interior Vault Walls Labeling each Incoming HDPE Conduit.

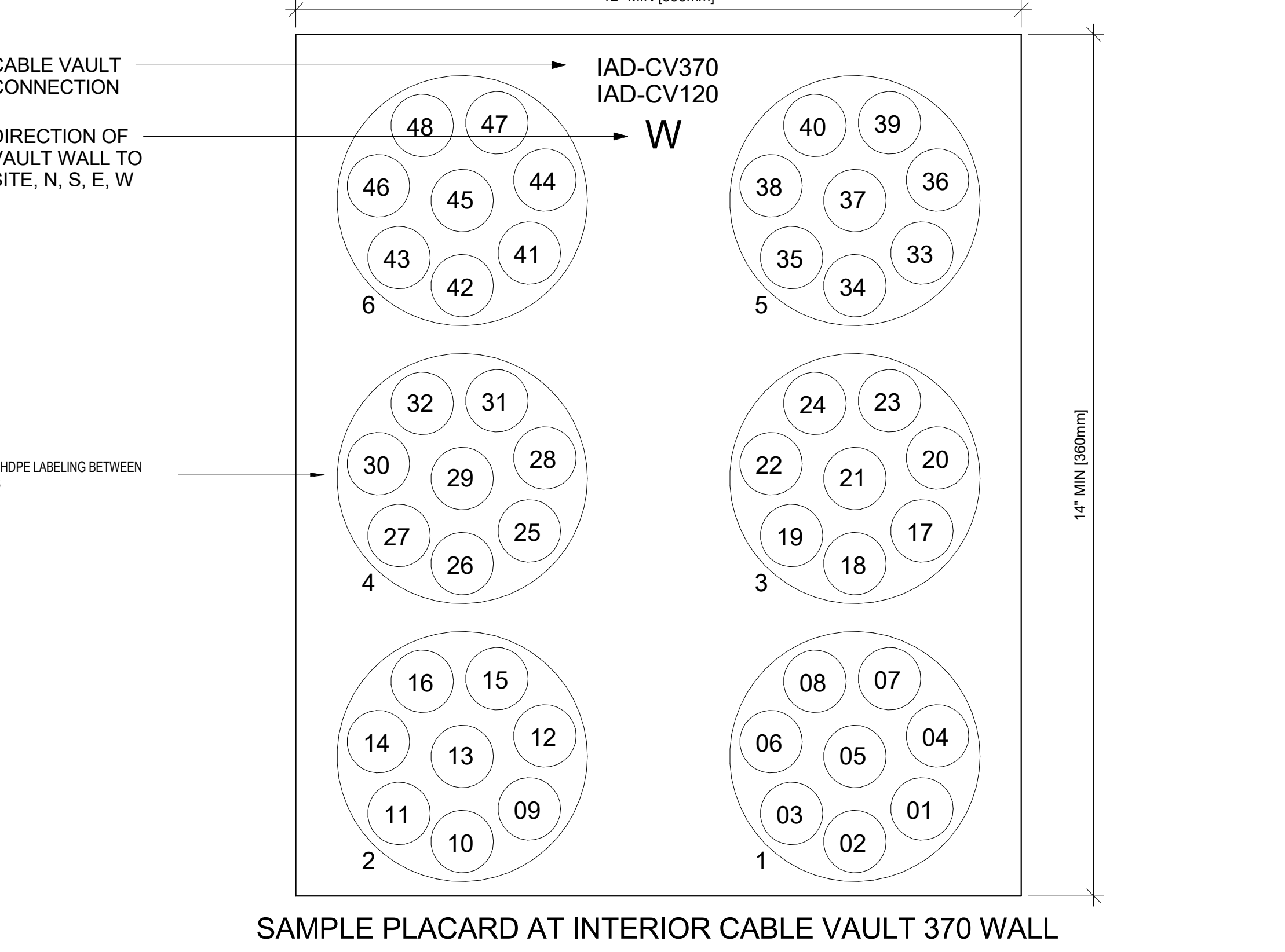
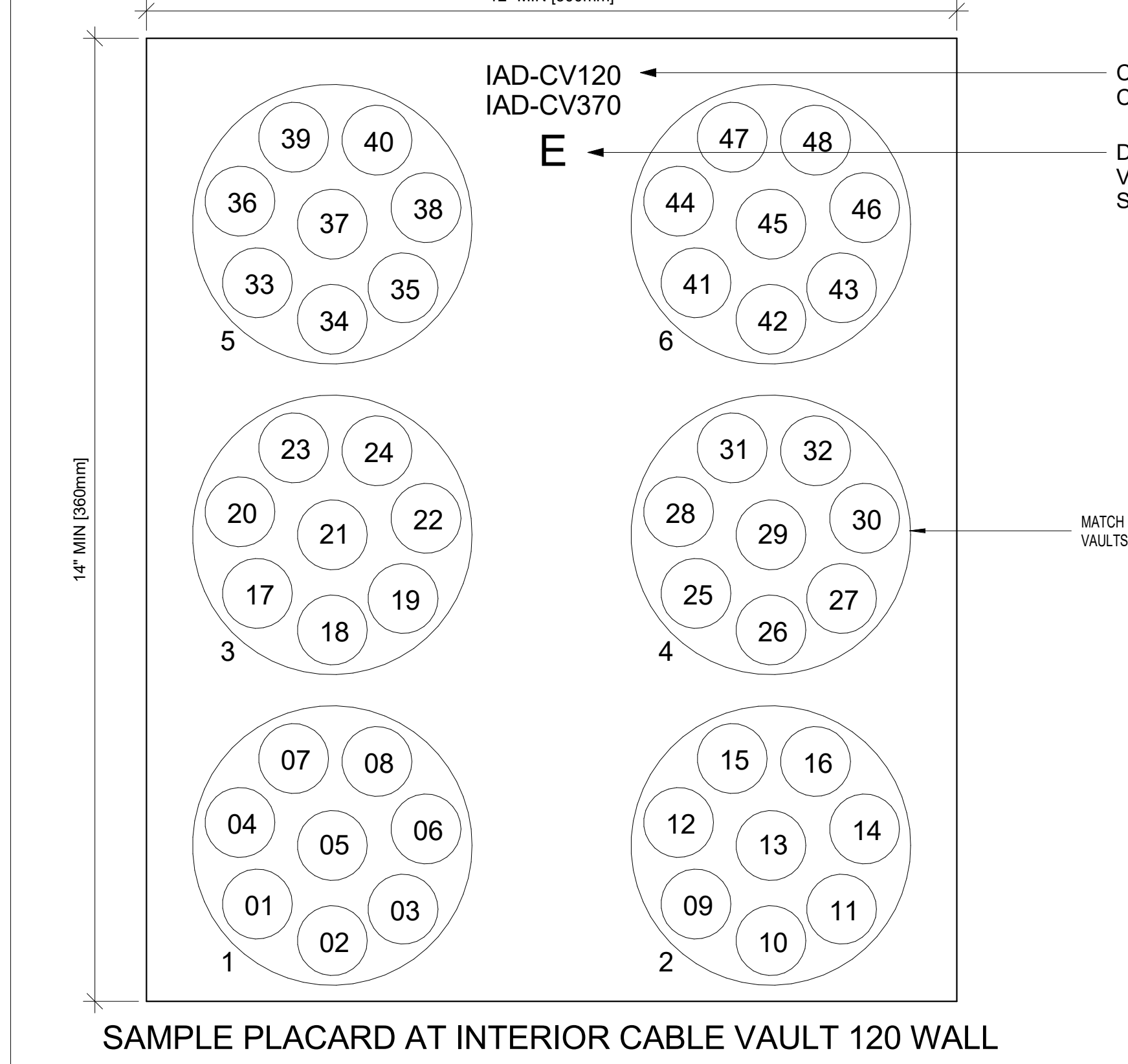
