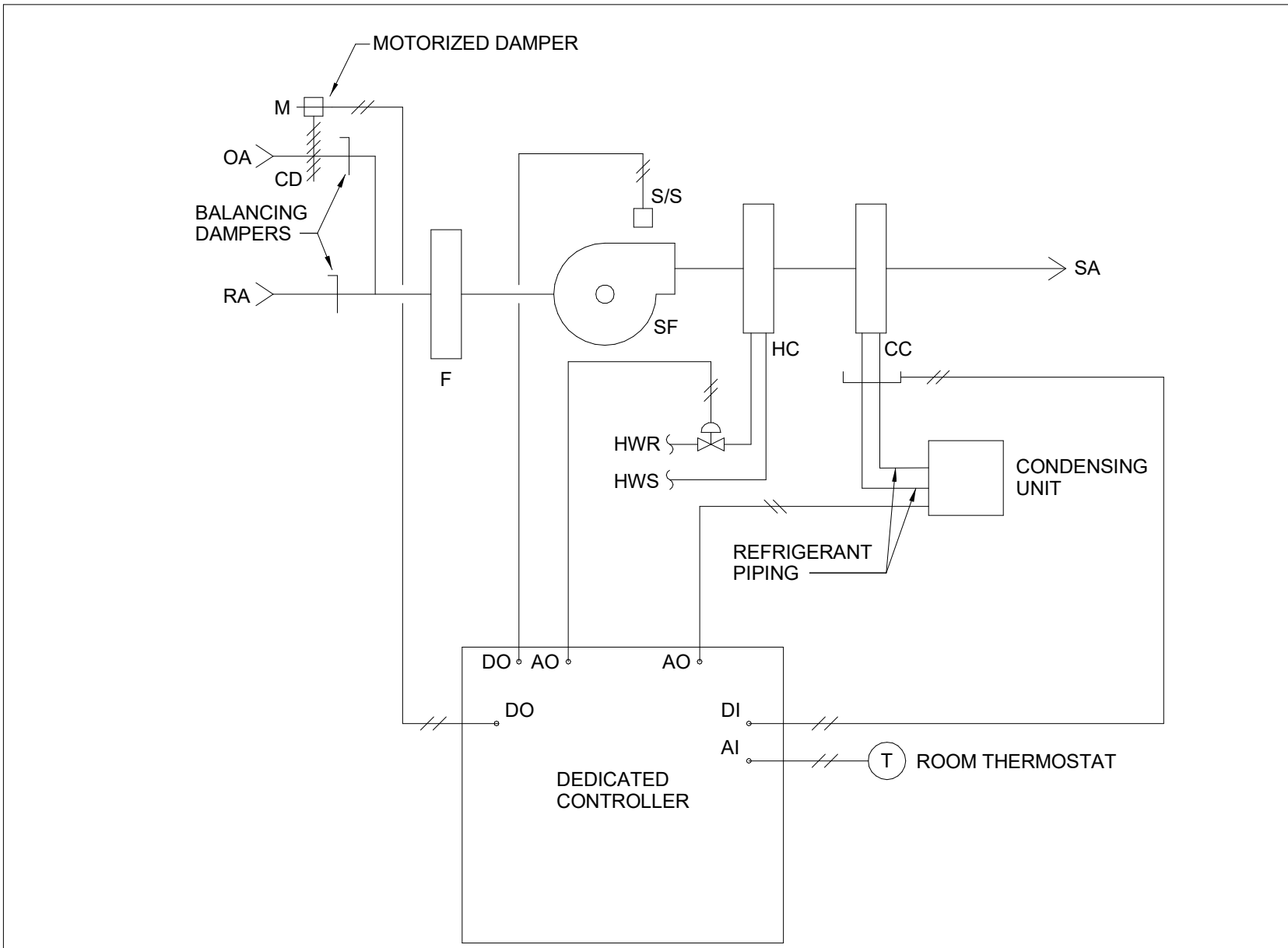


SYMBOL		DESCRIPTION		SYMBOL		DESCRIPTION		DOUBLE LINE PIPING (2" AND ABOVE)		SINGLE LINE PIPING (UP TO 2")		PIPE TYPE	
		SECTION NO.				SECTION VIEW SHEET NO.						CHS	
		DETAIL DESIGNATION				CHR						CHR	
		POWERED EQUIPMENT DESIGNATION				HWS						HWS	
		NON POWERED EQUIPMENT DESIGNATION				HWR						HWR	
		BASEBOARD EQUIPMENT DESIGNATION				CWS						CWS	
		SHEET KEY NOTES				CWR						CWR	
		POINT OF DISCONNECTION				D						D	
		ARROW INDICATES DIRECTION OF FLOW				HPS						HPS	
		EXTERIOR WALL LOUVER (UNDER ARCH. SECTION)				MPS						MPS	
		UNDERCUT DOOR (UNDER ARCH. SECTION)				LPS						LPS	
		DOOR LOUVER (UNDER ARCH. SECTION)				HPR						HPR	
		LOUVER DOOR FULL HEIGHT (UNDER ARCH. SECTION)				MPR						MPR	
						LPR						LPR	
						RS						RS	
						RL						RL	
						RHG						RHG	
						A						A	
						BD						BD	
						BF						BF	
						BO						BO	
						CF						CF	
						PCS/R						PCS/R	
						HTWS/R						HTWS/R	
						PHWS/R						PHWS/R	
						PCHS/R						PCHS/R	
						PR						PR	
						(E)						(E)	
						(E)						(E)	

FITTINGS:		
SYMBOL	ABBREVIATION	DESCRIPTION
	P&T	PRESSURE/TEMPERATUR E PORT TAPS
	CR	CONCENTRIC REDUCER
	ER	ECCENTRIC REDUCER
	EJ	EXPANSION JOINT
	U	UNION
	T	THERMOMETER W/ THERMOWELL
	AV	AIR VENT
	FC	FLEXIBLE PIPE CONNECTOR
	FS	FLOW SWITCH
	PS	PRESSURE SWITCH
	PG	PRESSURE GAUGE W/ GAUGE COCK
		ELBOW UP
		ELBOW DOWN
		TEE UP
		TEE DOWN
		PIPE CAP OR PLUG
	IV	ISOLATION VALVE, RE: SPECS
	OS&Y	OUTSIDE STEM AND YOK E
	DV	DRAIN VALVE W/ HOSE EN D CONNECTION
		BALL VALVE W/ HOSE CON NECTION
	CV	CHECK VALVE WITH DIR ECTION OF FLOW
	PRV	PRESSURE REDUCING VAL VE
	SV	SOLENOID VALVE
	FCV	AUTO FLOW CONTROL VAL VE W/ TEST PORTS
	CS,BV	CIRCUIT SETTER OR BAL ANCING VALVE
	GLV	GLOBE VALVE (STRAIGH T PATTERN)
	GLV	GLOBE VALVE (ANGLE P ATTERN)
	BFV	BUTTERFLY VALVE
	BV	BALL VALVE
	TCV	AUTOMATIC TEMPERATUR E CONTROL VALVE, 2-WAY
	TCV	AUTOMATIC TEMPERATUR E CONTROL VALVE, 3-WAY
	BV	BALANCING VALVE
	TMP	TEMPERATURE/PRESSURE RELIEF VALVE
		VALVE IN RISER
	STR	STRAINER W/ BLOW-OFF & CAPPED HOSE EN D CONNECTION
	ST	STEAM TRAP

ABBREVIATION		DESCRIPTION		ABBREVIATION		DESCRIPTION		ABBREVIATION		DESCRIPTION		ABBREVIATION		DESCRIPTION	
A		AIR (COMPRESSED)		E		EFFECTIVE DIRECT RADIATION		M		MAKE-UP AIR		SFCS		SPRINKLER FLOOR CONTROL STATION	
ABV		ABOVE		EER		ENERGY EFFICIENCY RATIO		MA		MAKE-UP AIR		SH		SHOWER	
AC		AIR CONDITIONING		EF		EFFICIENCY		MAX		MAXIMUM		SHT		SHEET	
ACCH		AIR COMPRESSOR		EJC		EXPANSION JOINT		MBH		MECHANICAL CONTRACTOR		SQ		SQUARE	
ACCU		AIR COOLED CONDENSING UNIT		EL		ELEVATION		MCA		MINIMUM CIRCUIT AMPACITY		SK		SINK	
AD		ACCESS DOOR		EMRG		EMERGENCY		MCC		MOTOR CONTROL CENTER		SKVA		STARTING KILOVOLT AMPS	
ADJ		ADJUSTABLE		ENGR		ENGINEER		MFR		MANUFACTURER		SM		SHEET METAL	
AF		AIR FILTER		ENT		ENTERING		MHS		MECHANICAL SPECIFICATION		SP		STATIC PRESSURE	
AFC		ABOVE FINISHED CEILING		ES		END SUCTION		MIL		MANHOLE		SPP		SPRINKLER	
AFG		ABOVE FINISHED FLOOR		ESP		EXTERNAL STATIC PRESSURE		MIN		MINIMUM		SS		STAINLESS STEEL	
AHU		ABOVE FINISHED GRADE		ETR		EXISTING TO REMAIN		MNI		MAXIMUM OVER CURRENT PROTECTION		SSD		SERVICE SINK	
AL		ALUMINUM		EVAP		EVAPORATOR		MND		MOUND DRAIN		SSDU		SANITARY SEWER FIXTURE	
AMB		AMBIENT		EWT		ENTERING WATER		MNT		MOUNTED		SSSC		SOLID STATE SPEED CONTROL	
AMP		ACCESS PANEL		EX		TEMPERATURE		MTL		METAL		STD		STANDARD	
ARI		AIR PRESSURE DROP		EXT		EXTERNAL		MTU		MAKE-UP AIR UNIT		STL		STRAINER	
ARCH		ARCHITECT		EXTG		EXISTING		MUA		MANUAL VOLUME DAMPER		SV		SURFACE	
AS		AIR SEPARATOR						MVD		MANUAL VOLUME DAMPER		SUSP		SUSPEND	
ASHRAE		AMERICAN SOCIETY OF HEATING AND REFRIGERATION ENGINEERS										ST		SOUND TRAP	
ASTM		AMERICAN SOCIETY OF MECHANICAL ENGINEERS													
AV		AIR VENT													
AVG		AVERAGE													
AW		AMERICAN WELDING SOCIETY													
AWX		AUXILIARY													



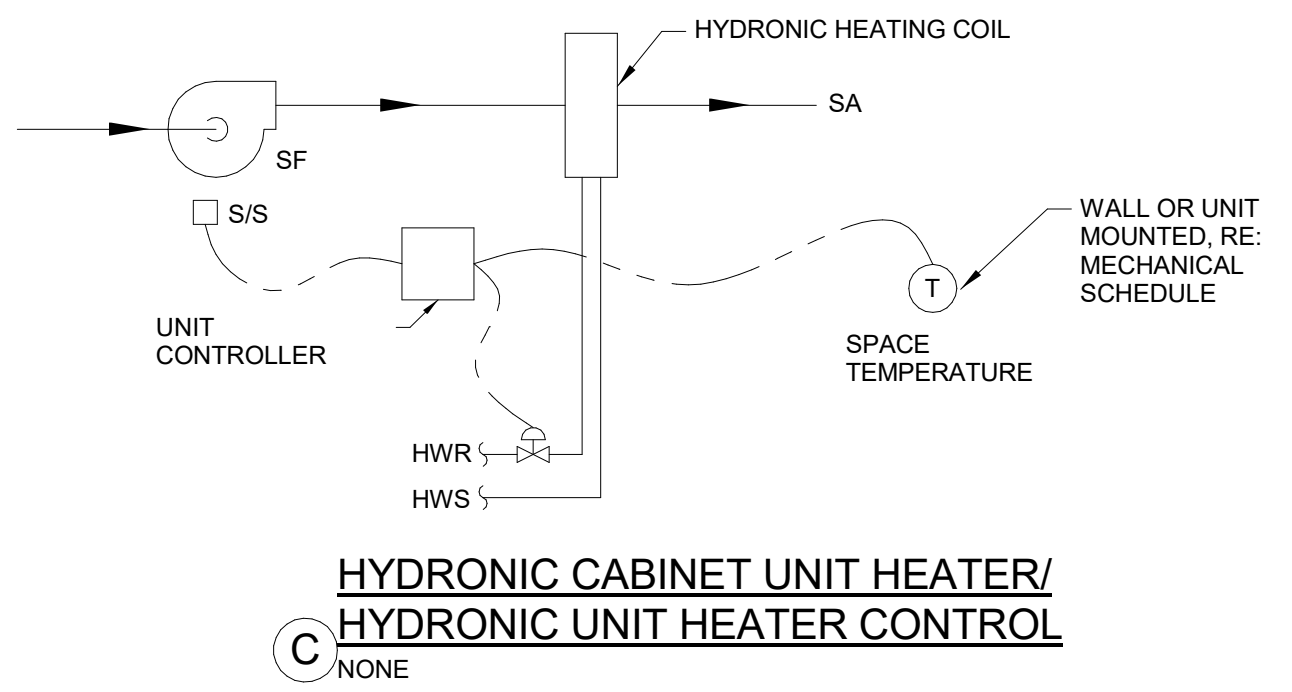
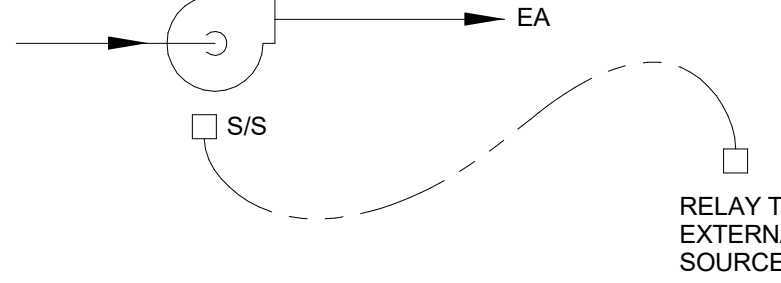
A BUILDING F FAN COIL UNIT CONTROL
NONE

