

### ABBREVIATIONS

A/C	AIR CONDITIONING	Hz	HERTZ
AFF	ABOVE FINISHED FLOOR	INSUL	INSULATION
AFG	ABOVE FINISHED GRADE	INTL	INTERNAL
AL	ALUMINUM	LAT	LEAVING AIR TEMPERATURE
AMB	AMBIENT	LBS	POUNDS
AMP	AMPERE	LIN	LINEAL
AP	ACCESS PANEL	LP	LOW PRESSURE
APROX	APPROXIMATE	LRA	LOCKED ROTOR AMPS
ARR	ARRANGEMENT	LVL	LEVEL
ATC	AUTOMATIC TEMPERATURE CONTROL	LVR	LOUVER
AUTO.	AUTOMATIC	LWT	LEAVING WATER TEMPERATURE
AUX	AUXILIARY	MAN.	MANUAL
AVG	AVERAGE	MAX	MAXIMUM
BBD	BOILER BLOW DOWN	MBH	THOUSAND BRITISH THERMAL UNITS PER HOUR
BF	BOILER FEED	MU	MAKEUP
BHP	BOILER HORSEPOWER OR BRAKE HORSEPOWER	MIN	MINIMUM
B.J.	BETWEEN JOISTS	MOD.	MODEL
BOD	BOTTOM OF DUCT	MOUNT.	MOUNTING
BOP	BOTTOM OF PIPE	MTD	MOUNTED
BOT	BOTTOM	NA	NOT APPLICABLE
BP	BACK PRESSURE	NC	NORMALLY CLOSED
BSMT	BASEMENT	NEG	NEGATIVE
BTU	BRITISH THERMAL UNIT	NIC	NOT IN CONTRACT
C TO C	CENTER TO CENTER	NO	NORMALLY OPEN
CA	COMPRESSED AIR	NTS	NOT TO SCALE
CAP.	CAPACITY CHEMICAL FEED CUBIC FOOT (FEET) PER MINUTE	OA	OUTSIDE AIR
CI	CAST IRON	OED	OPEN END DUCT OVERFLOW
CL	CENTER LINE	OF	OF
CO	CLEANOUT	OFCI	OWNER FURNISHED CONTRACTOR INSTALLED
COL	COLUMN	OV	OUTLET VELOCITY
CONC	CONCRETE OR CONCENTRIC	PCR	PUMPED CONDENSATE RETURN
CONN	CONNECT OR CONNECTION	PD	PRESSURE DROP
CONT	CONTINUATION	PG	PRESSURE GAUGE
CTR	CENTER	PL	PLATE
CF	CUBIC FOOT (FEET)	PNEU	PNEUMATIC
D	DRAIN OR DEEP	PRESS.	PRESSURE
DB	DRY BULB	PROP.	PROPELLER
DDC	DIRECT DIGITAL CONTROL	PSIG	POUNDS PER SQUARE INCH GAUGE
DEG	DEGREE	QTY	QUANTITY
DET	DETAIL	RECOV	RECOVERY
DIA.Ø	DIAMETER	REF	REFERENCE
DISC.	DISCONNECT	REQD	REQUIRED
DN	DOWN	REV	REVISION
DWG	DRAWING	RL	REFRIGERANT LIQUID
EA	EACH	RM	ROOM
EAT	ENTERING AIR TEMPERATURE	RS	REFRIGERANT SUCTION
EDR	EQUVALENT DIRECT RADIATION	RTN	RETURN
EER	ENERGY EFFICIENCY RATIO	S	SWITCH
EFF	EFFICIENCY	SCH	SCHEDULE
EJ	EXPANSION JOINT	SD	SMOKE DAMPER WITH ACCESS DOOR
EL	ELEVATION	SEC	SECONDARY, SECONDS
ELB	ELBOW	SENS	SENSIBLE
ELEC	ELECTRICAL	SEP	SEPARATE
ENT	ENTERING	SEQ	SEQUENCE
ESP	EXTERNAL STATIC PRESSURE	SER	SERIES
EVAP	EVAPORATOR TEMPERATURE	SERV	SERVICE
EWT	EXHAUST	SHT	SHEET
EXH	EXHAUST	SOL	SOLENOID
EXP	EXPANSION	SP	STATIC PRESSURE
EXST	EXISTING	SS	STAINLESS STEEL
EXT	EXTERNAL	STL	STEEL
FAT	FLOAT & THERMOSTATIC	SUCT	SUCTION
FC	FLEXIBLE CONNECTOR / FLEXIBLE CONNECTION	SPLY	SUPPLY
FDW	FEED WATER	TD	TEMPERATURE DIFFERENTIAL
FLA	FULL LOAD AMPS	TEMP	TEMPERATURE
FLR	FLOOR	TH	THERMOMETER
FO	FUEL OIL	THK	THICK
FRM	FOOT (FEET) PER MINUTE	T.J.	THROUGH JOIST WEBS
FPS	FOOT (FEET) PER SECOND	TSP	TOTAL STATIC PRESSURE
FS	FLOW SWITCH	TYP.	TYPICAL
FT	FOOT (FEET)	UON	UNLESS OTHERWISE NOTED
GA	GAUGE	V	VENT OR VOLT
GAL	GALLONS	VAC	VACUUM
GALV	GALVANIZED	VAV	VARIABLE AIR VOLUME
GND	GROUND	VB	VACUUM BREAKER
GPH	GALLONS PER HOUR	VEL	VELOCITY
GPM	GALLONS PER MINUTE	VERT	VERTICAL
GPS	GALLONS PER SECOND	VIB	VIBRATION
GR	GRAIN	VOL	VOLUME
HD	HEAD	VSD	VARIABLE SPEED DRIVE
HG	HOT GAS	VTR	VENT THRU ROOF
HGT	HEIGHT	W	WATT, WIDTH OR WIDE
HTD	HEATED	WB	WET BULB
HTR	HEATER	WMS	WIRE MESH SCREEN
HMD	HUMIDITY		
HORIZ	HORIZONTAL		
HP	HORSEPOWER		

### DUCTWORK SYMBOLS

DOUBLE LINE	DESCRIPTION	SINGLE LINE
	EXISTING TO REMAIN	
	EXISTING TO BE REMOVED	
	NEW WORK	
	MEDIUM PRESSURE DUCTWORK	
	DOUBLE-WALL SPIRAL DUCT (COLOR SHALL BE SELECTED BY ARCHITECT)	
	SUPPLY AIR UP	
	SUPPLY AIR DOWN	
	EXHAUST OR RETURN AIR UP	
	EXHAUST OR RETURN AIR DOWN	
	ROUND DUCT UP	
	ROUND DUCT DOWN	
	RECTANGULAR DUCT SIZE SHOWN IN INCHES (FIRST FIGURE-SIDE SHOWN)	
	FLAT OVAL DUCT SIZE (FIRST FIGURE-SIDE SHOWN)	
	DIRECTION OF FLOW	
	DUCT INCLINED RISE OR DROP IN DIRECTION OF FLOW	
	90° ELBOW WITH TURNING VANES	
	45° ELBOW (NO VANES)	
	SUPPLY OR RETURN BRANCH CONNECTION	
	SUPPLY BRANCH WITH SPIN COLLAR CONNECTION	
	LATERAL CONNECTION ROUND DUCTWORK	
	CONICAL TEE ROUND DUCTWORK	
	4-WAY DIFFUSER	
	3-WAY, 2-WAY, OR 1-WAY GRILLE	
	EXHAUST OR RETURN GRILLE	
	MOTORIZED DAMPER	
	VOLUME DAMPER	
	BYPASS DAMPER	
	BACK DRAFT DAMPER	
	SMOKE DAMPER WITH ACCESS DOOR	
	FIRE DAMPER WITH ACCESS DOOR	
	COMBINATION FIRE & SMOKE DAMPER WITH ACCESS DOOR	
	STATIC PRESSURE SENSOR	
	DUCT TEMPERATURE SENSOR	
	DUCT HUMIDITY SENSOR	
	DUCT SMOKE DETECTOR	
	FLEXIBLE DUCTWORK (DUCT PRESSURE GLASS)	

**NOTE:**  
NOT ALL ABBREVIATIONS AND SYMBOLS INDICATED MAY APPEAR ON THESE CONTRACT DRAWINGS. THIS IS FOR REFERENCE ONLY.

### PIPING SYMBOLS

SYMBOL	DESCRIPTION
	SHUT-OFF VALVE
	GLOBE VALVE
	CHECK VALVE
	FLOW SETTER
	ANGLE GATE VALVE
	RELIEF OR SAFETY VALVE
	SOLENOID VALVE
	THERMAL EXPANSION VALVE
	BACK PRESSURE VALVE
	BUTTERFLY VALVE
	2-WAY CONTROL VALVE
	3-WAY CONTROL VALVE
	PRESSURE REDUCING VALVE
	UNION
	STRAINER W/BLOW-OFF & CAP
	FLOW SENSOR
	SIGHT GLASS
	PIPE GUIDE
	PIPE ANCHOR
	FLEXIBLE CONNECTOR
	EXPANSION JOINT
	THERMOMETER
	PRESSURE GAUGE W/COCK
	AUTOMATIC AIR VENT
	MANUAL AIR VENT
	ORIFICE PLATE
	FLOAT AND THERMOSTATIC TRAP
	DIRECTION OF FLOW
	DIRECTION OF SLOPE
	CONCENTRIC REDUCER
	ECCENTRIC REDUCER
	PIPE UP
	PIPE DOWN
	PIPE THROUGH
	TOP TAKE-OFF
	BUCKET TRAP
	END OF MAIN DRIP
	EXISTING TO REMAIN
	EXISTING TO BE REMOVED
	NEW WORK
	BOILER BLOWDOWN - CONTINUOUS
	BOILER FEED WATER
	COMPRESSED AIR
	CHEMICAL FEED
	CHILLED WATER RETURN
	CHILLED WATER SUPPLY
	CONDENSER WATER RETURN
	CONDENSER WATER SUPPLY
	CONDENSATE DRAIN OR DRAIN
	FUEL OIL RETURN
	FUEL OIL SUPPLY
	FUEL OIL TANK VENT
	HOT GAS
	HIGH PRESSURE CONDENSATE RETURN
	HIGH PRESSURE STEAM SUPPLY
	HEAT PUMP WATER RETURN
	HEAT PUMP WATER SUPPLY
	HEATING WATER RETURN
	HEATING WATER SUPPLY
	LOW PRESSURE CLEAN STEAM
	LOW PRESSURE CONDENSATE RETURN
	LOW PRESSURE STEAM SUPPLY
	MEDIUM PRESSURE CONDENSATE RETURN
	MEDIUM PRESSURE STEAM SUPPLY
	MAKE UP WATER
	PUMPED CONDENSATE RETURN
	REFRIGERANT LIQUID
	REFRIGERANT SUCTION
	VENT LINE
	BBD
	BF
	CA
	CF
	CHWR
	CHWS
	CWR
	CWS
	CD
	FOR
	FOS
	FOV
	HG
	HPR
	HPS
	HPWR
	HPWS
	HTWR
	HTWS
	LPCS
	LPR
	LPS
	MPR
	MPS
	MU
	PCR
	RL
	RS
	V

### RUNOUT SCHEDULE

GPM	PIPE SIZE
0.0 - 3.0	3/4"
3.1 - 6.5	1"
6.6 - 11.5	1 1/4"
11.6 - 18.5	1 1/2"
18.6 - 40.0	2"
40.1 - 69.0	2-1/2"
69.1 - 122.0	3"
122.1 - 255.0	4"
255.1 - 750.0	6"

### FLEXIBLE DUCT SCHEDULE

CFM	DUCT DIAMETER
UP TO 125	6"
126 TO 280	8"
281 TO 380	10"
381 TO 550	12"
551 TO 750	14"