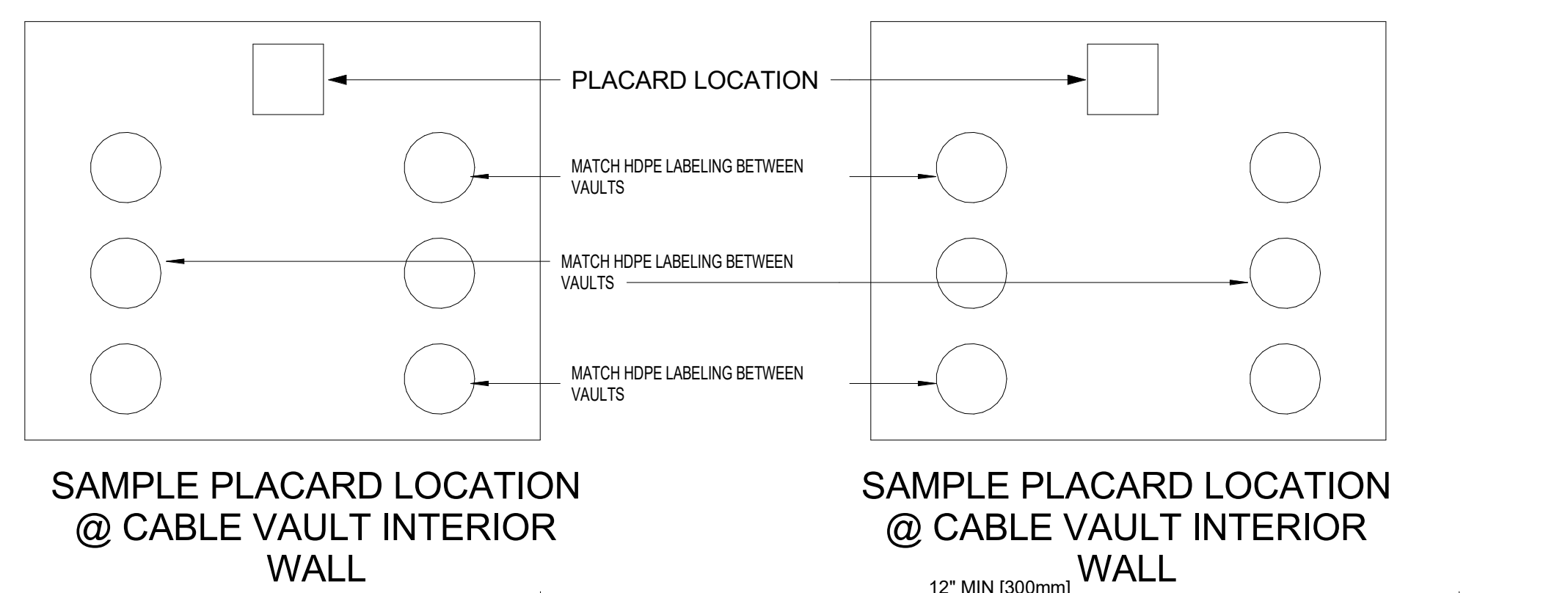
Placards Shall List Any Connecting Vaults At Specific Wall With Each Connecting Conduit Label.

