

MECHANICAL LEGEND

(NOTE: NOT ALL SYMBOLS SHOWN ARE USED ON THESE DRAWINGS)

ABBR.	SYMBOL	DESCRIPTION	ABBR.	SYMBOL	DESCRIPTION	ABBR.	SYMBOL	DESCRIPTION	ABBR.	SYMBOL	DESCRIPTION
					- PIPING -						
SA		POSITIVE PRESSURE DUCT UP			METER			PIPE DOWN			ZONE #
SA		POSITIVE PRESSURE DUCT DOWN			2-WAY MOTOR CONTROL VALVE			PIPE UP			ZONE #
EARA		NEGATIVE PRESSURE DUCT UP			3-WAY MOTOR CONTROL VALVE			TEE OUTLET UP			ZONE #
EARA		NEGATIVE PRESSURE DUCT DOWN			BALANCE VALVE			TEE OUTLET DOWN			ZONE #
OA		OUTSIDE AIR INTAKE DUCT UP			FLOW MEASURING STATION	HTWS		HEATING HOT WATER SUPPLY			CARBON MONOXIDE DETECTOR
OA		OUTSIDE AIR INTAKE DUCT DOWN			BALL VALVE	HTWR		HEATING HOT WATER RETURN			CARBON DIOXIDE SENSOR
		ROUND DUCT UP			BUTTERFLY VALVE	CHWS		CHILLED WATER SUPPLY			DIGITAL INPUT
		ROUND DUCT DOWN			CHECK VALVE	CHWR		CHILLED WATER RETURN			ANALOG INPUT
		CONICAL FITTING WITH DAMPER			GATE VALVE	CWS		CONDENSER WATER SUPPLY (TOWER)			DIGITAL OUTPUT
		ECCENTRIC FITTING WITH DAMPER			GLOBE VALVE	CWR		CONDENSER WATER RETURN (TOWER)			ANALOG OUTPUT
		CONICAL FITTING WITHOUT DAMPER			PRESSURE REDUCING VALVE	GHWS		GLYCOL HEATING WATER SUPPLY			BI-DIRECTIONAL NETWORK CONNECTION
		ECCENTRIC FITTING WITHOUT DAMPER			STRAINER	GHWR		GLYCOL HEATING WATER RETURN			FLOW ARROW
		ELBOW WITH TURNING VANES			STRAINER WITH BLOW OFF VALVE	CBS		CHILLED BEAM SUPPLY			FLOW SWITCH
		ELBOW WITHOUT TURNING VANES			PLUG VALVE	CBR		CHILLED BEAM RETURN			DUCT MOUNTED TEMPERATURE SENSOR
		LONG RADIUS ELBOW			GAS COCK	LPS		LOW PRESSURE STEAM SUPPLY			DUCT AVERAGING TEMPERATURE SENSOR
		SHORT RADIUS ELBOW			SOLENOID VALVE	LPR		LOW PRESSURE STEAM RETURN			WELL MOUNTED TEMPERATURE SENSOR
		SUPPLY DIFFUSER			PRESSURE REGULATING VALVE	MPS		MEDIUM PRESSURE STEAM SUPPLY			CONTROL DAMPER ACTUATOR
		SUPPLY DIFFUSER ROUND NECK			THERMOWELL	MPR		MEDIUM PRESSURE STEAM RETURN			TEMPERATURE LOW LIMIT THERMOSTAT
		SUPPLY DIFFUSER SQUARE NECK			THERMOMETER WITH THERMOWELL	HPS		HIGH PRESSURE STEAM SUPPLY			DUCT SMOKE DETECTOR
		EXHAUST/RETURN GRILLE SQUARE NECK			UNION	HPR		HIGH PRESSURE STEAM RETURN			DAMPER/VALVE END SWITCH
		EXHAUST/RETURN GRILLE ROUND NECK			DIELECTRIC COUPLING	HPWS		HEAT PUMP WATER SUPPLY			DIFFERENTIAL PRESSURE SWITCH
		RETURN AIR GRILLE			VENTURI	HPWR		HEAT PUMP WATER RETURN			HIGH PRESSURE SWITCH
		ROUND DIFFUSER			AUTOMATIC AIR VENT	RL		REFRIGERANT LIQUID			PRESSURE SWITCH MANUAL RESET
		SLOT DIFFUSER			MANUAL AIR VENT	RS		REFRIGERANT SUCTION			AQUASTAT
		FLEXDUCT			VACUUM BREAKER	RHG		REFRIGERANT HOT GAS			PRESSURE ELECTRIC SWITCH
		DUCTWORK			THERMOMETER	FOS		FUEL OIL SUPPLY			MOTOR STARTER
		MANUAL VOLUME DAMPER			GAUGE	FOR		FUEL OIL RETURN			CONTROL RELAY
		FIRE DAMPER 1-1/2 HOUR UNLESS NOTED			GAUGE WITH BALL VALVE	FOV		FUEL OIL VENT			VARIABLE FREQUENCY DRIVE
		FIRE SMOKE DAMPER 1-1/2 HOUR UNLESS NOTED			PRESSURE TEMPERATURE/TEST POINT	A		COMPRESSED AIR			VARIABLE FREQUENCY DRIVE WITH BY-PASS
		SMOKE DAMPER			PIPE ANCHOR	PC		PUMPED CONDENSATE			ELECTRIC MOTOR
		MOTORIZED DAMPER			PIPE GUIDE	D		CONDENSATE OR EQUIPMENT DRAIN			TEMPERATURE CONTROLLER
		SECURITY BARRIER			FLEX CONNECTION	GHXS		GEOTHERMAL HX SUPPLY			TEMPERATURE TRANSMITTER
		ACCESS PANEL (SIZE)			PIPE BREAK	GHXR		GEOTHERMAL HX RETURN			LEVEL TRANSMITTER
		PUMP			FLOW ARROW	DHW		DOMESTIC HOT WATER			PRESSURE TRANSMITTER
		DUCT BREAK			STEAM TRAP (INVERTED BUCKET TRAP)	DHWC		DOMESTIC COLD WATER			DIFFERENTIAL PRESSURE TRANSMITTER
RPBP		REDUCED PRESSURE BACKFLOW PREVENTER			STEAM TRAP (THERMOSTATIC TRAP)	DPDWC		HIGH PRESSURE DOMESTIC COLD WATER			FLOW TRANSMITTER
DCVA		DOUBLE CHECK VALVE ASSEMBLY			STEAM TRAP (FLOAT & THERMOSTATIC TRAP)	DW		DEIONIZED WATER			ELECTRIC PNEUMATIC TRANSDUCER
					FIRE SPRINKLER PENDANT HEAD	V		DOMESTIC VENT PIPING			ELECTRIC PNEUMATIC TRANSDUCER
					FIRE SPRINKLER UPRIGHT HEAD	AV		ACID VENT PIPING			CURRENT SWITCH/TRANSMITTER
					FIRE SPRINKLER SIDEWALL HEAD	SS		SANITARY WASTE (ABOVE FLOOR)			ANNUNCIATOR
					TAMPER SWITCH	SS		SANITARY WASTE (BELOW FLOOR)			FIRE ALARM CONTROL PANEL
					OS & Y GATE VALVE	SV		SANITARY VENT			CONTROL ADDRESSABLE MODULE
					FIRE HOSE CABINET	DWS		DRINKING WATER SUPPLY			MONITOR ADDRESSABLE MODULE
					DOWNSPOUT NOZZLE	DWR		DRINKING WATER RETURN			EMERGENCY STOP RELAY
						SW		SOFT WATER LINE			LEVEL CONTROLLER
						TWS		TEMPERED WATER SUPPLY			EMERGENCY POWER SHUTOFF
						TWR		TEMPERED WATER RETURN			AIR FLOW SWITCH
						SD		STORM DRAIN (ABOVE FLOOR)			
						SD		STORM DRAIN (BELOW FLOOR)			
						OST		STORM OVERFLOW DRAIN			
						FL		FIRE LINE			
						SHWS		SOLAR HOT WATER SUPPLY			
						SHWR		SOLAR HOT WATER RETURN			

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SHEET TITLE:
MECHANICAL LEGEND

SCALE: 12" = 1'-0"
SHEET NUMBER

M1.01

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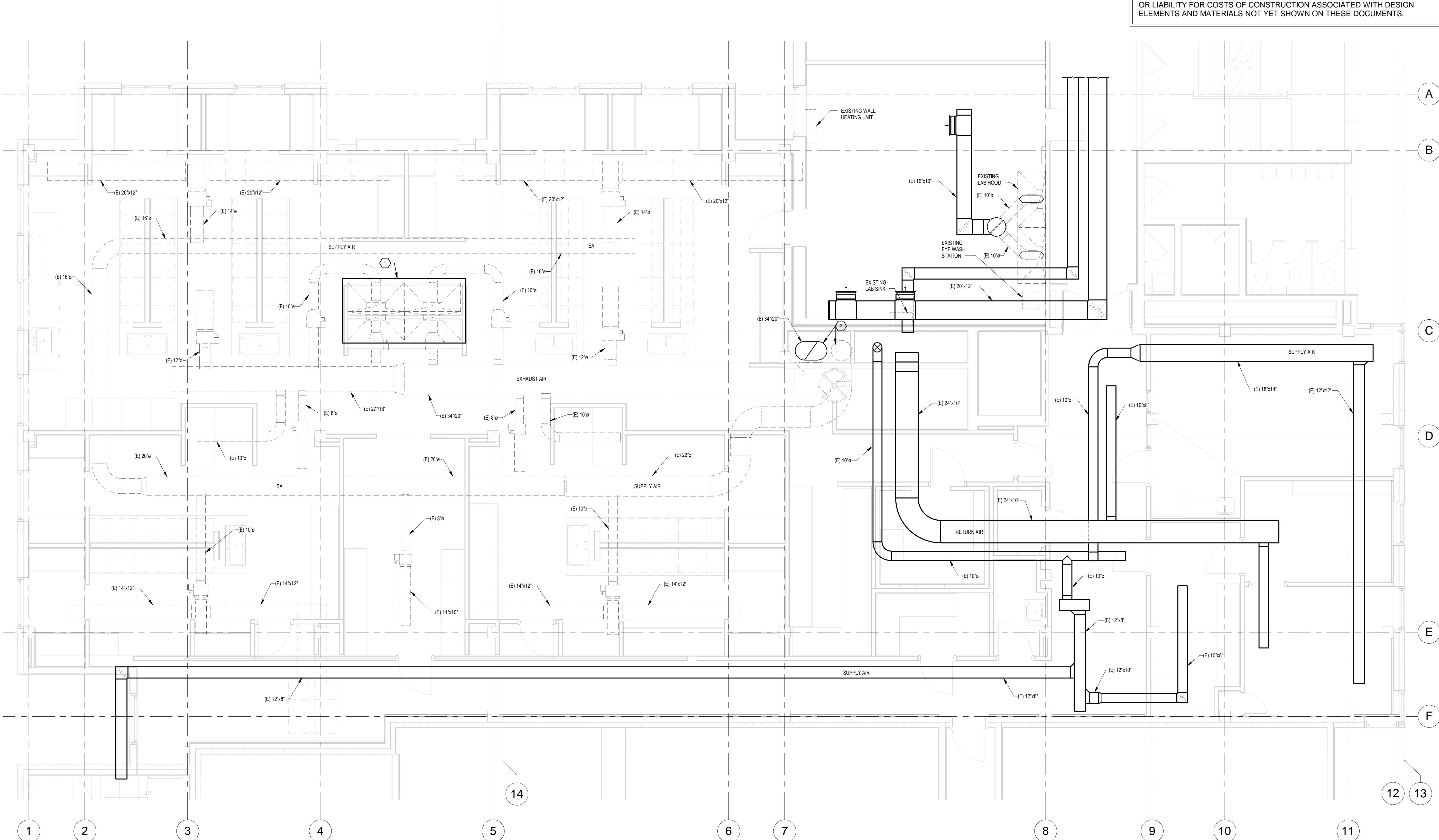
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SHEET TITLE:
3RD FLOOR HVAC
DEMO PLAN
SCALE: 1/4" = 1'-0"
SHEET NUMBER

MD2.03



1. LEVEL 3 - HVAC DEMO
1/4" = 1'-0"

SHEET NOTES

1. DASHED LINES INDICATE WORK TO BE DEMOLISHED. DARK LINES INDICATE EXISTING UTILITIES TO REMAIN.

KEY NOTES

1. LABORATORY FUME HOODS TO BE RELOCATED.
2. DEMOLISH BACK TO THE NEXT RISER



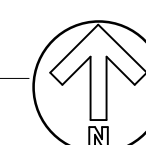
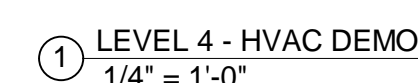
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SHEET TITLE:
4TH FLOOR HVAC
DEMO PLAN
SCALE: 1/4" = 1'-0"
SHEET NUMBER

MD2.04



1. DASHED LINES INDICATE WORK TO BE DEMOLISHED. DARK LINES INDICATE EXISTING UTILITIES TO REMAIN.

- 1 REMOVE EXISTING VAV BOX.
- 2 REMOVE EXISTING DUCTWORK TO THIS POINT.
- 3 CAP EXISTING DUCTWORK.

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3RD FLOOR HVAC PLAN

SCALE: 1/4" = 1'-0"
SHEET NUMBER

M2.03

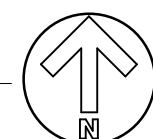
SHEET NOTES

1. LIGHT LINES INDICATE EXISTING DUCTWORK, AND PIPING. DARK LINES INDICATE NEW DUCTWORK, PIPING, AND EQUIPMENT.

KEY NOTES

1. EQUIPMENT EXHAUST CONNECTION POINT TO EXHAUST DUCT.
2. SEE M5.01 FOR TYPICAL EQUIPMENT EXHAUST CONNECTION POINTS.

1 LEVEL 3 - HVAC
1/4" = 1'-0"



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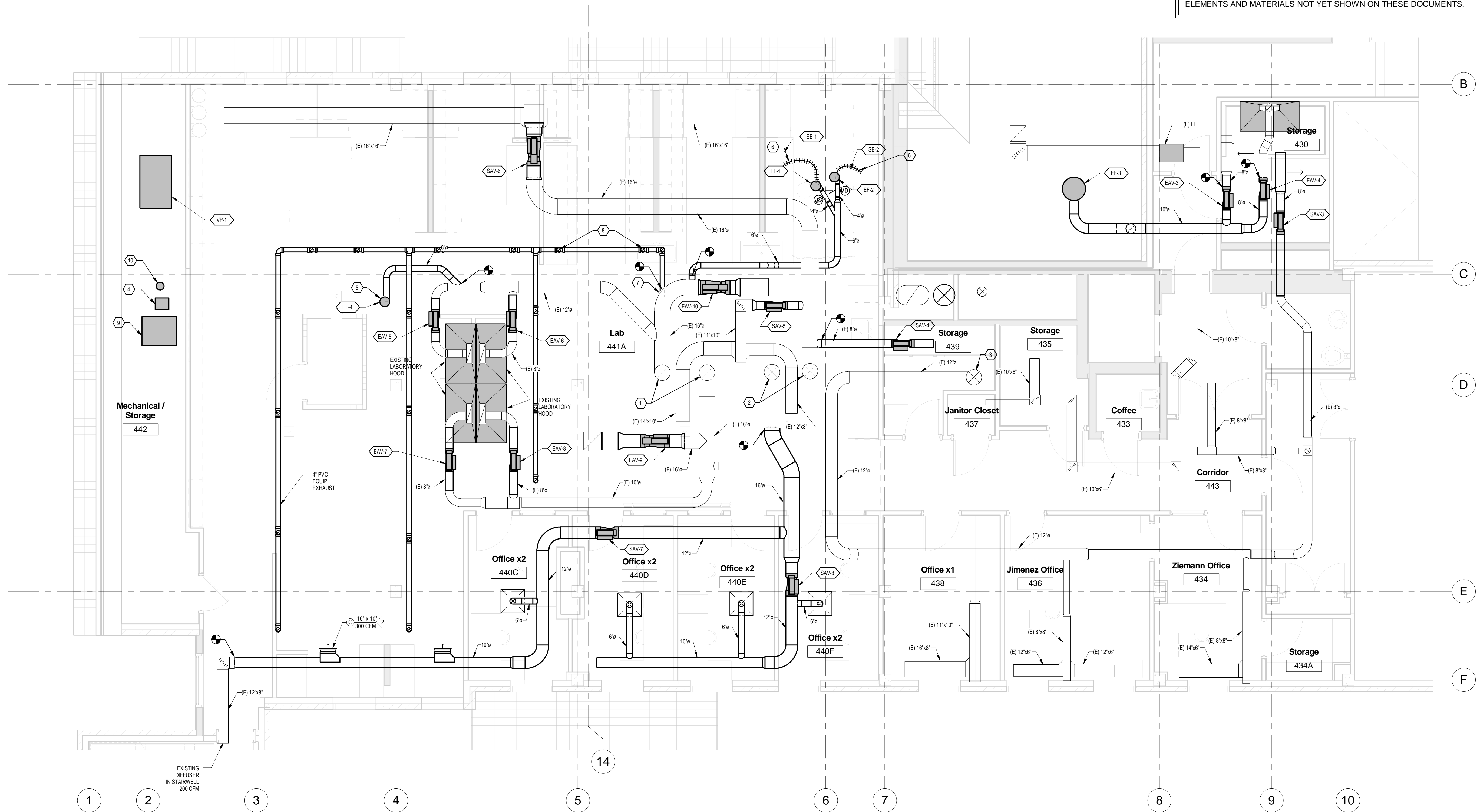
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SHEET TITLE:
4TH FLOOR HVAC PLAN

SCALE: 1/4" = 1'-0"
SHEET NUMBER

M2.04



1 LEVEL 4 - HVAC
1/4" = 1'-0"

SHEET NOTES

1. LIGHT LINES INDICATE EXISTING DUCTWORK AND PIPING. DARK LINES INDICATED NEW DUCTWORK, PIPING AND EQUIPMENT.

KEY NOTES

- EXISTING 16 DIA. RA TO AHU-2.
- EXISTING 16 DIA. SA TO AHU-2.
- EXISTING 16 DIA. SA TO AHU-1.
- 100 LPM AADCO PURE AIR UNIT SUPPLIED BY CU.
- PROVIDE 6" DIAMETER EXHAUST DUCT DROP FOR PORTABLE EXHAUST FAN. VERIFY LOCATION WITH OWNER.
- SEE SHEET M5.1 FOR BENCH SNORKEL DETAIL.
- EQUIPMENT EXHAUST CONNECTION POINT TO EXHAUST DUCT.
- SEE M5.01 FOR TYPICAL EQUIPMENT EXHAUST CONNECTION POINTS.
- CHILLER PROVIDED BY CU.
- PURE-AIR SCRUBBER PROVIDED BY CU.