### GENERAL NOTES:

- CONTRACT DRAWINGS ARE DIAGRAMMATIC AND INDICATE THE RELATION OF PIPING, DUCTWORK, CONNECTIONS, AND EQUIPMENT. THE DRAWINGS DO NOT INDICATE ALL OFFSETS, ELBOWS, AND FITTINGS THAT MAY BE REQUIRED. THEREFORE, THE CONTRACTOR SHALL CAREFULLY INVESTIGATE THE STRUCTURAL AND FINISH CONDITIONS AFFECTING THE WORK AND ACTUAL EQUIPMENT PROVIDED. THE CONTRACTOR SHALL FURNISH ALL OFFSETS, ELBOWS, FITTINGS, HANGERS, AND ACCESSORIES AS MAY BE REQUIRED TO MEET THESE CONDITIONS AT NO ADDITIONAL COST TO THE OWNER.
- INSTALL ALL EQUIPMENT AND MATERIALS IN STRICT ACCORDANCE WITH THE CURRENTLY ADOPTED INTERNATIONAL MECHANICAL CODE, ALL PERTINENT CODES, LAWS, ORDINANCES, REGULATIONS, AND RESPECTIVE MANUFACTURER'S WRITTEN INSTRUCTIONS.
- ALL DUCTWORK SHALL BE CONSTRUCTED AND INSTALLED IN STRICT ACCORDANCE WITH SMACNA AND ASHRAE STANDARDS.
- COORDINATE HVAC WORK WITH THE WORK OF ALL OTHER CONTRACTORS AND OWNER.
- THE HVAC CONTRACTOR SHALL ARRANGE THE PROGRESS OF HIS WORK SO AS TO CONFORM TO THE PROGRESS OF THE TRADES AND SHALL COMPLETE THE ENTIRE INSTALLATION AS SOON AS THE CONDITION OF THE PROJECT WILL PERMIT.
- ALL ITEMS OF LABOR, MATERIAL, AND EQUIPMENT NOT SPECIFICALLY DESCRIBED HEREIN NOR DETAILED ON THE DRAWINGS BUT INCIDENTAL TO OR NECESSARY FOR THE COMPLETION OF THE WORK, SHALL BE CONSIDERED AS INCLUDED WITHOUT EXTRA COST.
- COORDINATE EXACT LOCATIONS OF DIFFUSERS, DUCTWORK WITH LIGHTS, SPRINKLERS, AND CEILING WITH REFLECTED CEILING PLAN AND ARCHITECT.
- PROVIDE INDIVIDUAL VOLUME DAMPERS FOR BALANCING ON ALL SUPPLY, RETURN, RELIEF, AND EXHAUST MAIN BRANCH AND BRANCH TAKE-OFFS. LOCATE VOLUME DAMPER AS CLOSE AS POSSIBLE TO TAKE OFF POINTS. PROVIDE CABLE CONTROL VOLUME DAMPERS FOR ALL INACCESSIBLE CEILINGS.
- THE CONTRACTOR SHALL PROVIDE ADEQUATE CLEARANCE FOR ALL UNIT CONTROLS.
- PROVIDE THREE TIMES DUCT DIAMETER STRAIGHT RUN AT THE INLET OF ALL FPVAV, VAV, AND CAV BOXES.
- MOUNT ALL SPACE SENSING DEVICES AT 48" AFF, COORDINATE ALL LOCATIONS WITH ARCHITECT PRIOR TO ROUGH-IN AND INSTALLATION.
- PROVIDE PROTECTION FOR ALL PENETRATIONS OF FIRE RESISTANCE RATED ASSEMBLIES IN ACCORDANCE WITH THE REQUIREMENTS OF THE CURRENTLY ADOPTED INTERNATIONAL BUILDING CODE.
- REFER TO ARCHITECTURAL REFLECTED CEILING PLANS FOR CEILING TYPES. PROVIDE APPROPRIATE FRAMES AND MOUNTING HARDWARE FOR ALL AIR DEVICES. MECHANICAL CONTRACTOR IS RESPONSIBLE FOR COORDINATING ALL MOUNTING DETAILS AND REQUIREMENTS WITH CEILING CONTRACTOR.
- ROUTE EQUIPMENT DRAIN PIPING TO FLOOR DRAINS TO PREVENT TRIPPING HAZARDS. DO NOT INSTALL PIPING ON FLOOR IN ANY EQUIPMENT ACCESS AISLES.
- PROVIDE DOUBLE WALL INSULATED ACCESS DOORS IN ALL INSULATED DUCTWORK AND SINGLE WALL ACCESS DOORS IN UN-INSULATED DUCTWORK FOR FIRE DAMPER, SMOKE DAMPER, AND REHEAT COIL. INSPECTION AND SERVICE.
- NO PIPING OR DUCTWORK FOREIGN TO ELECTRICAL, DATA, OR ELEVATOR MACHINE ROOMS IS PERMITTED TO BE INSTALLED IN THESE SPACES.
- ALL INDOOR FLOOR MOUNTED MECHANICAL EQUIPMENT SHALL BE MOUNTED ON 4" MINIMUM HOUSEKEEPING PADS.
- PROVIDED ALL PIPING, VALVING & EQUIPMENT SHOWN ON FLOW DIAGRAMS AND DETAILS EVEN IF NOT SHOWN ON FLOOR PLANS.
- PROVIDE PIPING TO ALL EQUIPMENT REQUIRING WATER SERVICE AND DUCTWORK TO EVERY AIR DEVICE EVEN IF NOT SHOWN ON PLANS.
- ALL PIPING AND DUCTWORK TO BE CONCEALED IN CEILING AND WALLS, EXCEPT IN MECHANICAL ROOMS, SPACES WITH/OUT CEILINGS, OR WHERE NOTED OTHERWISE.
- PROVIDE FIRE DAMPERS AND SMOKE DAMPERS AS INDICATED ON FLOOR PLANS, AND WHERE REQUIRED BY APPLICABLE CODES AT RATED CONSTRUCTION.
- EC SHALL FURNISH DUCT SMOKE DETECTORS, MC SHALL INSTALL THEM AND A T.C. CONTRACTOR SHALL WIRE THEM TO AIR HANDLING UNIT STARTERS / VFD'S. EC TO WIRE DUCT SMOKE DETECTORS TO FIRE ALARM SYSTEM.
- HVAC CONTRACTOR SHALL PROVIDE SMOKE DAMPERS. EC SHALL WIRE THEM TO FIRE ALARM SYSTEM.
- WHERE PLENUM RETURN AIR SYSTEM ARE USED, PROVIDE ONLY MATERIALS IN THE CEILING THAT ARE APPROVED FOR AIR PLENUM USE.
- PROVIDE ACCESS PANELS FOR ALL VALVES AND DAMPERS ABOVE INACCESSIBLE CEILINGS. ACCESS PANEL TO BE A MINIMUM OF 12"x12". COORDINATE FINAL LOCATION WITH REFLECTED CEILING PLAN.
- HVAC CONTRACTOR TO PROVIDE ALL CUTTING AND PATCHING IN EXISTING BUILDING. HVAC CONTRACTOR TO PROVIDE NEW LINETLS AT WALL PENETRATIONS. REFER TO STRUCTURAL DRAWINGS FOR LINTEL SPECIFICATIONS AND SIZES.
- HVAC CONTRACTOR TO PROVIDE WOOD BLOCKING FOR ALL ROOF CURBS IN BOTH EXISTING AND NEW CONSTRUCTION, COORDINATE WITH GC.
- HVAC CONTRACTOR TO PROVIDE HOUSEKEEPING PADS FOR ALL EQUIPMENT.
- THE EXISTING CONDITIONS ON THESE DRAWINGS ARE FROM HISTORICAL DOCUMENTS. CHECK AND VERIFY ALL DIMENSIONS AND EXISTING CONDITIONS AT THE SITE PRIOR TO COMMENCING WORK. WHERE DISCREPANCY EXISTS, NOTIFY ENGINEER IN WRITING.
- CONTRACTOR SHALL UNCONDITIONALLY GUARANTEE IN WRITING ALL MATERIALS, EQUIPMENT, AND WORKMANSHIP FOR A PERIOD OF ONE YEAR FROM THE DATE OF ACCEPTANCE BY OWNER.
- THE MECHANICAL CONTRACTOR SHALL SUBMIT TO THE ARCHITECT/ENGINEER AS-BUILT DRAWINGS AND OPERATION AND MAINTENANCE MANUALS INCLUDING ALL NAMEPLATE DATA, WIRING DIAGRAMS, MAINTENANCE INSTRUCTIONS, AND PARTS LIST UPON PROJECT COMPLETION.
- MAINTAIN A CLEAN AND SAFE WORK AREA AT ALL TIMES. ALL SAFETY PROCEDURES AND ENFORCEMENT IS THE RESPONSIBILITY OF THE CONTRACTOR, CONFORM TO ALL OSHA STANDARDS.
- VERIFY EXISTING CONDITIONS BEFORE BEGINNING WORK. IF EXISTING CONDITIONS DO NOT MATCH CONTACT ENGINEER WITH WRITTEN REPORT.
- ALL SYSTEMS SHALL BE TESTED FOR PROPER OPERATION IN ACCORDANCE WITH APPLICABLE CODES AND REGULATIONS.

### MECHANICAL DRAWING LIST

M0.0	MECHANICAL INFORMATION SHEET
M1.1	FIRST FLOOR PLAN - MECHANICAL DUCT
M1.2	SECOND FLOOR PLAN - MECHANICAL DUCT
M1.3	THIRD FLOOR PLAN - MECHANICAL DUCT
M2.1	FIRST FLOOR PLAN - MECHANICAL PIPING
M2.2	SECOND FLOOR PLAN - MECHANICAL PIPING
M3.0	ENLARGED PLANS - MECHANICAL DUCT
M3.1	ENLARGED PLANS - MECHANICAL DUCT
M3.2	ENLARGED PLANS - MECHANICAL PIPING
M3.3	ENLARGED PLANS - MECHANICAL PIPING
M4.0	MECHANICAL DETAILS
M5.0	MECHANICAL SCHEDULES
MD1.1	FIRST FLOOR PLAN - DEMOLITION - MECHANICAL
MD1.2	SECOND FLOOR PLAN - DEMOLITION - MECHANICAL
MD1.3	THIRD FLOOR PLAN - DEMOLITION - MECHANICAL

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NO.	DATE	DESCRIPTION OF CHANGES

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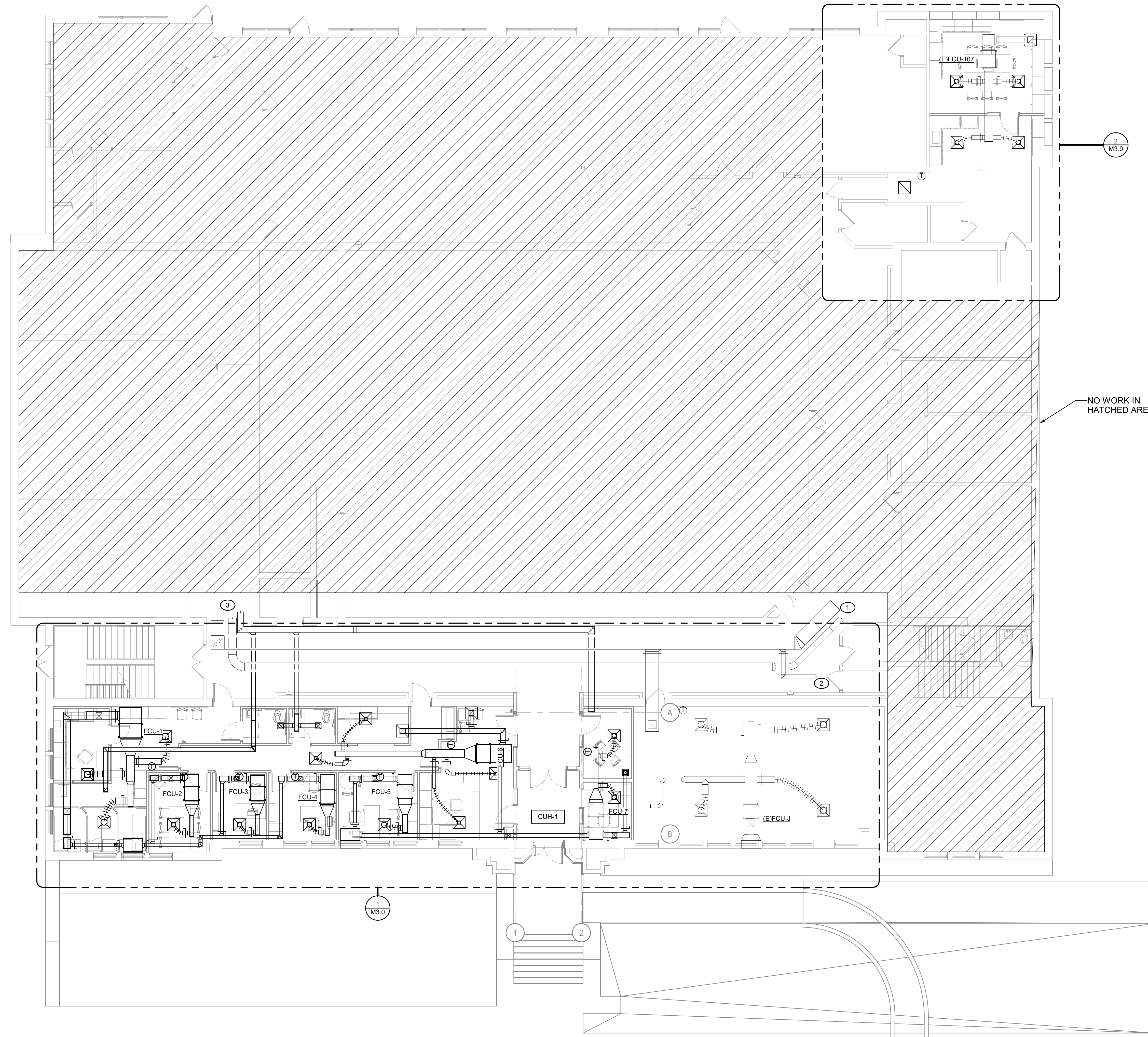
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<p>MECHANICAL INFORMATION SHEET</p> <p>PROJECT 3378.1</p> <p>PLLOT SCALE 12" = 1'-0"</p> <p>FILENAME: <b>M0.0</b></p> <p>DATE: 02/09/24</p>	<p>PROJECT 3378.1</p> <h1 style="font-size: 2em;">M0.0</h1>
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**NOTES BY SYMBOL:** ①

(THIS DRAWING ONLY)

- ① EXISTING 26x16 RA AND 12x8 SA MECHANICAL DUCT WORK TO REMAIN, BEYOND SCOPE, SHOWN FOR CLARITY.
- ② EXISTING 8x4 RA MECHANICAL DUCT WORK TO REMAIN, BEYOND SCOPE, SHOWN FOR CLARITY.
- ③ EXISTING 26x16 RA, 16" SA AND 12x10 EA MECHANICAL DUCT WORK TO REMAIN, BEYOND SCOPE, SHOWN FOR CLARITY.