Each Conduit Number Shall Be Labeled Per Label #5 Or Label #13 Depending On Where Vault Routes To.

Start HDPE Labeling From Bottom Corner Of Cable Vault.  
Conduit Labeling Should Match Labeling At Connecting Cable Vaults.

NOTE: PLACARD FORMAT AND CONFIGURATION VARIES DEPENDING ON INCOMING CONDUIT CONFIGURATION. SAMPLE SHOWN ONLY FOR REFERENCE

Label Type: Engraved Metal Placard .  
Mechanically fastened or Adhered Interior Of Cable Vault.  
See Spec 27 05 53 For More Info



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PROJ. NO. 10438332

TELECOM DETAILS

SCALE: 12" = 1'-0"

SHEET NUMBER:  
**T6.2**

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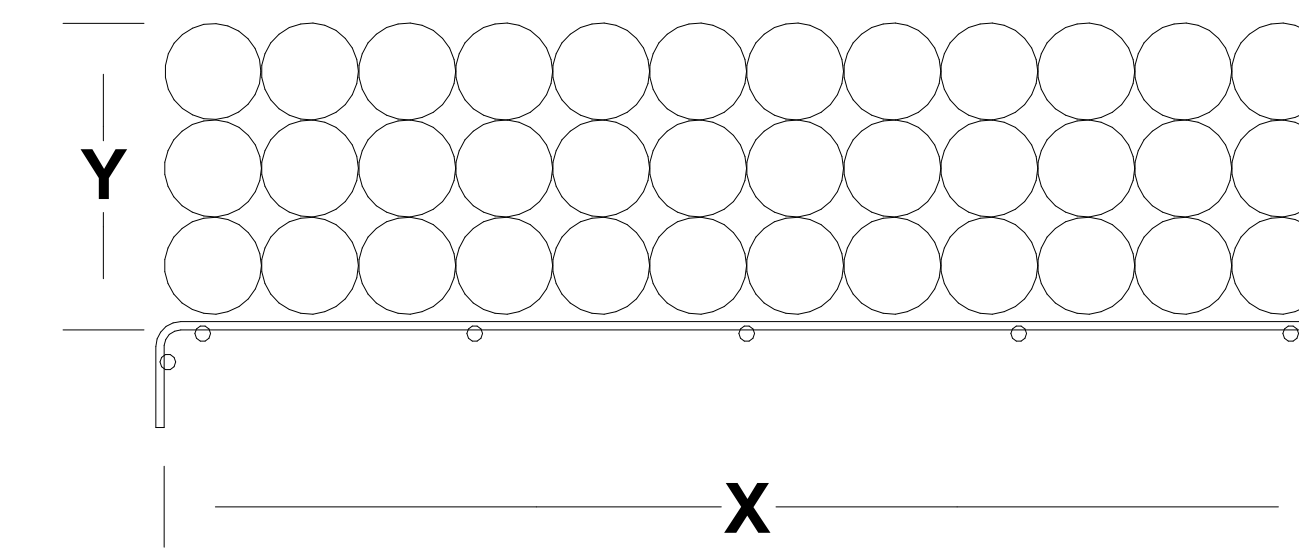
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CATEGORY CABLE CONDUIT FILL CHART

No. of cable at 40% conduit fill based on trade size of the conduit (inches)

Cable Manufacturer	Type	O.D.	Conduit Size								
			3/4"	1"	1-1/4"	1-1/2"	2"	2-1/2"	3"	3-1/2"	4"
Non-Plenum			Category 6								
Panduit	4 pr UTP	0.225	4	8	12	18	32	49	71	97	126
General Cable	4 pr UTP	0.200	6	10	16	23	40	63	90	123	160
			Category 6A								
Panduit	4 pr UTP	0.310	2	4	7	9	17	26	37	51	67
General Cable	4 pr UTP	0.330	2	4	6	8	15	23	33	45	59
Plenum			Category 6								
Panduit	4 pr UTP	0.205	5	10	15	21	38	59	86	117	152
General Cable	4 pr UTP	0.200	6	10	16	23	40	63	90	123	160
			Category 6A								
Panduit	4 pr UTP	0.300	3	4	7	10	18	28	40	54	71
General Cable	4 pr UTP	0.320	2	4	6	9	16	24	35	48	63

WYR-GRID CABLE TRAY FILL CHART (PANDUIT)



X (in.)	Y (in.)	Cable Fill (50% Fill) **	
		# of CAT 6 plenum cables ** dia. 0.22" (5.6 mm)	# of CAT 6 plenum cables ** dia. 0.22" (5.6 mm)
12.2	2	321	637
	4	642	1273
	6	963	1910
18.2	2	479	794
	4	958	1589
	6	1436	2383

\*\* Published Load & Fill chart is based on Panduit Wyr-Grid Overhead Cable Tray product. The above cable diameters represent the nominal Panduit cable diameter per performance level.