SEQUENCE OF OPERATION:

- A. GENERAL**
1. THE FOLLOWING SEQUENCE OF OPERATION INCLUDES REQUIRED FUNCTIONALITY OF THE FAN COIL UNIT. POINTS REQUIRED TO EXECUTE THIS SEQUENCE SHALL BE COORDINATED BETWEEN THE EQUIPMENT PROVIDER AND TEMPERATURE CONTROLS CONTRACTOR PRIOR TO THE START OF CONSTRUCTION. SUBMIT LIST OF ITEMS TO BE PROVIDED BY THE TEMPERATURE CONTROLS CONTRACTOR IN ORDER TO EXECUTE THIS SEQUENCE.
 2. UNIT SHALL BE PROVIDED WITH A PROGRAMMABLE THERMOSTAT CAPABLE OF HOURLY OCCUPIED/UNOCCUPIED MODE SEQUENCING AND SETPOINT ADJUSTMENT. PROGRAMMABLE THERMOSTAT SHALL BE PROVIDED WITH PASSWORD PROTECTION.
- B. OCCUPIED MODE:**
1. UNITS WITH OUTSIDE AIR DUCTWORK: WHEN THE FCU IS IN THE OCCUPIED MODE, THE SUPPLY FAN SHALL OPERATE CONTINUOUSLY. THE OUTSIDE AIR MOTORIZED DAMPER SHALL BE OPEN. THE SUPPLY FAN SHALL UTILIZE MULTI-SPEED FAN CONTROL. COOLING AND HEATING SHALL MODULATE IN SEQUENCE TO MAINTAIN SPACE TEMPERATURE SETPOINT.
 2. UNITS WITH NO OUTSIDE AIR DUCTWORK: WHEN THE FCU IS IN THE OCCUPIED MODE, THE SUPPLY FAN SHALL OPERATE INTERMITTENTLY. THE SUPPLY FAN SHALL UTILIZE MULTI-SPEED FAN CONTROL. COOLING AND HEATING SHALL MODULATE IN SEQUENCE TO MAINTAIN SPACE TEMPERATURE SETPOINT.
- C. UNOCCUPIED MODE:**
1. WHEN THE FCU ENTERS UNOCCUPIED MODE THE SUPPLY FAN SHALL BE OFF, THE OUTSIDE AIR DAMPER SHALL CLOSE, COOLING SHALL BE DISABLED, AND HEATING CONTROL VALVE SHALL CLOSE.
 2. SPACE TEMPERATURE SHALL BE SETBACK AND MAINTAINED BELOW A 5F (ADJ.) OFFSET TO OCCUPIED MODE COOLING SETPOINT AND ABOVE A 10F (ADJ.) OFFSET TO OCCUPIED MODE HEATING SETPOINT.
 3. WHEN COOLING IS REQUIRED IN THE SPACE, THE SUPPLY FAN SHALL CYCLE ON AND COOLING SHALL MODULATE TO MAINTAIN SPACE TEMPERATURE.
 4. WHEN HEATING IS REQUIRED IN THE SPACE, THE SUPPLY FAN SHALL CYCLE ON AND HEATING SHALL MODULATE TO FULL.
 5. UPON SPACE TEMPERATURE REACHING UNOCCUPIED MODE SETPOINT, UNIT SHALL CYCLE OFF.
- D. FAN SAFETY CONTROLS:**
1. DE-ENERGIZE THE SUPPLY FAN WHENEVER THE OVERFLOW SENSOR HAS TRIPPED. MANUAL RESET REQUIRED.
- E. HEATING CONTROL:**
1. THE HEATING CONTROL VALVE SHALL MODULATE TO MAINTAIN SPACE TEMPERATURE. HEATING CONTROL VALVE SHALL CLOSE IF THE FANS ARE OFF.
- F. COOLING CONTROL:**
1. THE COOLING SHALL MODULATE TO MAINTAIN SPACE TEMPERATURE. COOLING SHALL BE DISABLED IF THE FANS ARE OFF.

B BUILDING F EXHAUST FAN CONTROL (INTERLOCK)
NONE

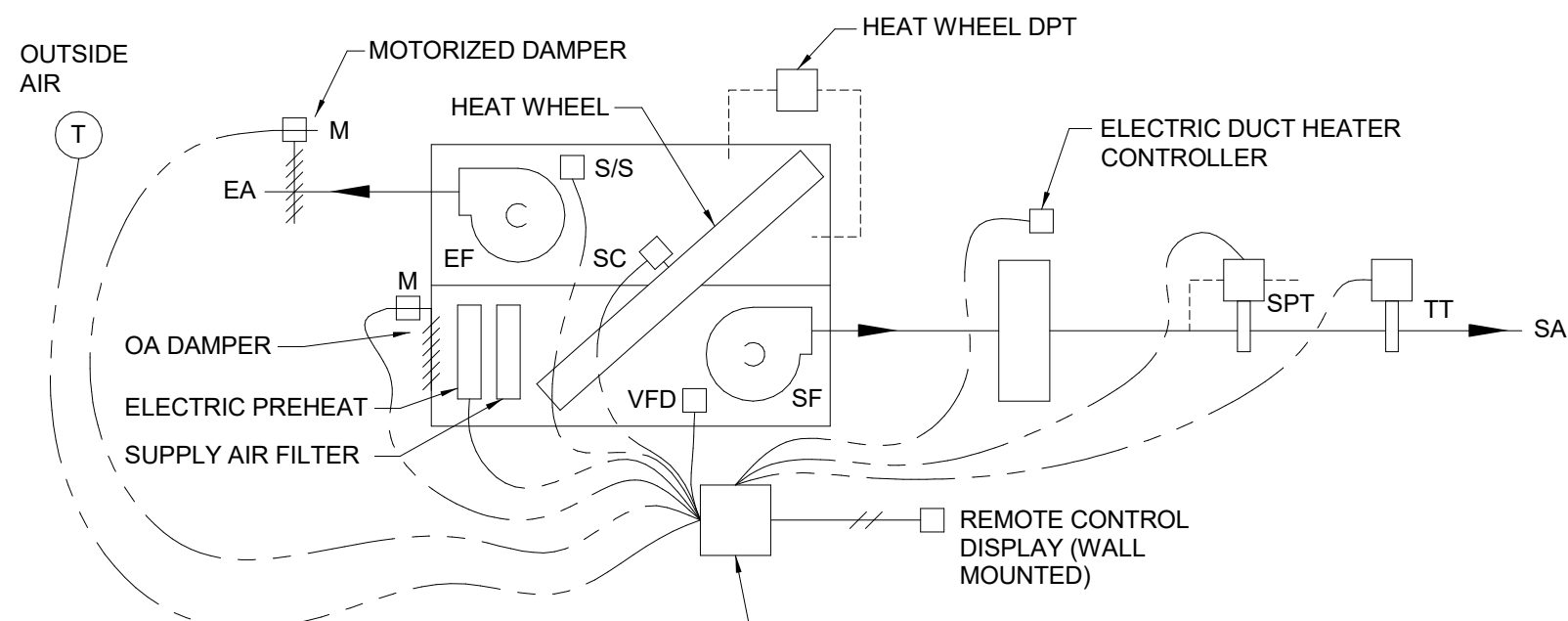
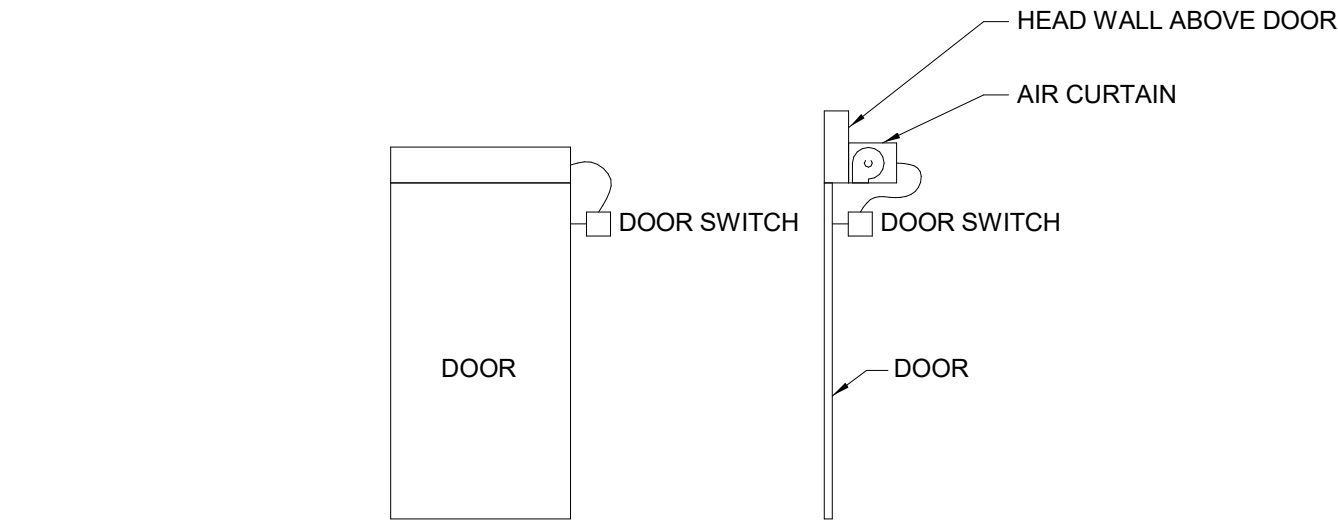
- A. INTERLOCK FAN WITH FAN COIL UNIT SERVING SAME AREA. ENERGIZE FAN UPON RELAY SIGNAL FROM DEVICE.**



- A. THERMOSTAT SHALL CYCLE FAN & OPEN HEATING WATER VALVE TO MAINTAIN SPACE SETPOINT.**
- B. WHERE REMOTE MOUNTED THERMOSTAT IS INDICATED, PROVIDE CONTROL TRANSFORMER AND LOW VOLTAGE THERMOSTAT BY TEMPERATURE CONTROLS CONTRACTOR.**

D AIR CURTAIN CONTROL
NONE

- A. EACH DOOR PROTECTED WITH AIR CURTAIN(S) SHALL BE PROVIDED WITH A DOOR SWITCH. WHEN THE DOOR OPENS EITHER FULLY OR PARTIALLY, THE AIR CURTAIN SHALL ENERGIZE. WHEN THE DOOR HAS FULLY CLOSED, THE AIR CURTAIN SHALL DE-ENERGIZE.**