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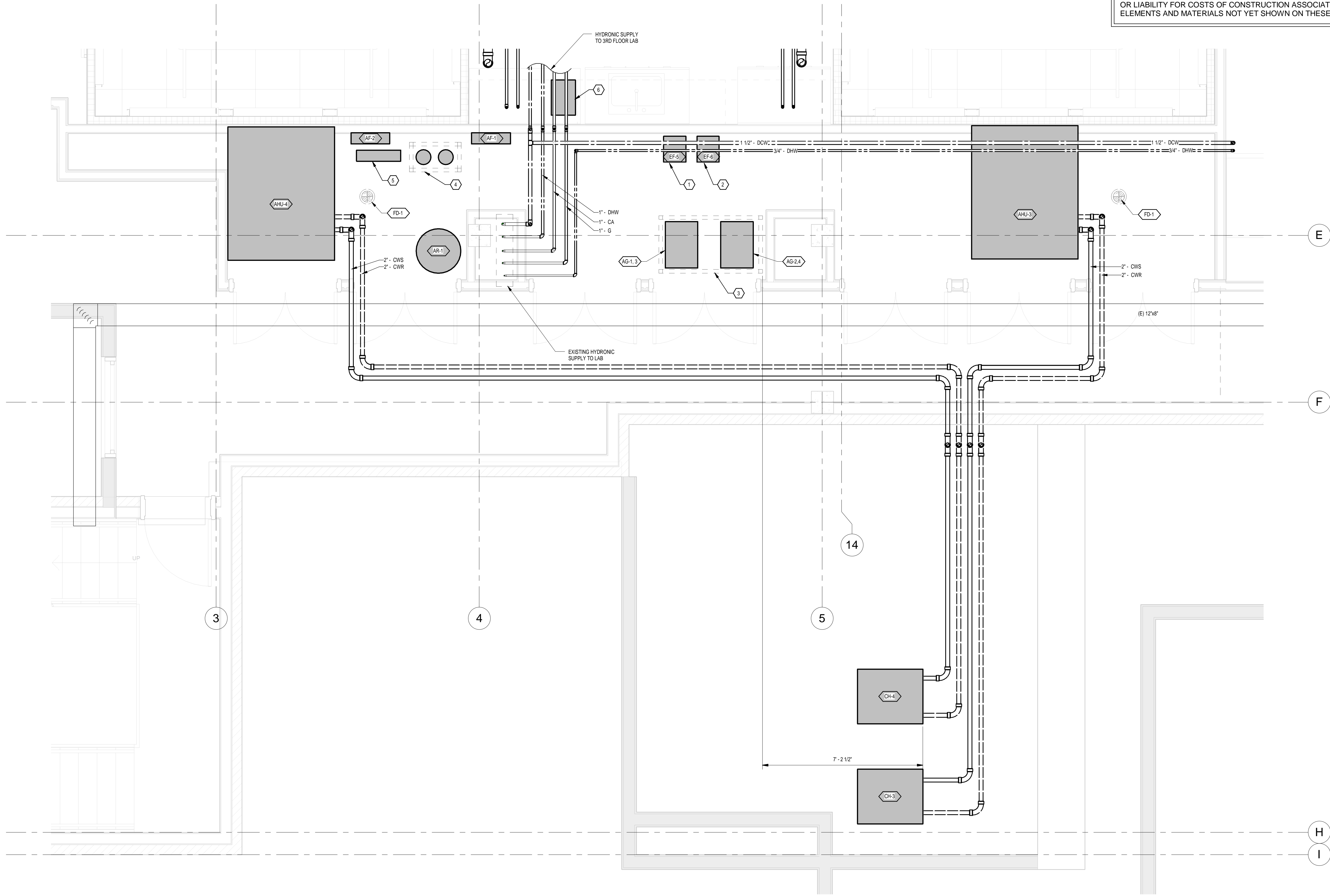
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SHEET TITLE:
ENLARGED
MECHANICAL RM. PLAN
SCALE: 1/2" = 1'-0"
SHEET NUMBER

M3.01



LEVEL 3 - ENLARGED MECHANICAL ROOM
1/2" = 1'-0"

KEY NOTES

- 1 TRANSFER PUMP - CHAMBER 1 TO ATMOSPHERE.
- 2 TRANSFER PUMP - CHAMBER 2 TO ATMOSPHERE.
- 3 TWO-SHELF CUSTOM RACK FOR AADCO AIR GENERATORS.
- 4 PURE-AIR SCRUBBERS PROVIDED BY CU.
- 5 CHAMBER PURE-AIR HUMIDIFICATION DEVICE.
- 6 MILLI-Q DIRECT PURE WATER GENERATOR. 1/4" TEFLON TUBE ROUTED TO HUMIDIFICATION DEVICE.



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CU Atmospheric Chemistry
Laboratory
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SHEET TITLE:
MECHANICAL CONTROL
SCHEMATICS

SCALE: AS NOTED
SHEET NUMBER:

M4.01

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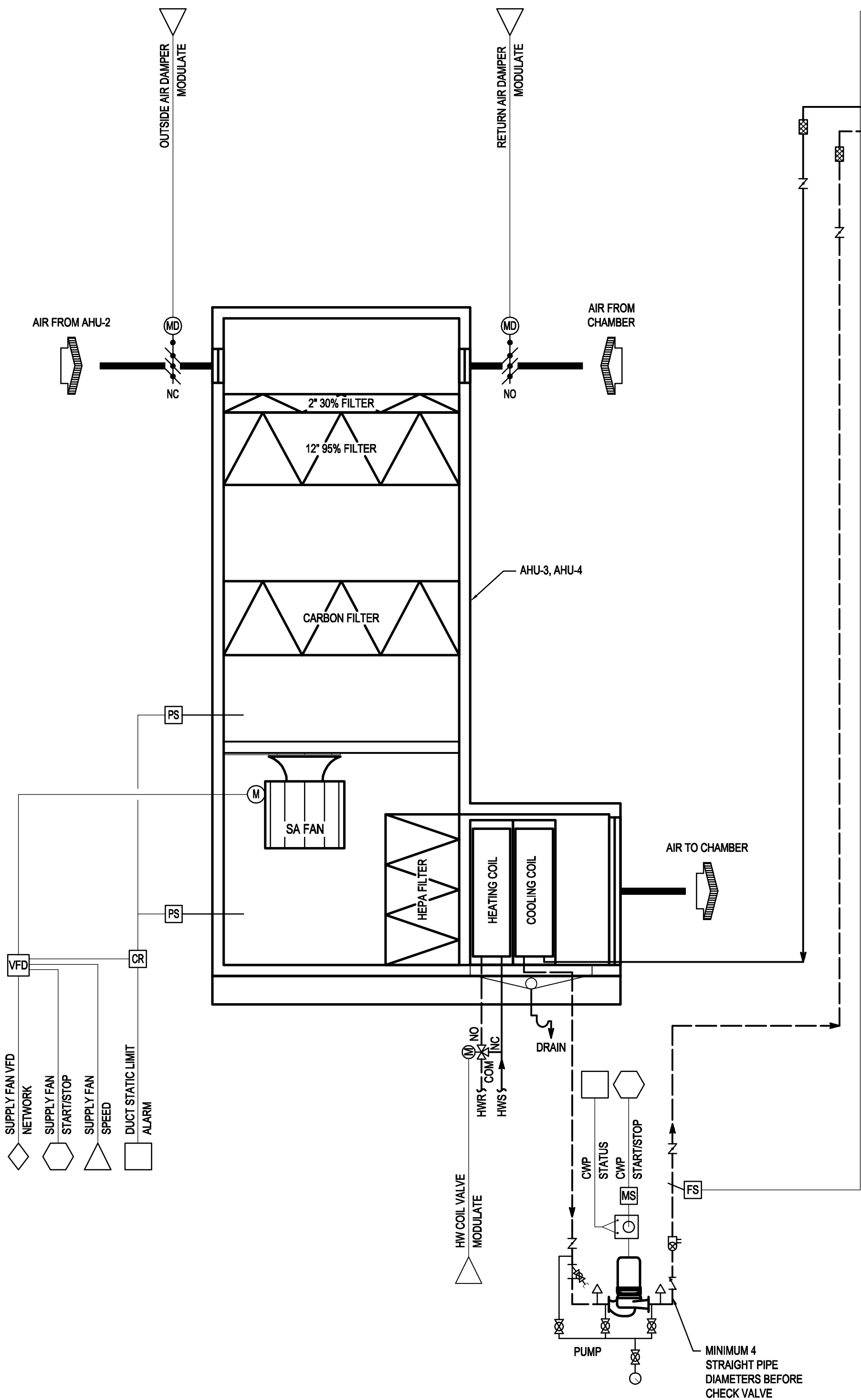
BI-DIRECTIONAL NETWORK CONNECTION MAY
BE PROVIDED INSTEAD OF HARD WIRED POINTS
AT CONTRACTORS OPTION. COORDINATE WITH
EQUIPMENT SUPPLIER

CH-3.1
NETWORK
CH-3.2
TEMP RESET
CH-3.4
ALARM
CH-3.4
ENABLE
CH-3.4
KW

CONTROL
PANEL

KWT
STARTER

CHILLER
(ON ROOF)

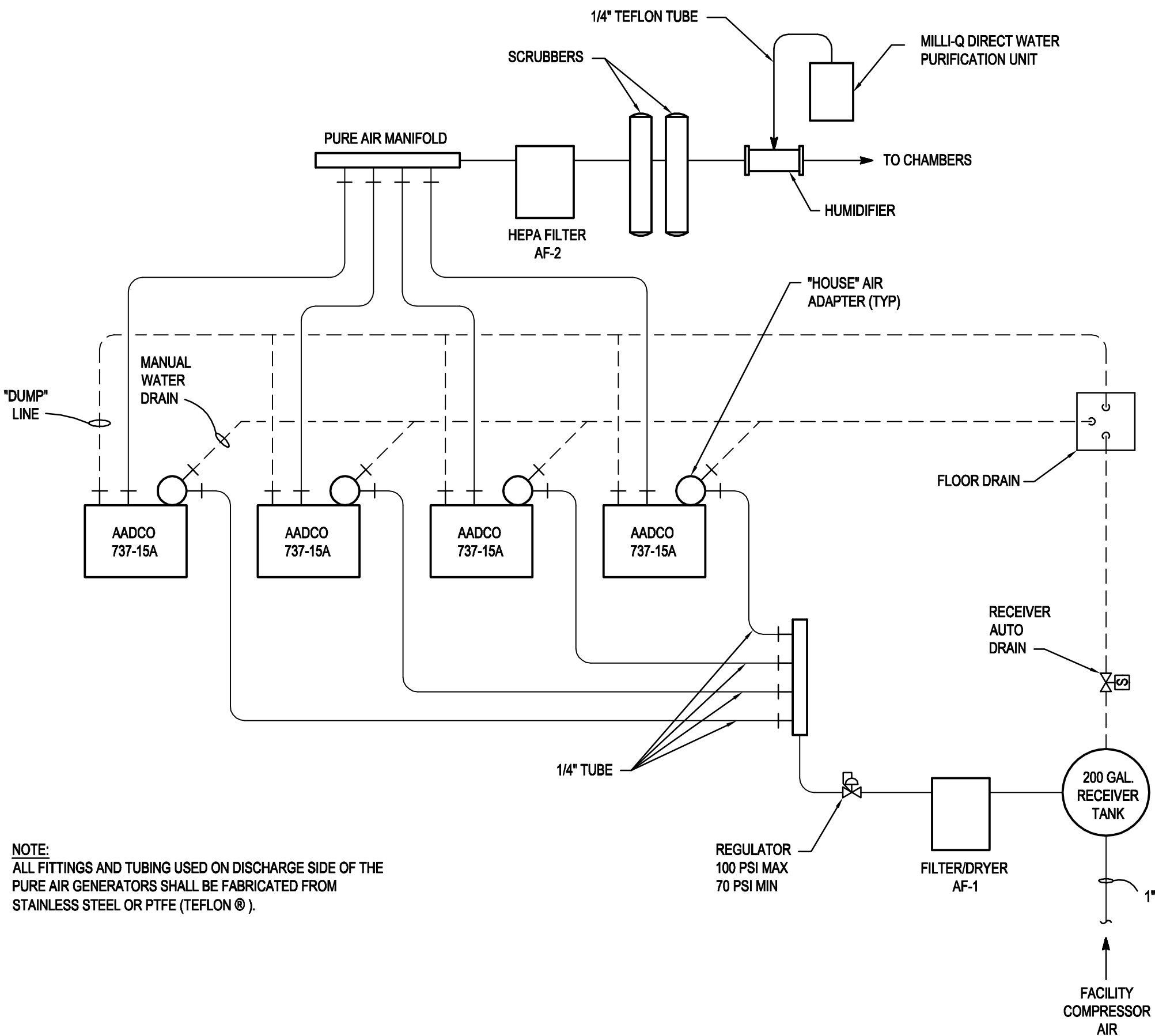


CHAMBER AIR SCHEMATIC

SCALE: NONE

2

M4.01



CHAMBER PURE AIR SCHEMATIC

SCALE: NONE

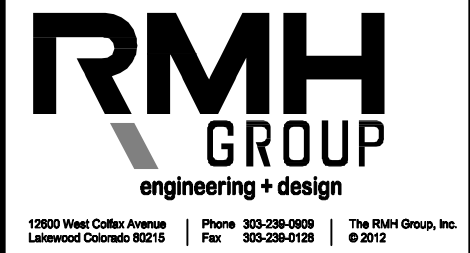
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M4.01

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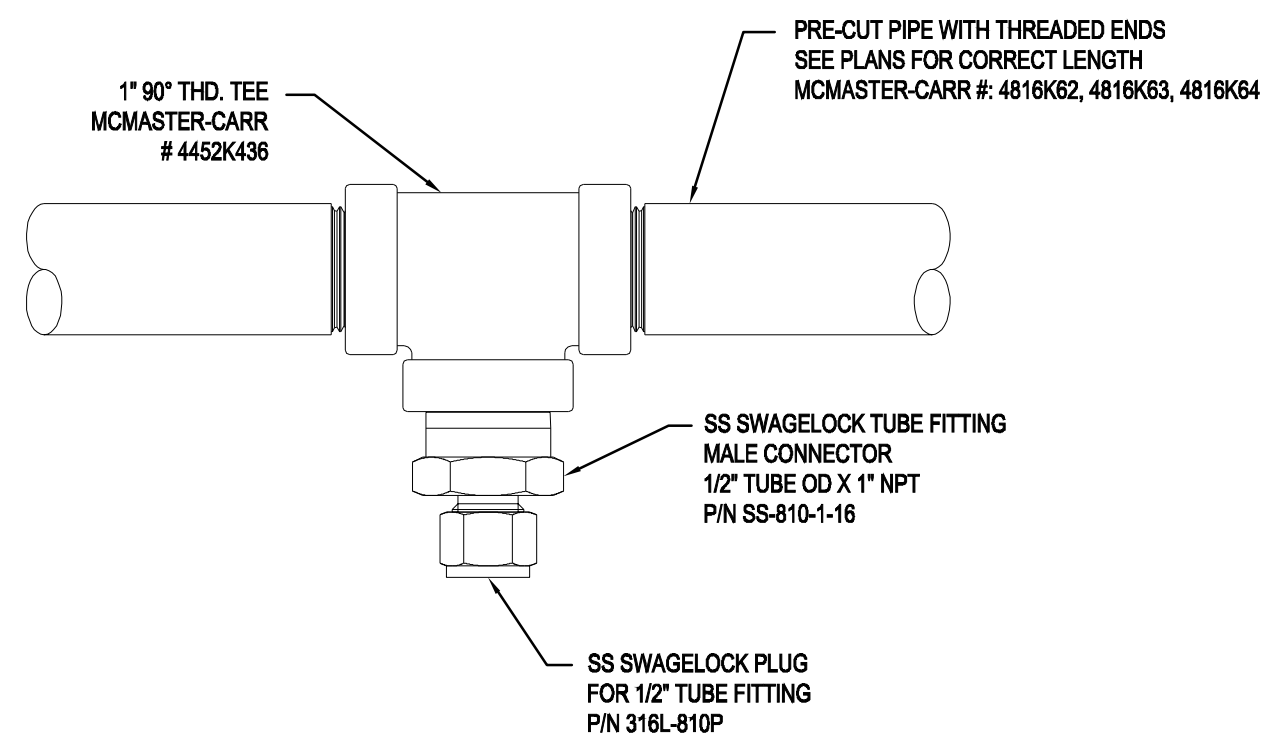
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SHEET TITLE:
MECHANICAL DETAILS

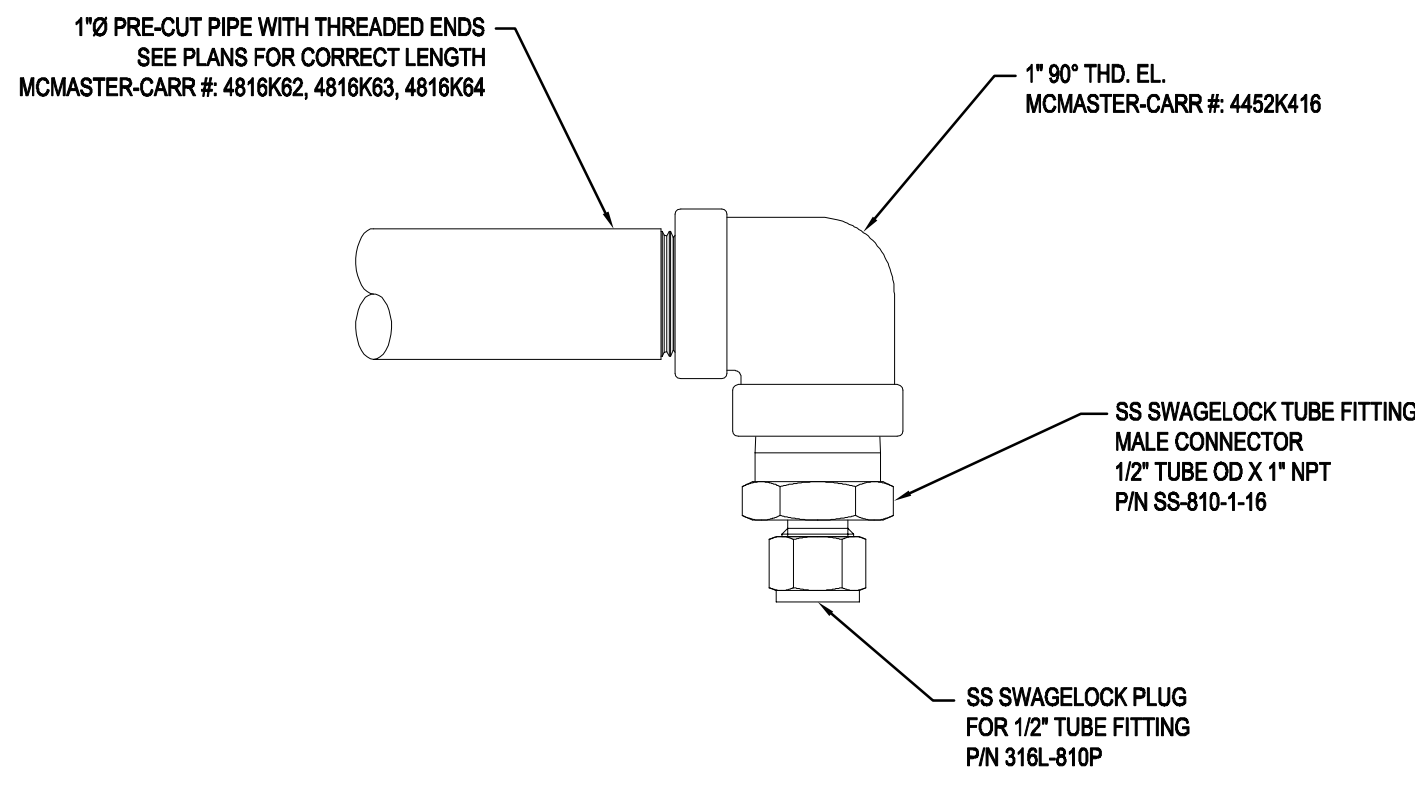
SCALE: AS NOTED
SHEET NUMBER:

M5.01



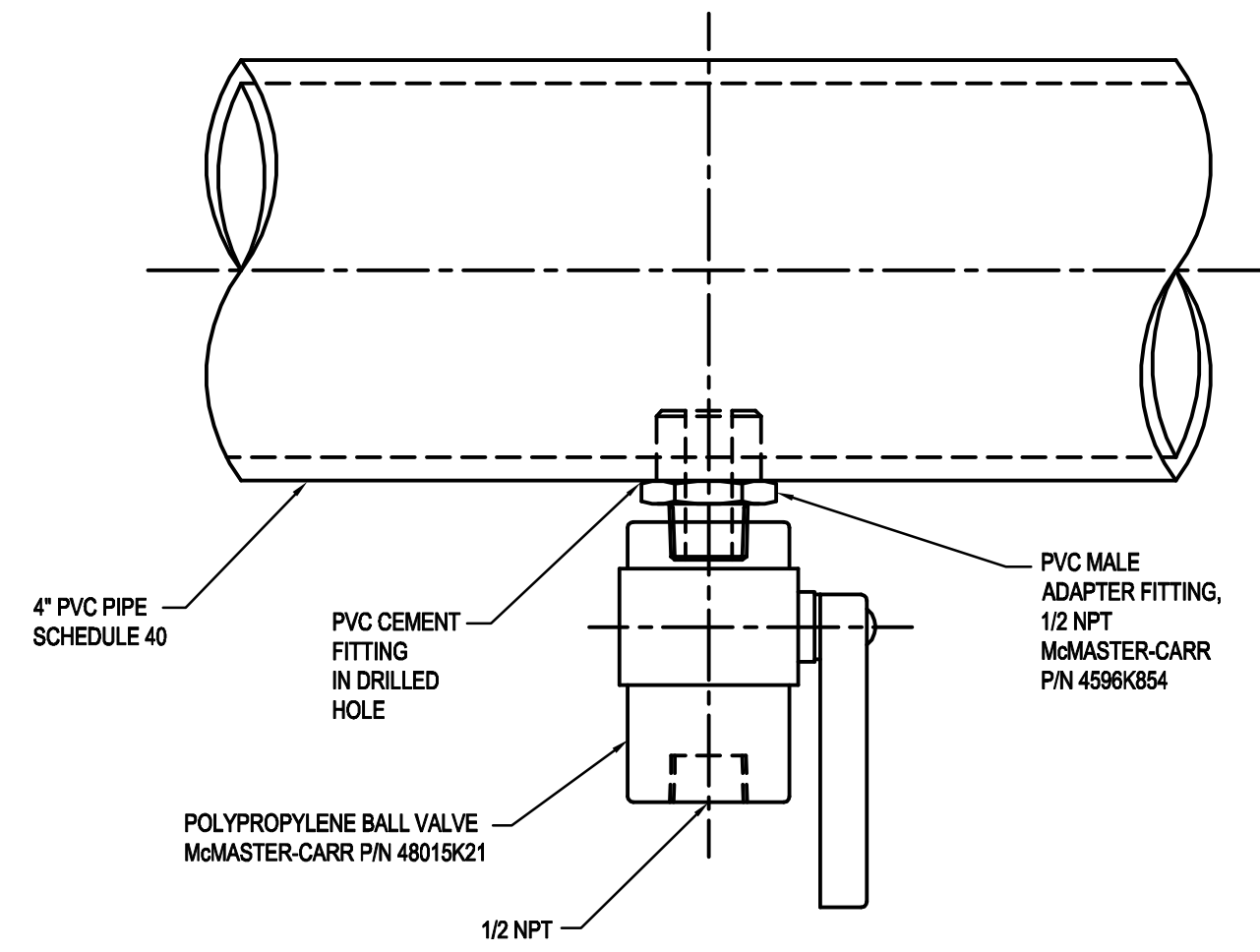
VACUUM LINE TYPICAL TEE DROP
SCALE: 1" = 1"