\*\* Cable tray fill capacity is based on NEC allowable fill of 50%. The NEC rule requires that the cable cross-sectional areas together may not exceed 50% of the tray area (width x depth = fill). TIA standards recommend up to 40% fill ratio. Loads shown in the chart will not be exceeded at 50% fill.

DUAL SIDED VERTICAL WIRE MANAGEMENT (PANDUIT)

Part Number	60% Capacity Channel		40% Capacity Channel		RU Capacity	
	Channel Area (in <sup>2</sup> )	Cable Capacity	Channel Area (in <sup>2</sup> )	Cable Capacity	Total	
		Cat 6 (0.240)		Cat 6 (0.240)		
PEV6	64.8	531	46.2	357	3 rows of 2 RU	6
PEV8	83.4	733	65	501	3 rows of 3 RU	9
PEV12	147	1147	102	789	3 rows of 6 RU (6 with limited depth)	12/18

DUAL SIDED DEEP VERTICAL WIRE MANAGEMENT (PANDUIT)

Part Number	Front Channel with Spool		Front Channel without Spool		Rear Channel	
	Channel Area (in <sup>2</sup> )	Cable Capacity	Channel Area (in <sup>2</sup> )	Cable Capacity	Channel Area (in <sup>2</sup> )	Cable Capacity
		Cat 6 (0.240)		Cat 6 (0.240)		Cat 6 (0.240)
PRV6*	28.22	-	37.8	292	27.6	213
PRV8*	44.68	345	54.3	419	39	301
PRV12*	77.6	600	87.2	674	61.7	543

Dual sided vertical cable managers. Capacities are based on a fill rate of 35% to accommodate proper cable routing techniques. For comparison, multiply by 1.5 for a fill rate of 50%. The above cable diameters represents the nominal Panduit cable diameter per performance level.

HORIZONTAL WIRE MANAGEMENT (PANDUIT)

Part Number	Category 6A-SD (.240")	Category 6A (.300")	Category 6 (.240")	Fiber (3mm)	Rack Space
PEHF2	143	92	143	592	2U
PEHF3	259	166	259	1072	3U
PEHF4	357	240	375	1551	4U

Maximum cable count (40% fill). The above cable diameters represents the nominal Panduit cable diameter per performance level.

REFERENCE:  
FILL RATIO STANDARD TDMM 10TH EDITION  
CHAPTER 4 (4-7) TIA/EIA 569-A 6.3.3.2

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APPRVD:  
Approver

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PROJECT ADDRESS:  
TULSA COUNTY, OK

PROJ. NO. 10438332

TELECOM DETAILS

SCALE: 12" = 1'-0"

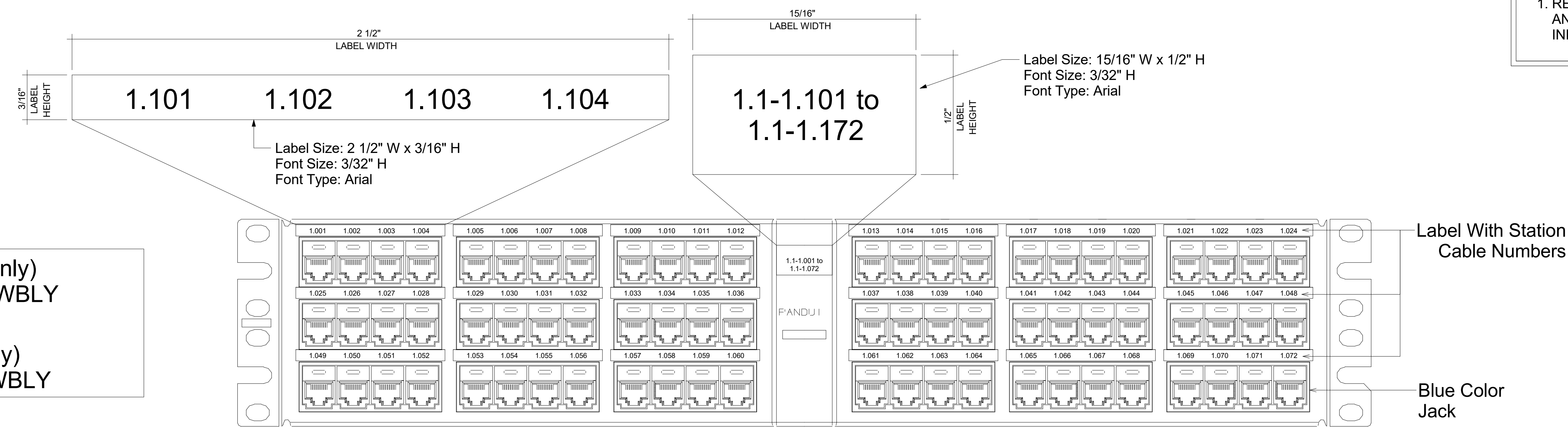
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**T6.3**