NO WORK IN  
 HATCHED AREAS

① **FIRST FLOOR PLAN - MECHANICAL DUCT**  
 SCALE: 1/8" = 1'-0"

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FIRST FLOOR PLAN -  
 MECHANICAL DUCT

PLOT SCALE:  
 1/8" = 1'-0"  
 FILENAME:  
 DATE:  
 02/09/24

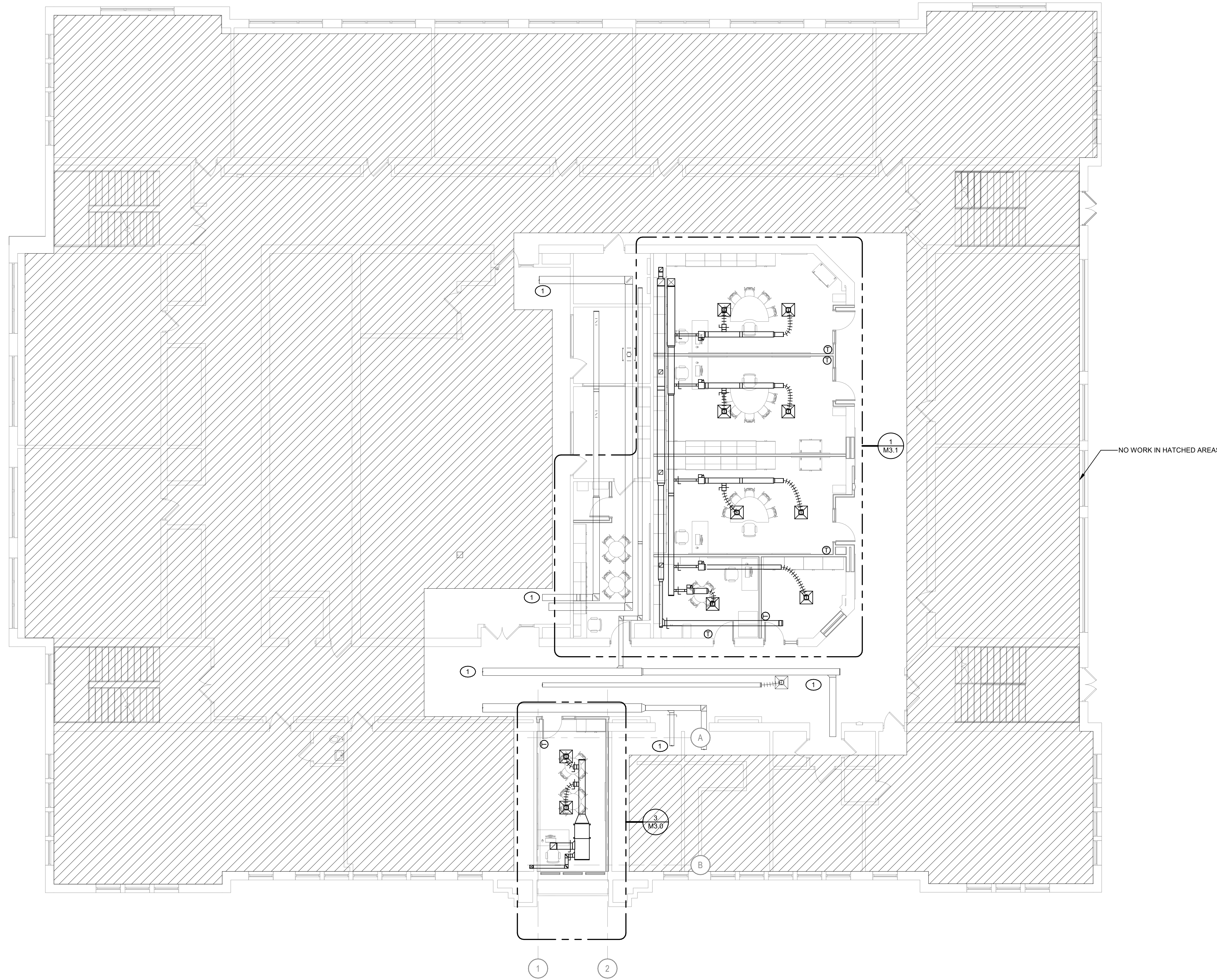
**PROJECT**  
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**M1.1**

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**NOTES BY SYMBOL: #**

- (THIS DRAWING ONLY)  
 ① EXISTING MECHANICAL DUCT WORK TO REMAIN, BEYOND SCOPE, SHOWN FOR CLARITY.



① SECOND FLOOR PLAN - MECHANICAL DUCT  
 SCALE: 1/8" = 1'-0"

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SECOND FLOOR PLAN -  
 MECHANICAL DUCT

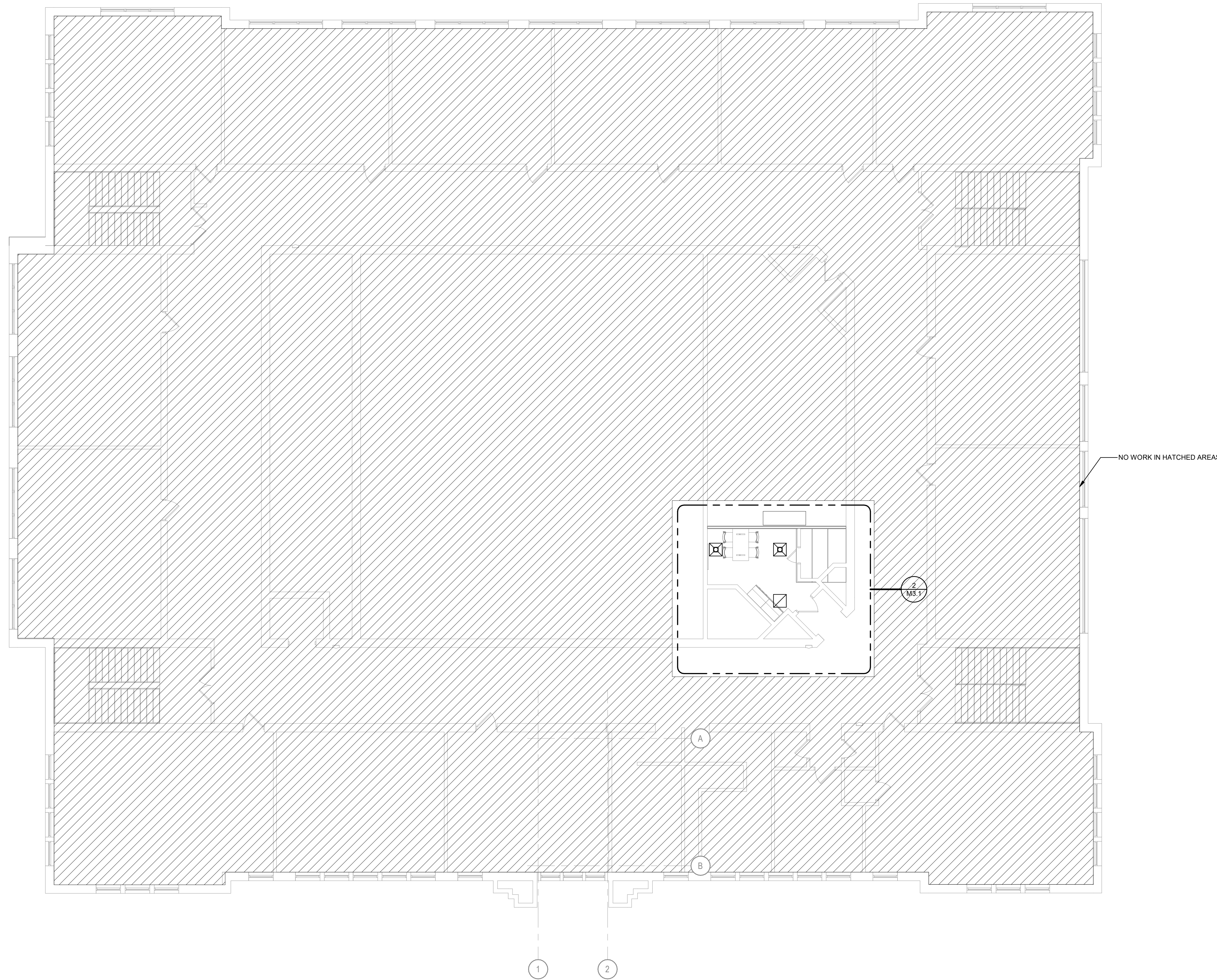
PLOT SCALE:  
 1/8" = 1'-0"

FILENAME:

DATE:  
 02/09/24

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**M1.2**





1 THIRD FLOOR PLAN - MECHANICAL DUCT  
 SCALE: 1/8" = 1'-0"

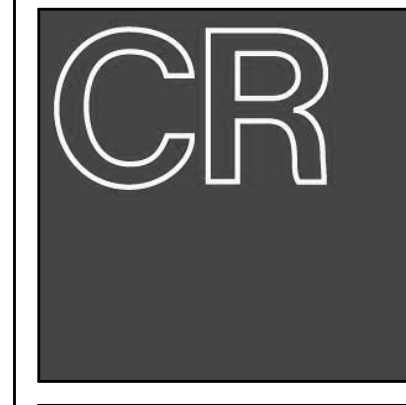
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THIRD FLOOR PLAN - MECHANICAL DUCT  
 PLOT SCALE: 1/8" = 1'-0"  
 FILENAME:  
 DATE: 02/09/24

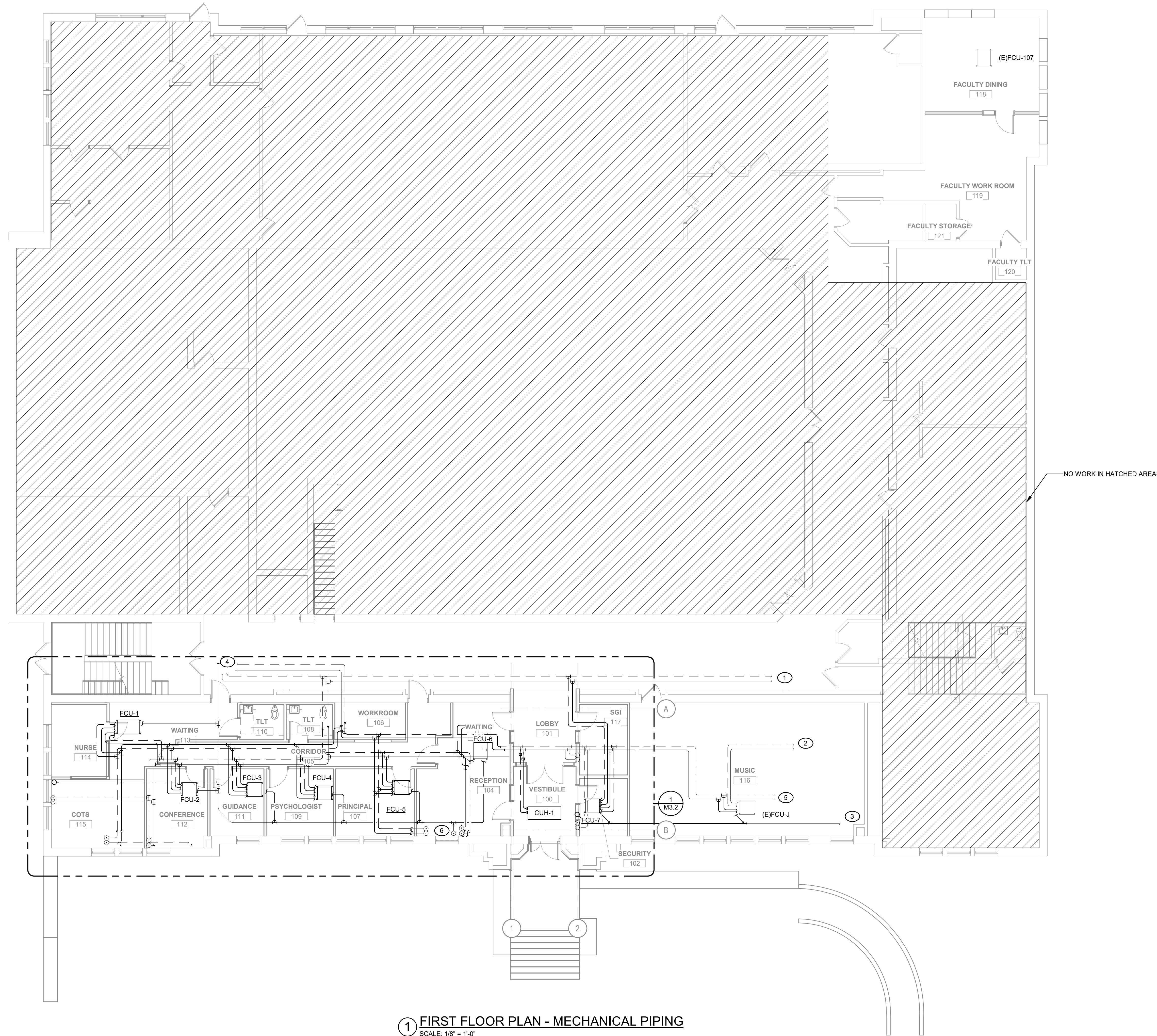
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**NOTES BY SYMBOL:** (7)

(THIS DRAWING ONLY)

- ① EXISTING 4" CHWR/CHWS PIPING TO REMAIN. BEYOND SCOPE, SHOWN FOR CLARITY.
- ② EXISTING CHWR/CHWS PIPING TO REMAIN. BEYOND SCOPE, SHOWN FOR CLARITY.
- ③ EXISTING 1" CONDENSATE PIPING TO REMAIN BEYOND SCOPE, SHOWN FOR CLARITY.
- ④ EXISTING 4" CHWR/CHWS, 2-1/2" HWR/HWS, AND 1-1/2" CONDENSATE PIPING TO REMAIN. BEYOND SCOPE, SHOWN FOR CLARITY.
- ⑤ EXISTING HWR/HWS PIPING TO REMAIN. BEYOND SCOPE, SHOWN FOR CLARITY.
- ⑥ EXISTING CHWR/CHWS, HWR/HWS, AND CONDENSATE PIPING UP TO REMAIN. BEYOND SCOPE, SHOWN FOR CLARITY.