E BUILDING C ENERGY RECOVERY VENTILATOR CONTROL
NONE

- A. ENERGY RECOVERY VENTILATOR SHALL BE PROVIDED WITH REMOTE DISPLAY BY ERV MANUFACTURER FOR SCHEDULING OF OCCUPIED AND UNOCCUPIED MODES. REMOTE DISPLAY SHALL BE WALL MOUNTED.**
- B. WHEN THE UNIT IS IN OCCUPIED MODE, THE SUPPLY FAN VFD SHALL BE ENERGIZED AND SHALL MODULATE TO MAINTAIN SUPPLY DUCT STATIC PRESSURE SETPOINT. THE EXHAUST FAN VFD SHALL BE ENERGIZED AND SHALL TRACK THE SUPPLY FAN BLOWER SPEED VIA INTERNAL PACKAGED CONTROLS. THE HEAT WHEEL SHALL MODULATE TO MAINTAIN SUPPLY AIR TEMPERATURE SETPOINT. THE ERV CONTROLLER SHALL RESET THE SUPPLY TEMPERATURE SETPOINT BASED ON OUTSIDE AIR TEMPERATURE. WHEN OUTSIDE AIR TEMPERATURE IS BELOW 55F, SUPPLY AIR TEMPERATURE SETPOINT SHALL BE 68F (ADJ.). WHEN OUTSIDE AIR TEMPERATURE IS ABOVE 65F, SUPPLY AIR TEMPERATURE SETPOINT SHALL BE 65F (ADJ.). WHEN OUTSIDE AIR TEMPERATURE IS BETWEEN 55F AND 65F, THE SUPPLY AIR TEMPERATURE SETPOINT SHALL BE ADJUSTED LINEARLY BETWEEN 55F AND 68F.**
- C. WHEN OUTSIDE AIR TEMPERATURE IS BELOW 5F (ADJ.) AND THE DIFFERENTIAL PRESSURE ACROSS THE WHEEL RISES TO 1.5", FROST CONTROL MODE SHALL BE ENABLED. UNIT MOUNTED ELECTRIC PREHEAT SHALL BE ENERGIZED. WHEN OUTSIDE AIR RISES ABOVE 5F (ADJ.) AND THE DIFFERENTIAL PRESSURE ACROSS THE WHEEL FALLS BELOW 1.5", UNIT SHALL RESUME NORMAL OPERATION.**
- D. HEATING CONTROL: EACH ENERGY RECOVERY VENTILATOR SHALL BE PROVIDED WITH AN EXTERNAL ELECTRIC DUCT HEATER WITH SCR CONTROL. THE ERV CONTROLLER SHALL MODULATE HEATING AT THE EXTERNAL ELECTRIC DUCT HEATER TO MAINTAIN SUPPLY AIR DISCHARGE TEMPERATURE SETPOINT. HEATING SHALL BE LOCKED OUT WHEN OUTSIDE AIR IS ABOVE 68F (ADJ.).**

CONTROL LEGEND

ABBR DESCRIPTION	ABBR DESCRIPTION	ABBR DESCRIPTION
AI ANALOG INPUT	FR FREEZESTAT	PHC PREHEAT COIL
AO ANALOG OUTPUT	FRN FURNACE	PT PRESSURE TRANSMITTER
BDD BACKDRAFT DAMPER	FS FLOW SWITCH	PZ PIEZOMETER RING
BTU BTU METER	FSP FIREFIGHTER SMOKE	RA RETURN AIR
C CONTROLLER	FSPD FAN SPEED	RF RETURN FAN
CC COOLING COIL	FT FLOW TRANSMITTER	S SPACE TEMPERATURE SENSOR
CD CONTROL DAMPER	H HUMIDITY OR HIGH	S/S START/STOP
CFM AIRFLOW MEASURING SENSOR	HC HEATING COIL	SA SUPPLY AIR
CHR CHILLED WATER RETURN	HIL HIGH/LIMIT	SC SPEED CONTROL
CHS CHILLED WATER SUPPLY	HH HIGH LIMIT HUMIDITY SWITCH	SD SMOKE DETECTOR
CO2 CARBON DIOXIDE	HS HUMIDITY SENSOR	SF SUPPLY FAN
COND CONDENSATE OVERFLOW	HT HUMIDITY TRANSMITTER	SPT STATIC PRESSURE TRANSMITTER
COV CHANGE OF VALUE	HWR HOT WATER RETURN	SR SWITCHING RELAY
CSEN CURRENT SENSOR	HWS HOT WATER SUPPLY	T THERMOSTAT
DI DIGITAL INPUT	IR INTERLOCK RELAY	TM THERMAL MASS METER
DO DIGITAL OUTPUT	L LEVEL OR LOW	TO TIMED OVERRIDE SWITCH
DP DIFFERENTIAL PRESSURE	LAN LOCAL AREA NETWORK CONNECTION	TS TEMPERATURE SENSOR
EA EXHAUST AIR	M MOTORIZED CONTROL	TT TEMPERATURE TRANSMITTER
ES END SWITCH	MIN MINIMUM	TTAB TEMPERATURE TRANSMITTER W/ AVERAGING BULB
F FILTER ASSEMBLY OR FAIL	ND NITROGEN DIOXIDE	V VALVE
FACP FIRE ALARM CONTROL PANEL	OA OUTSIDE AIR	VFD VARIABLE FREQUENCY DRIVE
FAS FAIL CLOSED	OS OCCUPANCY SENSOR	VP VIRTUAL POINT
FCU FAN COIL UNIT	P SPACE STATIC PRESSURE	VS VELOCITY SENSOR
FM FLOW METER	P-E PNEUMATIC ELECTRIC SWITCH	WBT WET BULB TEMPERATURE TRANSMITTER
FO FAIL OPEN		

CONTROL SYSTEM GENERAL NOTES:

- DESIGN INTENT:**
- A. THE CONTROL DRAWINGS AND SEQUENCES ARE PROVIDED TO COMMUNICATE A DESIGN INTENT FOR CONTROL OF INDICATED SYSTEMS. ALTERNATIVE CONTROL METHODS MAY BE USED WHERE PRACTICAL OR WHERE NECESSARY TO MEET REQUIRED SYSTEM PERFORMANCE. WHERE ALTERNATIVE CONTROL METHODS ARE USED TO MEET THE DESIGN INTENT, THESE METHODS SHALL BE INDICATED IN SUBMITTAL TO ENGINEER FOR EVALUATION. ENGINEER SHALL DETERMINE IF A SUBMITTED ALTERNATIVE CONTROL METHOD MEETS THE DESIGN INTENT.
 - B. ALTHOUGH THE MECHANICAL DRAWINGS MAY INDICATE A PRODUCT AS BASIS OF DESIGN, THE CONTROL DRAWINGS AND SEQUENCES ARE PROVIDED TO INDICATE A DESIGN INTENT FOR THE COMPLETE SYSTEM THAT IS APPLICABLE TO MULTIPLE POTENTIAL PRODUCTS OR MANUFACTURERS. CONTROL METHODS SHALL BE DEVELOPED BY THE TEMPERATURE CONTROLS CONTRACTOR AND/OR EQUIPMENT PROVIDER IN ORDER TO ACHIEVE THE REQUIRED SYSTEM PERFORMANCE.
- REQUIRED COORDINATION:**
- A. THE DIVISION 23 CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATION BETWEEN EQUIPMENT PROVIDERS AND TEMPERATURE CONTROLS CONTRACTOR IN ORDER TO FULLY SATISFY THE DESIGN INTENT. INTERFACE BETWEEN CONTROL SYSTEMS, INCLUDING ITEMS PROVIDED BY EACH ENTITY, COMMUNICATION PROTOCOL, SIGNAL TYPE, ETC., SHALL BE COORDINATED PRIOR TO RELEASE OF EQUIPMENT FOR PRODUCTION.
 - B. THE TEMPERATURE CONTROLS CONTRACTOR SHALL PROVIDE SUBMITTAL DRAWINGS AND PRODUCT DATA FOR THE ENTIRE CONTROL SYSTEM TO ENGINEER FOR REVIEW. THE TEMPERATURE CONTROLS SUBMITTAL SHALL DISTINGUISH WHERE SPECIFIC SEQUENCE ELEMENTS ARE PROVIDED WITHIN THE BOILER PLANT CONTROL SYSTEM OR WITHIN PACKAGED EQUIPMENT CONTROLLERS. RE: SPECIFICATIONS FOR REQUIREMENTS.
 - C. REFER TO SPECIFICATION SECTION 23 05 01 MECHANICAL AND ELECTRICAL COORDINATION.

SEQUENCE OF OPERATION GENERAL NOTES:

- GENERAL:**
- A. PROVIDE INDIVIDUAL INPUTS OR OUTPUTS FOR EACH POINT LISTED IN THE POINTS LIST OR CONTROL DIAGRAM. PROVIDE ANY ADDITIONAL POINTS NOT LISTED IN THE POINTS LIST OR CONTROL DIAGRAM, BUT REQUIRED TO MEET THE SEQUENCE OF OPERATION, AT NO ADDITIONAL COST TO THE OWNER. ALL ANALOG OUTPUTS SHALL BE 4-20MA, 0-10VDC OR 0-20VDC UNLESS OTHERWISE INDICATED.
 - B. IN THE EVENT OF A POWER OUTAGE OR OTHER MALFUNCTION, THE CURRENTLY ENABLED CONTROLS SEQUENCES SHALL BE MAINTAINED. RE: SPECIFICATIONS.

OCCUPANCY SCHEDULES:

- A. THE FOLLOWING SPECIAL OCCUPANCY SCHEDULE MODES ARE HEREBY DEFINED:
 1. OCCUPIED MODE
 2. UNOCCUPIED MODE
- B. ANY DEVICE UTILIZING ON/OFF CONTROL OR SCHEDULING VIA BMS SHALL BE CAPABLE OF BEING PROGRAMMED TO CONFORM TO ANY OF THE ABOVE SEQUENCES.
- C. THE BMS SHALL STAGE AIR HANDLERS TO/FROM OCCUPIED MODE TO MINIMIZE SUDDEN CHANGES IN SYSTEM FLOW REQUIREMENTS.

INITIAL SPACE THERMOSTAT SETPOINTS

- A. INITIAL SPACE THERMOSTAT SETPOINTS SHALL BE AS FOLLOWS:
 1. OCCUPIED OFFICE AND CONFERENCE ROOM SPACES:
 - COOLING: 76F
 - HEATING: 70F
 2. MECHANICAL AND ELECTRICAL ROOMS:
 - COOLING: 80F
 - HEATING: 65F
 3. BUILDING ENTRY VESTIBULES:
 - COOLING: 80F (WHERE COOLING IS PROVIDED)
 - HEATING: 80F
 4. MISCELLANEOUS HEATING-ONLY AREAS:
 - HEATING: 65F

MISCELLANEOUS NON-DDC CONTROL:

- A. MISCELLANEOUS PUMPS: PUMPS SHALL OPERATE PER SCHEDULE AND DRAWINGS.

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Date	Description
2021.05.21	BPAD - GONDOLA SQUARE INTERIORS BLDG. A, C AND F - ISSUE FOR PERMIT AND CONSTRUCTION

Seal / Signature



05/20/2021

Project Name

Steamboat Base Village
Redevelopment

Project Number

003.7835.000

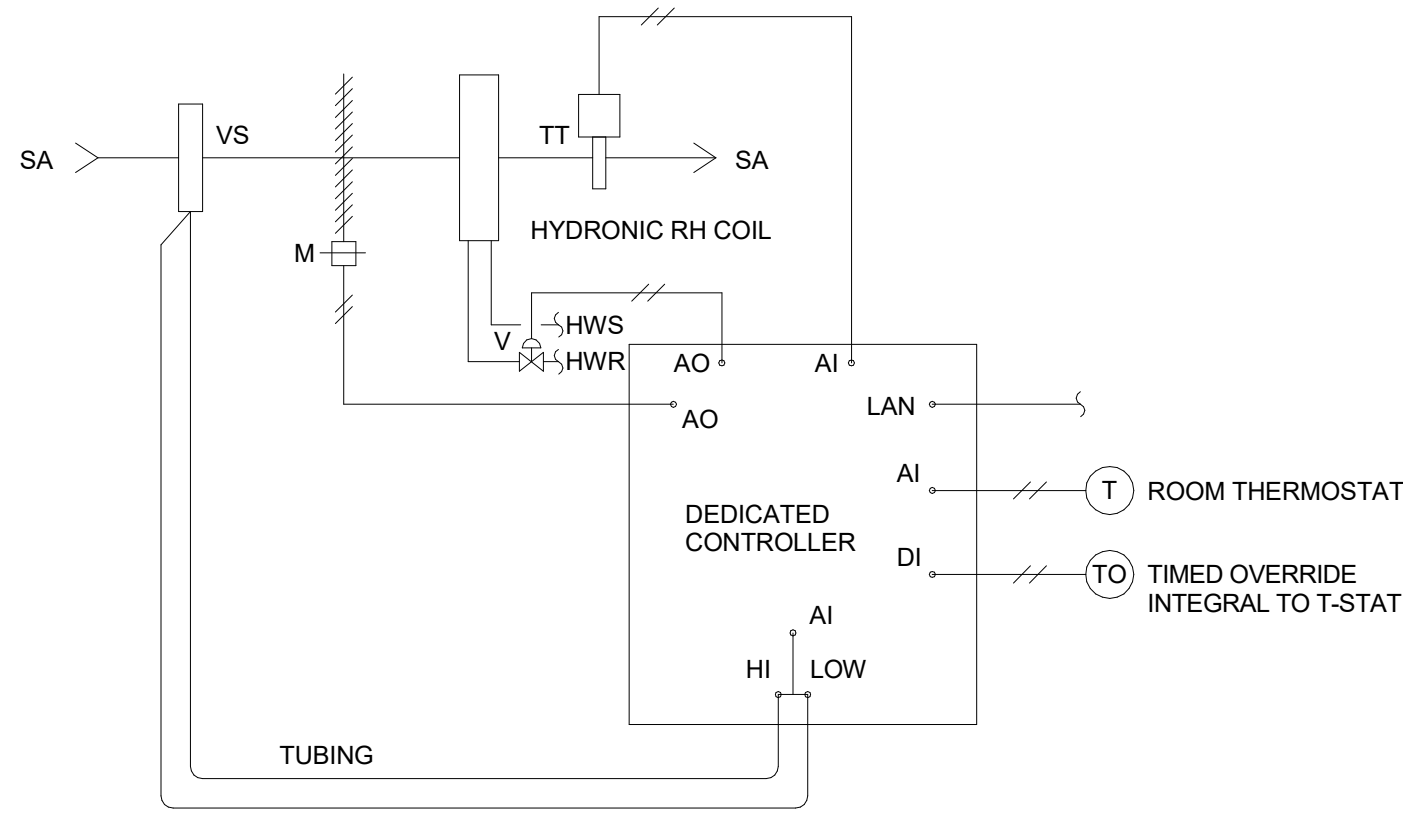
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MECHANICAL CONTROLS