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**GENERAL NOTES:**

1. RED COLOR IS RESERVED FOR FIRE ALARM CABLING AND SHALL NOT BE USED WITHIN THE CORP DATA INFRASTRUCTURE.

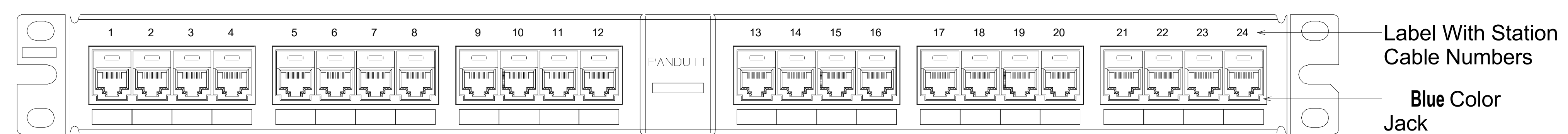


(2RU, Angled, 72 Data Only)  
Panduit part # CPPA72FMWBLY  
Alternate:  
(2RU, Flat, 72 Data Only)  
Panduit part # CPP72FMWBLY

**1 CATREDUCE DATA STATION CABLING PATCH PANEL (USED FOR DESKS AND VOIP PHONES)**

SCALE: Not To Scale

(1RU, Angled, 24 Data Only)  
Panduit part # CPPA24FMWBLY  
Alternate:  
(1RU, Flat, 24 Data Only)  
Panduit part # CPP24FMWBLY  
Alternate:  
(2RU, Angled, 72 Data Only)  
Panduit part # CPPA72FMWBLY  
Alternate:  
(2RU, Flat, 72 Data Only)  
Panduit part # CPP72FMWBLY



**2 INFRASTRUCTURE (4 PAIRS PER PORT) PATCH PANEL (USED FOR AP, GVC AND PRINTERS)**

SCALE: Not To Scale

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PROJ. NO. 10438332

**TELECOM DETAILS**

SCALE: 12" = 1'-0"

SHEET NUMBER:  
**T6.4**

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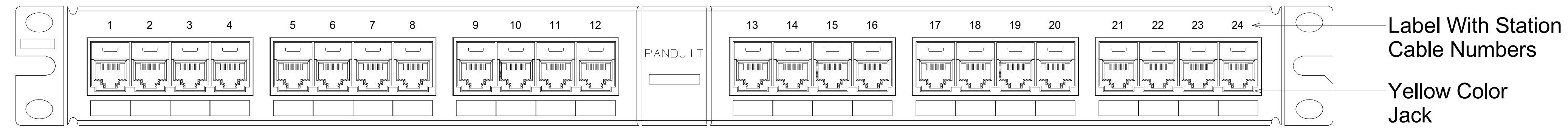
**GENERAL NOTES:**

1. RED COLOR IS RESERVED FOR FIRE ALARM CABLING AND SHALL NOT BE USED WITHIN THE CORP DATA INFRASTRUCTURE.

(1RU Or 2RU, 1RU Shown)  
 Panduit part # CPPA24FMWBLY  
 (or CPPA48HDWBLY)  
 or part # CCP24FMWBLY (or CPP48HDWBLY)

Security Cable Legend:  
 SEC = IP Camera

Example:  
 SEC-x.x-x.xxx  
 For security camera, ceiling mounted.

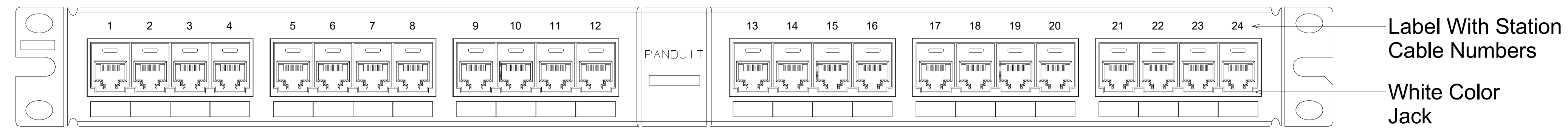


**\*NOTE:**  
 Stand-alone racks require flat mounted patch panels. If panel is used with other angled patch panels, angled patch panel is required.

1 IP CAMERA, SECURITY ONLY PATCH PANEL

SCALE: Not To Scale

(1RU Or 2RU, 1RU Shown)  
 Panduit part # CPPA24FMWBLY  
 (or CPPA48HDWBLY)



2 BUILDING MANAGEMENT SYSTEM (BMS) PATCH PANEL

SCALE: Not To Scale

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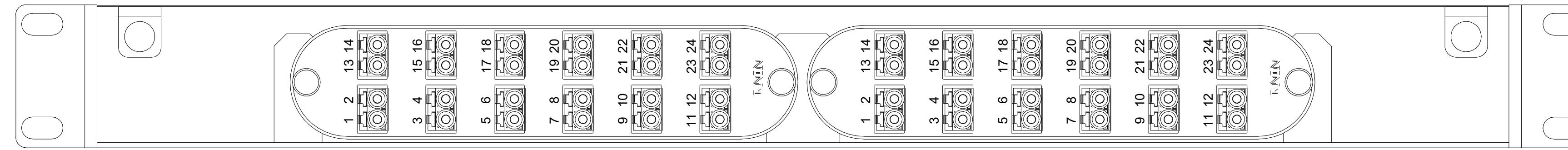
**TELECOM DETAILS**  
 SCALE: 12" = 1'-0"