① FIRST FLOOR PLAN - MECHANICAL PIPING  
 SCALE: 1/8" = 1'-0"

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 SECURITY VESTIBULE & RENOVATIONS  
 298 LAFAYETTE AVENUE  
 PALMERTON, PA 18071



FIRST FLOOR PLAN - MECHANICAL PIPING

PLOT SCALE:  
 1/8" = 1'-0"  
 FILENAME:  
 DATE:  
 02/09/24

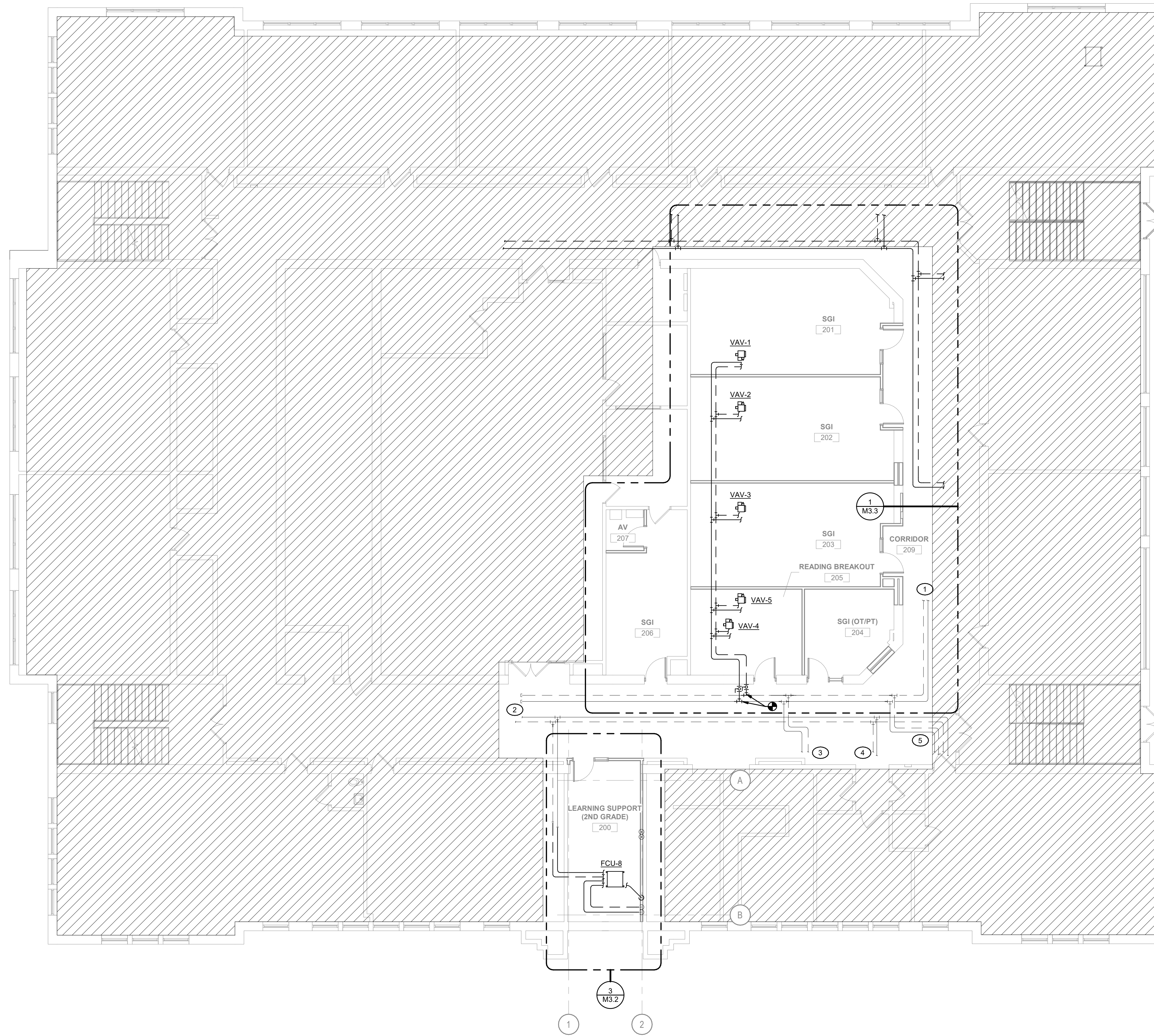
**PROJECT**  
 3378.1

**M2.1**

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**NOTES BY SYMBOL: ①**  
 (THIS DRAWING ONLY)

- ① EXISTING 1-1/2" HWR/HWS PIPING TO REMAIN. BEYOND SCOPE, SHOWN FOR CLARITY.
- ② EXISTING 1-1/2" HWR/HWS AND 2" CHWS/CHWR PIPING TO REMAIN. BEYOND SCOPE, SHOWN FOR CLARITY.
- ③ EXISTING 1" HWR/HWS PIPING TO REMAIN. BEYOND SCOPE, SHOWN FOR CLARITY.
- ④ EXISTING 1" CHWR/CHWS PIPING TO REMAIN. BEYOND SCOPE, SHOWN FOR CLARITY.
- ⑤ EXISTING 1" CHWR/CHWS AND 1" HWS/HWR PIPING TO REMAIN. BEYOND SCOPE, SHOWN FOR CLARITY.



① **SECOND FLOOR PLAN - MECHANICAL PIPING**  
 SCALE: 1/8" = 1'-0"

**REVISIONS**

NO.	DATE	NAME	DESCRIPTION OF CHANGES

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SECOND FLOOR PLAN -  
 MECHANICAL PIPING  
 PLOT SCALE:  
 1/8" = 1'-0"  
 FILENAME:  
 DATE:  
 02/09/24