Scale

1/8" = 1'-0"

M0.002

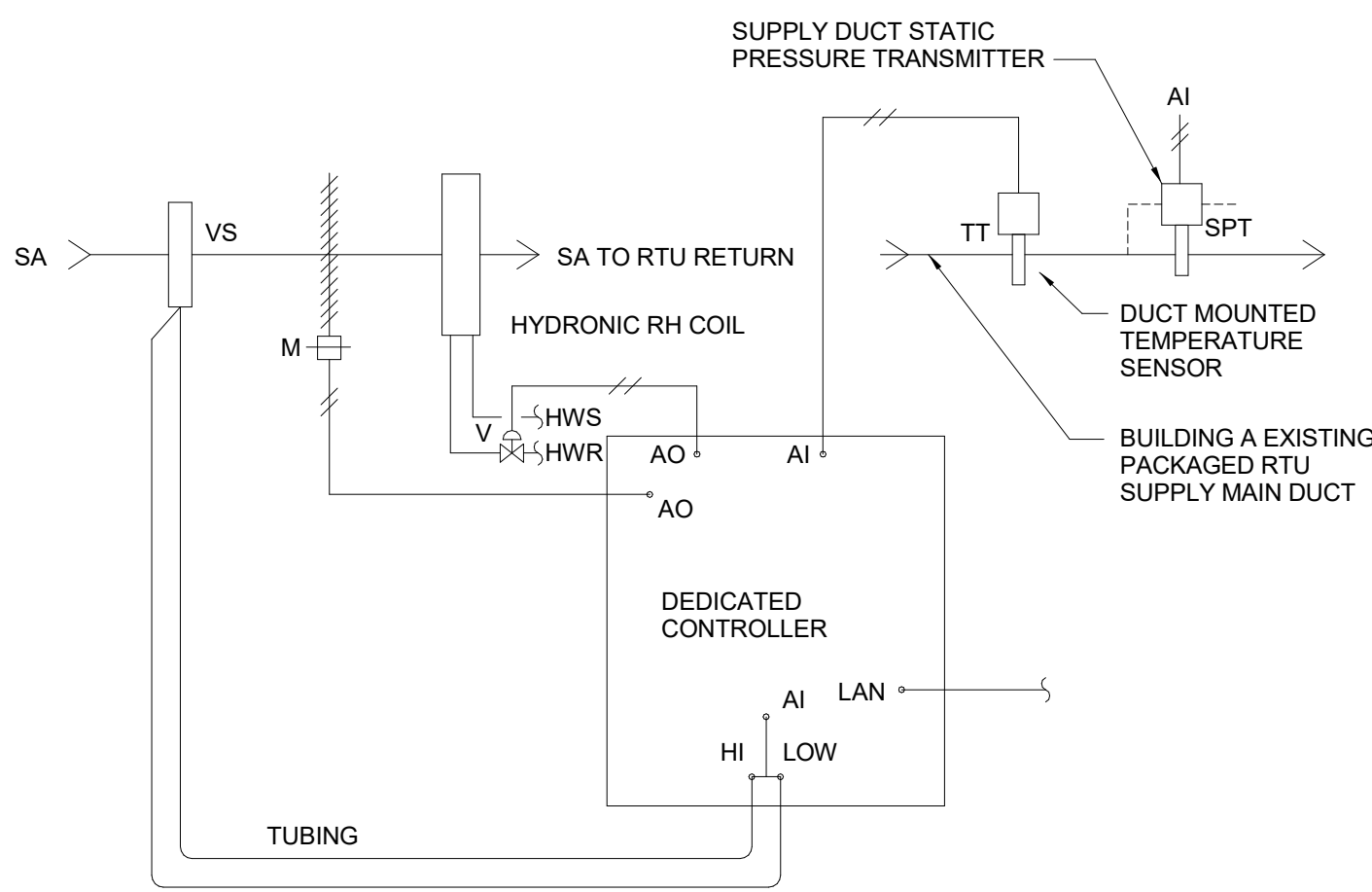


BUILDING A SUPPLY VARIABLE AIR VOLUME (VAV) BOX WITH HOT WATER REHEAT CONTROL

A NONE

SEQUENCE OF OPERATION:

- OCCUPIED MODE:**
 - ON A RISE IN SPACE TEMPERATURE ABOVE THE COOLING SETPOINT, THE UNIT SHALL MODULATE UP TO ITS MAXIMUM CFM TO MAINTAIN COOLING SETPOINT. AS SPACE TEMPERATURE DECREASES, THE UNIT SHALL MODULATE DOWN TO ITS MINIMUM COOLING CFM TO MAINTAIN COOLING SETPOINT. UPON A FURTHER DECREASE IN SPACE TEMPERATURE, THE UNIT SHALL MODULATE TO ITS FIXED HEATING MINIMUM CFM AND THE HEATING WATER CONTROL VALVE SHALL MODULATE TO MAINTAIN HEATING SETPOINT.
- UNOCCUPIED MODE:**
 - WHEN UNIT ENTERS UNOCCUPIED MODE, UNIT VOLUME DAMPER SHALL FULLY CLOSE AND HEATING WATER CONTROL VALVE SHALL CLOSE.
 - SPACE TEMPERATURE SHALL BE SETBACK AND MAINTAINED BELOW A 5F (ADJ.) OFFSET TO OCCUPIED MODE COOLING SETPOINT AND ABOVE A 10F (ADJ.) OFFSET TO OCCUPIED MODE HEATING SETPOINT.
 - WHEN COOLING OR HEATING IS REQUIRED IN THE SPACE, THE AIR HANDLING SYSTEM SERVING THE UNIT SHALL CYCLE ON AND THE UNIT SHALL OPERATE PER OCCUPIED MODE SEQUENCE TO MAINTAIN SETBACK SPACE TEMPERATURE.
 - IF THE AIR HANDLING SYSTEM SERVING THE UNIT CYCLES ON AT ANY TIME DURING UNOCCUPIED MODE, THE UNIT CONTROL DAMPER SHALL BE OPEN AND UNIT SHALL MODULATE PER THE SETBACK MODE ABOVE. WHEN THE AIR HANDLING UNIT CYCLES OFF, UNIT VOLUME DAMPER SHALL FULLY CLOSE AND HEATING SHALL BE DISABLED.
 - PROVIDE TIMED OVERRIDE SWITCH AT EACH SPACE THERMOSTAT. OVERRIDE SHALL RETURN SYSTEM SERVING ZONE TO OCCUPIED MODE FOR TWO HOURS (ADJ.). SYSTEM SHALL BE CAPABLE OF LOCKING OUT OVERRIDE CONTROL AT EACH INDIVIDUAL ZONE.
- PRE-OCCUPANCY WARM-UP AND COOL-DOWN MODES:**
 - WHEN THE AIR HANDLING SYSTEM SERVING THE UNIT ENTERS PRE-OCCUPANCY WARM-UP OR PRE-OCCUPANCY COOL-DOWN MODE, UNIT SHALL OPERATE PER OCCUPIED MODE SEQUENCE. UNIT SHALL CONTINUE TO OPERATE IN OCCUPIED MODE AS THE AIR HANDLING SYSTEM TRANSITIONS TO OCCUPIED MODE.

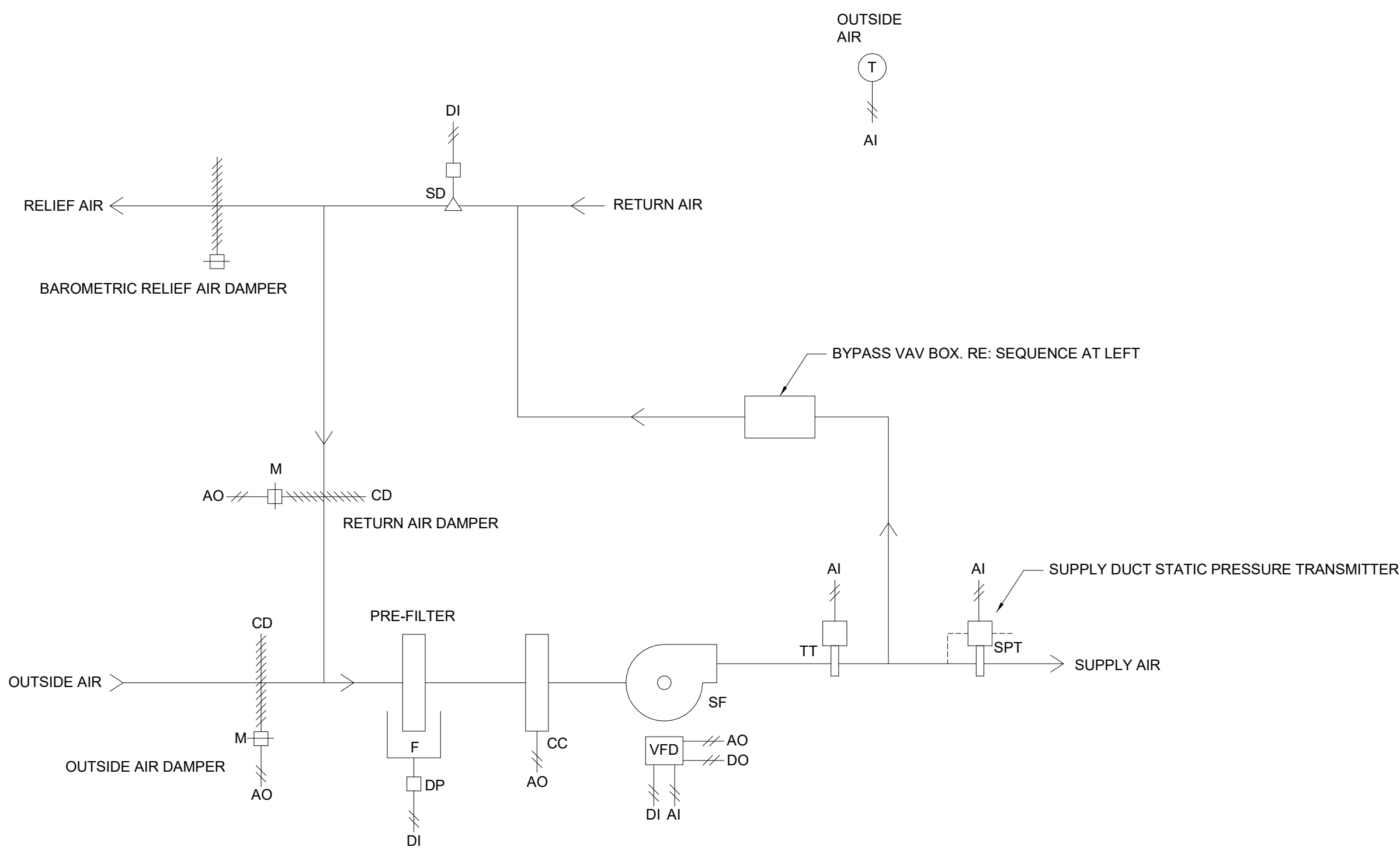


BUILDING A BYPASS VARIABLE AIR VOLUME (VAV) BOX WITH HOT WATER REHEAT CONTROL

A NONE

SEQUENCE OF OPERATION:

- GENERAL:**
 - THE SYSTEM IS PROVIDED WITH A BYPASS VAV BOX WHICH DIRECTS SUPPLY AIRFLOW FROM THE PACKAGED ROOFTOP UNIT SUPPLY MAIN DUCT TO THE RETURN PLENUM IN ORDER TO KEEP AIRFLOW AT THE ROOFTOP UNIT CONSTANT DURING HEATING AND COOLING MODES. THE BYPASS VAV BOX SHALL OPERATE IN A REVERSE-ACTING AIRFLOW SEQUENCE SUCH THAT WHEN OTHER VAV BOXES IN THE SYSTEM ARE REDUCING AIRFLOW, THE BYPASS VAV BOX SHALL INCREASE AIRFLOW SO THAT FLOW AT THE ROOFTOP UNIT REMAINS AT OR ABOVE 5,600 CFM. THE BYPASS VAV BOX SHALL BE CONTROLLED TO MAINTAIN SUPPLY DUCT STATIC PRESSURE ON THE DISCHARGE SIDE OF THE EXISTING PACKAGED ROOFTOP UNIT.
- OCCUPIED MODE:**
 - THE BMS SHALL MONITOR AND CONTROL DUCT STATIC PRESSURE IN THE PACKAGED ROOFTOP UNIT SUPPLY MAIN DUCT.
 - AS THE SUPPLY VAV BOXES IN THE AIR HANDLING SYSTEM REDUCE AIRFLOW, THE BYPASS VAV BOX SHALL INCREASE AIRFLOW TO MAINTAIN SUPPLY DUCT STATIC PRESSURE SETPOINT.
 - AS THE SUPPLY VAV BOXES IN THE AIR HANDLING SYSTEM INCREASE AIRFLOW, THE BYPASS VAV BOX SHALL REDUCE AIRFLOW TO MAINTAIN SUPPLY DUCT STATIC PRESSURE. ONCE THE BYPASS VAV BOX HAS REACHED MINIMUM AIRFLOW, IT SHALL REMAIN AT MINIMUM AIRFLOW AS LONG AS DUCT STATIC PRESSURE IS ABOVE SETPOINT.
 - THE BYPASS VAV BOX IS EQUIPPED WITH A REHEAT COIL. PROVIDE A DUCT MOUNTED TEMPERATURE SENSOR DOWNSTREAM OF THE PACKAGED ROOFTOP UNIT FOR CONTROL OF THE BYPASS VAV BOX REHEAT COIL. WHEN SUPPLY AIR TEMPERATURE LEAVING THE ROOFTOP UNIT FALLS BELOW 55F (ADJ.), THE BYPASS VAV BOX REHEAT COIL HOT WATER VALVE SHALL OPEN AND MODULATE TO MAINTAIN A MINIMUM OF 55F (ADJ.) SUPPLY AIR TEMPERATURE LEAVING THE ROOFTOP UNIT.
- UNOCCUPIED MODE:**
 - WHEN UNIT ENTERS UNOCCUPIED MODE, UNIT VOLUME DAMPER SHALL FULLY CLOSE AND HEATING WATER CONTROL VALVE SHALL CLOSE.
 - IF THE AIR HANDLING SYSTEM SERVING THE UNIT CYCLES ON AT ANY TIME DURING UNOCCUPIED MODE, THE UNIT CONTROL DAMPER SHALL BE OPEN AND UNIT SHALL MODULATE PER THE OCCUPIED MODE ABOVE. WHEN THE AIR HANDLING UNIT CYCLES OFF, UNIT VOLUME DAMPER SHALL FULLY CLOSE AND HEATING SHALL BE DISABLED.
- PRE-OCCUPANCY WARM-UP AND COOL-DOWN MODES:**
 - WHEN THE AIR HANDLING SYSTEM SERVING THE UNIT ENTERS PRE-OCCUPANCY WARM-UP OR PRE-OCCUPANCY COOL-DOWN MODE, UNIT SHALL OPERATE PER OCCUPIED MODE SEQUENCE. UNIT SHALL CONTINUE TO OPERATE IN OCCUPIED MODE AS THE AIR HANDLING SYSTEM TRANSITIONS TO OCCUPIED MODE.



BUILDING A EXISTING PACKAGED ROOFTOP UNIT CONTROL

A NONE

SEQUENCE OF OPERATION:

- GENERAL:**
 - THE ROOFTOP UNIT SERVING BUILDING A IS EXISTING TO REMAIN. THE FOLLOWING SEQUENCE OF OPERATION INCLUDES REQUIRED FUNCTIONALITY OF THE AIR HANDLING SYSTEM INCLUDING REQUIRED SEQUENCE ADJUSTMENTS AND CONTROLLABILITY FOR THE EXISTING ROOFTOP UNIT.
 - THE EXISTING ROOFTOP UNIT SHALL BE MODIFIED TO INCLUDE AN APR CONTROL VALVE ON THE LEAD COMPRESSOR CIRCUIT TO PROVIDE VARIABLE COOLING CAPACITY FOR TIGHTER DISCHARGE AIR TEMPERATURE CONTROL. REFER TO MECHANICAL SCHEDULES.
- OCCUPIED MODE:**
 - WHEN THE UNIT IS IN THE OCCUPIED MODE, THE SUPPLY FAN SHALL OPERATE CONTINUOUSLY AT FIXED SPEED. THE OUTSIDE AIR DAMPER SHALL OPEN TO MAINTAIN MINIMUM OUTSIDE AIRFLOW OR ECONOMIZER AIRFLOW AS REQUIRED. AIR SHALL BE RELIEVED FROM THE BUILDING THROUGH THE BAROMETRIC RELIEF DAMPER IN THE ROOFTOP UNIT. COOLING AND ECONOMIZER DAMPERS SHALL MODULATE IN SEQUENCE TO MAINTAIN DISCHARGE AIR TEMPERATURE (DAT).
- UNOCCUPIED MODE:**
 - WHEN THE UNIT ENTERS UNOCCUPIED MODE THE SUPPLY FAN SHALL BE OFF, THE OUTSIDE AIR DAMPER SHALL BE CLOSED, THE RETURN AIR DAMPER SHALL BE OPEN, AND COOLING SHALL BE DISABLED.
 - WHEN THERE IS AN UNOCCUPIED CALL FOR COOLING AT ANY ZONE SERVED BY THE AIR HANDLING SYSTEM, THE SUPPLY FAN SHALL CYCLE ON AND COOLING AND/OR ECONOMIZER DAMPERS SHALL MODULATE TO MAINTAIN DISCHARGE AIR TEMPERATURE. OUTSIDE AIR DAMPER SHALL BE CLOSED AND RETURN AIR DAMPER SHALL BE OPEN UNLESS ECONOMIZER CONDITIONS ARE MET.
 - WHEN THERE IS AN UNOCCUPIED CALL FOR HEATING AT ANY VAV BOX ZONE SERVED BY THE AIR HANDLING SYSTEM, THE SUPPLY FAN SHALL CYCLE ON, OUTSIDE AIR DAMPER SHALL BE CLOSED, AND RETURN AIR DAMPER SHALL BE OPEN.
 - UPON ALL SPACE T-STATS REACHING UNOCCUPIED MODE SETPOINT, UNIT SHALL CYCLE OFF.
- OPTIMUM START WARM-UP MODE:**
 - PRIOR TO SCHEDULED OCCUPANCY, IF THE AVERAGE SPACE TEMPERATURE, AS MEASURED AND AVERAGED OVER EACH THERMOSTAT SERVED BY THE SYSTEM, IS LESS THAN THE MORNING WARM-UP SETPOINT OF 70F (ADJ.), THE BMS SHALL INITIATE THE OPTIMUM START WARM-UP SEQUENCE.
 - THE BMS SHALL CALCULATE THE REQUIRED TIME TO BRING ALL SPACES WITHIN OCCUPIED HEATING SETPOINTS BASED ON THE AVERAGE TEMPERATURE OF ALL SPACES SERVED AND THE OUTSIDE AIR TEMPERATURE WHEN THE SEQUENCE IS INITIATED.
 - UPON INITIATING OPTIMUM START WARM-UP MODE, THE SUPPLY FAN SHALL BE ENERGIZED, THE OUTSIDE AIR DAMPER SHALL BE CLOSED, AND THE RETURN AIR DAMPER SHALL BE OPEN.
 - COOLING SHALL BE LOCKED OUT.
 - REVERT TO OCCUPIED MODE (ALLOW OUTSIDE AIR DAMPER TO OPEN) WHEN ALL SPACE STATS HAVE REACHED OCCUPIED HEATING SETPOINT.
- OPTIMUM START COOL-DOWN MODE:**
 - PRIOR TO SCHEDULED OCCUPANCY, IF THE AVERAGE SPACE TEMPERATURE, AS MEASURED AND AVERAGED OVER EACH THERMOSTAT SERVED BY THE SYSTEM, IS MORE THAN THE MORNING COOL-DOWN SETPOINT OF 78F (ADJ.), THE BMS SHALL INITIATE THE OPTIMUM START COOL-DOWN SEQUENCE.
 - THE BMS SHALL CALCULATE THE REQUIRED TIME TO BRING ALL SPACES WITHIN OCCUPIED COOLING SETPOINTS BASED ON THE AVERAGE TEMPERATURE OF ALL SPACES SERVED AND THE OUTSIDE AIR TEMPERATURE WHEN THE SEQUENCE IS INITIATED.
 - UPON INITIATING OPTIMUM START COOL-DOWN MODE, THE SUPPLY FAN SHALL BE ENERGIZED, THE OUTSIDE AIR DAMPER SHALL BE CLOSED, AND THE RETURN AIR DAMPER SHALL BE OPEN. COOLING AND/OR ECONOMIZER DAMPERS SHALL MODULATE TO MAINTAIN DISCHARGE AIR TEMPERATURE.
 - HEATING SHALL BE LOCKED OUT.
 - REVERT TO OCCUPIED MODE (ALLOW OUTSIDE AIR DAMPER TO OPEN IF NOT ALREADY OPEN) WHEN ALL SPACE STATS HAVE REACHED OCCUPIED COOLING SETPOINT.
- FAN SAFETY CONTROLS:**
 - DE-ENERGIZE THE SUPPLY AND RETURN FANS WHENEVER THE SMOKE DETECTOR HAS TRIPPED. THE SMOKE DETECTOR REQUIRES A MANUAL RESET.
- ECONOMIZER CONTROL:**
 - WHEN THE OUTSIDE AIR TEMPERATURE IS LESS THAN THE 75F, AND COOLING IS REQUIRED, THE ECONOMIZER CONTROL SHALL BE ENABLED. THE ECONOMIZER DAMPERS SHALL MODULATE BETWEEN MINIMUM POSITION AND FULL OPEN TO MAINTAIN THE DISCHARGE AIR TEMPERATURE. COOLING SHALL BE ENABLED WITH THE OUTSIDE AIR DAMPERS FULLY OPEN AS LONG AS OUTSIDE AIR TEMPERATURE IS LESS THAN 75F. WHEN OUTSIDE AIR TEMPERATURE EXCEEDS 75F, ECONOMIZER CONTROL SHALL BE DISABLED.
- SUPPLY DUCT STATIC PRESSURE:**
 - THE BMS SHALL MONITOR AND CONTROL DUCT STATIC PRESSURE IN THE PACKAGED ROOFTOP UNIT SUPPLY MAIN DUCT.
 - THE BYPASS VAV BOX SHALL MODULATE AS REQUIRED TO MAINTAIN SUPPLY DUCT STATIC PRESSURE ON THE DISCHARGE SIDE OF THE EXISTING PACKAGED ROOFTOP UNIT. REFER TO BYPASS VAV BOX SEQUENCE.
 - INITIAL STATIC PRESSURE SETPOINT SHALL BE 0.7" W.C.
- DISCHARGE AIR TEMPERATURE:**
 - MAINTAIN 55F (ADJ.) DISCHARGE AIR TEMPERATURE WHEN COOLING IS ENABLED.
 - THE BMS SHALL DETERMINE AND REPORT AIRFLOW OF EACH VAV BOX SERVED BY THE SYSTEM. AIRFLOW SHALL BE REPORTED IN UNITS OF CFM.
 - IF ANY VAV BOX SERVED BY THE SYSTEM MODULATES TO 95% OF COOLING CFM, REDUCE DISCHARGE AIR TEMPERATURE IN INCREMENTS OF 1 DEGREE F EVERY 5 MINUTES (ADJ.) UNTIL ALL BOXES ARE BELOW 90% COOLING CFM OR UNTIL DISCHARGE AIR TEMPERATURE REACHES MINIMUM SETPOINT OF 55F (ADJ.).
 - IF ALL VAV BOXES SERVED BY THE SYSTEM ARE BELOW 70% COOLING CFM, INCREASE DISCHARGE AIR TEMPERATURE IN INCREMENTS OF 1 DEGREE F EVERY 5 MINUTES (ADJ.) UNTIL ONE BOX EXCEEDS 70% COOLING CFM OR UNTIL DISCHARGE AIR TEMPERATURE REACHES MAXIMUM SETPOINT OF 70F (ADJ.).
 - IF DAT DROPS BELOW 40F (ADJ.) DE-ENERGIZE FANS AND CLOSE OA AND RELIEF AIR DAMPERS. ALARM BMS.
- COOLING CONTROL:**
 - THE UNIT SHALL MODULATE COOLING THROUGH ITS INTERNAL CONTROLS TO MAINTAIN THE DAT. COOLING SHALL BE DISABLED IF THE RTU IS IN HEATING MODE, THE FANS ARE OFF, OR THE DISCHARGE AIR TEMPERATURE SENSOR HAS FAILED. THE APR CONTROL VALVE SHALL BE CONTROLLED VIA INTERNAL UNIT CONTROLS.