1
M5.01



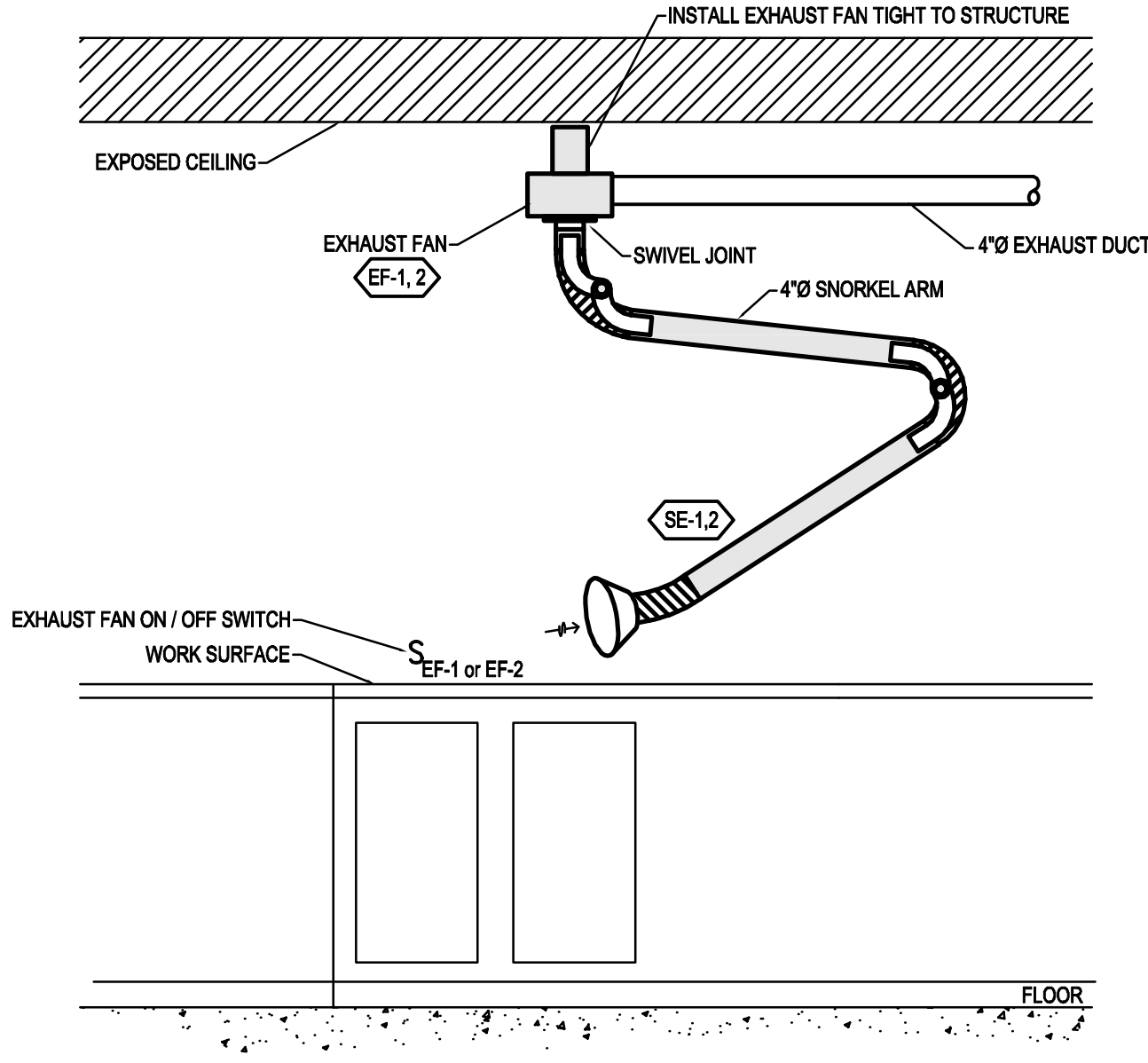
VACUUM LINE TYPICAL ELBOW DROP
SCALE: 1" = 1"

2
M5.01



EQUIPMENT EXHAUST CONNECTION DETAIL
SCALE: 1" = 1"

3
M5.01



BENCH SNORKEL EXHAUST DETAIL
SCALE: NONE

4
M5.01

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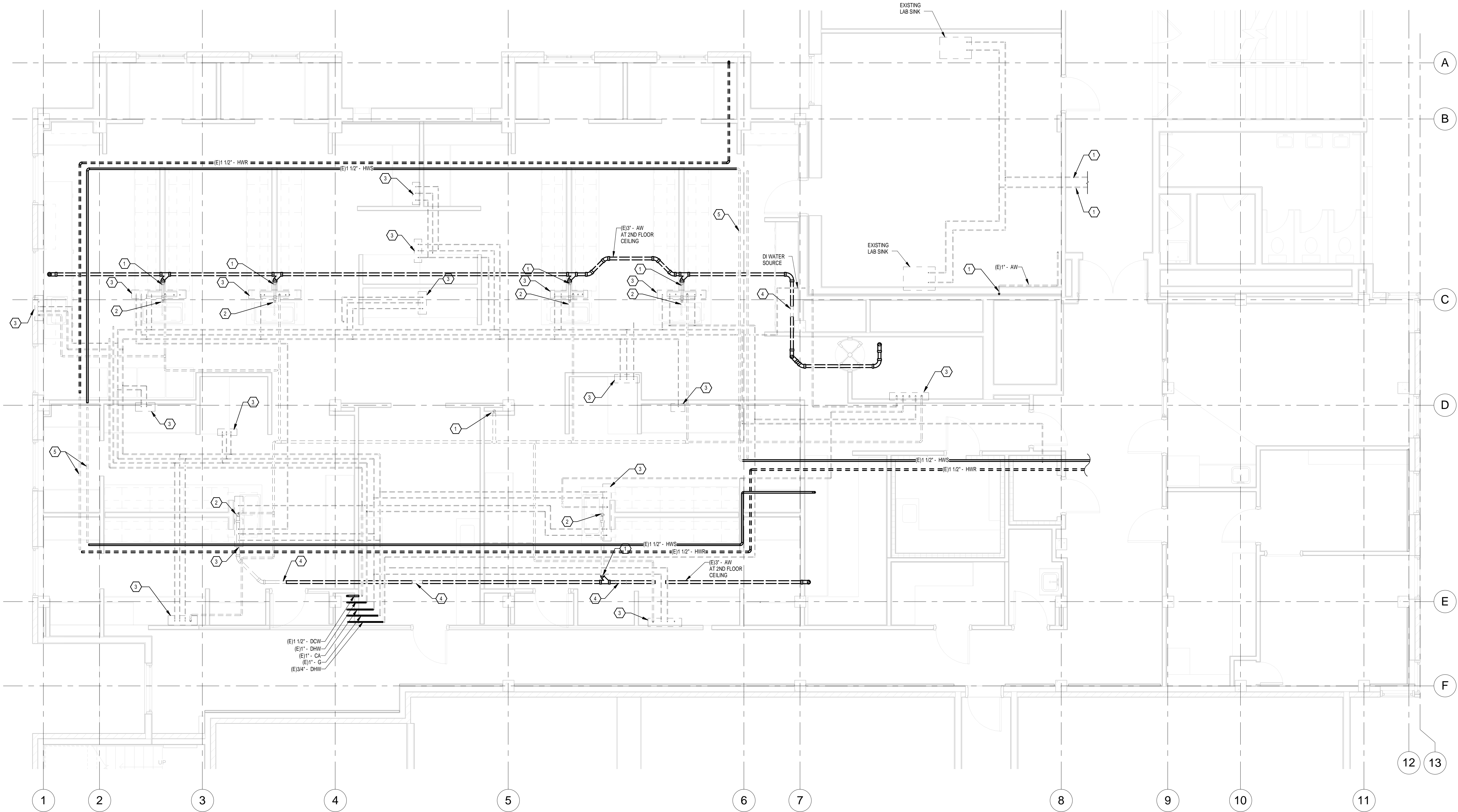
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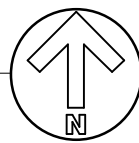
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SHEET TITLE:
3RD FLOOR PLUMBING
DEMO PLAN
SCALE: 1/4" = 1'-0"
SHEET NUMBER

PD-2.03



1 LEVEL 3 - PLUMBING DEMO
1/4" = 1'-0"



SHEET NOTES

1. DASHED LINES INDICATE WORK TO BE DEMOLISHED. DARK LINES INDICATE EXISTING UTILITIES TO REMAIN.
2. PLUMBING SHOWN IS BELOW THE FLOOR AND CAN BE ACCESSED ON LEVEL 2.

KEY NOTES

- 1 DEMO SANITARY BACK TO TEE AND CAP.
- 2 REPAIR HOLE IN FLOORING.
- 3 EXISTING UTILITY DROP TO LAB BENCH.
- 4 DEMO THIS SECTION OF WASTE PIPE FOR NEW CONSTRUCTION.
- 5 DEMO SECTION OF HOT WATER HEATING PIPE FOR REROUTING.

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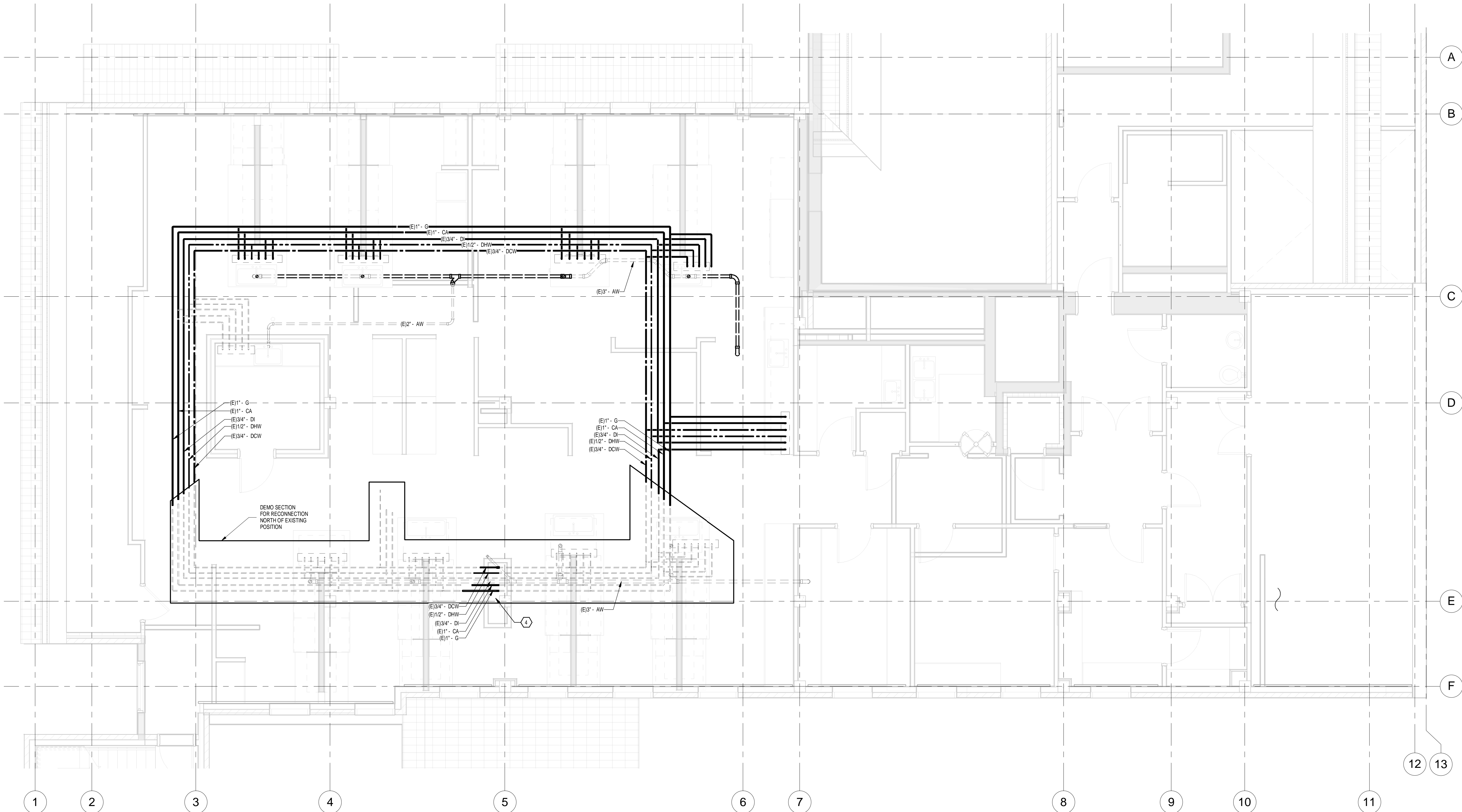
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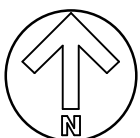
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CHEM - 4th Floor -
Atmospheric Lab
ISSUED FOR:
18499 50% CD

SHEET TITLE:
4TH FLOOR PLUMBING
DEMO PLAN
SCALE: 1/4" = 1'-0"
SHEET NUMBER

PD-2.04



1 LEVEL 4 - PLUMBING DEMO
1/4" = 1'-0"



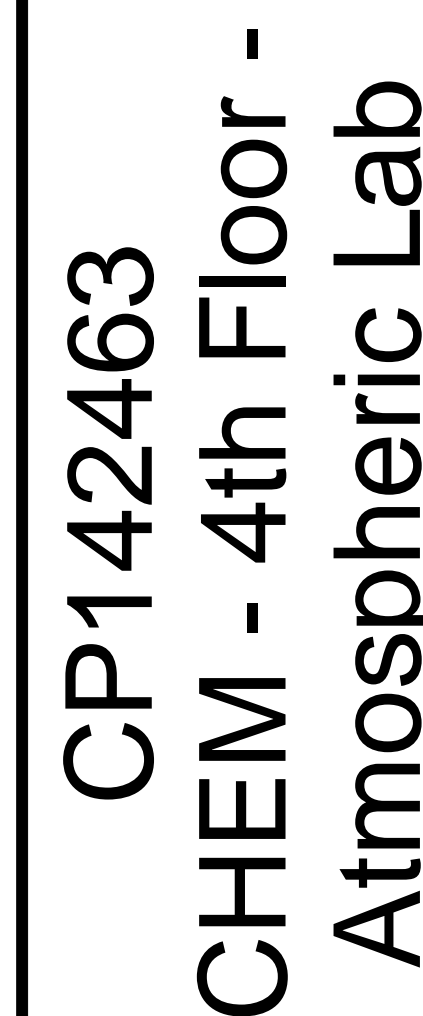
SHEET NOTES

1. DASHED LINES INDICATE WORK TO BE DEMOLISHED. DARK LINES INDICATE EXISTING UTILITIES TO REMAIN.
2. PLUMBING SHOWN IS BELOW THE FLOOR AND CAN BE ACCESSED ON LEVEL 3.

KEY NOTES

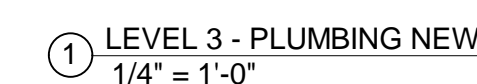


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- 1 PROVIDE FACILITY STANDARD DRAIN AND CONNECT INTO EXISTING AW LINE
- 2 CONNECT NEW SINK INTO EXISTING AW LINE.
- 3 VACUUM ROUTED TO 4TH FLOOR VACUUM SOURCE AT THIS POINT.
- 4 WORKBENCH UTILITY DROP POINT.
- 5 EXISTING HYDRONICS SUPPLY POINT.

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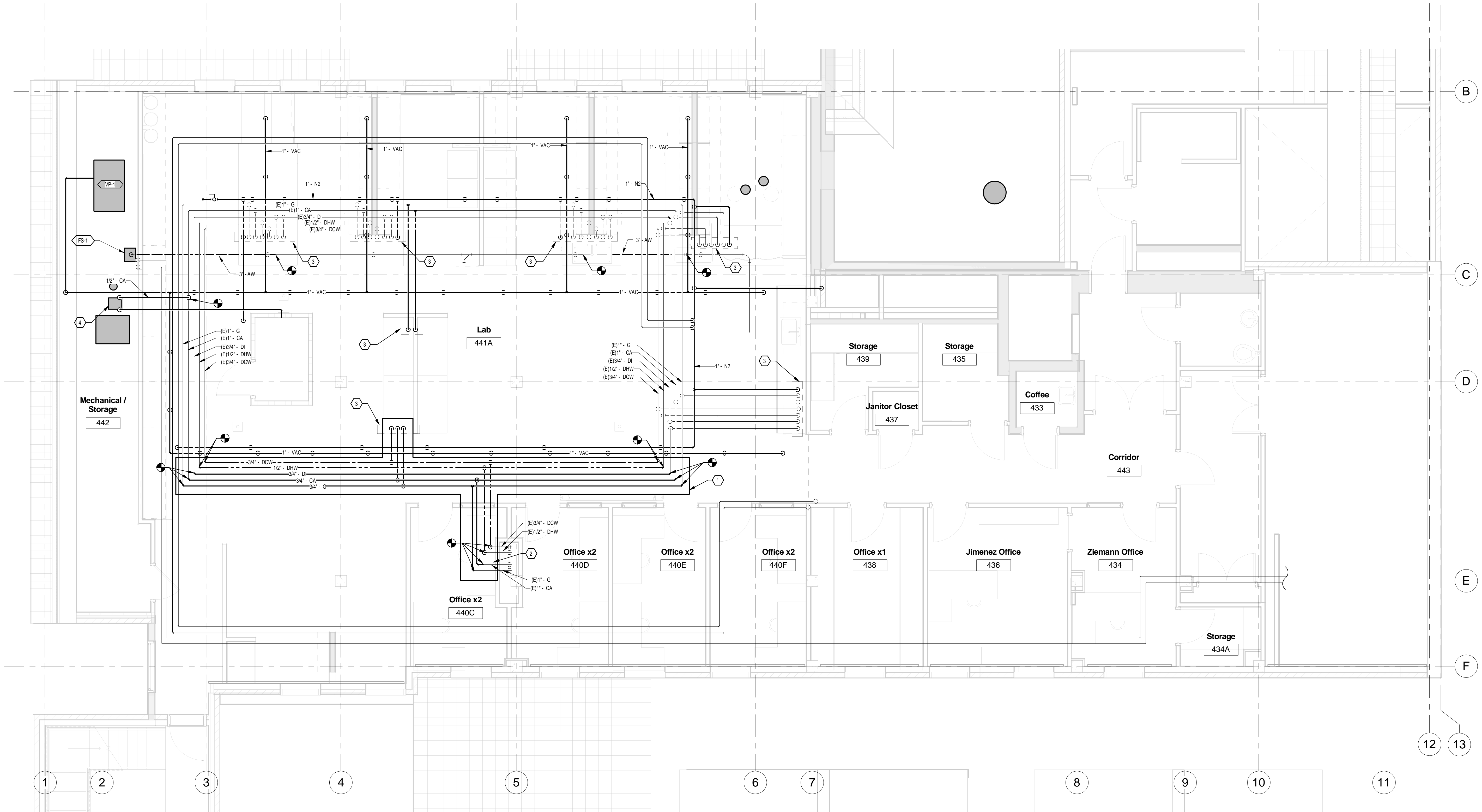
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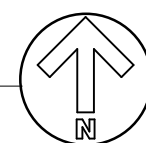
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4TH FLOOR PLUMBING
PLAN
SCALE: 1/4" = 1'-0"
SHEET NUMBER

P-2.04



1 LEVEL 4 - PLUMBING NEW
1/4" = 1'-0"



SHEET NOTES

1. WASTE PIPING SHOWN IS BELOW THE FLOOR
AND CAN BE ACCESSED ON LEVEL 3.

KEY NOTES

- 1 NEW PIPE CONSTRUCTION INSIDE BOX.
EXISTING PIPE OUTSIDE BOX.
2 EXISTING HYDRONICS SOURCE POINT.
3 WORKBENCH UTILITY DROP POINT.
4 100 LPM AADCO PURE AIR UNIT SUPPLIED
BY CU.