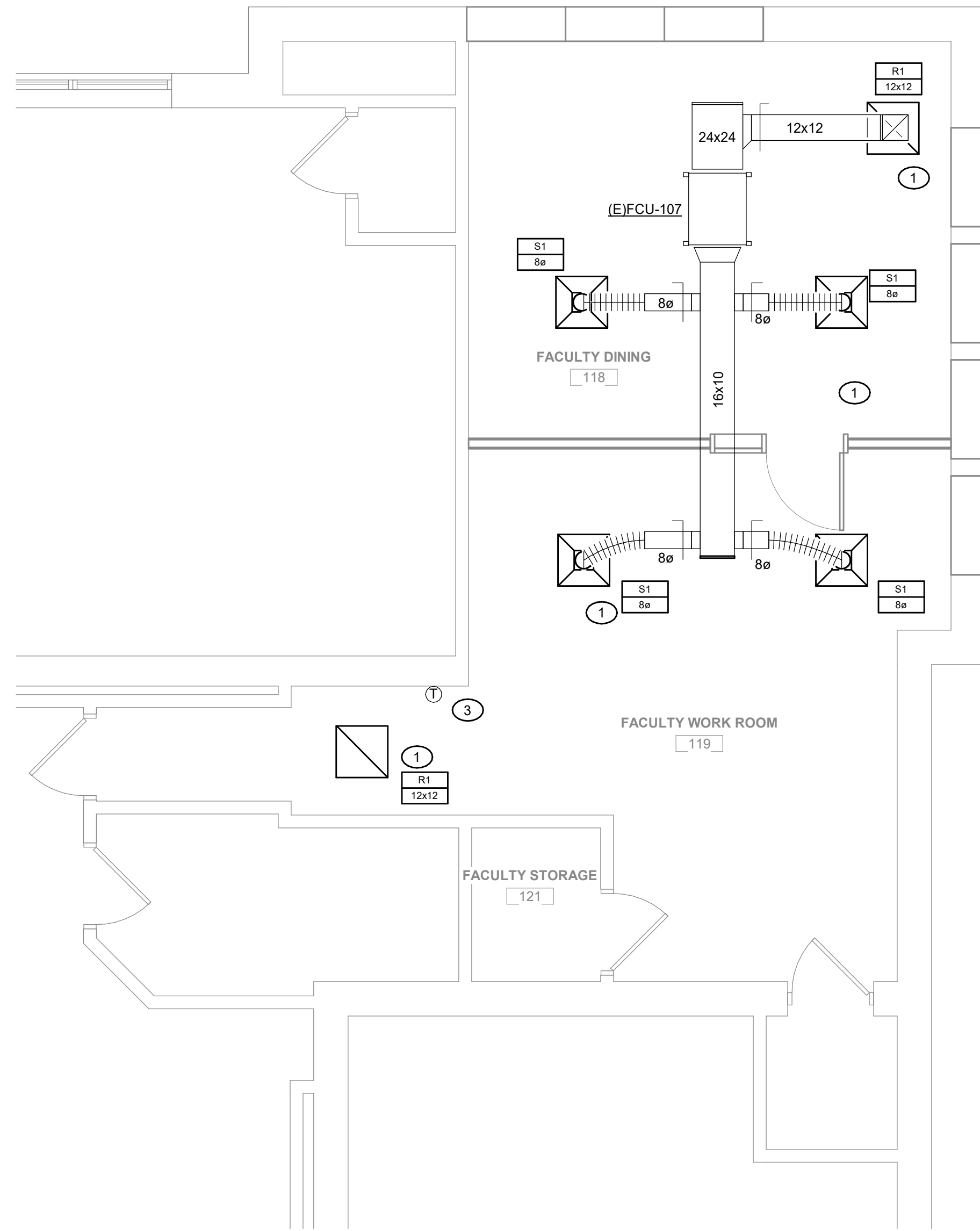
**PROJECT**  
 3378.1  
**M2.2**

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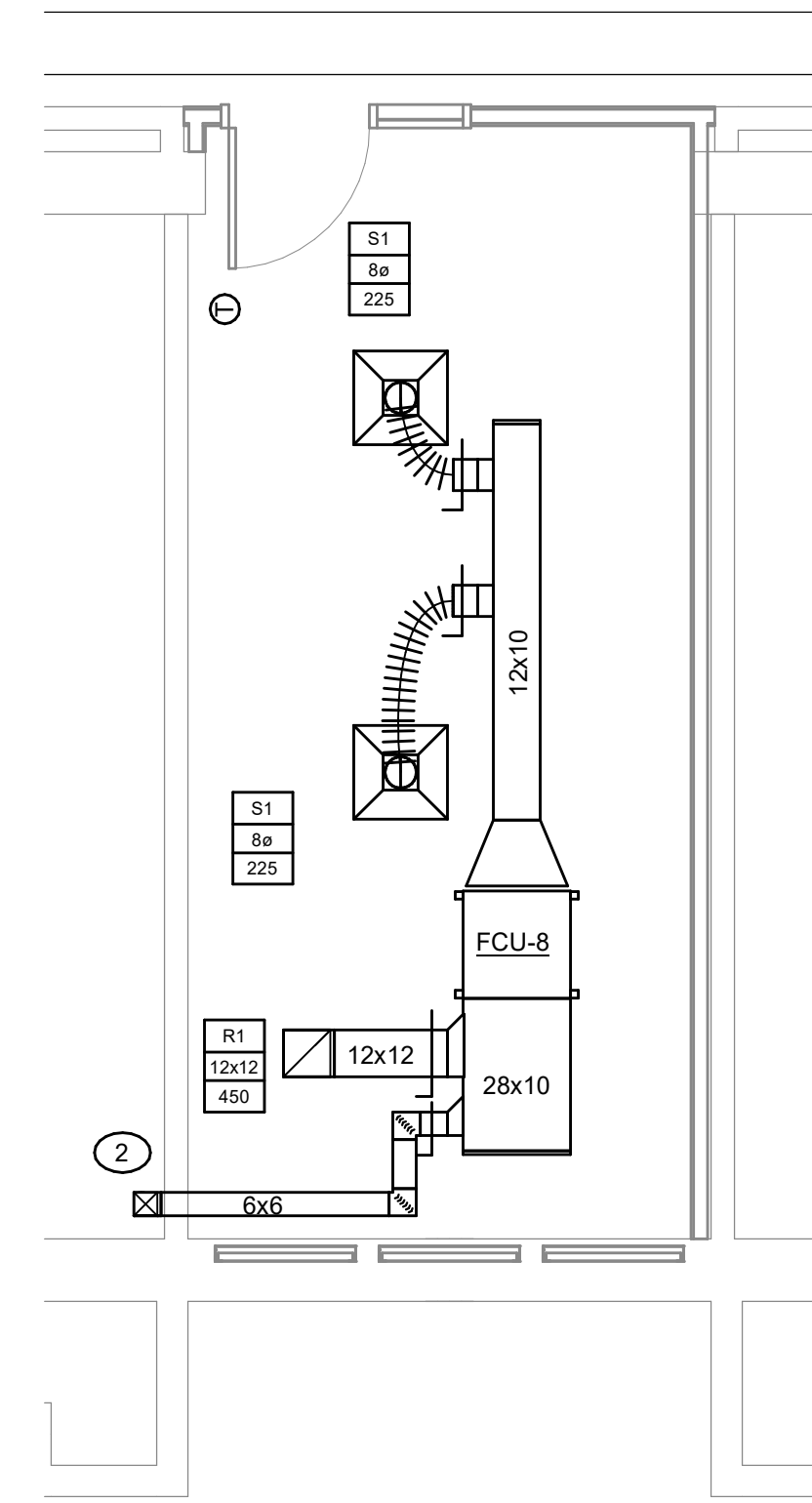
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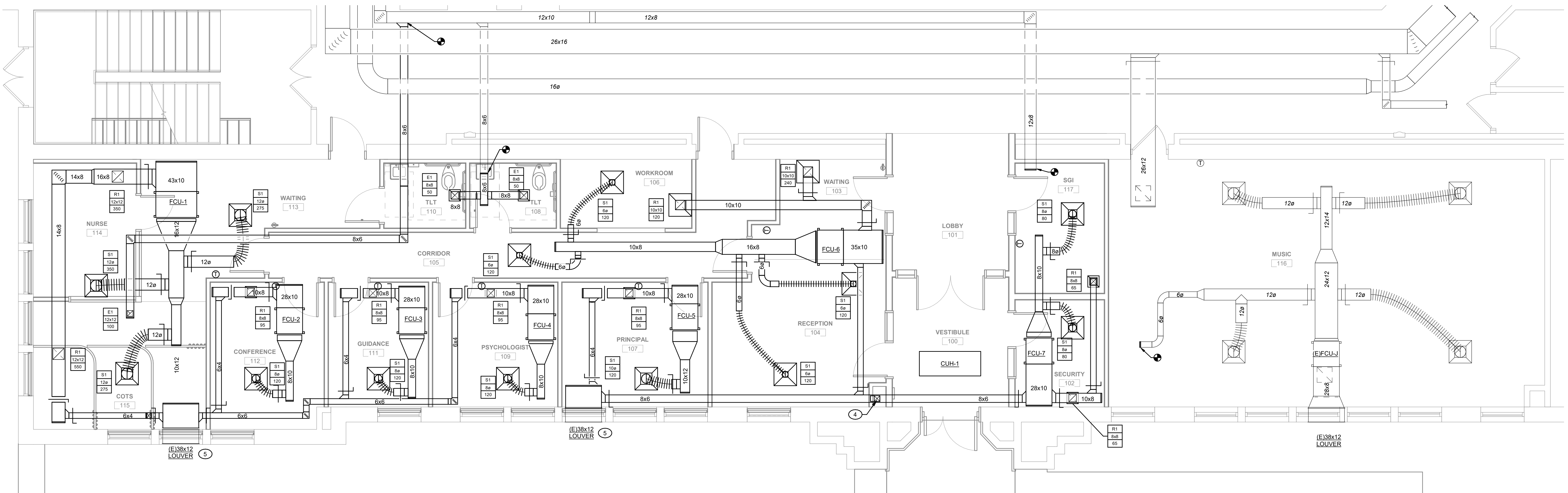
- ① REINSTALL GRILLES AND DIFFUSERS.
- ② 6x6 OA FROM BELOW. BALANCE TO CFM INDICATED IN SCHEDULE.
- ③ REINSTALL THERMOSTAT IN PREVIOUS LOCATION.
- ④ 6x6 OA UP.
- ⑤ PROVIDE INSULATED PLENUM, FULL SIZE OF EXISTING INTAKE LOUVER. INTERLOCK EXISTING MODULATING DAMPER WITH FAN COIL OCCUPIED MODE OF OPERATION.



② ENLARGED PLAN - TEACHERS LOUNGE - MECHANICAL DUCT  
SCALE: 1/4" = 1'-0"



③ ENLARGED PLAN - LEARNING SUPPORT - MECHANICAL DUCT  
SCALE: 1/4" = 1'-0"



① ENLARGED PLAN - MAIN OFFICE - MECHANICAL DUCT  
SCALE: 1/4" = 1'-0"

**REVISIONS**

NO.	DATE	NAME	DESCRIPTION OF CHANGES

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ENLARGED PLANS -  
MECHANICAL DUCT  
PLOT SCALE:  
1/4" = 1'-0"  
FILENAME:  
DATE:  
02/09/24

**PROJECT**  
3378.1  
**M3.0**

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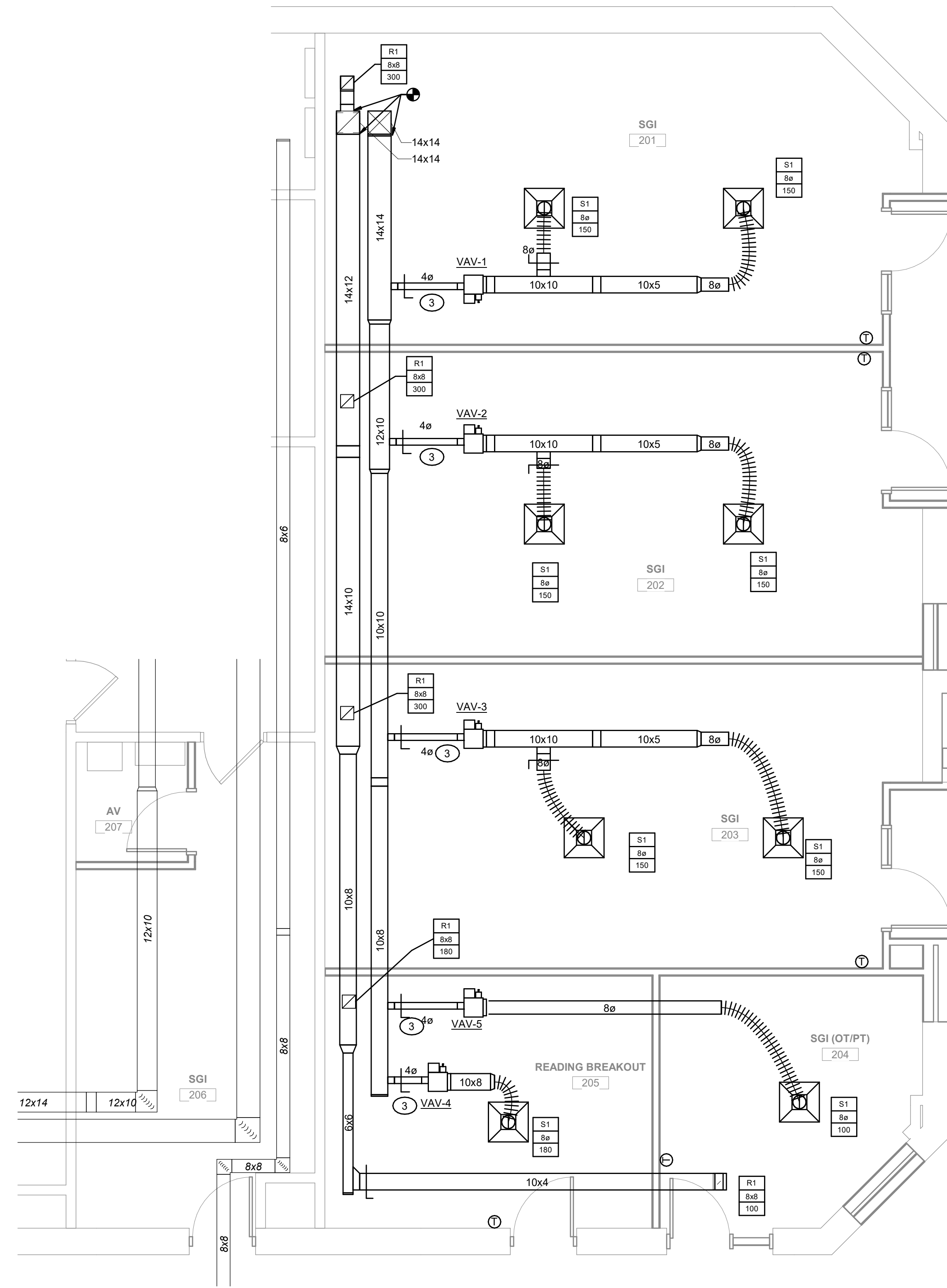
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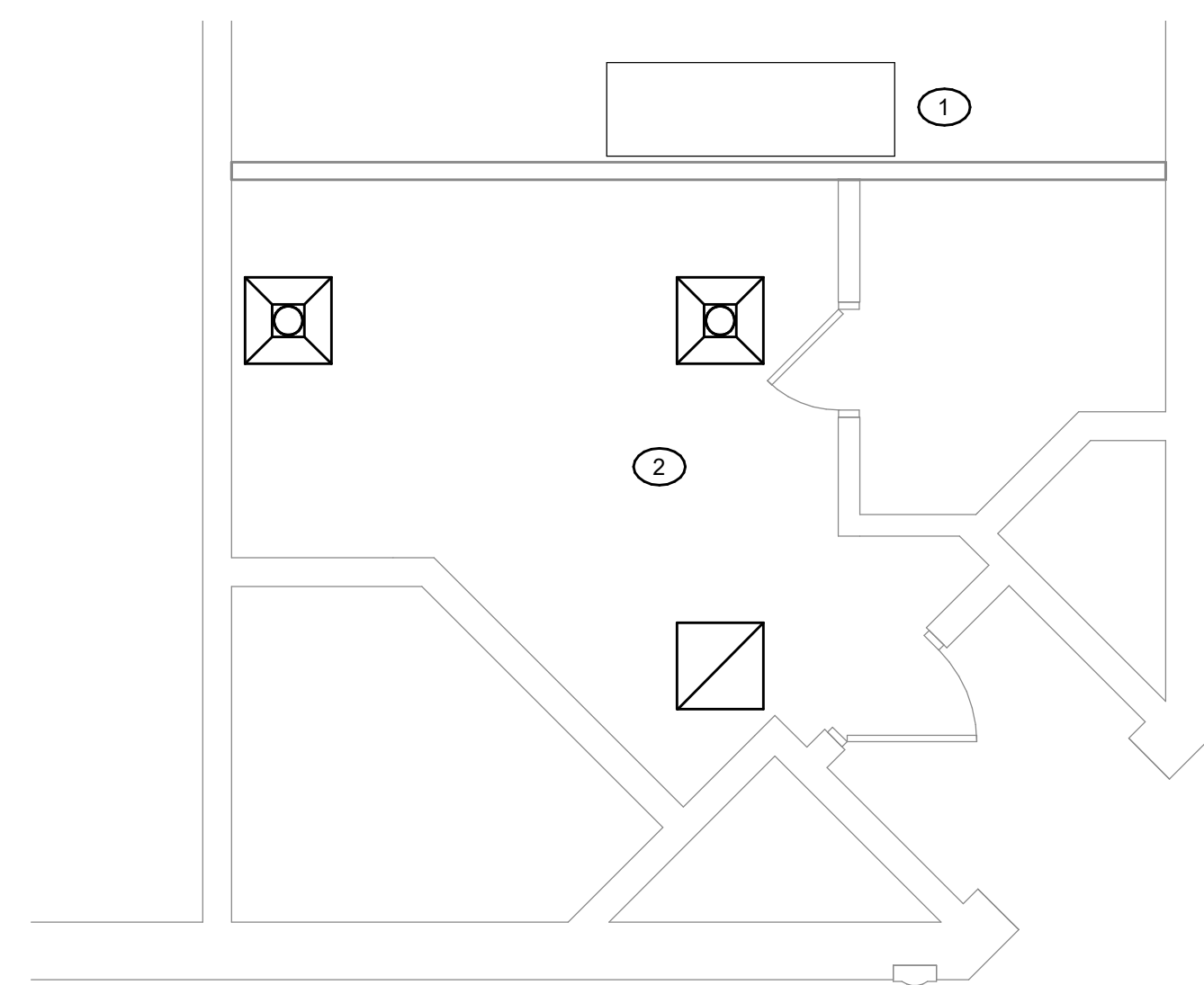
- ① REINSTALL EXISTING CEILING MOUNTED EXPOSED FAN COIL UNIT AND THERMOSTAT.
- ② REINSTALL GRILLES AND DIFFUSERS. RECONNECT TO EXISTING DUCTWORK.
- ③ DUCTWORK TAPPING FROM MAIN DUCT TRUNK TO INLET OF VAV UNIT TO BE MEDIUM PRESSURE DUCTWORK.