SHEET NUMBER:  
**T6.5**  
 PHASE: ISSUE FOR CONSTRUCTION - HUB

**GENERAL NOTES:**

1. RED COLOR IS RESERVED FOR FIRE ALARM CABLING AND SHALL NOT BE USED WITHIN THE CORP DATA INFRASTRUCTURE.

"Campus Fiber"  
 LC Fiber Connectors, Single mode  
 CORNING part # PCH-01U or CCH-01U  
 CORNING part # PCH-02U or CCH-02U  
 CORNING part # PCH-04U or CCH-04U  
 CORNING part # CCH-CP24-A9



**\*NOTES:**

1. Same fiber panel shall be used for either MM or SM fiber.

**1 FIBER PATCH PANEL**

SCALE: Not To Scale

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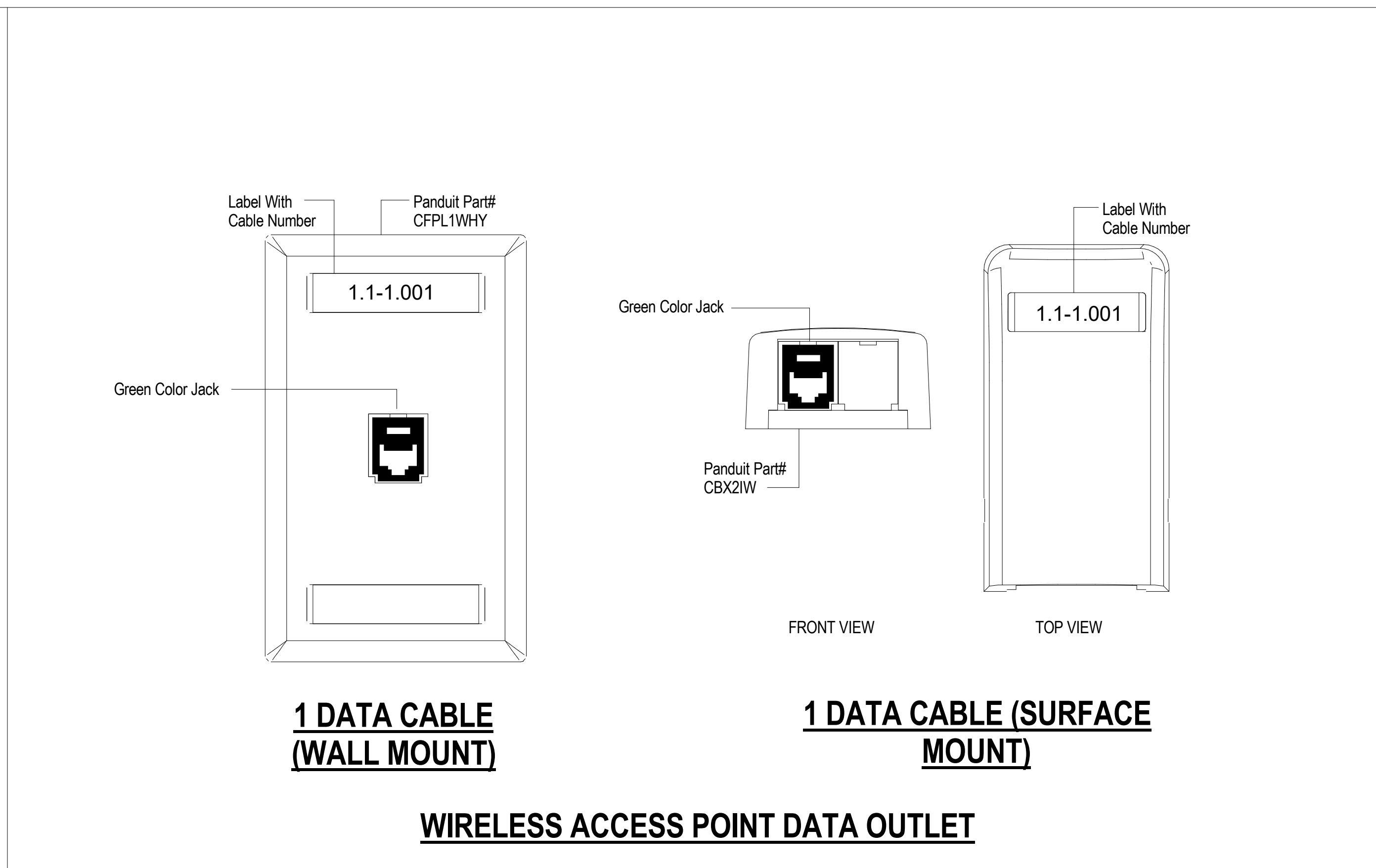
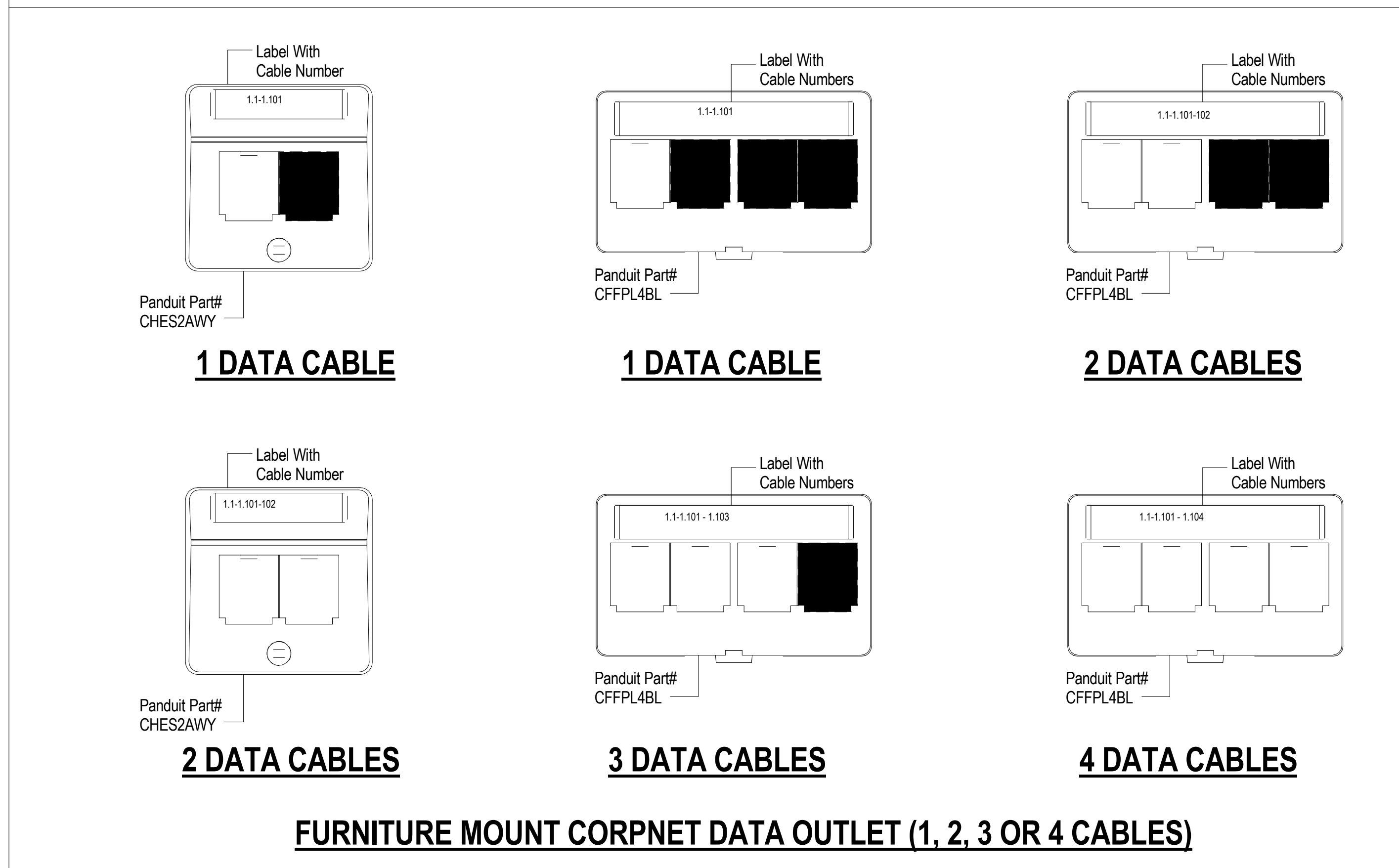
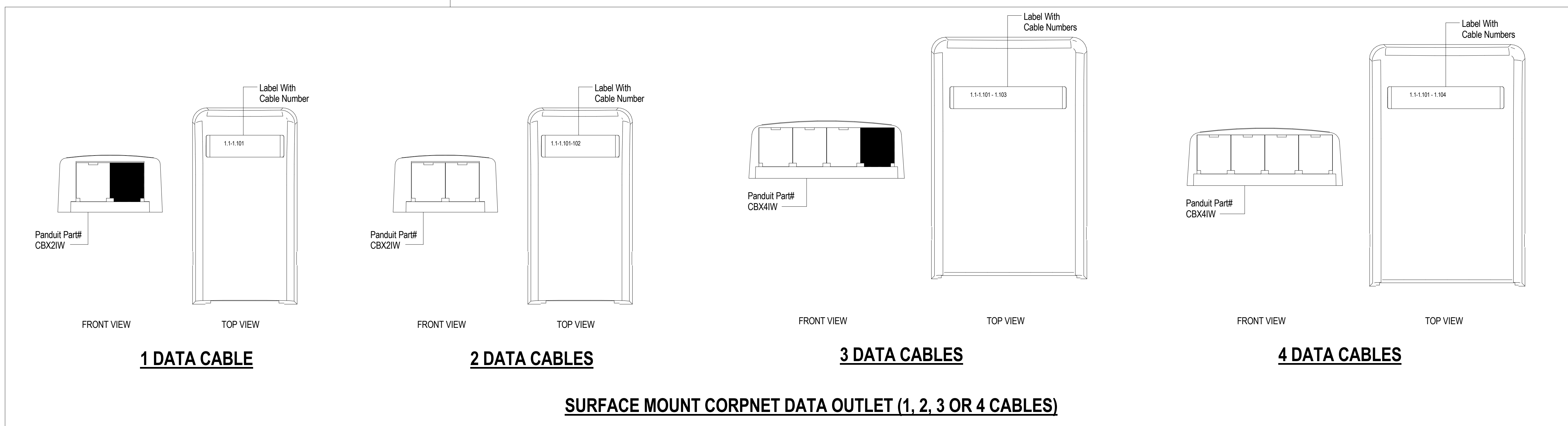
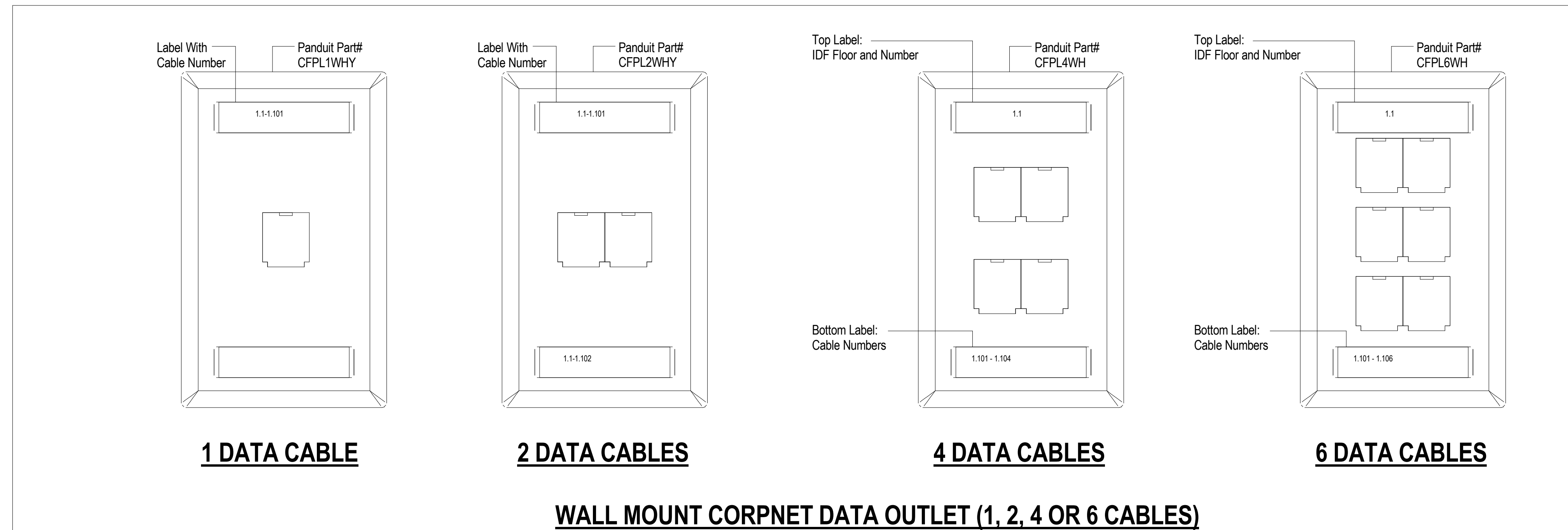
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**TELECOM DETAILS**  
 SCALE: 12" = 1'-0"