KEY NOTES

1 MODIFY EXISTING SPRINKLER SYSTEM TO MEET NEW SPACE REQUIREMENTS OF OCCUPANCY CLASS B, ORDINARY HAZARD GROUP II.

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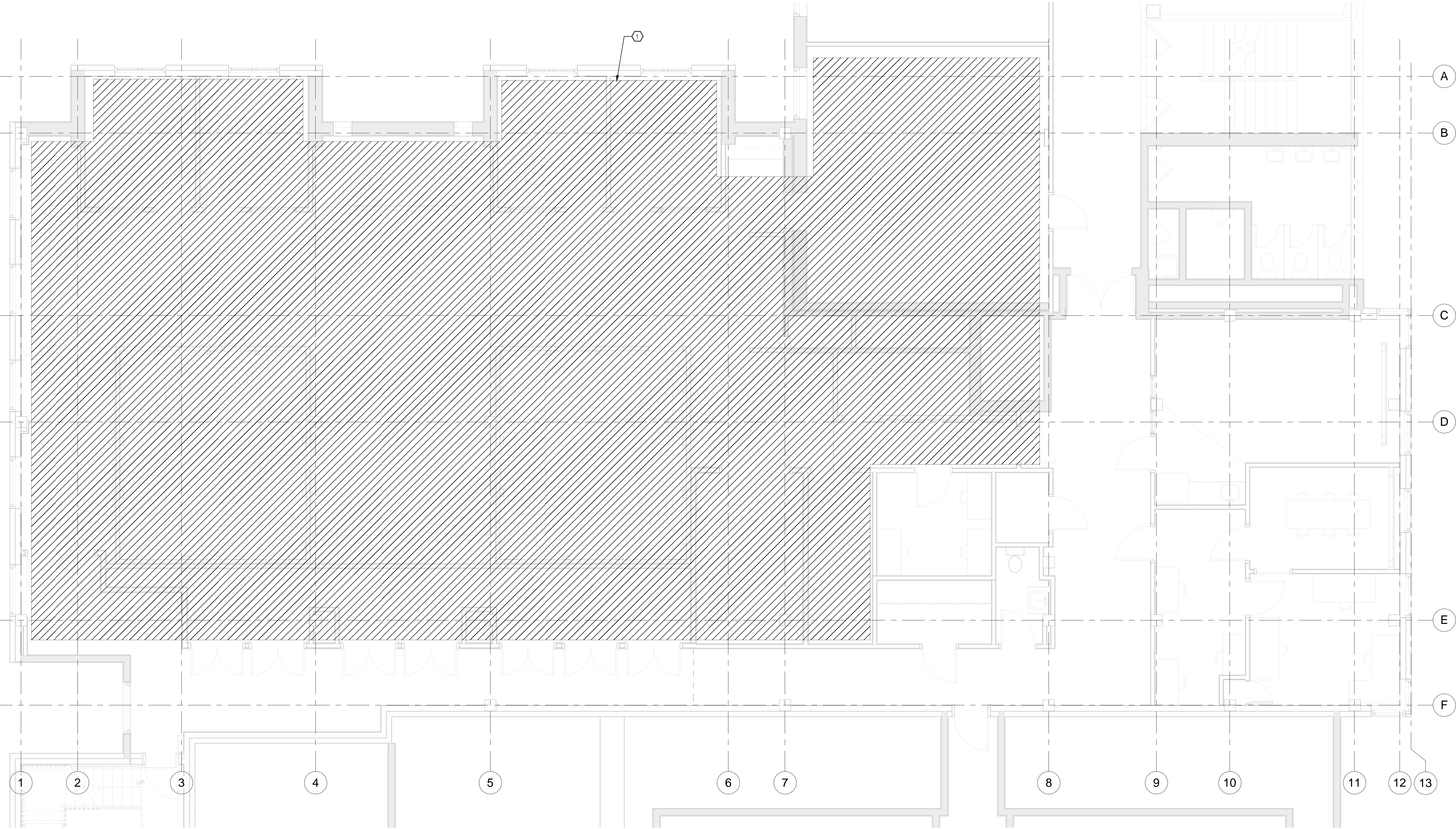
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SHEET TITLE:
3RD FLOOR FIRE
PROTECTION
SCALE: 1/4" = 1'-0"
SHEET NUMBER

FP-2.03



1 LEVEL 3 - Fire Protection
1/4" = 1'-0"

KEY NOTES

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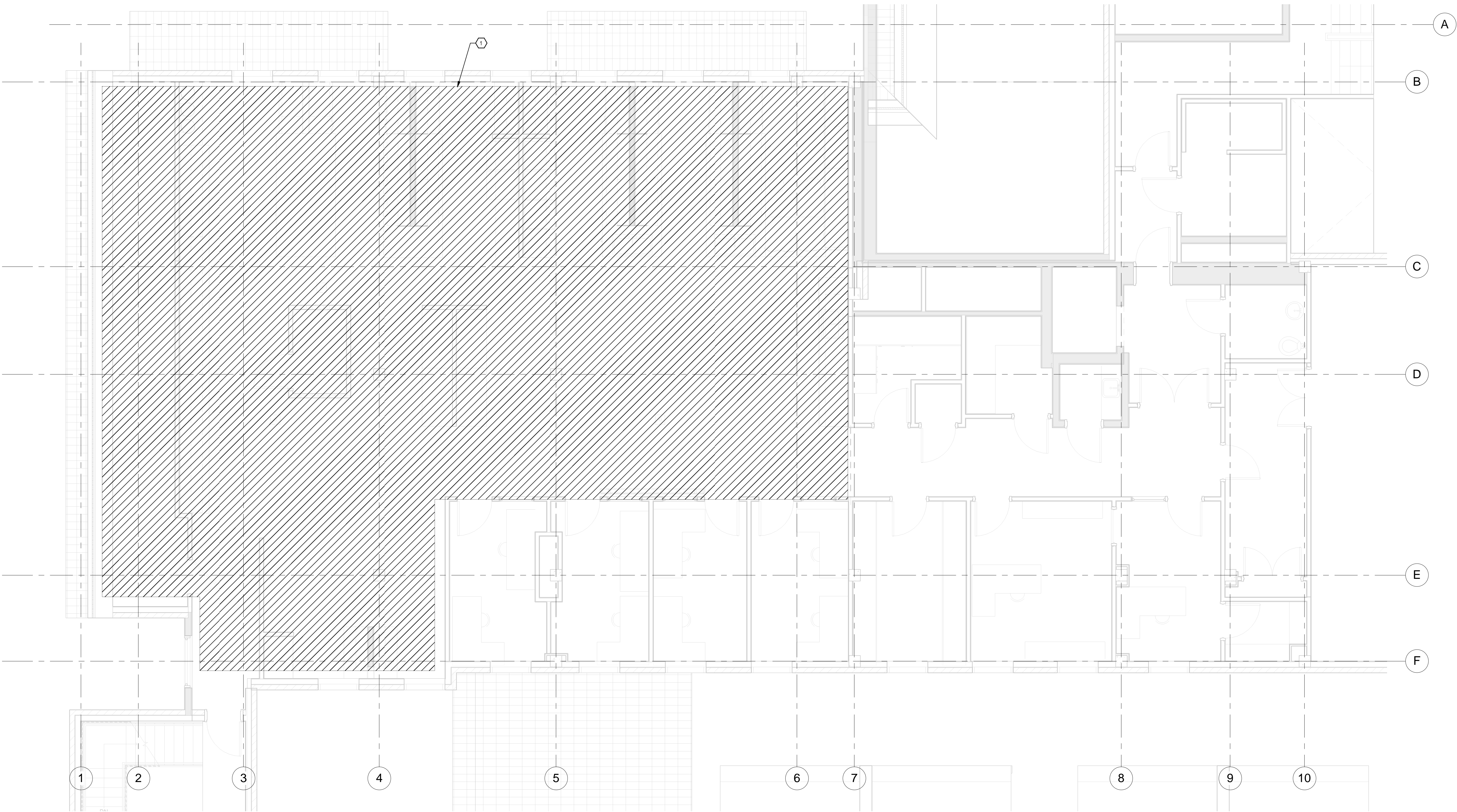
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ELECTRICAL LEGEND (NOTE: NOT ALL SYMBOLS SHOWN ARE USED ON THESE DRAWINGS)										- ABBREVIATIONS -				
SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION					
-ONE LINE SYMBOLS-		-GENERAL-		-POWER-		-LIGHTING (REFER TO LUMINAIRE SCHEDULE)-		-GROUNDING SYMBOLS-		(E)	EXISTING	IG	ISOLATED GROUND	
	CIRCUIT BREAKER		BRANCH CIRCUIT HOME RUN TO PANELBOARD, DESIGNATION INDICATES PANEL AND CIRCUIT NUMBERS		DUPLEX RECEPTACLE D = DEDICATED DUPLEX GROUNDED RECEPTACLE IG = ISOLATED GROUND		LUMINAIRES # = BRANCH CIRCUIT NUMBER x = SWITCH LEG IDENTIFIER		GROUND TEST WELL	(N)	NEW	JB	JUNCTION BOX	
	DRAW-OUT CIRCUIT BREAKER (MOLDED/INSULATED CASE)		CONTROL WIRING		GFI = GROUND FAULT CIRCUIT INTERRUPTER		SHADING INDICATES LUMINAIRE ON LIFE SAFETY		GROUNDING CONDUCTOR	(PART)	PARTIAL CIRCUIT	K	THOUSAND	
	DRAW-OUT POWER CIRCUIT BREAKER		LIGHTING, ONE-LINE, AND POWER CIRCUITING (UNDERGROUND)		FLOOR MOUNTED DUPLEX RECEPTACLE		SHADING INDICATES PORTION OF LUMINAIRE ON LIFE SAFETY		LIGHTNING PROTECTION AIR TERMINAL	+XX	MOUNTING HEIGHT IN INCHES. AFF UNO	LTS	LIGHTS	
	CONTROL FUSE		CONDUIT BREAK SYMBOL		FLOOR MOUNTED FOURPLEX RECEPTACLE		WALL MOUNTED LUMINAIRE		BONDING POINT	A	AMP	LV	LOW VOLTAGE	
	FUSE WITH SWITCH		CONDUIT CAP		FLOOR MOUNTED SPECIAL PURPOSE RECEPTACLE		STRIP LIGHT		GROUND BAR	AB	AMPS BRACING	MAM	MONITOR ADDRESSABLE MODULE	
	SWITCH		CONDUIT CHANGE IN ELEVATION		CEILING MOUNTED DUPLEX RECEPTACLE		STRIP LIGHT w/JUNCTION BOX		ELECTRICAL GROUND	AC	ABOVE COUNTER TOP	MATV	MASTER ANTENNA TV	
	PANELBOARD		CONDUIT STUB DOWN (OUT OF DRAWING LIMITS)		CEILING MOUNTED FOURPLEX RECEPTACLE		POLE MOUNTED LUMINAIRE		GROUND ROD	AF	AMP FRAME	MCB	MAIN CIRCUIT BREAKER	
	SPD OR MISC EQUIPMENT		CONDUIT STUB UP (OUT OF DRAWING LIMITS)		CEILING MOUNTED SPECIAL PURPOSE RECEPTACLE		LUMINAIRE		GROUND ROD WITH INSPECTION TEST WELL	AFC	ABOVE FINISHED COUNTER	MCC	MOTOR CONTROL CENTER	
	AUTOMATIC TRANSFER SWITCH		JUNCTION BOX		FOURPLEX RECEPTACLE		WALL WASHER LUMINAIRE		PIGTAIL	AFG	ABOVE FINISHED GRADE	MCSW	MOLDED CASE SWITCH	
	FEEDER DESIGNATION, SEE FEEDER SCHEDULE		WALL MOUNTED JUNCTION BOX		RANGE RECEPTACLE		ADJUSTABLE LUMINAIRE			AHJ	AUTHORITY HAVING JURISDICTION	MDF	MAIN DISTRIBUTION FRAME	
	AUTOMATIC TRANSFER SWITCH WITH BY-PASS		FLOOR MOUNTED JUNCTION BOX		SINGLE RECEPTACLE		PENDANT LUMINAIRE			AIC	AMPS INTERRUPTING CAPACITY	MDP	MAIN DISTRIBUTION PANEL	
	ENGINE GENERATOR		PUSH BUTTON A = ABORT DA = DURESS ALARM EPO = EMERGENCY POWER OFF IC = INTERCOM ST = SHUNT TRIP		DUPLEX EMERGENCY/CRITICAL		TRACK LIGHTING			AS	AMPS SENSOR	MH	MANHOLE	
	TRANSFORMER		SWITCH SYMBOL SINGLE POLE (IF BLANK) 2 = DOUBLE POLE 3 = THREE-WAY 4 = FOUR-WAY AS=ADJUSTABLE SPEED D = DIMMER K = KEY OPERATED LV = LOW VOLTAGE P = WITH PILOT LIGHT OS=OCCUPANCY SENSOR TO = THERMAL OVERLOAD VS = VACANCY SENSOR WP = WEATHERPROOF x = SMALL LETTER INDICATES LUMINAIRES CONTROLLED XP = EXPLOSION PROOF		FOURPLEX EMERGENCY/CRITICAL		PHOTOCELL			AT	AMP TRIP	MLO	MAIN LUGS ONLY	
	ENCLOSED BUSWAY		DISCONNECT SWITCH		FUSED DISCONNECT SWITCH		EXIT LIGHT (WITH FACES & DIRECTION ARROWS INDICATED)			ATS	AUTOMATIC TRANSFER SWITCH	MTD	MOUNTED	
	GROUND BUS		ENCLOSED CIRCUIT BREAKER		MOTOR STARTER		WALL MOUNTED EXIT LIGHT (WITH FACES & DIRECTION ARROWS INDICATED)			BFC	BELOW FINISHED CEILING	MTG	MOUNTING HEIGHT	
	WEATHERHEAD		DISTRIBUTION PANEL		COMBINATION MOTOR STARTER		WALL MOUNTED BATTERY PACK EMERGENCY LIGHT			C	CONDUIT	N	NEUTRAL	
	MOTOR		NEW PANEL, FLUSH MOUNTED		EXISTING DISTRIBUTION PANEL					CAM	CONTROL ADDRESSABLE MODULE	NC	NORMALLY CLOSED	
	DELTA CONNECTION		EXISTING PANEL, FLUSH MOUNTED		NEW PANEL, SURFACE MOUNTED					CB	MOLDED CASE CIRCUIT BREAKER	NEC	NATIONAL ELECTRIC CODE	
	WYE CONNECTION		EXISTING PANEL, SURFACE		COMBINATION SWITCH AND RECEPTACLE					CCTV	CLOSED CIRCUIT T.V.	NF	NON FUSED	
	GROUNDING WYE CONNECTION		CONDUIT SEAL OFF		FIRE RATED POKE-THRU					CKT	CIRCUIT	NIC	NOT IN CONTRACT	
	GROUNDING WYE CONNECTION W/RESISTOR GROUND		PARTITION CIRCUIT SPLIT		POWER POLE					CLG	CEILING	NL	NIGHT LIGHT	
	GROUNDING WYE CONNECTION W/REACTOR GROUND		SURFACE RACEWAY		CONTROL RELAY					CO	CONDUIT ONLY	NO	NORMALLY OPEN	
	METERING DEVICE		TRANSFORMER		METER					CUH	CABINET UNIT HEATER	P	POLE	
	CURRENT TRANSFORMER		MISC. SYSTEM COMPONENT AMP = AMPLIFIER ANN = ANNUNCIATOR ASD = ADJUSTABLE SPEED DRIVE ATS = AUTOMATIC TRANSFER SWITCH BMS = BALANCED MAGNETIC STRIP CAM = CONTROL ADDRESSABLE MODULE DE = DELAYED EGRESS DMA = DOOR MANAGEMENT ALARM DTC = DATA TERMINAL CABINET DVR = DIGITAL VIDEO RECORDER EC = ELECTRICAL CONTACTOR FAA = FIRE ALARM ANNUNCIATOR FACP = FIRE ALARM CONTROL PANEL FSD = FIRE SMOKE DAMPER MAM = MONITOR ADDRESSABLE MODULE N = NURSE CALL STATION NCS = NURSE'S CALL MASTER STATION NCT = NURSE CALL TERMINAL CABINET PIR = PASSIVE INFRARED DETECTOR SAP = SECURITY ALARM PANEL SPD = SURGE PROTECTIVE DEVICE VFD = VARIABLE FREQUENCY DRIVE								DMC	DUAL MODE CONTROLLER	PA	PUBLIC ADDRESS
	POTENTIAL TRANSFORMER		RESISTOR							DTB	DATA TERMINAL BOARD	PB	PULL BOX	
	LOAD-BREAK CONNECTOR		CONTACT NORMALLY OPEN - TYPE a							DTC	DATA TERMINAL CABINET	PIV	POST INDICATOR VALVE	
	PROTECTIVE RELAY DEVICE		CONTACT NORMALLY CLOSED - TYPE b							E/G	ENGINE/GENERATOR	PNL	PANEL	
	KEY INTERLOCK		SINGLE BATTERY							EC	EMPTY CONDUIT	PWR	POWER	
	RESISTOR		MULTIPLE BATTERIES							EF	EXHAUST FAN	RCPT(S)	RECEPTACLE(S)	
	LIGHTNING ARRESTOR		THERMAL ELEMENT, OVERLOAD RELAY							ELEC	ELECTRIC	RF	RETURN AIR FAN	
	THERMAL ELEMENT, OVERLOAD RELAY									ELEV	ELEVATION	SBC	STRANDED BARE COPPER	
										EM	EM EMERGENCY	SF	SUPPLY AIR FAN	
										EMERG	EMERGENCY	SO	SPACE ONLY	
										EMS	ENERGY MANAGEMENT SYSTEM	SP	SPARE	
										EP	EXPLOSION PROOF	SPD	SURGE PROTECTIVE DEVICE	
										EWC	ELECTRIC WATER COOLER	ST	SHUNT TRIP	
										EX	EXISTING	SW	SWITCH	
										F	FUSE	T	TRANSFORMER	
										FA	FIRE ALARM	TEL	TELEPHONE	
										FAA	FIRE ALARM ANNUNCIATOR	TF	TRANSFER FAN	
										FACP	FIRE ALARM CONTROL PANEL	TTB	TELEPHONE TERMINAL BOARD	
										FAP	FIRE ALARM PANEL	TV	TELEVISION	
										FCU	FAN COIL UNIT	UF	UNDERFLOOR	
										FIXT	FIXTURE	UG	UNDERGROUND	
										FLR	FLOOR	UH	UNIT HEATER	
										FLUOR	FLUORESCENT	UNO	UNLESS NOTED OTHERWISE	
										FTU	FAN TERMINAL UNIT	UPS	UNINTERRUPTIBLE POWER SUPPLY	
										G	GROUND (EQUIPMENT)	V	VOLTAGE	
										GEN	GENERATOR	VFD	VARIABLE FREQUENCY DRIVE	
										GFCI	GROUND FAULT CIRCUIT INTERRUPTER	VP	VAPOR PROOF	
										GFI	GROUND FAULT CIRCUIT INTERRUPTER	VV	VARIABLE VOLUME UNIT	
										GAF	GROUND FAULT INTERRUPTER	W	WIRE	
										GND	GROUND (EQUIPMENT)	WI	WITH	
										HC	HANDICAPPED	WG	WIRE GUARD	
										HG	HOSPITAL GRADE	WP	WEATHERPROOF	
										HP	HORSEPOWER	WT	WATERTIGHT	
										HT	HEAT TRACE	XFMR	TRANSFORMER	
										HV	HIGH VOLTAGE	XP	EXPLOSION PROOF	
										IC	INTERRUPTING CAPACITY			
										ICAND	INCANDESCENT			
										IDF	INTERMEDIATE DISTRIBUTION FRAME			

GENERAL NOTES

ALL ELECTRICAL WORK SHALL BE IN ACCORDANCE WITH LOCAL BUILDING CODES AND THE NATIONAL ELECTRICAL CODE (NEC).

CONTRACTOR SHALL REFERENCE SPECIFICATIONS FOR CONSTRUCTION MATERIALS AND INSTALLATION PROCEDURES. SPECIFICATIONS ARE A PART OF THE CONSTRUCTION DOCUMENTS. SHOULD ANY CONFLICT ARISE BETWEEN THE DRAWINGS AND SPECIFICATIONS, SUCH CONFLICT SHALL BE BROUGHT TO THE ATTENTION OF THE ARCHITECT/ENGINEER FOR RESOLUTION.

THESE DRAWINGS ARE DIAGRAMMATIC IN CHARACTER AND DO NOT SHOW MATERIALS FOR A COMPLETE INSTALLATION.

CONTRACTOR SHALL PLAN THE INSTALLATION AND LAYOUT THE WORK AS DIAGRAMMED IN THESE DOCUMENTS. REFER TO THE FLOOR PLANS, SCHEMATICS AND DIAGRAMS OF OTHER TRADES FOR ELECTRICAL REQUIREMENTS, BRANCH CIRCUITS AND ELECTRICAL CONNECTIONS NOT INDICATED ON THESE DOCUMENTS.