**REVISIONS**

NO.	DATE	NAME	DESCRIPTION OF CHANGES



① ENLARGED PLAN - SECOND FLOOR - MECHANICAL DUCT  
 SCALE: 1/4" = 1'-0"



② ENLARGED PLAN - MATH COACH - MECHANICAL DUCT  
 SCALE: 1/4" = 1'-0"

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ENLARGED PLANS -  
 MECHANICAL DUCT  
 PLOT SCALE:  
 1/4" = 1'-0"  
 FILENAME:  
 DATE:  
 02/09/24

**PROJECT**  
 3378.1  
**M3.1**



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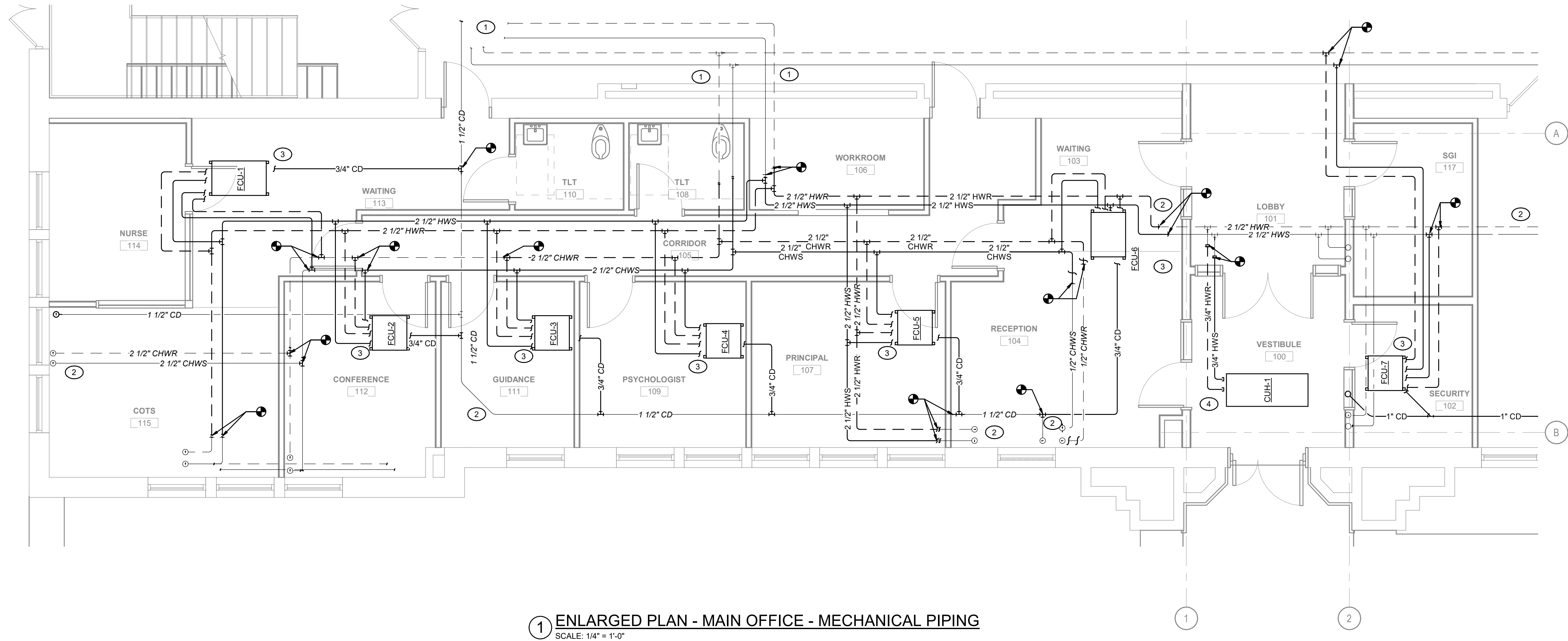
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(THIS DRAWING ONLY)

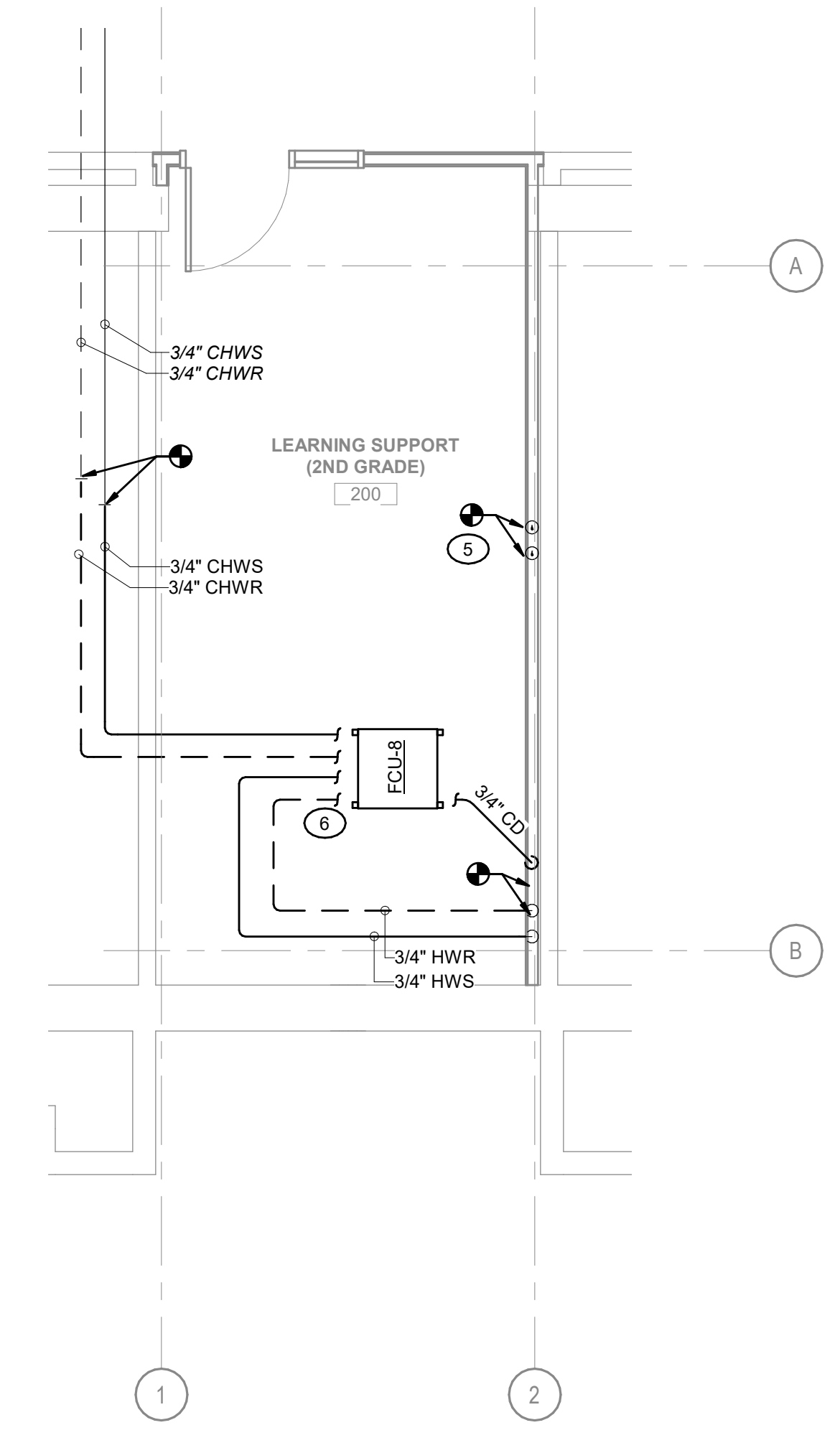
- (1) EXISTING MECHANICAL PIPING TO REMAIN. SHOWN FOR CLARITY.
- (2) EXISTING MECHANICAL MAIN AND BRANCH PIPING TO REMAIN.
- (3) PROVIDE CONNECTION TO NEW FAN COIL UNIT. FOLLOW MANUFACTURER'S INSTALLATION MANUAL FOR SIZING.
- (4) PROVIDE HWS/HWR PIPING TO CUH-1. FOLLOW MANUFACTURER'S INSTALLATION MANUAL FOR SIZING.
- (5) PROVIDE PIPE CAPS FOR EXISTING HWS/HWR PIPING IN WALL.
- (6) PROVIDE 3/4" HWS/HWR AND 3/4" CHWS/CHWR TO ECU-8.

**REVISIONS**

NO.	DATE	DESCRIPTION OF CHANGES



**1 ENLARGED PLAN - MAIN OFFICE - MECHANICAL PIPING**  
 SCALE: 1/4" = 1'-0"



**3 ENLARGED PLAN - LEARNING SUPPORT - MECHANICAL PIPING**  
 SCALE: 1/4" = 1'-0"

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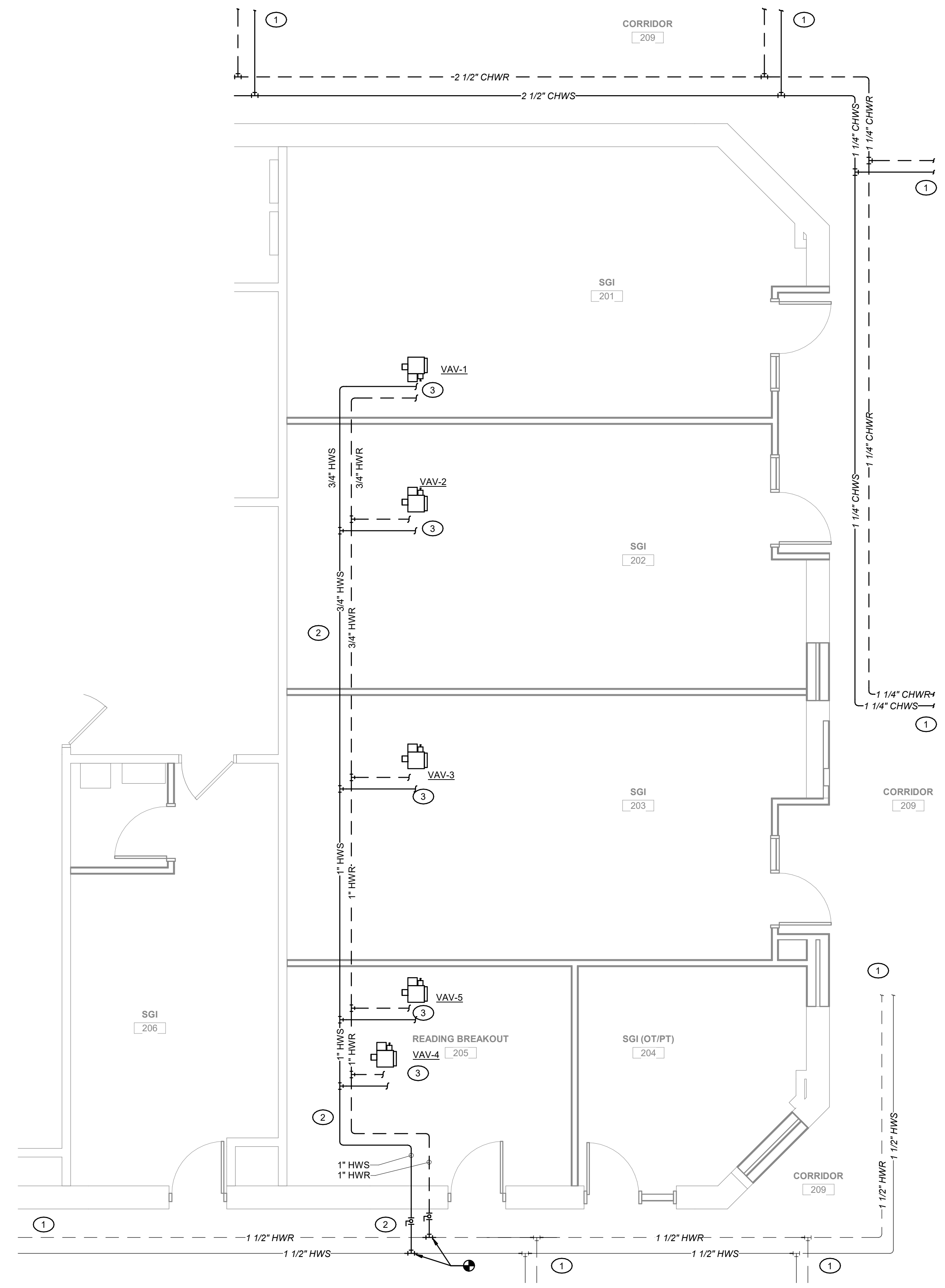
ENLARGED PLANS - MECHANICAL PIPING  
 PLOT SCALE: 1/4" = 1'-0"  
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 DATE: 02/09/24

**PROJECT**  
 3378.1  
**M3.2**

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**NOTES BY SYMBOL: #**

- (THIS DRAWING ONLY)
- ① EXISTING MECHANICAL PIPING TO REMAIN. SHOWN FOR CLARITY.
  - ② EXISTING MECHANICAL BRANCH PIPING TO REMAIN.
  - ③ PROVIDE 3/4" HW/HWR CONNECTION TO NEW VAV UNIT. FOLLOW MANUFACTURER'S INSTALLATION MANUAL FOR SIZING.