Date	Description
2021.05.21	BP4D - GONDOLA SQUARE INTERIORS BLDG. A, C AND F - ISSUE FOR PERMIT AND CONSTRUCTION

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05/20/2021

Project Name

Steamboat Base Village
Redevelopment

Project Number

003.7835.000

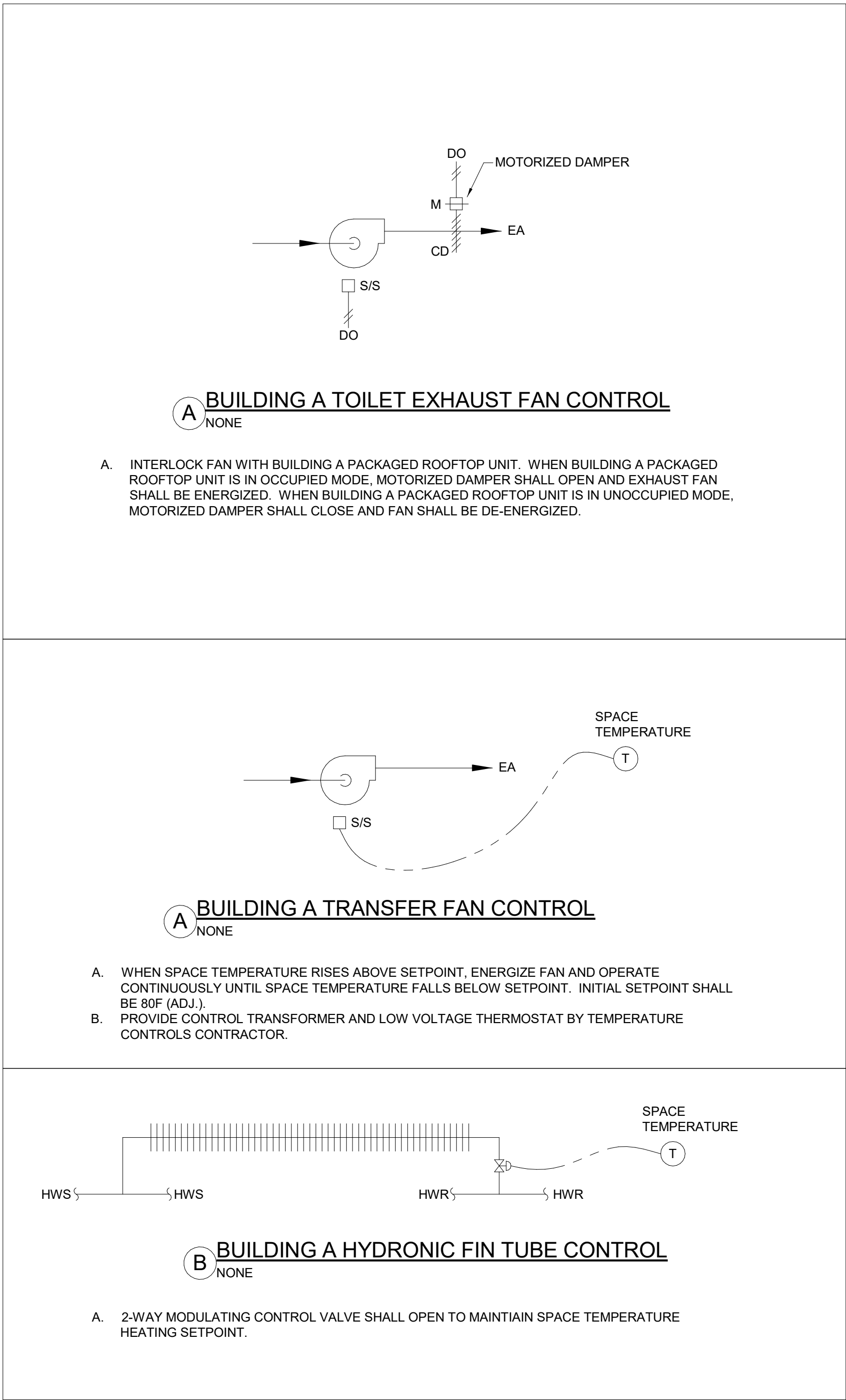
Description

MECHANICAL CONTROLS

Scale

1/8" = 1'-0"

M0.003



△	Date	Description
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MECHANICAL CONTROLS

Scale

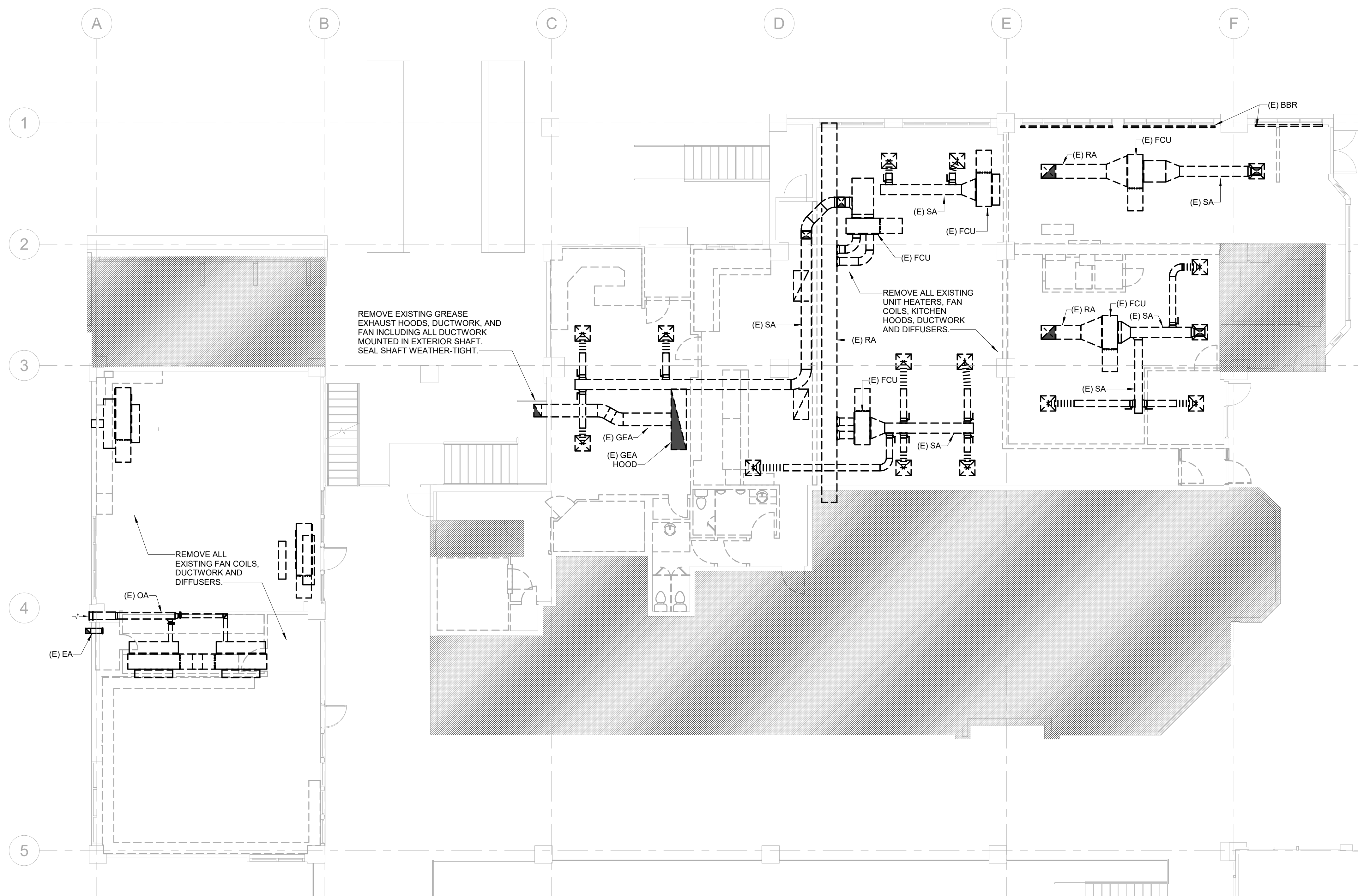
1/8" = 1'-0"

M0.004

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7. MAINTAIN SYSTEM CONTINUITY FOR ALL SYSTEMS THAT PASS THROUGH DEMO SCOPE AREA AND SERVE OTHER AREAS OUTSIDE THE SCOPE OF WORK.

KEYNOTES



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Project Name

Steamboat Base Village
Redevelopment

Project Number

003.7835.000

Description

MECHANICAL DEMOLITION PLAN - C
& F BUILDING LEVEL 02

Scale

1/8" = 1'-0"

DM1.102



KEYNOTES

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- 2021.05.21	BP4D - GONDOLA SQUARE INTERIORS BLDG. A, C AND F - ISSUE FOR PERMIT AND CONSTRUCTION

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Project Name

Steamboat Base Village Redevelopment

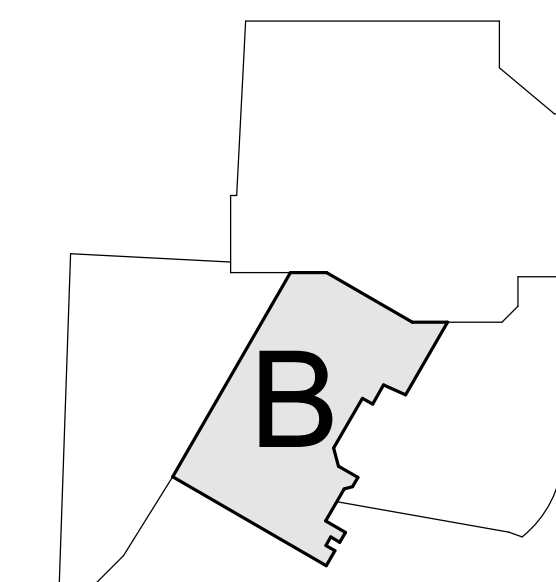
Project Number	003.7835.000
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Description
MECHANICAL DEMOLITION PLAN - A BUILDING LEVEL 02, 03, & 04