ALL PENETRATIONS THROUGH FIRE SEPARATION WALLS ARE TO BE SEALED TO MAINTAIN SEPARATION RATING.

JUNCTION BOXES FOR LUMINAIRES ARE NOT INDICATED. ELECTRICAL CONTRACTOR IS RESPONSIBLE FOR PROVIDING THE PROPER NUMBER OF J-BOXES TO MEET LOCAL CODE AND NATIONAL ELECTRICAL CODE.

-GRAPHIC SYMBOLS-	
	KEY NOTE
	REVISION NUMBER
	DETAIL NOTE
	MECHANICAL EQUIPMENT TAG
	SHADING INDICATES EQUIPMENT
	HATCHING INDICATES ITEM(S) TO BE REMOVED
	ROOM NUMBER
	NORTH ARROW
	DETAIL BUBBLE 1 = DETAIL NUMBER 2 = SHEET NUMBER - WHERE DETAIL IS SHOWN
	SECTION CUT 1 = SECTION NUMBER/LETTER 2 = SHEET NUMBER - WHERE SECTION IS SHOWN

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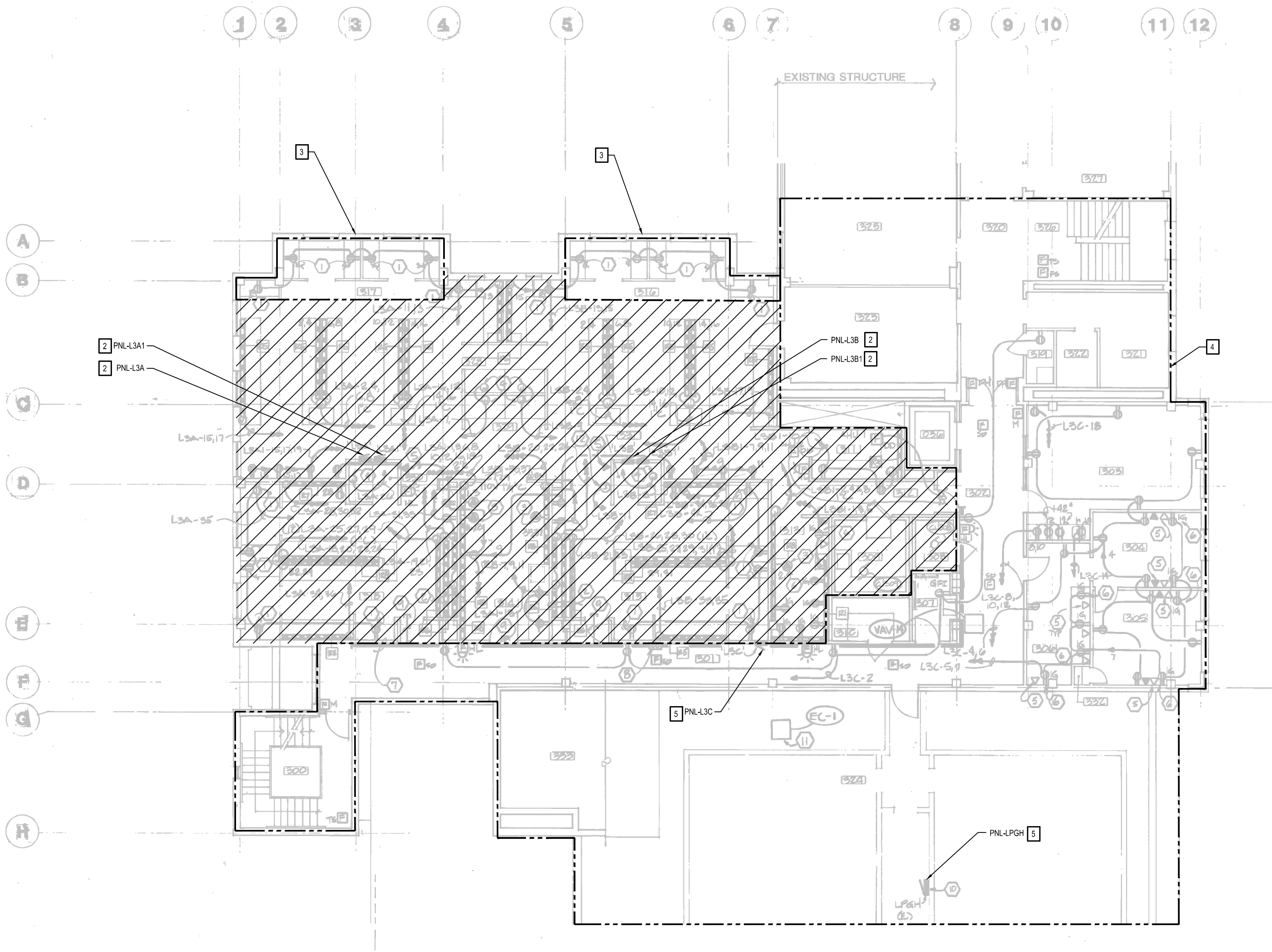
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KEY NOTES

- 1 REMOVE EXISTING RECEPTACLES, RACEWAY, JUNCTION BOXES, ALL OTHER ELECTRICAL DEVICES AND ASSOCIATED CONDUIT/CONDUCTORS BACK TO SOURCE.
- 2 REFER TO DEMO ONE-LINE ON SHEET ED5.01 FOR PANEL L3A, L3A1, L3B, AND L3B1 DEMO REQUIREMENTS.
- 3 RECEPTACLES WILL BE RECONNECTED TO NEW PANEL, REMOVE ASSOCIATED CIRCUIT HOME RUN.
- 4 ELECTRICAL INSTALLATION TO REMAIN IN PLACE IN ROOM/HALLWAY.
- 5 EXISTING PANEL AND ASSOCIATED CIRCUITS TO REMAIN IN PLACE.



3RD FLOOR POWER DEMOLITION PLAN
SCALE: 1/8"=1'-0"



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DEMOLITION PLAN

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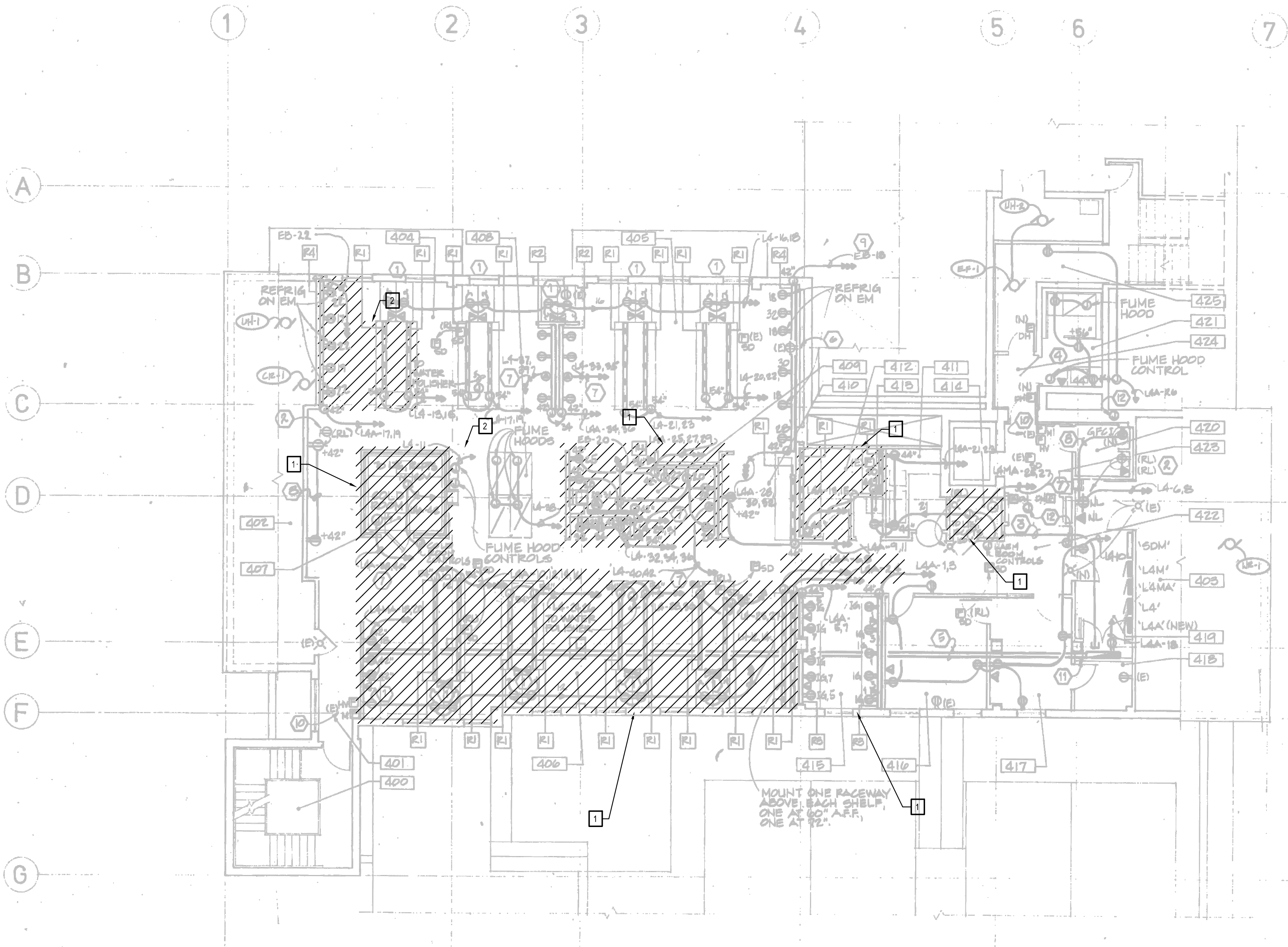
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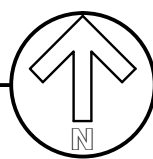
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KEY NOTES

- 1 REMOVE EXISTING RECEPTACLES, RACEWAY, JUNCTION BOXES, ALL OTHER ELECTRICAL DEVICES AND ASSOCIATED CONDUIT/CONDUCTORS BACK TO SOURCE.
- 2 FUME HOOD CONTROLS TO BE RELOCATED AS SHOWN ON POWER PLAN. REFER TO E2.04 FOR FURTHER DETAILS.



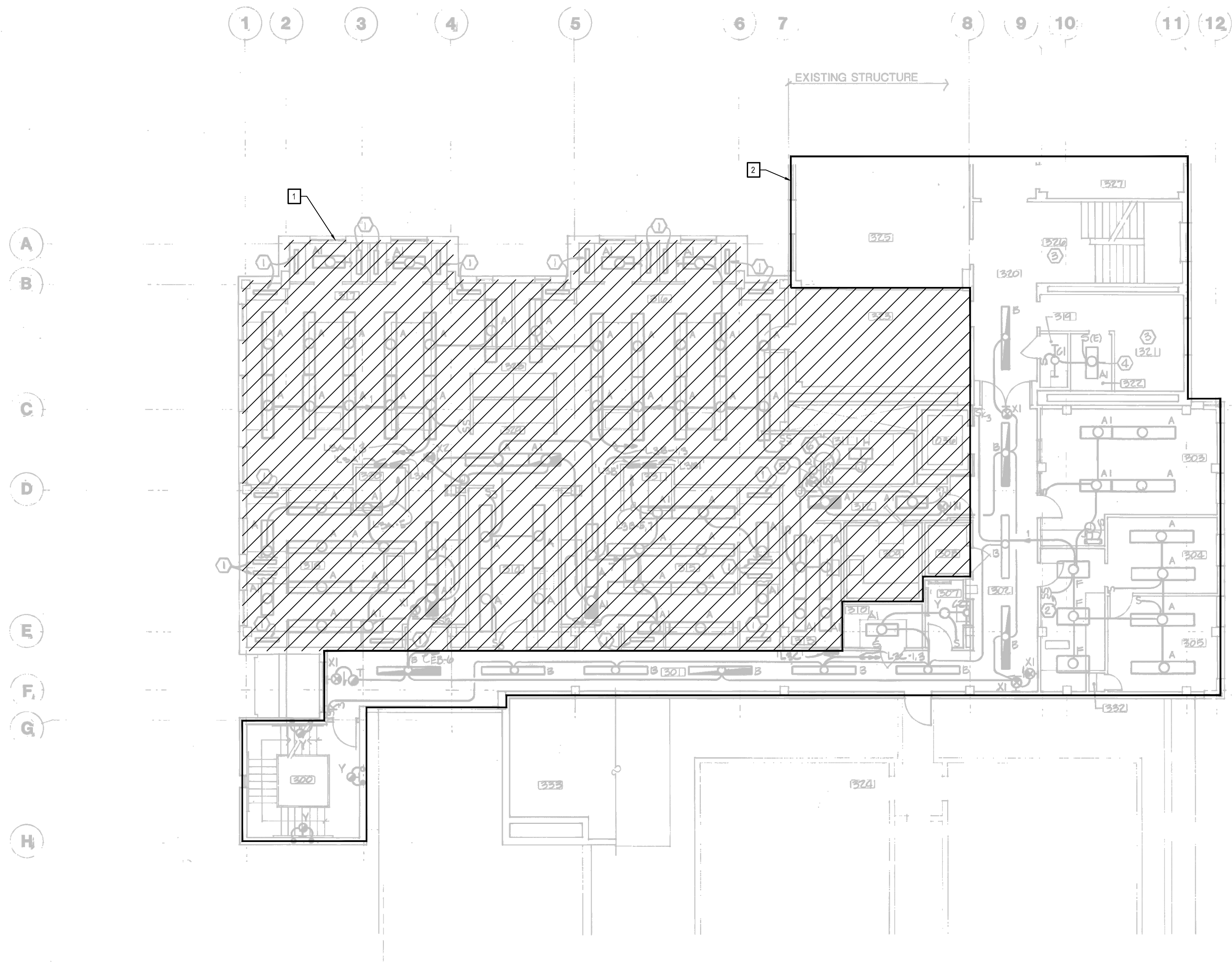
4TH FLOOR POWER DEMOLITION PLAN
SCALE: 1/8"=1'-0"



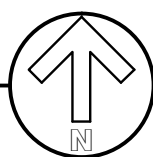
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KEY NOTES

- 1 REMOVE LIGHTING FIXTURES, ASSOCIATED CONTROL DEVICES AND ASSOCIATED CONDUIT/CONDUCTORS IN HATCHED AREA BACK TO SOURCE.
- 2 LIGHTING TO REMAIN IN PLACE IN ROOM/HALLWAY.



3RD FLOOR LIGHTING DEMOLITION PLAN
SCALE: 1/8"=1'-0"



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SHEET NUMBER:

ED3.03

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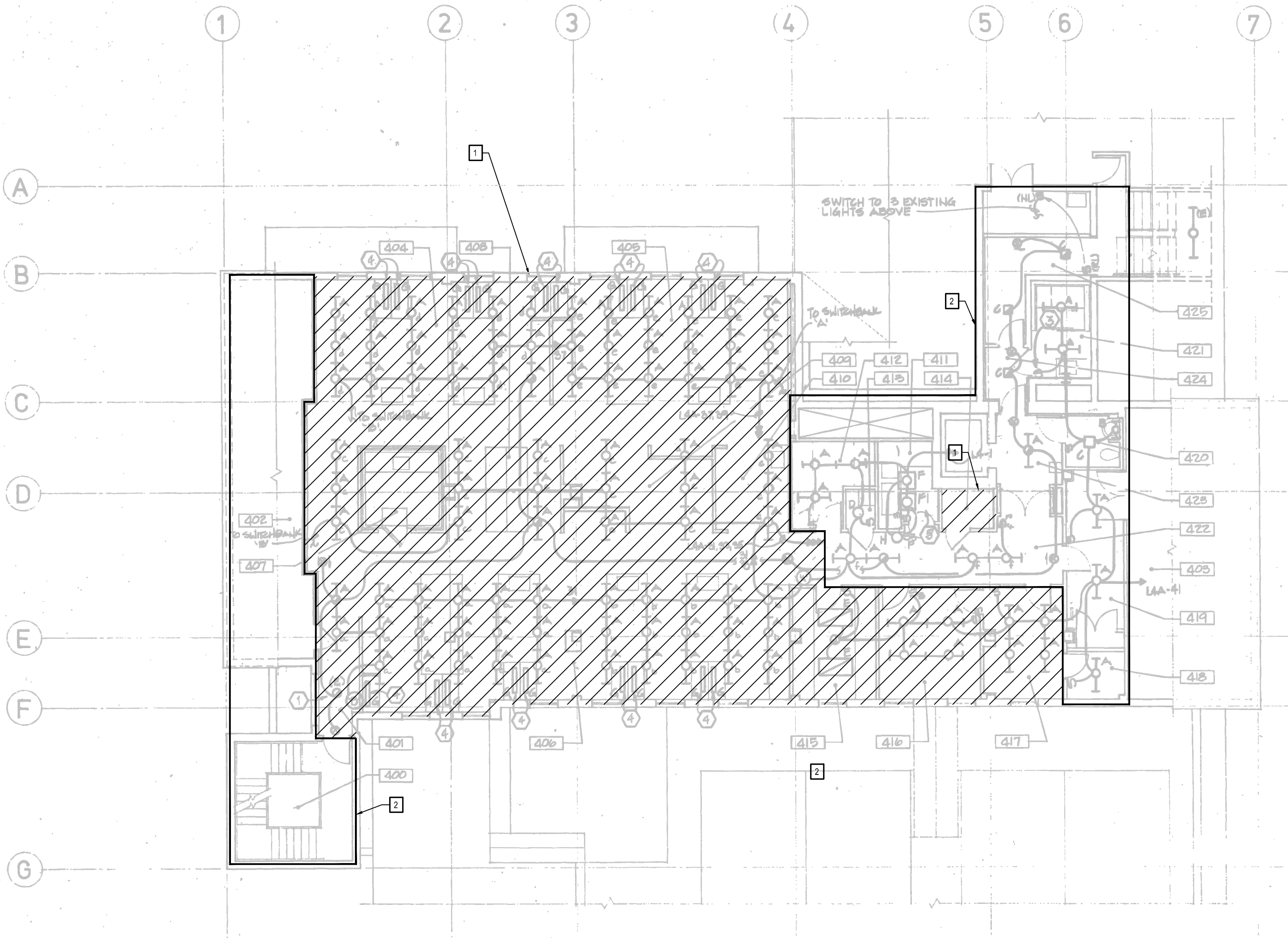
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18499 100% DD
SHEET TITLE:
4TH FLOOR LIGHTING
DEMOLITION PLAN

SCALE: AS NOTED
SHEET NUMBER:

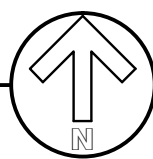
ED3.04

KEY NOTES

- 1 REMOVE LIGHTING FIXTURES, ASSOCIATED CONTROL DEVICES AND ASSOCIATED CONDUIT/CONDUCTORS IN HATCHED AREA BACK TO PANEL 'L4A'.
2 LIGHTING TO REMAIN IN PLACE IN ROOM/HALLWAY.



4TH FLOOR LIGHTING DEMOLITION PLAN
SCALE: 1/8"=1'-0"





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SHEET TITLE:
DEMOLITION ONE-LINE

ED5.01



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SHEET TITLE:
3RD FLOOR POWER
PLAN
SCALE: 1/4" = 1'-0"
SHEET NUMBER

E2.03

SHEET NOTES

1. LIGHT LINES REPRESENT EXISTING WORK AND
DARK LINES REPRESENT NEW WORK.

KEY NOTES

- DASHED LINE INDICATES EXTENT OF SCOPE.
- REFER TO SPECIFICATIONS FOR POWER BUS REQUIREMENTS. LOCATIONS OF RECEPTACLES CONNECTED TO PB3 ARE APPROXIMATE AND SHOULD BE COORDINATED WITH OWNER. EACH RECEPTACLE CORD SHALL BE 50 TYPE, 15-FOOT, WITH KELLUM GRIP ON EACH END.
- NEW HOMERUN FOR EXISTING CIRCUIT.
- EXTEND EXISTING FIRE ALARM CIRCUITS TO PROVIDE COVERAGE INTO LAB AREA.
- NEMA TYPE 14-20R RECEPTACLE.
- REFER TO SHEET XXX FOR PROCESS LIGHTING INSIDE CHAMBERS.