SHEET NUMBER:  
**T6.6**  
 PHASE: ISSUE FOR CONSTRUCTION - HUB

COMMENTS	BACK BOX	CONDUIT	JACK TYPE	CABLE TYPE
			1	
			CAT 6 RJ45	CAT 6 UTP
			BAS	
			CAT 6 RJ45	CAT 6 UTP
			COORDINATE EXACT LOCATION AND FINAL EQUIPMENT LAYOUT WITH CONTRACTOR PRIOR TO ROUGH-IN.	
			2	
			CAT 6 RJ45	CAT 6 UTP
			CAT 6 RJ45	CAT 6 UTP
			4	
		4-1116"	CAT 6 RJ45	CAT 6 UTP
		1-1/2"	CAT 6 RJ45	CAT 6 UTP
			CAT 6 RJ45	CAT 6 UTP
			CAT 6 RJ45	CAT 6 UTP
			AP	
	NA	NA	CAT 6A RJ45	CAT 6A UTP
			CAT 6A RJ45	CAT 6A UTP
			R	
	4-1116"	1-1/2"		PROVIDE PULL CORD WITHIN CONDUIT BACK TO CONSOLIDATION POINT. PROVIDE BLANK FACEPLATE.
			DISP	
	4-1116"	1"	CAT 6 RJ45	CAT 6 UTP
				MOUNT AT 20" AFF. UON.



**SHEET NOTES:**

- THIS DRAWING PERTAINS TO THE CORPNET DATA OUTLET LABELING.

C. OUTLET NUMBERS ON FACEPLATES ARE TO BE READ AS FOLLOWS:  
 ex.  
 1 2  
 3 4  
 5 6

D. REPLACE BLANK PANEL WITH WHITE DATA JACK, WHEN APPLICABLE.

**LABEL NUMBERING LEGEND:**

A. 1 & 2 CABLE LABEL FORMAT:

**1.1 - 1.101**

IDF Floor  
 Server/IDF room number  
 termination

Sequential station cable number  
 Type prefix (Refer to the cable labelling legend on T-000)  
 Floor number where the outlet is located

B. 4 - 6 CABLES LABEL FORMAT:

**1.1**

IDF Floor  
 Server/IDF room number  
 termination

**1.101 - 1.106**

Range of cable numbers  
 Type prefix (Refer to the cable labelling legend on T-000)  
 Floor number where the outlet is located

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PROJ. NO. 10438332

**TELECOM DETAILS**

SCALE: As indicated

SHEET NUMBER:  
**T6.7**

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