Scale
 $1/8" = 1'-0"$

DM1.103

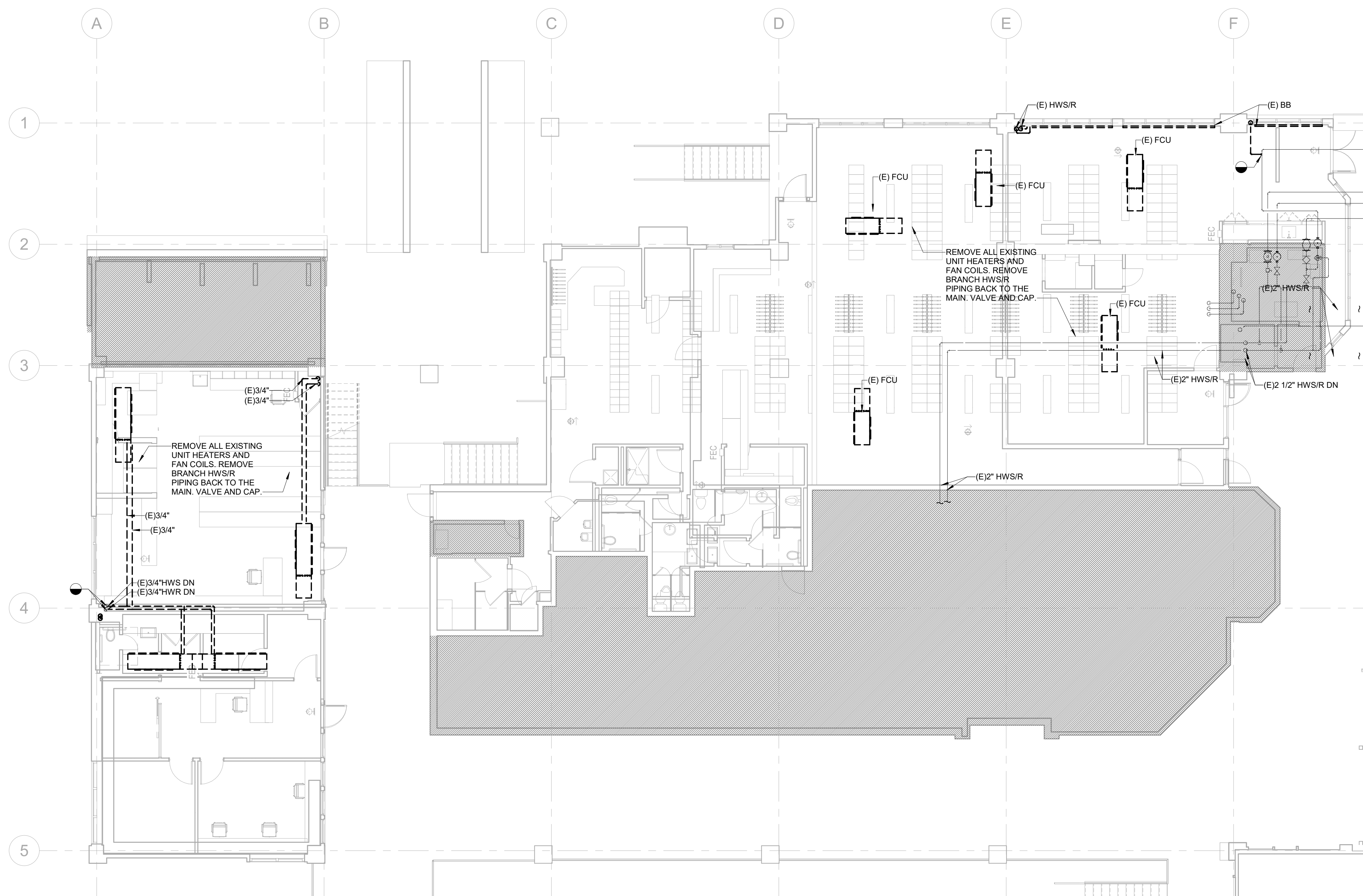
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Redevelopment

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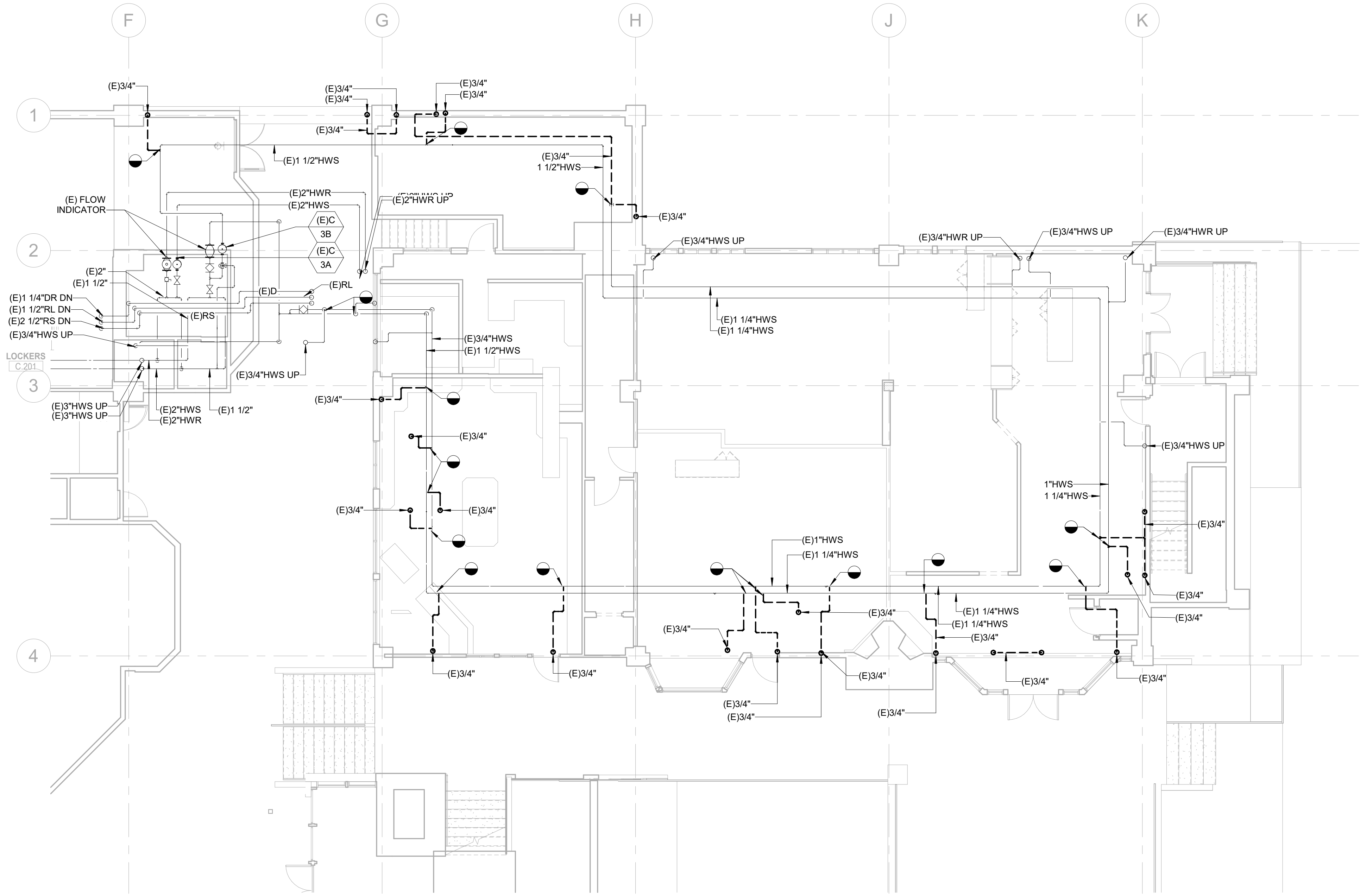
Description

MECHANICAL PIPING DEMOLITION
PLAN - C & F BUILDING LEVEL 02

Scale

1/8" = 1'-0"

DM1.104



1 MECHANICAL PIPING DEMOLITION PLAN - A BUILDING LEVEL 02
SCALE: 1/8" = 1'-0"

GENERAL NOTES:

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KEYNOTES



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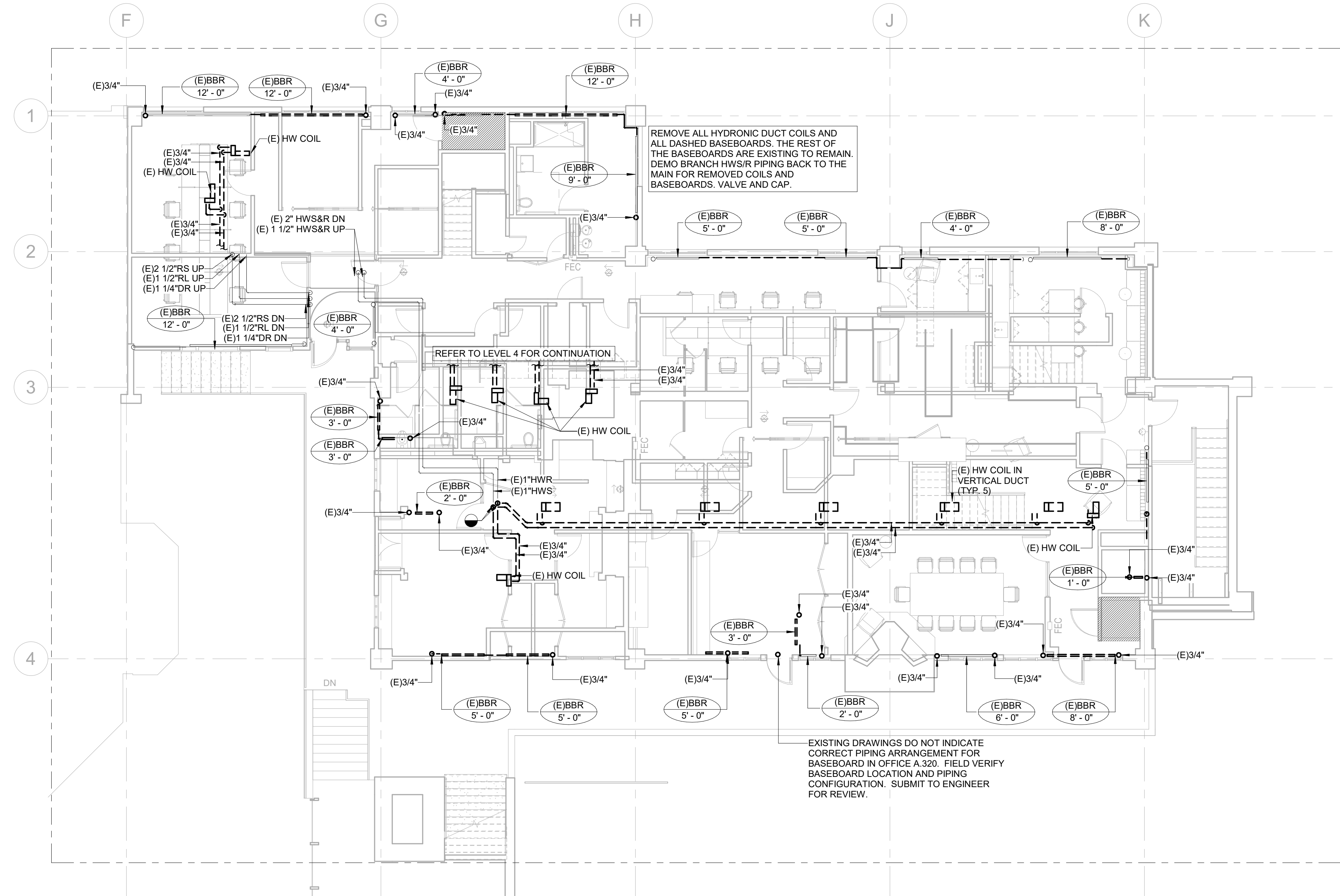
Description

MECHANICAL PIPING DEMOLITION
PLAN - A BUILDING LEVEL 02

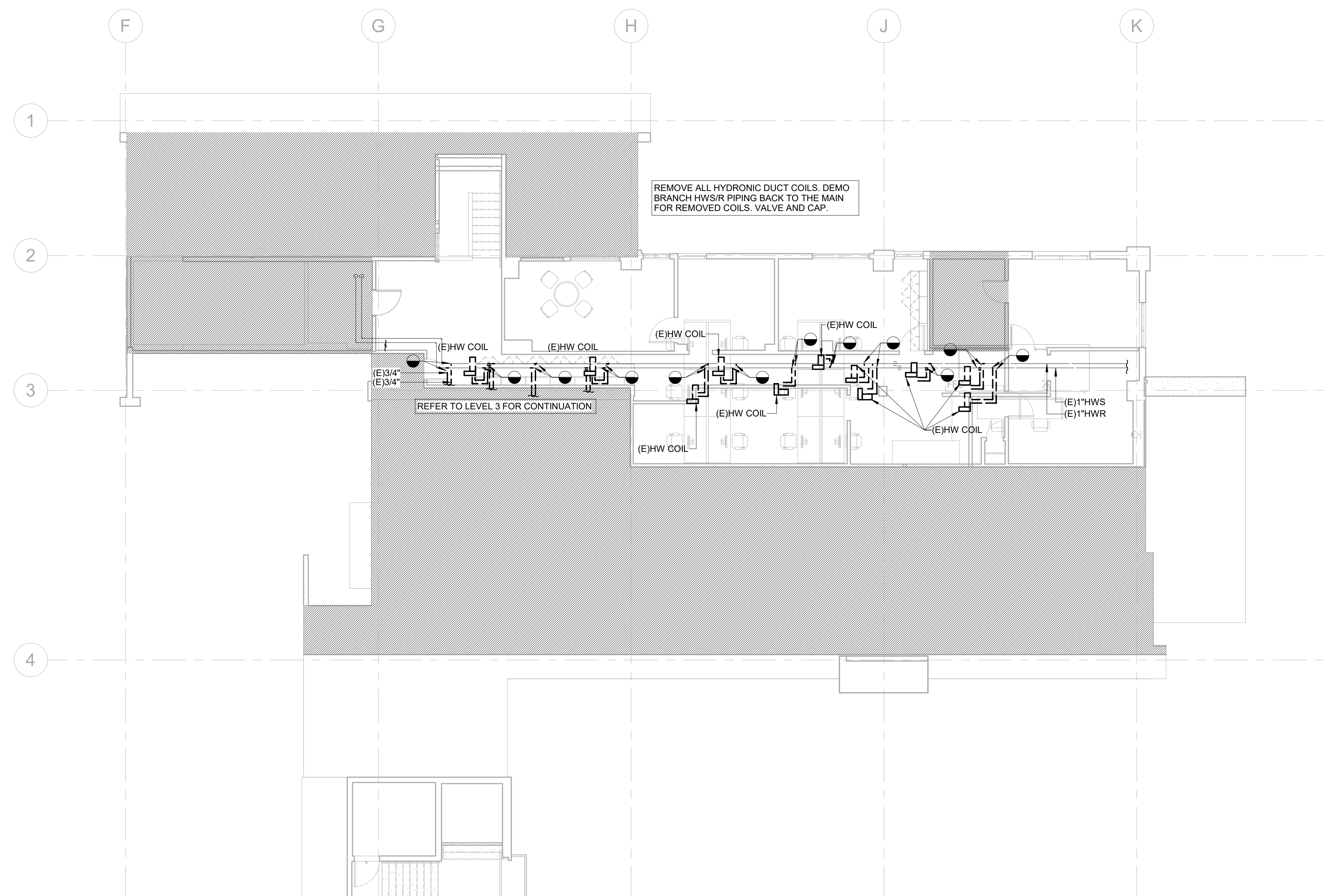
Scale

1/8" = 1'-0"