1 LEVEL 3 - POWER
1/4" = 1'-0"

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SHEET TITLE:
4TH FLOOR POWER
PLAN
SCALE: 1/4" = 1'-0"
SHEET NUMBER

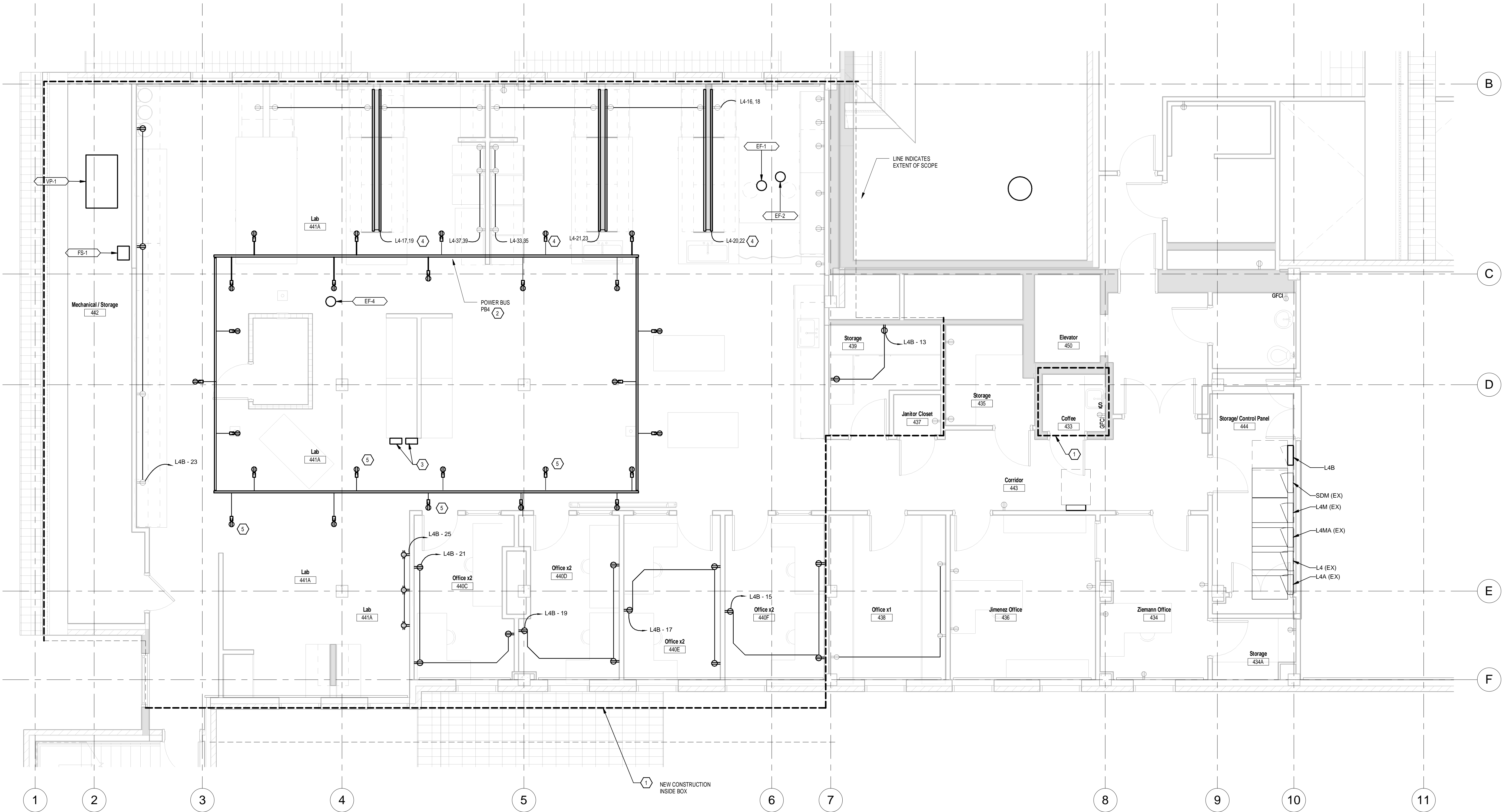
E2.04

SHEET NOTES

1. LIGHT LINES REPRESENT EXISTING WORK AND DARK LINES REPRESENT NEW WORK.

KEY NOTES

- 1 DASHED LINE INDICATES EXTENT OF SCOPE.
- 2 REFER TO SPECIFICATIONS FOR POWER BUS REQUIREMENTS. LOCATIONS OF RECEPTACLES CONNECTED TO PB4 ARE APPROXIMATE AND SHOULD BE COORDINATED WITH OWNER. EACH RECEPTACLE CORD SHALL BE SO TYPE, 15-FOOT, WITH KELLUM GRIP ON EACH END.
- 3 RELOCATE FUME HOOD CONTROLS TO THIS LOCATION. RELOCATE EXISTING POWER AND CONTROLS CIRCUIT.
- 4 EXISTING SURFACE MOUNTED RACEWAY.
- 5 NEMA TYPE 14-20R RECEPTACLE.



1 LEVEL 4 - POWER
1/4" = 1'-0"

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SHEET TITLE:
3RD FLOOR LIGHTING
PLAN
SCALE: 1/4" = 1'-0"
SHEET NUMBER

E3.03

SHEET NOTES

1. LIGHT LINES REPRESENT EXISTING WORK AND DARK LINES REPRESENT NEW WORK.

KEY NOTES

1. DASHED LINE INDICATES EXTENT OF SCOPE.

2. RECEPTACLES DENOTED WITH 'VS' ARE ASSOCIATED WITH TASK LIGHTS AND SHOULD BE TIED TO LOCAL VACANCY SENSOR.

1. LEVEL 3
1/4" = 1'-0"



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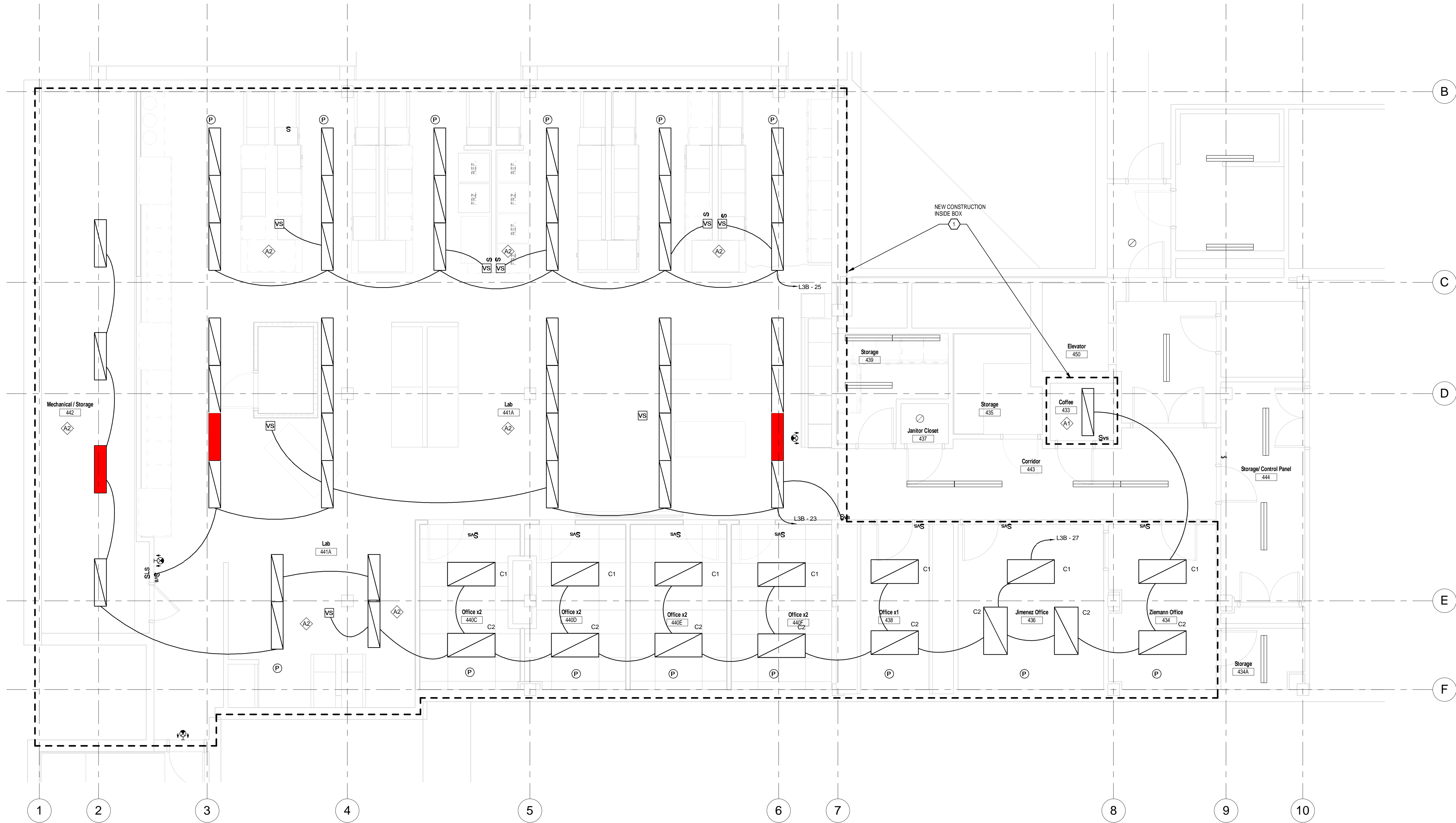
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SHEET TITLE:
4TH FLOOR LIGHTING
PLAN
SCALE: 1/4" = 1'-0"
SHEET NUMBER

E3.04



1 LEVEL 4
1/4" = 1'-0"

SHEET NOTES

1. LIGHT LINES REPRESENT EXISTING WORK AND DARK LINES REPRESENT NEW WORK.

KEY NOTES

1 DASHED LINE INDICATES EXTENT OF SCOPE.

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SHEET TITLE:
3RD FLOOR SPECIAL
SYSTEMS
SCALE: 1/4" = 1'-0"
SHEET NUMBER

E4.03

1 LEVEL 3 - SPECIAL SYSTEMS
1/4" = 1'-0"

KEY NOTES

1 REFER TO SPECIFICATIONS FOR CABLE TRAY REQUIREMENTS.
CABLE TRAY USED FOR LAB INSTRUMENTS AND LOW VOLTAGE
CABLE ONLY.

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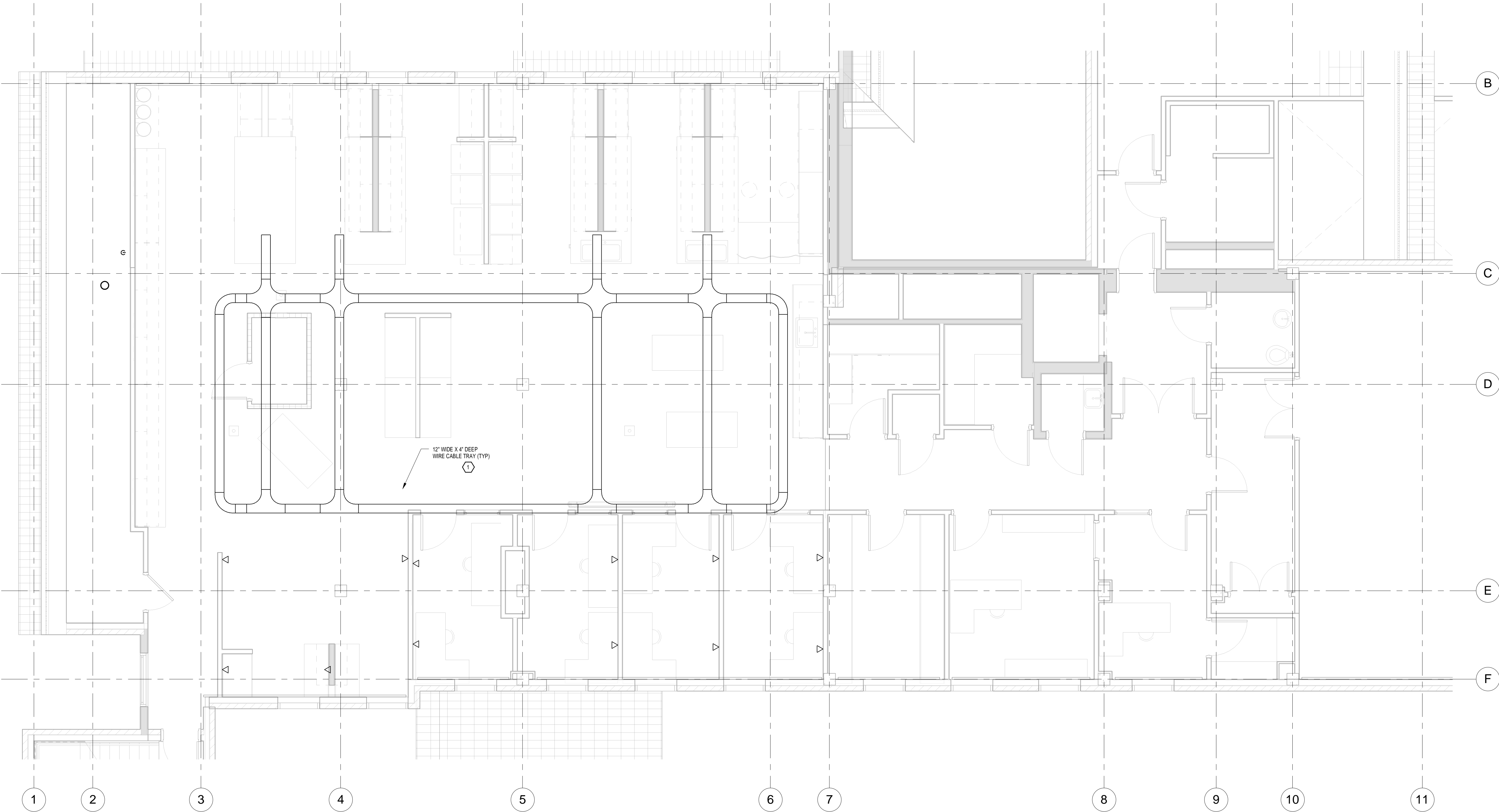
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SHEET TITLE:
4TH FLOOR SPECIAL
SYSTEMS
SCALE: 1/4" = 1'-0"
SHEET NUMBER

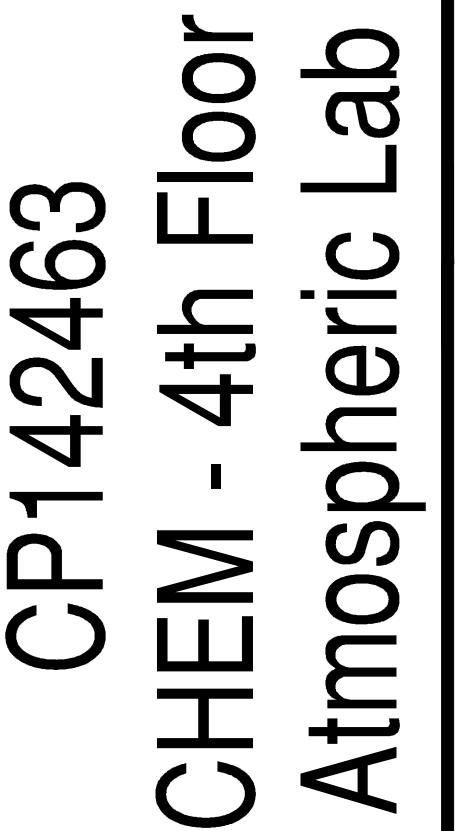
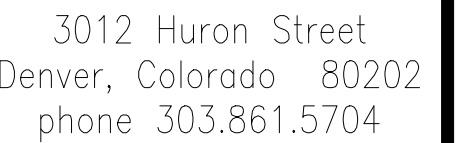
E4.04



1 LEVEL 4 - SPECIAL SYSTEMS
1/4" = 1'-0"

KEY NOTES

1 REFER TO SPECIFICATIONS FOR CABLE TRAY REQUIREMENTS.
CABLE TRAY USED FOR LAB INSTRUMENTS AND LOW VOLTAGE
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SHEET TITLE:
INSTALLATION ONE-LINE
DIAGRAM

E5.01

1 NEW CIRCUIT BREAKER. PROVIDE ALL HARDWARE TO INSTALL THE NEW BREAKERS. PROVIDE PROPER LOAD IDENTIFICATION PER SPECIFICATIONS. CONFIRM ADEQUATE SPACE FOR NEW BREAKERS. MATCH MFG AND AIC RATING.

VALUES BASED ON EXISTING DATA. NEW EQUIPMENT VERIFIED WITH SKM VLS

SHORT CIRCUIT SCHEDULE			FEEDER SCHEDULE			Version 0911
POINT	ISCA	DESCRIPTION	KEY	CONDUIT & CONDUCTORS [SEE NOTE 1]	REMARKS	
X1	33,617	AVAILABLE	150A4G	2" C - #41/0, 1#6G		
X2	24,658	AVAILABLE	225A4G	2-1/2" C - #4/0, 1#4G		
X3	12,049	AVAILABLE				
X4	18,290	AVAILABLE				
X5	4,753	AVAILABLE				
X6	7,190	AVAILABLE				
X7	11,310	AVAILABLE				
X8	8,311	AVAILABLE				
X9	6,933	AVAILABLE				
X10	8,311	AVAILABLE				
X11	10,878	AVAILABLE				
X12	11,524	AVAILABLE				
X13	9,145	AVAILABLE				
X14	15,697	AVAILABLE				
X15	9,755	AVAILABLE				

SCHEDULE NOTES:

1. THIS FEEDER SCHEDULE IS BASED ON 60 DEGREE CENTIGRADE (TYPE THW) WIRE AND TERMINATIONS FOR SIZES #14 TO #1/2 AND 75 DEGREE CENTIGRADE (TYPE THHN/THWN) WIRE AND TERMINATIONS FOR SIZES #1/0 AND LARGER. UNLESS NOTED OTHERWISE, CONDUIT IS SIZED BASED ON TYPE EMT CONDUIT. USE OF OTHER CONDUIT TYPES REQUIRES RESIZING OF CONDUIT.



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SHEET TITLE:
SCHEDULES

SCALE: AS NOTED

SHEET NUMBER:

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PANEL: NEW - L3B VOLTAGE: 120/208 V. TYPE: PANELBOARD
3 PH MOUNTING: SURFACE
4 W. PANEL COVER: DOOR IN HINGED COVER
FED FROM: DP2 225 AMP MAIN RATED AT 80% 60 HZ NEUTRAL BUS: YES ISOLATED GND: NO
N/A AMP MAIN LUGS
225 AMP BUS
COPPER BUSING
10000 SYMMETRICAL RMS AMPS
PANEL SHORT CIRCUIT RATING

NOTE	DESCRIPTION	CCT VA	BREAKER AMP / P	CCT PH CCT AMP / P	BREAKER AMP / P	CCT VA	DESCRIPTION	NOTE
	LAB-OFFICE	1000	20 / 1	1 A 2	20 / 1	360	PHONE-ROOM	
	LAB-OFFICE	1000	20 / 1	3 B 4	20 / 1	1000	COMPUTER ROOM	
	LAB-OFFICE	1000	20 / 1	5 C 6	20 / 1	1000	COMPUTER ROOM	
	LAB-OFFICE	1000	20 / 1	7 A 8	20 / 1	1000	COMPUTER ROOM	
	WORKSTATION	1000	20 / 1	9 B 10	20 / 1	1000	COMPUTER ROOM	
	WORKSTATION	1000	20 / 1	11 C 12	20 / 1	1000	COMPUTER ROOM	
	WORKSTATION	1000	20 / 1	13 A 14	20 / 1	1000	COMPUTER ROOM	
	L3 LAB-LIGHTING	1176	20 / 1	15 B 16	20 / 1	360	STORAGE	
	L3 LAB-LIGHTING	896	20 / 1	17 C 18	20 / 1	540	STORAGE	
	L3 MECH-STORAGE LIGHTING	920	20 / 1	19 A 20	20 / 1	360	STORAGE	
	L3 OFFICE LIGHTING	896	20 / 1	21 B 22	20 / 1	540	GENERAL PURPOSE RECEIPT	
	L4 LAB LIGHTING	1120	20 / 1	23 C 24	20 / 1	540	GENERAL PURPOSE RECEIPT	
	L4 LAB LIGHTING	1008	20 / 1	25 A 26	20 / 1	540	GENERAL PURPOSE RECEIPT	
	L4 OFFICE/STORAGE LIGHTING	1408	20 / 1	27 B 28	20 / 1	540	LAB-RECEPT	
		0	20 / 1	29 C 30	20 / 1	540	LAB-RECEPT	
	BUSBAR - PB3	13000	150 / -	31 A 32	20 / 1	540	LAB-RECEPT	
		13000	- / -	33 B 34	20 / 1	540	LAB-RECEPT	
		13000	- / -	35 C 36	20 / 1	540	LAB-RECEPT	
	SPARE	0	20 / 1	37 A 38	20 / 1	0	SPARE	
	SPARE	0	20 / 1	39 B 40	20 / 1	0	SPARE	
	SPARE	0	20 / 1	41 C 42	20 / 1	0	SPARE	