**① ENLARGED 2 FLOOR PLAN - MECHANICAL PIPING**  
 SCALE: 1/4" = 1'-0"

**REVISIONS**

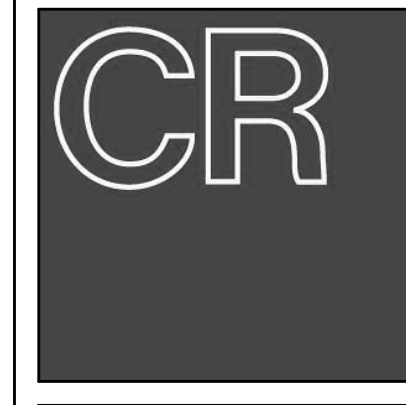
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ENLARGED PLANS -  
 MECHANICAL PIPING

PLOT SCALE:  
 1/4" = 1'-0"

FILENAME:

DATE:  
 02/09/24

**PROJECT**  
 3378.1

**M3.3**



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REVISIONS		
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**FAN COIL UNIT SCHEDULE**

TAG NO.	MANUFACTURER	MODEL NO.	CFM	ESP	MOTOR		COOLING COIL (CHILLED WATER)						HEATING COIL (HOT WATER)						REMARKS						
					WATTS	V/PHz	EAT		LAT		SENSIBLE MBH	TOTAL MBH	EWT	LWT	GPM	WPD	EAT			LAT		LWT	GPM	WPD (IN)	
							DB	WB	DB	WB							EAT	LAT		EAT	LAT				
FCU-1	TRANE	FCCB100	900	0.25	256	120/1/60	80.0	67.0	55.0	54.0	25.88	38.04	44.0	56.0	6.32	12.51	72.0	104.91	32.12	200.0	160.0	1.6	1.04	594	1-7
FCU-2	TRANE	FCCB030	240	0.5	82	120/1/60	80.0	67.0	55.0	54.0	6.34	8.80	44.0	56.0	1.46	4.05	72.0	100.39	7.39	200.0	160.0	0.5	0.05	158	1-7
FCU-3	TRANE	FCCB020	160	0.5	49	120/1/60	80.0	67.0	55.0	54.0	4.41	6.26	44.0	56.0	1.04	2.22	72.0	109.72	6.55	200.0	160.0	0.5	0.05	106	1-7
FCU-4	TRANE	FCCB020	160	0.5	49	120/1/60	80.0	67.0	55.0	54.0	4.41	6.26	44.0	56.0	1.04	2.22	72.0	109.72	6.55	200.0	160.0	0.5	0.05	106	1-7
FCU-5	TRANE	FCCB060	400	0.5	109	120/1/60	80.0	67.0	55.0	54.0	10.84	15.12	44.0	56.0	2.51	3.12	72.0	104.20	13.97	200.0	160.0	0.7	0.15	264	1-7
FCU-6	TRANE	FCCB040	300	0.5	95	120/1/60	80.0	67.0	55.0	54.0	8.07	11.52	44.0	56.0	1.91	7.51	72.0	100.5	9.27	200.0	160.0	0.5	0.06	198	1-7
FCU-7	TRANE	FCCB020	160	0.5	49	120/1/60	80.0	67.0	55.0	54.0	4.41	6.26	44.0	56.0	1.04	2.22	72.0	109.72	6.55	200.0	160.0	0.5	0.05	106	1-7
FCU-8	TRANE	FCCB060	400	0.5	109	120/1/60	80.0	67.0	55.0	54.0	10.84	15.12	44.0	56.0	2.51	3.12	72.0	104.20	13.97	200.0	160.0	0.7	0.15	264	1-7

REMARKS:  
 1. INSTALL PER MANUFACTURER'S WRITTEN INSTRUCTIONS.  
 2. PROVIDE FAN COIL VALVE KIT, INCLUDING: TWO-WAY MOTORIZED VALVE, BALANCING VALVE, STRAINER AND SHUT OFFS.  
 3. FAN COILS ARE TO BE HORIZONTAL UNITS AND HUNG ABOVE CEILING WITH HORIZONTAL BLOW. INCLUDE VIBRATION ISOLATORS.  
 4. VERIFY SCHEDULED UNIT SIZE MATCHES EXISTING EQUIPMENT BEFORE ORDERING.  
 5. PROVIDE CONDENSATE TRAPS FROM DRAIN PAN AND CONNECT INTO CLOSEST EXISTING CONDENSATE PIPING MAIN.  
 6. CONTROLS BY MANUFACTURER/VENDOR AND VERIFY WITH OWNER FOR COMPATIBILITY WITH BAS. INSTALLED IN FIELD.  
 7. PROVIDE UNIT WITH ACCESSORY MINI CONDENSATE PUMP POWERED BY FAN COIL UNIT. EXTERNAL PUMPS REQUIRING ADDITIONAL POWER CIRCUITS SHALL NOT BE ACCEPTED.

**VAV BOX SCHEDULE (HOT WATER COIL)**

TAG NO.	AREA SERVED	MANUFACTURER	MODEL NO.	CFM			INLET SIZE	OUTLET SIZE	HOT WATER COIL						APD	WEIGHT	REMARKS	
				NOM	ACTUAL	MIN.			EAT	LAT	MBH	EWT	GPM	WPD				ROWS
VAV-1	SGI	TRANE	VCWF05	350	300	88	5"	10"x11"	55.0	103.01	9.11	200	0.5	0.49	1	0.13	25.2	1-5
VAV-2	SGI	TRANE	VCWF05	350	300	88	5"	10"x11"	55.0	103.01	9.11	200	0.5	0.49	1	0.13	25.2	1-5
VAV-3	SGI	TRANE	VCWF05	350	300	88	5"	10"x11"	55.0	103.01	9.11	200	0.5	0.49	1	0.13	25.2	1-5
VAV-4	READING BREAKOUT	TRANE	VCWF04	225	180	56	4"	10"x 7"	55.0	116.82	7.58	200	0.5	0.49	1	0.06	25.2	1-5
VAV-5	WORK	TRANE	VCWF04	225	100	56	4"	10"x 7"	55.0	116.82	7.58	200	0.5	0.49	1	0.06	25.2	1-5

REMARKS:  
 1. INSTALL PER MANUFACTURER'S WRITTEN INSTRUCTION.  
 2. PROVIDE 2-WAY AND 3-WAY CONTROL VALVES. BAS SHALL FURNISH AND WIRE CONTROL VALVES.  
 3. PROVIDE ACCESS CLEARANCE FOR EQUIPMENT FOLLOWING MANUFACTURER'S RECOMMENDATIONS.  
 4. PROVIDE MANUFACTURER'S CONTROLS AND VERIFY WITH OWNER FOR COMPATIBILITY WITH BAS.

**GRILLE/DIFFUSER SCHEDULE**

TAG NO.	MANUFACTURER	MODEL NO.	MODULE SIZE	NECK SIZE	PATTERN	CFM RANGE	REMARKS
S1	TITUS	TMS	12"x12"	6"	4-WAY	0-100	1
	TITUS	TMS	24"x24"	8"	4-WAY	101-200	1
	TITUS	TMS	24"x24"	10"	4-WAY	201-400	1
	TITUS	TMS	24"x24"	12"	4-WAY	401-600	1
	TITUS	TMS	24"x24"	14"	4-WAY	601-800	1
R1/E1	TITUS	355RL	8"x8"	8"x8"	R/A	0-185	--
	TITUS	355RL	12"x12"	12"x12"	R/A	186-450	--
	TITUS	355RL	24"x12"	24"x12"	R/A	451-730	--
	TITUS	355RL	24"x24"	24"x24"	R/A	731-1700	--

REMARKS:  
 1. PROVIDE WITH BORDER TYPE MATCHING INSTALLED SURFACE.

**CEILING UNIT HEATER SCHEDULE**

TAG NO.	MANUFACTURER	MODEL NO.	MBH*	CFM	COIL ROWS	GPM	WPD (IN)	LOCATION	HP	V/PHz	FLA	REMARKS
CUH-1	ZEHNDER - RITTLING	RRC-440	40.8	420	2.8	2.8	2.2	VESTIBULE	1/25	120/1/60	0.68	1-3

REMARKS:  
 1. PROVIDE PARTIALLY RECESSED MOUNTING ENCLOSURE WITH MANUFACTURER'S ACCESSORY DISCONNECT SWITCH AND SUPPORT BRACKETS.  
 2. FURNISH AND INSTALL 2-WAY CONTROL VALVE WITH REMOTE MOUNTED AND NETWORKED WALL THERMOSTAT.  
 3. COORDINATE WITH ARCHITECT FOR EXACT MOUNTING LOCATION AND FINISH COLOR PRIOR TO INSTALLATION. \* RATED @ 200°F EWT. 60°F EAT

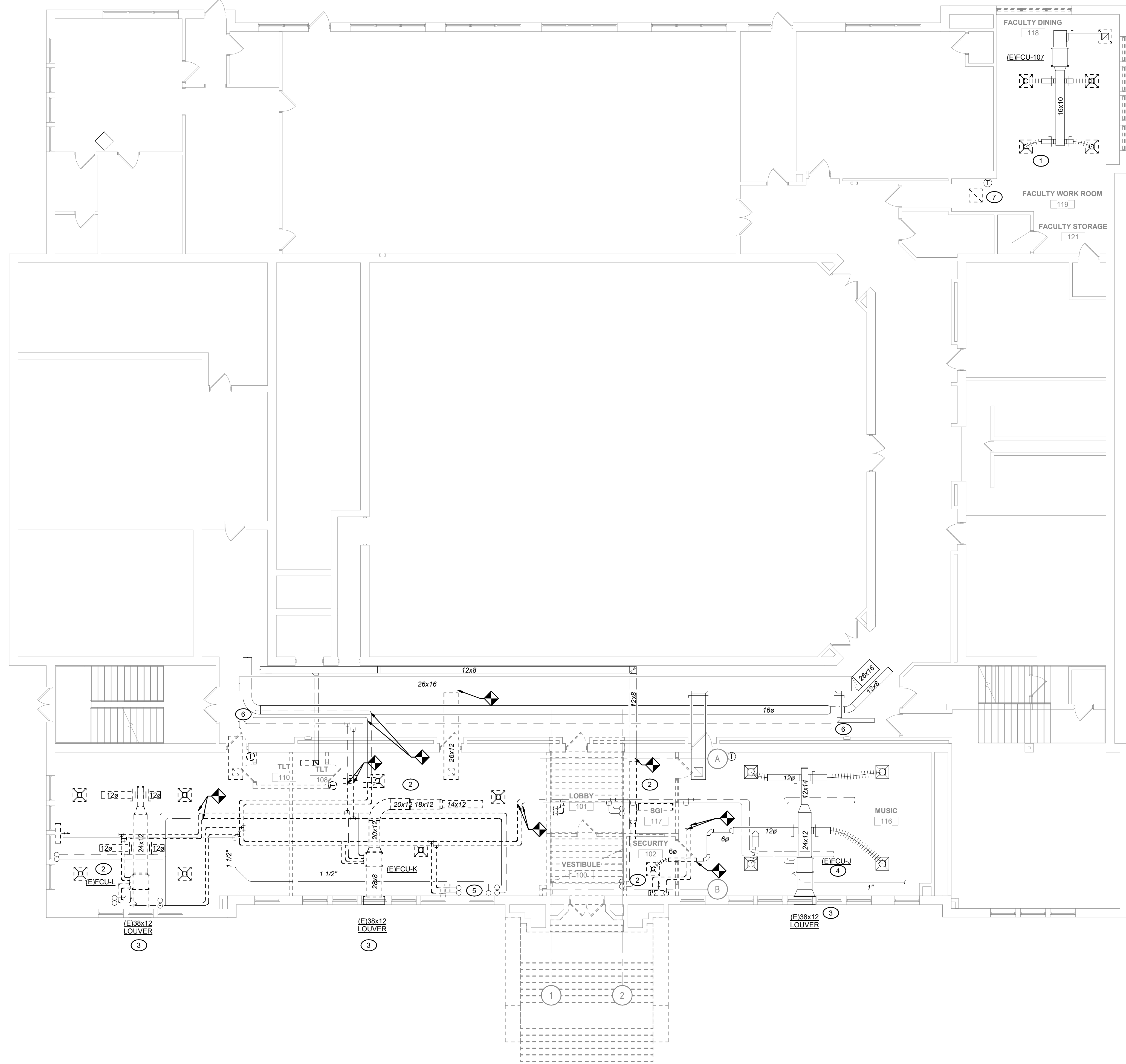


**GENERAL NOTES:**

1. VERIFY EXISTING CONDITIONS BEFORE BEGINNING WORK.
2. IF EXISTING CONDITIONS DO NOT MATCH CONTACT ENGINEER WITH WRITTEN REPORT.
3. REMOVE, CLEAN AND STORE EXISTING GRILLES AND DIFFUSERS FOR REINSTALLATION.