PANEL LOADING SUMMARY					
LOAD TYPE	PH A	PH B	PH C	TOTAL	
INCANDESCENT	0.0	0.0	0.0	0.0	kVA
FLUORESCENT	1.9	3.5	2.0	7.4	kVA
RECEPTACLES	14.8	15.0	15.2	44.9	kVA
MOTORS	0.0	0.0	0.0	0.0	kVA
KIT. EQUIP.	0.0	0.0	0.0	0.0	kVA
HEAT	0.0	0.0	0.0	0.0	kVA
COMPUTER	5.0	4.0	4.0	13.0	kVA
OTHER	0.0	0.0	0.0	0.0	kVA
PROCESS	0.0	0.0	0.0	0.0	kVA
TOTAL	21.7	22.5	21.2	65.3	kVA

PHASE BALANCE (%)				
A-B	B-C	C-A	PF	
97	94	97	94	
MIN PANEL AMPACITY 183 AMPERES				

NEC DEMAND LOAD SUMMARY					
LOAD TYPE	kW	POWER FACT	DEMAND FACTOR	CALCULATED LOAD	
INCANDESCENT	0.0	@ 100% = 0.0	@ 125% = 0.0	kVA	
FLUORESCENT	13.9	@ 95% = 13.2	@ 125% = 17.4	kVA	
RECEPTACLES	42.0	@ 95% = 40.0	@ 125% = 52.3	kVA	
MOTORS	0.0	@ 95% = 0.0	@ 100% = 0.0	kVA	
KIT. EQUIP.	0.0	@ 95% = 0.0	@ 50% = 0.0	kVA	
HEAT	0.0	@ 95% = 0.0	@ 100% = 0.0	kVA	
COMPUTER	0.0	@ 95% = 0.0	@ 100% = 0.0	kVA	
OTHER	0.0	@ 95% = 0.0	@ 100% = 0.0	kVA	
PROCESS	0.0	@ 95% = 0.0	@ 100% = 0.0	kVA	
25 % SPARE	10.0	@ 90% = 11.1	@ 100% = 11.1	kVA	
TOTAL	52.0	kW		66.4	kVA

PANEL: L4B VOLTAGE: 120/208 V. TYPE: PANELBOARD
3 PH MOUNTING: SURFACE
4 W. PANEL COVER: DOOR IN HINGED COVER
FED FROM: DP2 225 AMP MAIN RATED AT 80% 60 HZ NEUTRAL BUS: YES ISOLATED GND: NO
N/A AMP MAIN LUGS
225 AMP BUS
COPPER BUSING
10000 SYMMETRICAL RMS AMPS
PANEL SHORT CIRCUIT RATING

NOTE	DESCRIPTION	CCT VA	BREAKER AMP / P	CCT PH CCT AMP / P	BREAKER AMP / P	CCT VA	DESCRIPTION	NOTE
	SPARE	0	20 / 1	1 A 2	15 / -	300	EF-1	
	SPARE	0	20 / 1	3 B 4	- / -	300		
	SPARE	0	20 / 1	5 C 6	- / 3	300		
	SPARE	0	20 / 1	7 A 8	15 / -	300	EF-2	
	SPARE	0	20 / 1	9 B 10	- / -	300		
	SPARE	0	20 / 1	11 C 12	- / 3	300		
	STORAGE RCPT	360	20 / 1	13 A 14	25 / 1	1266	EF-3	
	OFFICE RCPT	540	20 / 1	15 B 16	25 / 1	1266		
	OFFICE RCPT	540	20 / 1	17 C 18	25 / 1	1266		
	OFFICE RCPT	540	20 / 1	19 A 20	15 / 1	300	EF-4	
	OFFICE RCPT	540	20 / 1	21 B 22	15 / 1	300		
	GENERAL RCPT	720	20 / 1	23 C 24	15 / 1	300		
	GENERAL RCPT	1080	20 / 1	25 A 26	60 / 1	2930	VP-1	
	SPARE	0	20 / 1	27 B 28	60 / 1	2930		
	MISC PROCESS	720	20 / 1	29 C 30	60 / 1	2930		
	SPARE	0	20 / 1	31 A 32	20 / 1	0	SPARE	
	SPARE	0	20 / 1	33 B 34	20 / 1	0	SPARE	
	SPARE	0	20 / 1	35 C 36	20 / 1	0	SPARE	
	SPARE	0	20 / 1	37 A 38	20 / 1	0	SPARE	
	SPARE	0	20 / 1	39 B 40	20 / 1	0	SPARE	
	SPARE	0	20 / 1	41 C 42	20 / 1	0	SPARE	

PANEL LOADING SUMMARY					
LOAD TYPE	PH A	PH B	PH C	TOTAL	
INCANDESCENT	0.0	0.0	0.0	0.0	kVA
FLUORESCENT	0.0	0.0	0.0	0.0	kVA
RECEPTACLES	2.0	1.1	2.0	5.0	kVA
MOTORS	5.1	5.1	5.1	15.3	kVA
KIT. EQUIP.	0.0	0.0	0.0	0.0	kVA
HEAT	0.0	0.0	0.0	0.0	kVA
COMPUTER	0.0	0.0	0.0	0.0	kVA
OTHER	0.0	0.0	0.0	0.0	kVA
PROCESS	0.0	0.0	0.0	0.0	kVA
TOTAL	7.1	6.2	7.1	20.3	kVA

PHASE BALANCE (%)				
A-B	B-C	C-A	PF	
87	87	100	88	
MIN PANEL AMPACITY 70 AMPERES				

NEC DEMAND LOAD SUMMARY					
LOAD TYPE	kW	POWER FACT	DEMAND FACTOR	CALCULATED LOAD	
INCANDESCENT	0.0	@ 100% = 0.0	@ 125% = 0.0	kVA	
FLUORESCENT	0.0	@ 95% = 0.0	@ 125% = 0.0	kVA	
RECEPTACLES	0.0	@ 95% = 0.0	@ 125% = 0.0	kVA	
MOTORS	0.0	@ 95% = 0.0	@ 100% = 0.0	kVA	
KIT. EQUIP.	4.8	@ 95% = 5.0	@ 100% = 5.0	kVA	
REMAINDER	0.0	@ 95% = 0.0	@ 50% = 0.0	kVA	
MOTORS	0.0	@ 95% = 0.0	@ 100% = 0.0	kVA	
LARGEST	2.3	@ 80% = 2.9	@ 125% = 3.7	kVA	
REMAINDER	9.9	@ 80% = 12.4	@ 100% = 12.4	kVA	
KITCHEN EQUIP.	0.0	@ 80% = 0.0	@ 100% = 0.0	kVA	
HEAT	0.0	@ 100% = 0.0	@ 125% = 0.0	kVA	
COMPUTER	0.0	@ 95% = 0.0	@ 100% = 0.0	kVA	
OTHER	0.0	@ 95% = 0.0	@ 100% = 0.0	kVA	
PROCESS	0.0	@ 95% = 0.0	@ 100% = 0.0	kVA	
20 % SPARE	3.7	@ 90% = 4.1	@ 100% = 4.1	kVA	
TOTAL	21.0	kW		25.2	kVA

PANEL: NEW - L3A VOLTAGE: 120/208 V. TYPE: PANELBOARD
3 PH MOUNTING: SURFACE
4 W. PANEL COVER: DOOR IN HINGED COVER
FED FROM: DP2 225 AMP MAIN RATED AT 80% 60 HZ NEUTRAL BUS: YES ISOLATED GND: NO
MLO AMP MAIN LUGS
400 AMP BUS
COPPER BUSING
22000 SYMMETRICAL RMS AMPS
PANEL SHORT CIRCUIT RATING

NOTE	DESCRIPTION	CCT VA	BREAKER AMP / P	CCT PH CCT AMP / P	BREAKER AMP / P	CCT VA	DESCRIPTION	NOTE
	N WALL VISIBLE	1152	150 / -	43 A 44	20 / 1	1120	20 PERCENT UV	
	N WALL VISIBLE	1568	- / -	45 B 46	20 / 1	1150	30 PERCENT UV	
	S WALL VISIBLE	1152	- / 3	47 C 48	20 / 1	1150	30 PERCENT UV	
	S WALL VISIBLE	1568	20 / 1	49 A 50	20 / 1	1840	50 PERCENT UV	
	W WALL VISIBLE	1152	20 / 1	51 B 52	20 / 1	1380	50 PERCENT UV	
	W WALL VISIBLE	1568	20 / 1	53 C 54	20 / 1	1840	50 PERCENT UV	
	W WALL VISIBLE	1152	20 / 1	55 A 56	20 / 1	1380	50 PERCENT UV	
	W WALL VISIBLE	1568	20 / 1	57 B 58	20 / 1	1380	50 PERCENT UV	
		0	20 / 1	59 C 60	20 / 1	0		
		0	20 / 1	61 A 62	20 / 1	0		
		0	20 / 1	63 B 64	20 / 1	0		
		0	20 / 1	65 C 66	20 / 1	0		
		0	20 / 1	67 A 68	20 / 1	0		
		0	20 / 1	69 B 70	20 / 1	1120	20 PERCENT UV	
		0	20 / 1	71 C 72	20 / 1	1150	30 PERCENT UV	
		0	20 / 1	73 A 74	20 / 1	1150	30 PERCENT UV	
		0	20 / 1	75 B 76	20 / 1	1840	50 PERCENT UV	
		0	20 / 1	77 C 78	20 / 1	1380	50 PERCENT UV	
		0	20 / 1	79 A 80	20 / 1	1840	50 PERCENT UV	
		0	20 / 1	81 B 82	20 / 1	1380	50 PERCENT UV	
		0	20 / 1	83 C 84	20 / 1	1380	50 PERCENT UV	

PANEL LOADING SUMMARY					
LOAD TYPE	PH A	PH B	PH C	TOTAL	
INCANDESCENT	0.0	0.0	0.0	0.0	kVA
FLUORESCENT	13.9	16.4	13.9	44.2	kVA
RECEPTACLES	0.0	0.0	0.0	0.0	kVA
MOTORS	0.0	0.0	0.0	0.0	kVA
KIT. EQUIP.	0.0	0.0	0.0	0.0	kVA
HEAT	0.0	0.0	0.0	0.0	kVA
COMPUTER	0.0	0.0	0.0	0.0	kVA
OTHER	0.0	0.0	0.0	0.0	kVA
PROCESS	0.0	0.0	0.0	0.0	kVA
TOTAL	13.9	16.4	13.9	44.2	kVA

PHASE BALANCE (%)				
A-B	B-C	C-A	PF	
85	85	100	95	
MIN PANEL AMPACITY 184 AMPERES				

NEC DEMAND LOAD SUMMARY					
LOAD TYPE	kW	POWER FACT	DEMAND FACTOR	CALCULATED LOAD	
INCANDESCENT	0.0	@ 100% = 0.0	@ 125% = 0.0	kVA	
FLUORESCENT	42.0	@ 95% = 40.0	@ 125% = 52.3	kVA	
RECEPTACLES	0.0	@ 95% = 0.0	@ 100% = 0.0	kVA	
MOTORS	0.0	@ 95% = 0.0	@ 50% = 0.0	kVA	
KIT. EQUIP.	0.0	@ 95% = 0.0	@ 100% = 0.0	kVA	
HEAT	0.0	@ 95% = 0.0	@ 100% = 0.0	kVA	
COMPUTER	0.0	@ 95% = 0.0	@ 100% = 0.0	kVA	
OTHER	0.0	@ 95% = 0.0	@ 100% = 0.0	kVA	
PROCESS	0.0	@ 95% = 0.0	@ 100% = 0.0	kVA	
25 % SPARE	10.0	@ 90% = 11.1	@ 100% = 11.1	kVA	
TOTAL	52.0	kW		66.4	kVA

PANEL: L4A VOLTAGE: 120/208 V. TYPE: PANELBOARD
3 PH MOUNTING: SURFACE
4 W. PANEL COVER: DOOR IN HINGED COVER
FED FROM: L4 225 AMP MAIN RATED AT 80% 60 HZ NEUTRAL BUS: YES ISOLATED GND: NO
N/A AMP MAIN LUGS
225 AMP BUS
COPPER BUSING
10000 SYMMETRICAL RMS AMPS
PANEL SHORT CIRCUIT RATING

NOTE	DESCRIPTION	CCT VA	BREAKER AMP / P	CCT PH CCT AMP / P	BREAKER AMP / P	CCT VA	DESCRIPTION	NOTE
	P-3	1267	30 / -	1 A 2	70 / 1	3696	CT-1	
		1267	- / -	3 B 4	70 / 1	3696		
		1267	- / 3	5 C 6	70 / 1	3696		
	P-4	1267	30 / -	7 A 8	15 / 1	480	P-12	
		1267	- / -	9 B 10	15 / 1	480		
		1267	- / 3	11 C 12	15 / 1	480		
	P-5	480	15 / -	13 A 14	15 / 1	696	EF-1	
		480	- / 3	15 B 16	20 / 1	0	SPARE (FMR WARM RM CND UNIT)	
		480	- / 3	17 C 18	20 / 1	0	SPARE (FMR REFRIG-WEST)	
	SPARE (FORMER COLD ROOM CONDENSING UNIT)	0	20 / -	19 A 20	20 / 1	0	SPARE (FMR REFRIG-WEST)	
		0	- / -	21 B 22	20 / 1	0	SPARE (FORMER DRK RM LTG)	
		0	- / 3	23 C 24	20 / -	0	SPARE 3PH	
	SPARE (FORMER WARM ROOM)	0	20 / -	25 A 26	- / -	0		
		0	- / 2	27 B 28	- / 3	0		
	SPARE	0	/ 1	29 C 30	/ 1	0	SPACE	

EQUIPMENT SCHEDULE														
KEY	ITEM DESCRIPTION (SEE NOTE 2)	VOLTS	PH	MOTOR HP	UNIT AMPS	UNIT KVA	UNIT KW	PANEL (SEE NOTE 5)	FEEDER	LOCAL DISC. SW.	DISC. BY	DISC. LOCATION SEE NOTE 4	REMARKS	
AHU-3	ENV CHAMBER AHU	200	3	0	14.4	5.0	4.0	0	3/4" C - 3#12, 1#12G	30A, 3P	DIV26	AT UNIT	0	
AHU-4	ENV CHAMBER AHU	200	3	0	14.4	5.0	4.0	0	3/4" C - 3#12, 1#12G	30A, 3P	DIV26	AT UNIT	0	
CH-3	ENV CHAMBER CHILLER	200	3	0	27.5	9.5	7.6	0	1" C - 3#8, 1#10G	60A, 3P	DIV26	AT UNIT	0	
CH-4	ENV CHAMBER CHILLER	200	3	0	27.5	9.5	7.6	0	1" C - 3#8, 1#10G	60A, 3P	DIV26	AT UNIT	0	
EF-1	SNORKLE ARM	200	3	1/2	2.5	0.9	0.7	0	3/4" C - 3#12, 1#12G	30A, 3P	DIV26	AT UNIT	0	
EF-2	SNORKLE ARM	200	3	1/2	2.5	0.9	0.7	0	3/4" C - 3#12, 1#12G	30A, 3P	DIV26	AT UNIT	0	
EF-3	STORAGE 430	200	3	3	11.0	3.8	3.0	0	3/4" C - 3#12, 1#12G	30A, 3P	DIV26	AT UNIT	0	
EF-4	SNORKLE ARM	200	3	1/2	2.5	0.9	0.7	0	3/4" C - 3#12, 1#12G	30A, 3P	DIV26	AT UNIT	0	
EF-5	CHAMBER EXHAUST	115	1	1/4	5.8	0.7	0.5	0	3/4" C - 2#12, 1#12G	20A, 2P	DIV26	AT UNIT	0	
EF-6	CHAMBER EXHAUST	115	1	1/4	5.8	0.7	0.5	0	3/4" C - 2#12, 1#12G	20A, 2P	DIV26	AT UNIT	0	
VP-1	VACUUM PUMP	200	3	7-1/2	25.3	8.8	7.0	0	1" C - 3#8, 1#10G	60A, 3P	DIV26	AT UNIT	0	
FH-3	3RD FLOOR FUME HOOD	115	1	1/2	9.8	1.1	0.9	0	3/4" C - 2#12, 1#12G	RECEPT	DIV26	AT UNIT	0	
FH-4	3RD FLOOR FUME HOOD	115	1	1/2	9.8	1.1	0.9	0	3/4" C - 2#12, 1#12G	RECEPT	DIV26	AT UNIT	0	
FCU-1	0	200	3	1	4.8	1.7	1.3	0	3/4" C - 3#12, 1#12G	30A, 3P	DIV26	AT UNIT	0	
FCU-2	0	200	3	1	4.8	1.7	1.3	0	3/4" C - 3#12, 1#12G	30A, 3P	DIV26	AT UNIT	0	
AG-1	AIR GENERATOR	200	1	0	20.0	4.0	3.2	0	3/4" C - 2#10, 1#10G	30A, 3P	DIV26	AT UNIT	0	
AG-2	AIR GENERATOR	200	1	0	20.0	4.0	3.2	0	3/4" C - 2#10, 1#10G	30A, 3P	DIV26	AT UNIT	0	
AG-3	AIR GENERATOR	200	1	0	20.0	4.0	3.2	0	3/4" C - 2#10, 1#10G	30A, 3P	DIV26	AT UNIT	0	
AG-4	AIR GENERATOR	200	1	0	20.0	4.0	3.2	0	3/4" C - 2#10, 1#10G	30A, 3P	DIV26	AT UNIT	0	
CZ	ZERO AIR CHILLER	115	1	0	6.0	0.7	0.6	0	3/4" C - 2#12, 1#12G	RECEPT	DIV26	AT UNIT	OWNER PROVIDED	
TOTALS		208	3	0	188	68	54							
Version 1009														
NOTES: 1. FUSE SIZE INDICATED MUST BE USED IN COMBINATION WITH PROPERLY SIZED OVERLOAD RELAYS. UNLESS INDICATED OTHERWISE, FUSES SHALL BE BUSSMANN LPS-RK OR LPN-RK. CONFIRM ACTUAL NAMEPLATE DATA OF EQUIPMENT AND PROVIDE FUSES AS RECOMMENDED BY MANUFACTURER. 2. COORDINATE ELECTRICAL EQUIPMENT REQUIREMENTS WITH THE ACTUAL MECHANICAL EQUIPMENT SUPPLIED. 3. COORDINATE THE REQUIREMENTS WITH THE VFD SUPPLIED. OVERCURRENT PROTECTION, AND FEEDER SIZE SHALL MATCH THAT REQUIRED BY THE VFD NAMEPLATE DATA. ALL MOTOR CIRCUIT CONDUCTORS FOR VFD CIRCUITS SHALL BE STRANDED COPPER. 4. LOCATE DISCONNECT WITHIN SIGHT OF MOTOR. IF CONTROLLER IS WITHIN SIGHT OF MOTOR AND IS EQUIPPED WITH A DISCONNECTING MEANS, A SEPARATE DISCONNECT IS NOT REQUIRED. IF CONTROLLER IS A VFD, COORDINATE WITH MECHANICAL TEMPERATURE CONTROL TO PROVIDE A SAFETY INTERLOCK IN THE DISCONNECT TO INDICATE THE STATUS OF THE DISCONNECT. IF THE DISCONNECT IS OPEN, THE VFD SHALL BE DISABLED. 5. REFER TO PANEL SCHEDULES FOR EXACT CIRCUIT NUMBER.														

LUMINAIRE SCHEDULE											Version 1107
KEY	QTY	LAMP(S) TYPE	DESCRIPTION	FINISH	MOUNTING	MANUFACTURER	SPECIFICATION (NOTE 1)		VOLTS	VA	NOTES
A1	1	28W15	80/20 DIRECT/INDIRECT STEEL FIXTURE WITH ROUNDED ENDCAPS WHITE CROSS BLADE BAFFLE AND 96% REFLECTIVE SURFACE	WHT	CABLE	FINELITE	S10-WCB-1T5-SC-96W-STO-120-AC-RE		120	28	
A2	2	28W15	80/20 DIRECT/INDIRECT STEEL FIXTURE WITH ROUNDED ENDCAPS WHITE CROSS BLADE BAFFLE AND 96% REFLECTIVE SURFACE	WHT	CABLE	FINELITE	S10-WCB-2T5-SC-96W-STO-120-AC-RE		120	56	
A3	2	28W15	80/20 DIRECT/INDIRECT STEEL FIXTURE WITH ROUNDED ENDCAPS WHITE CROSS BLADE BAFFLE AND 96% REFLECTIVE SURFACE AND DIMMING BALLAST	WHT	CABLE	FINELITE	S10-WCB-2T5-SC-96W-STO-120-AC-RE		120	56	INCLUDE DIMMING BALLAST
B2	2	32W18	OPEN TYPE INDUSTRIAL LIGHT FIXTURE WITH CHAIN MOUNTING AND REFLECTIVE POWER COATED FINISH	WHT	CHAIN	WILLIAMS	80-4-232-VBY-2-EB-120		120	64	
C1	1	32W18	RECESSED DIRECT INDIRECT ARCHITECTUAL LIGHTING FIXTURE WITH ACRYLIC DIFFUSER AND HIGHLY REFLECTIVE REFLECTOR	WHT	GRID	WILLIAMS	DIGS24-132-WPR-EB2-120		120	32	
C2	2	32W18	RECESSED DIRECT INDIRECT ARCHITECTUAL LIGHTING FIXTURE WITH ACRYLIC DIFFUSER AND HIGHLY REFLECTIVE REFLECTOR	WHT	GRID	WILLIAMS	DIGS24-232-WPR-EB2-120		120	64	
X		LED	SINGLE FACE GREEN LETTERING LED EXIT SIGN	WHITE	SURFACE	EXITRONIX	G502-WB-WH-G1		120	4	

LUMINAIRE SCHEDULE NOTES:

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SHEET TITLE:
SCHEDULES

SCALE: AS NOTED
SHEET NUMBER:

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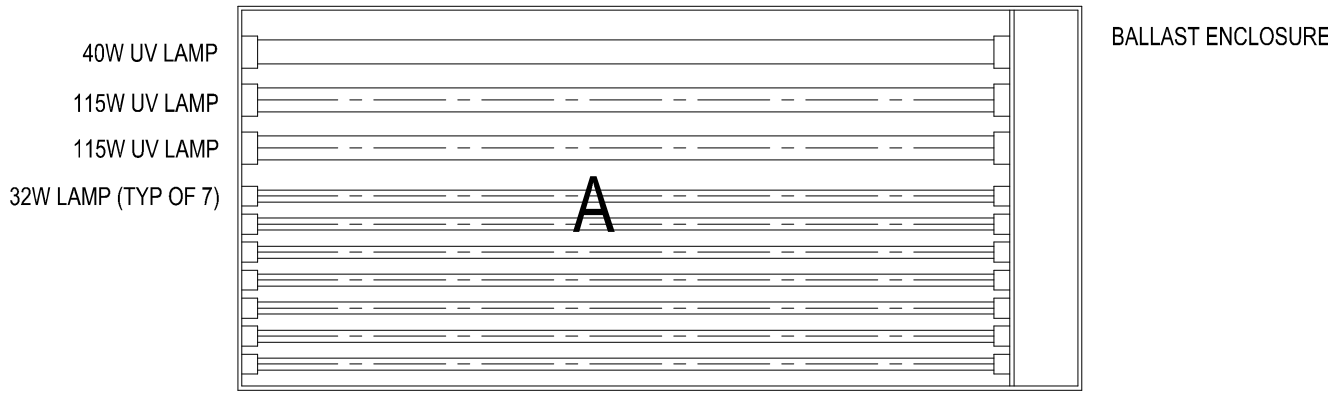
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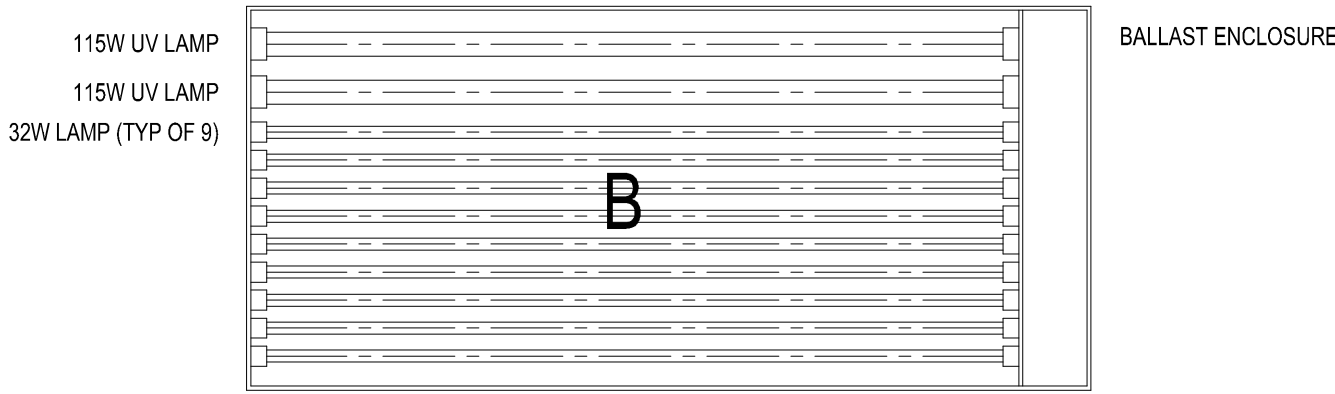


LIGHT FIXTURE TYPE A

SCALE: NO SCALE

EACH TYPE A LIGHT FIXTURE SHALL BE CUSTOM MADE BY LUMOS CUSTOM LIGHTING AND SHALL CONSIST OF THE FOLLOWING:

1. PROVIDE ONE SYLVANIA F40/350BL/ECO LAMP WITH F40/350BL/ECO BALLAST.
2. PROVIDE TWO SYLVANIA FR48T12/350BL/VHO180 LAMPS WITH F48T12/VHO BALLAST.
3. PROVIDE SEVEN VERLUX F32T8SUN (FULL SPECTRUM) LAMPS WITH 1 DIMMING BALLAST PER 4 LAMPS.

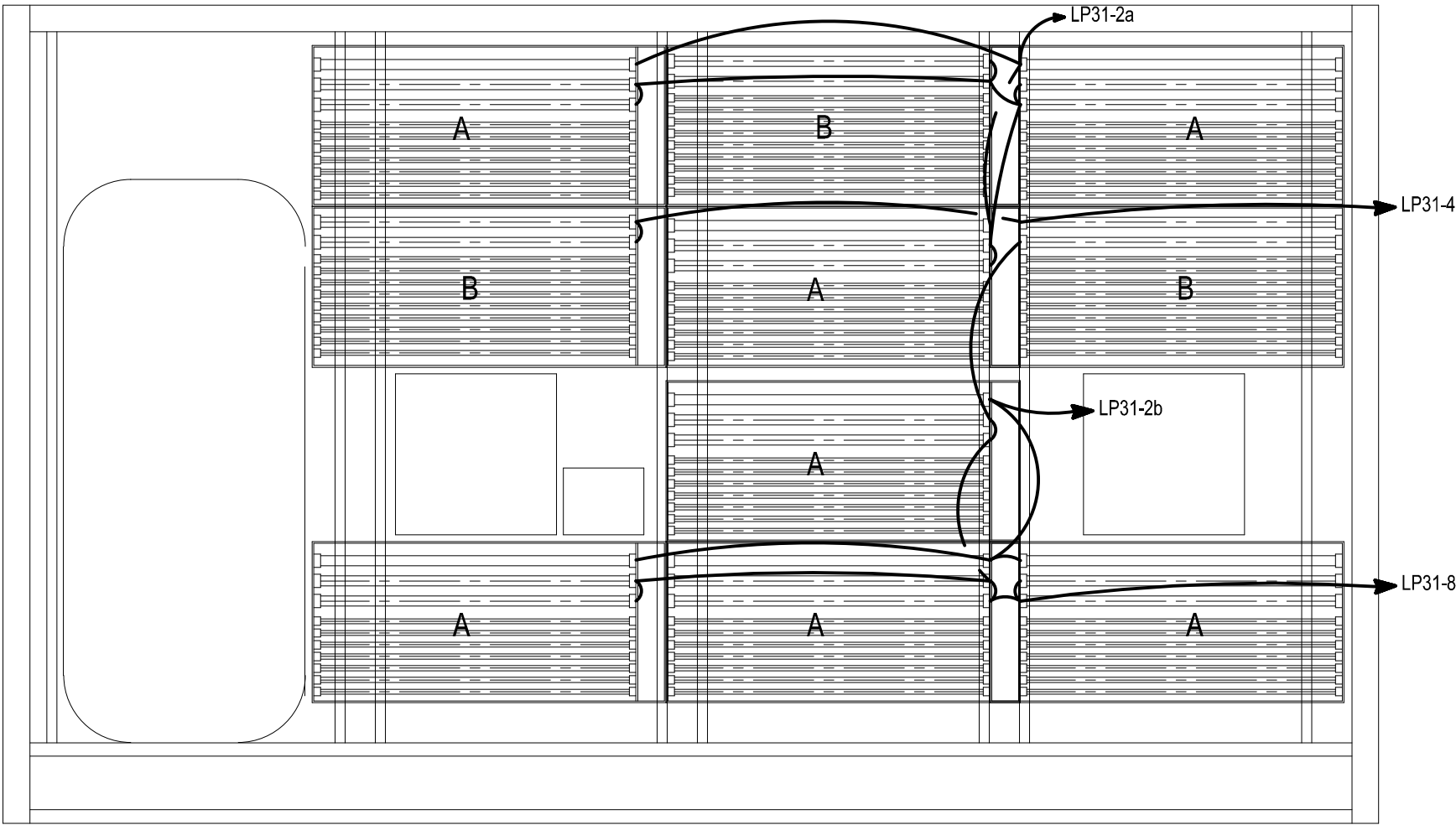


LIGHT FIXTURE TYPE B

SCALE: NO SCALE

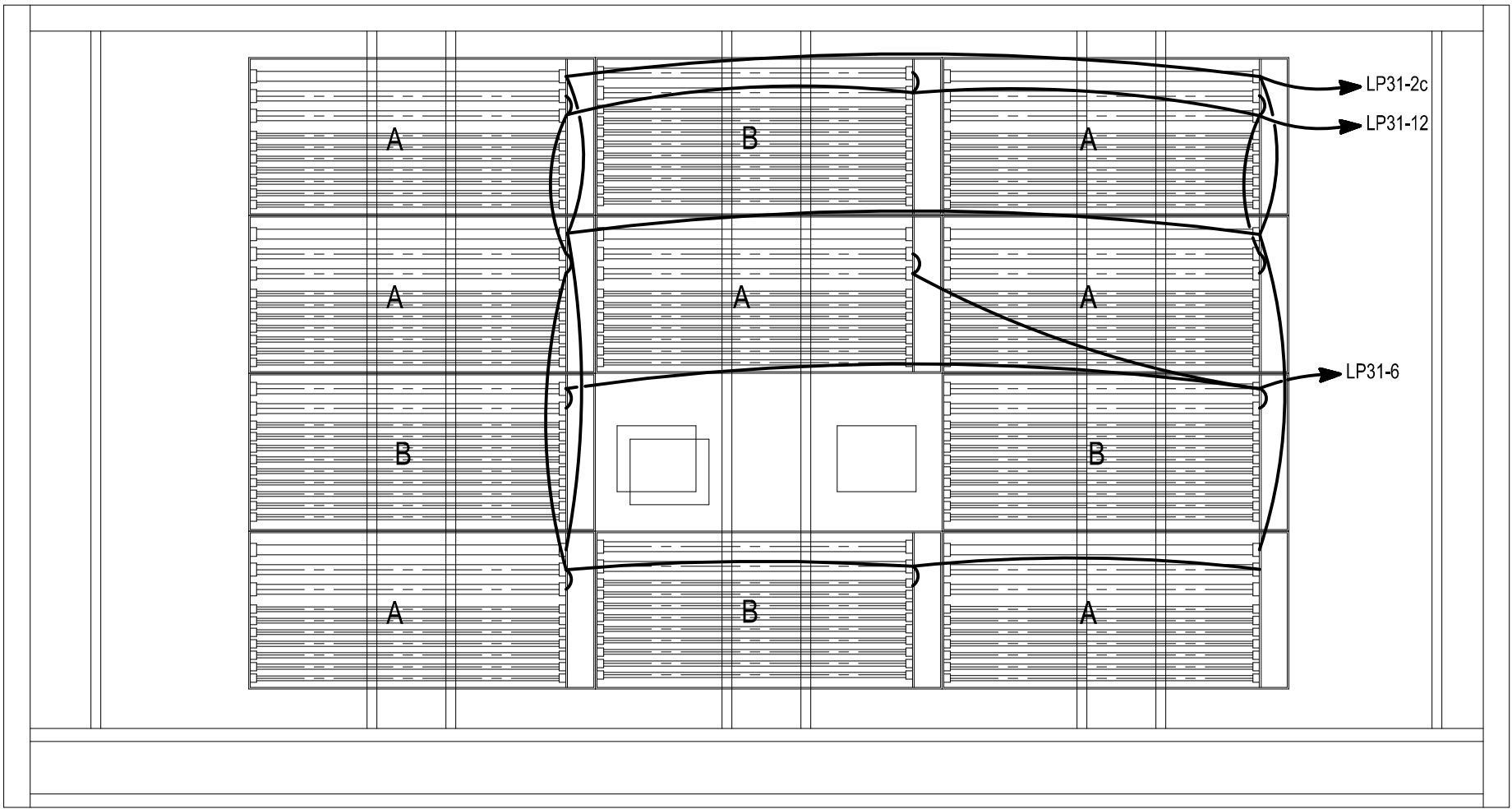
EACH TYPE B LIGHT FIXTURE SHALL CUSTOM MADE BY LUMOS CUSTOM LIGHTING AND SHALL CONSIST OF THE FOLLOWING:

1. PROVIDE TWO SYLVANIA FR48T12/350BL/VHO180 LAMPS WITH F48T12/VHO BALLAST.
2. PROVIDE SEVEN VERLUX F32T8SUN (FULL SPECTRUM) LAMP WITH 1 DIMMING BALLAST PER 3 LAMPS.



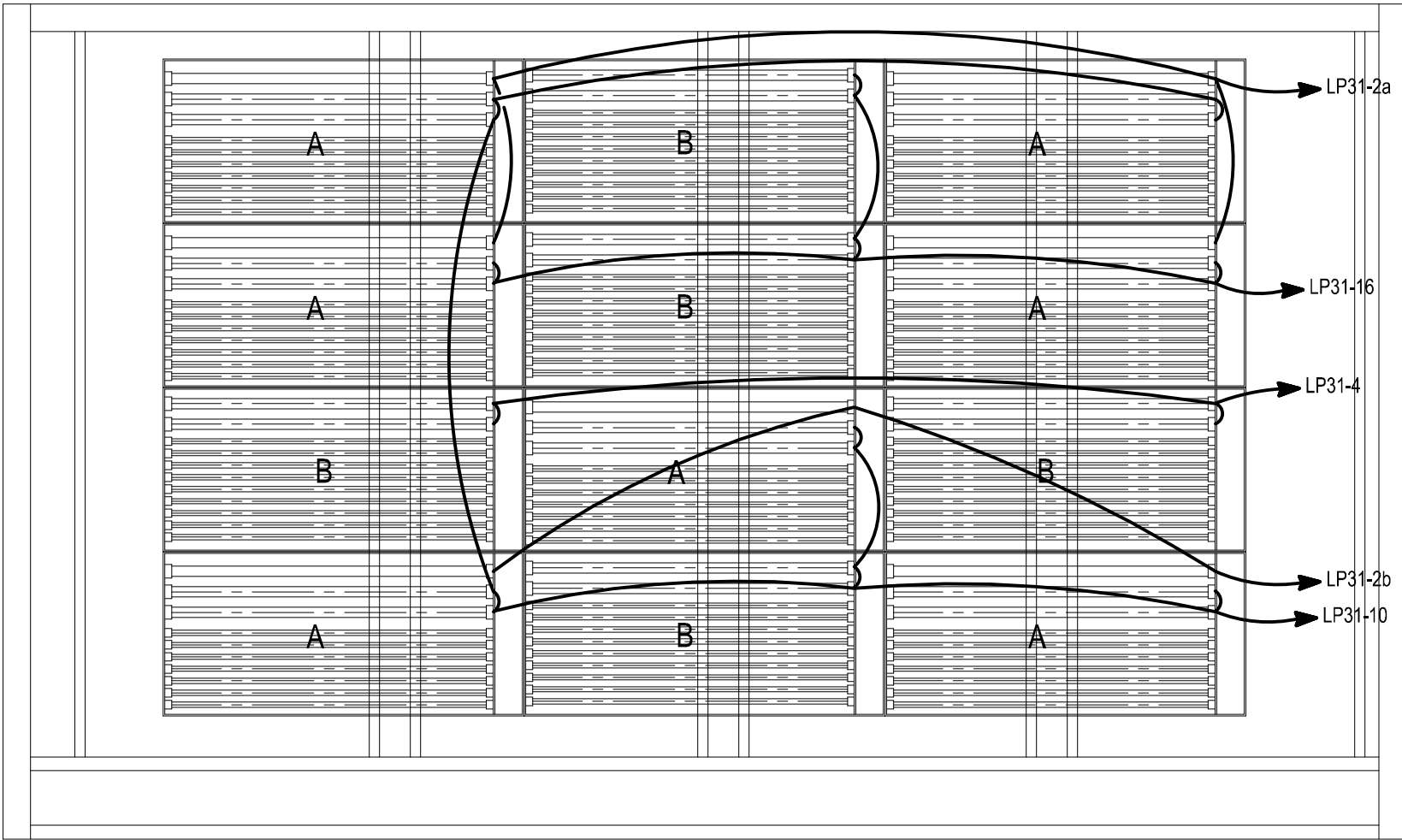
ELEVATION – CHAMBER INTERIOR NORTH WALL

SCALE: 1/2"=1'-0"



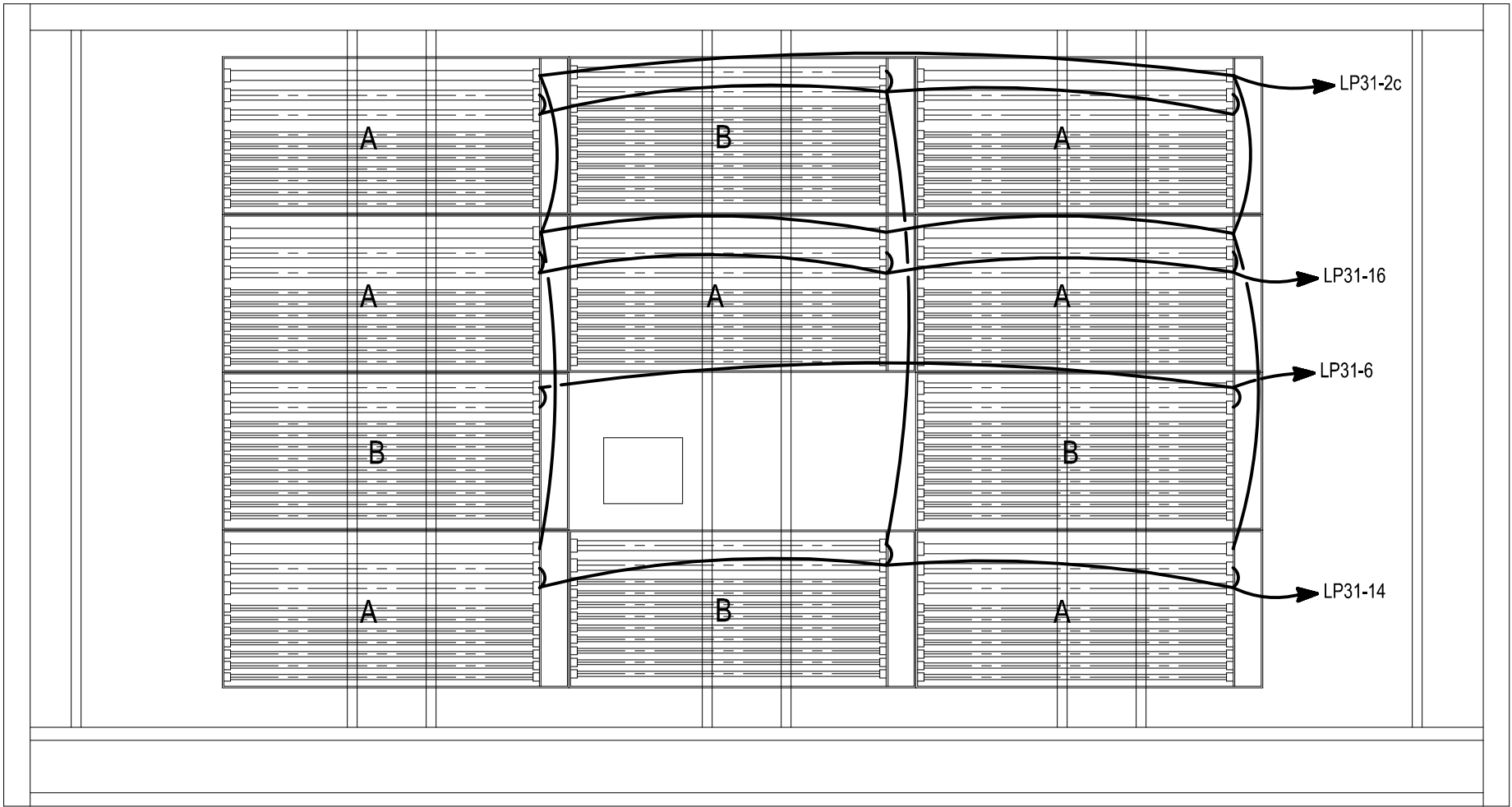
ELEVATION – CHAMBER INTERIOR EAST WALL

SCALE: 1/2"=1'-0"



ELEVATION – CHAMBER INTERIOR SOUTH WALL

SCALE: 1/2"=1'-0"



ELEVATION – CHAMBER INTERIOR WEST WALL

SCALE: 1/2"=1'-0"