**NOTES BY SYMBOL:** (A)

- (THIS DRAWING ONLY)
- 1 (E)FCU-IJ2 AND ASSOCIATED DUCTWORK TO REMAIN INSTALLED. REMOVE, CLEAN, AND STORE ASSOCIATED EXISTING THERMOSTAT FOR REINSTALLATION.
  - 2 REMOVE EXISTING MECHANICAL EQUIPMENT, DUCTWORK, GRILLES AND DIFFUSERS FROM EXISTING AREA. PREP FOR NEW INSTALLATIONS. REMOVE UNIT MECHANICAL PIPING CONNECTIONS AND PREP FOR INSTALLATION OF NEW EQUIPMENT.
  - 3 EXISTING LOUVER IN TRANSOM SPACE TO REMAIN. PREP FOR NEW OUTSIDE AIR DUCT CONNECTION.
  - 4 EXISTING MUSIC ROOM MECHANICAL SYSTEM TO REMAIN. REMOVE EXISTING DUCT WORK TO POINT OF DEMOLITION LOCATIONS AND CAP.
  - 5 EXISTING MECHANICAL PIPING UP TO REMAIN.
  - 6 EXISTING MECHANICAL PIPING TO REMAIN. MECHANICAL PIPING CONTINUES BEYOND SCOPE OF WORK.
  - 7 EXISTING PLENUM RETURN GRILL TO REMOVED, CLEANED AND STORED UNTIL REINSTALLATION.



**1 FIRST FLOOR PLAN - DEMOLITION - MECHANICAL**  
 SCALE: 1/8" = 1'-0"

**REVISIONS**

NO.	DATE	BY	DESCRIPTION OF CHANGES

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FIRST FLOOR PLAN -  
 DEMOLITION - MECHANICAL

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

FILENAME:  
 DATE: 02/09/24

**PROJECT**  
 3378.1

**MD1.1**

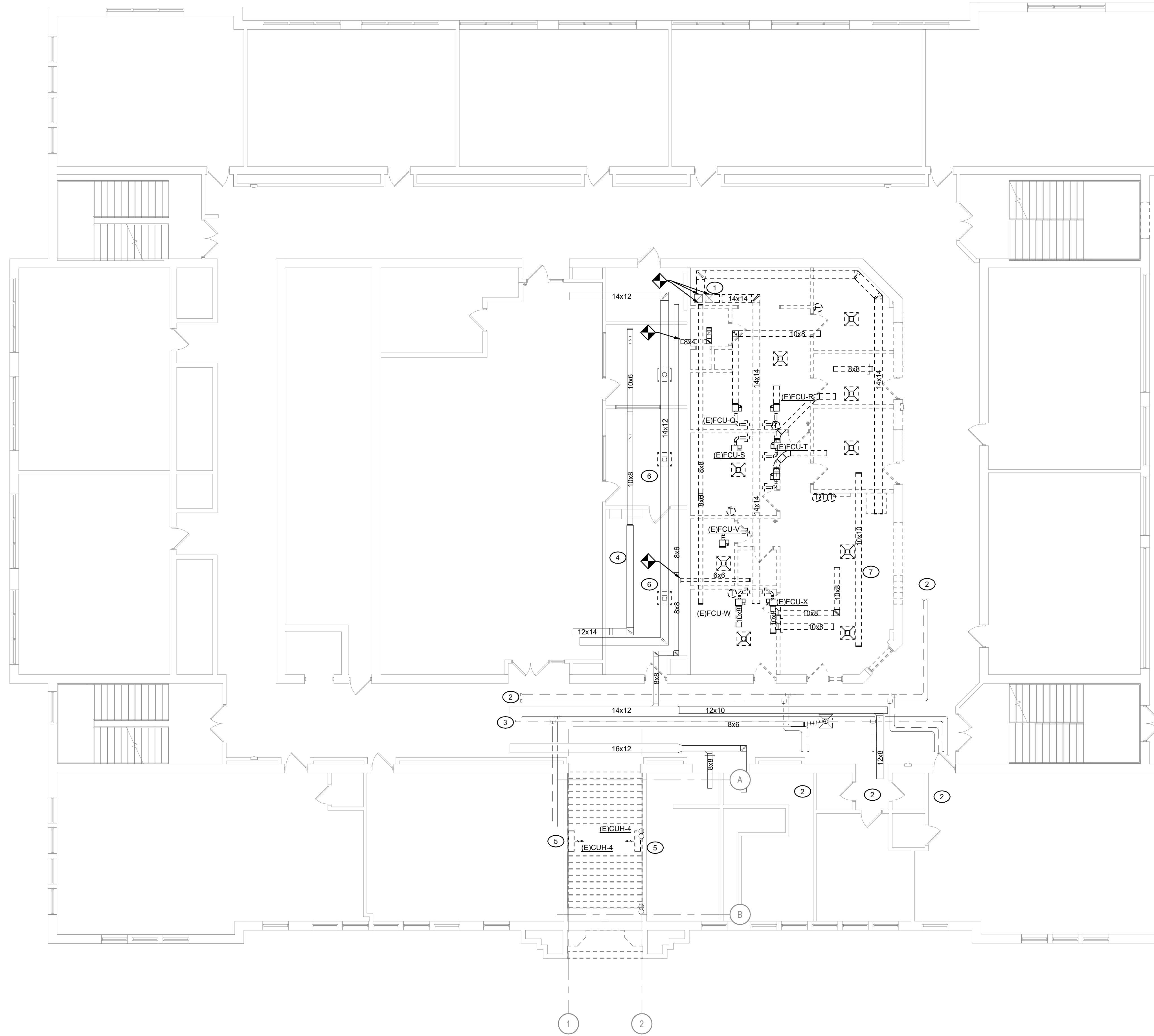
**GENERAL NOTES:**

1. VERIFY EXISTING CONDITIONS BEFORE BEGINNING WORK.
2. IF EXISTING CONDITIONS DO NOT MATCH CONTACT ENGINEER WITH WRITTEN REPORT.
3. REMOVE, CLEAN AND STORE EXISTING GRILLES AND DIFFUSERS FOR REINSTALLATION.

**NOTES BY SYMBOL: (1-7)**

(THIS DRAWING ONLY)

- (1) REMOVE ALL EXISTING MECHANICAL EQUIPMENT, THERMOSTATS, SUPPLY, EXHAUST AND RETURN DUCT WORK BACK TO SUPPLY AND RETURN MAIN DUCT DROP. REMOVE EXISTING GRILLES AND DIFFUSERS AND STORE FOR REINSTALLATION.
- (2) EXISTING MECHANICAL PIPING TO REMAIN. MECHANICAL PIPING CONTINUES BEYOND SCOPE OF WORK.
- (3) ALL EXISTING CORRIDOR DUCTWORK TO REMAIN. SHOWN FOR SCOPE CLARITY.
- (4) ALL EXISTING ADJACENT SPACE DUCTWORK TO REMAIN. SHOWN FOR SCOPE CLARITY.
- (5) EXISTING CUH-4 IN STAIRWELL TO BE REMOVED. CAP EXISTING HOT WATER SUPPLY AND RETURN PIPING IN WALL. PREP FOR INSTALLATION OF NEW EQUIPMENT.
- (6) REMOVE, CLEAN AND REINSTALL EXISTING CEILING DIFFUSER/GRILLE TO ACCOMMODATE FOR NEW CEILING GRID.
- (7) REMOVE PREVIOUSLY ABANDONED 10x10 DUCT.



**1 SECOND FLOOR PLAN - DEMOLITION - MECHANICAL**  
 SCALE: 1/8" = 1'-0"

**REVISIONS**

NO.	DATE	BY	DESCRIPTION OF CHANGES

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SECOND FLOOR PLAN -  
 DEMOLITION - MECHANICAL

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

FILENAME:

DATE:  
 02/09/24

**PROJECT**  
 3378.1

**MD1.2**

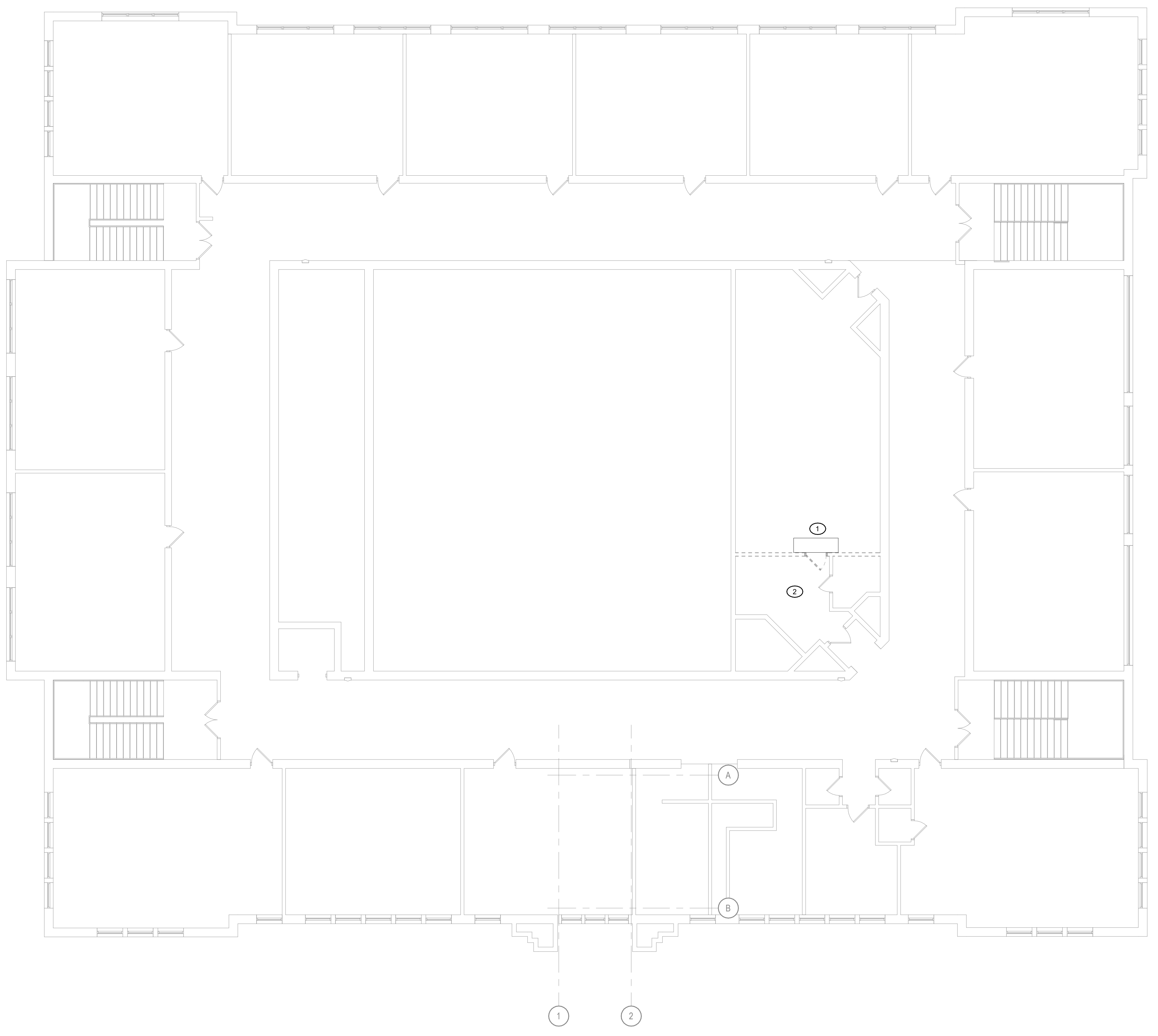
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**GENERAL NOTES:**

1. VERIFY EXISTING CONDITIONS BEFORE BEGINNING WORK.
2. IF EXISTING CONDITIONS DO NOT MATCH CONTACT ENGINEER WITH WRITTEN REPORT.

**NOTES BY SYMBOL:** (THIS DRAWING ONLY)

- 1 REMOVE, CLEAN AND STORE EXISTING CEILING MOUNTED NON-CONCEALED MECHANICAL UNIT AND THERMOSTAT IF NEEDED FOR EASE OF ACCESS TO WALL BEHIND. REINSTALL IN SAME LOCATION.
- 2 REMOVE, CLEAN AND STORE EXISTING GRILLES AND DIFFUSERS. EXISTING ASSOCIATED DUCTWORK AND MECHANICAL EQUIPMENT TO REMAIN. REMOVE, CLEAN AND STORE 3 EXISTING GRILLES AND DIFFUSERS.



1 THIRD FLOOR PLAN - DEMOLITION - MECHANICAL  
 SCALE: 1/8" = 1'-0"

**REVISIONS**

NO.	DATE	BY	DESCRIPTION OF CHANGES

**CRABTREE ROHRBAUGH & ASSOCIATES - ARCHITECTS**  
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THIRD FLOOR PLAN - DEMOLITION - MECHANICAL  
 PLOT SCALE: 1/8" = 1'-0"  
 FILENAME:  
 DATE: 02/09/24

**PROJECT**  
 3378.1  
**MD1.3**