DM1.105



1 MECHANICAL PIPING DEMO PLAN - A BUILDING LEVEL 03
SCALE: 1/8" = 1'-0"




2 MECHANICAL PIPING DEMO PLAN - A BUILDING LEVEL 04
SCALE: 1/8" = 1'-0"

GENERAL NOTES:

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KEYNOTES



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Project Name

Steamboat Base Village Redevelopment

Project Number

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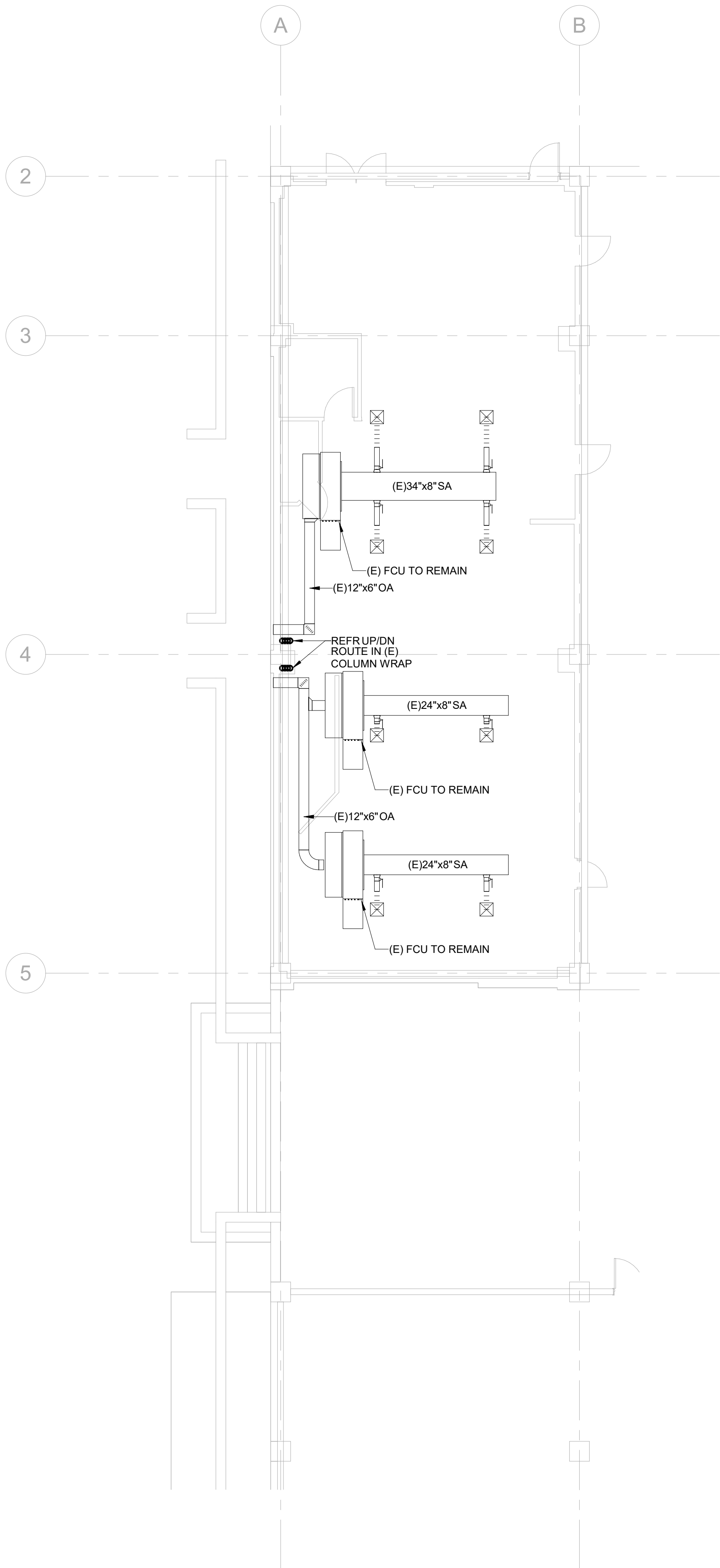
Description

MECHANICAL PIPING DEMOLITION PLAN - A BUILDING LEVEL 03 & 04

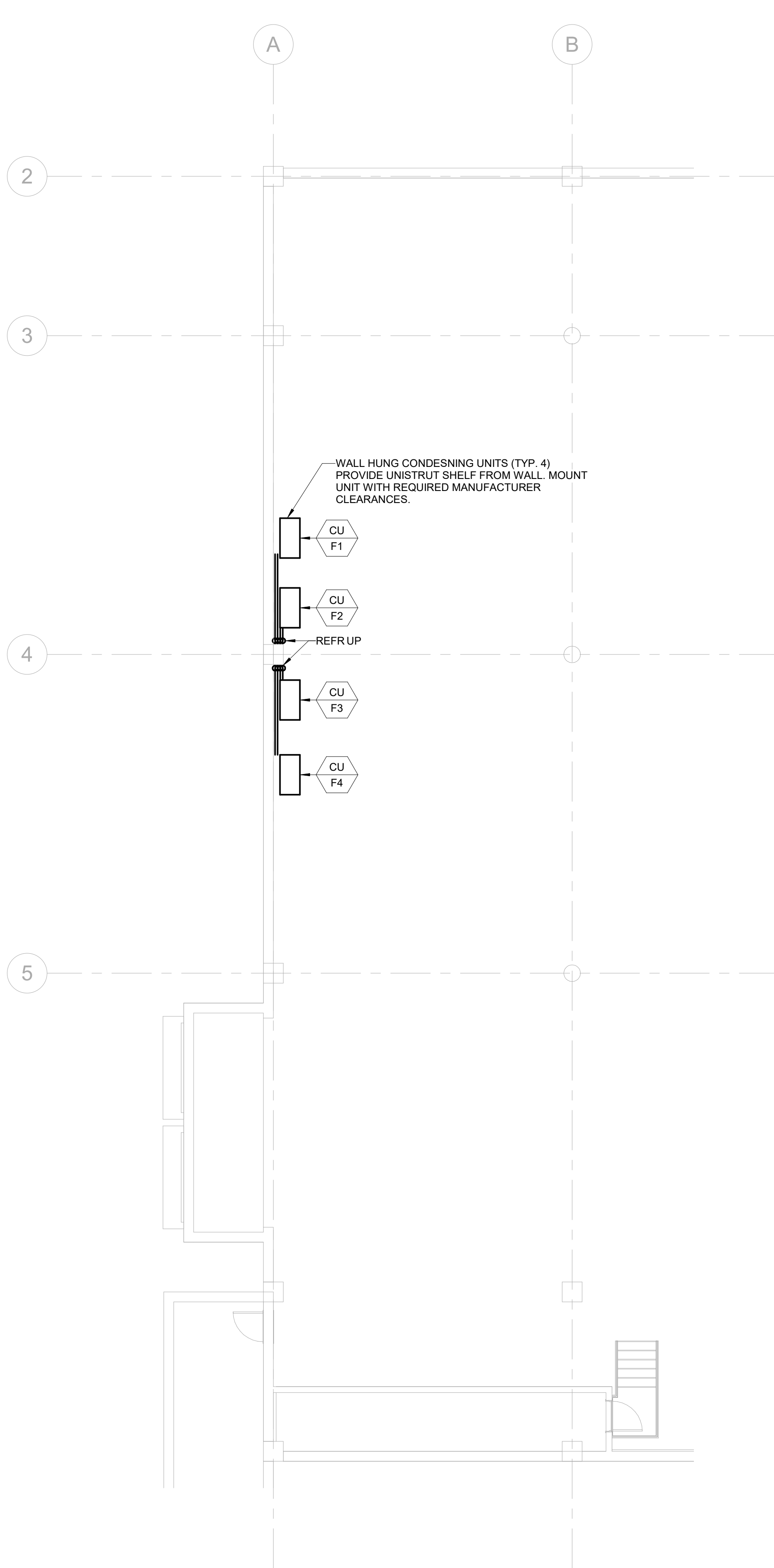
Scale

1/8" = 1'-0"

DM1.106



2 MECHANICAL PLAN - PLAZA LEVEL - LEVEL 01
SCALE: 1/8" = 1'-0"



1 MECHANICAL PLAN - CHRISTY'S LOWER LEVEL 01
SCALE: 1/8" = 1'-0"

GENERAL NOTES:

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2. MAINTAIN CODE REQUIRED AREA OF SEPARATION FROM OUTSIDE AIR INTAKES TO TERMINATIONS OF EXHAUST, COMBUSTION AIR, PLUMBING VENTS, ETC.
3. PROVIDE MANUAL BALANCE DAMPERS IN ALL SUPPLY DUCT BRANCH TAPS DOWNSTREAM OF DOWNSTREAM OF VENTILATION FAN.
4. PROVIDE MANUAL BALANCE DAMPERS IN ALL SUPPLY DUCT BRANCH TAPS DOWNSTREAM OF FAN UNITS.
5. PROVIDE MANUAL BALANCE DAMPERS IN ALL EXHAUST DUCT BRANCH TAPS.
6. COORDINATE SPACE TEMPERATURE SENSORS AND THERMOSTAT LOCATIONS TO ALIGN VERTICALLY WITH LIGHT SWITCHES.
7. PROVIDE THROUGH FACE BALANCING FOR ALL DIFFUSERS, REGISTERS, AND GRILLES ABOVE INACCESSIBLE AREAS.
8. INSTALL EXPOSED DUCTWORK AS HIGH AS POSSIBLE.
9. TEMPERATURE CONTROLS CONTRACTOR SHALL SUBMIT PLANS INDICATING ALL SPACE TEMPERATURE SENSORS, T-STATS, ETC. AS PART OF SUBMITTAL PROCESS FOR A/E REVIEW PRIOR TO ROUGH-IN.
10. ALL DUCT/PIPE PENETRATIONS THROUGH FIRE RATED/SMOKE RATED PARTITIONS SHALL BE CAULKED AND SEALED TO MEET THE RATING REQUIRED. REFER TO LIFE SAFETY DRAWINGS FOR FIRE/SMOKE RATING REQUIREMENTS.
11. PROVIDE TURNING VANES IN ALL 90 DEGREE DUCT ELBOWS.
12. PROVIDE ISOLATION VALVES AT EACH BRANCH LINE OFF OF MAINS.
13. PROVIDE 3/4" BRANCH PIPING TO ALL TERMINAL UNITS, UNLESS NOTED OTHERWISE.
14. PROVIDE CONDENSATE DRAIN FROM ALL DX EVAPORATOR COILS TO NEAREST MOP SINK, FLOOR DRAIN, OR APPROVED INDIRECT CONNECTION POINT. PROVIDE CONDENSATE PUMP FOR ALL COOLING UNITS THAT CANNOT BE DRAINED BY GRAVITY TO TERMINATION LOCATION.

KEYNOTES



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Project Number

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Description

MECHANICAL PLAN - F BUILDING
LEVEL 01

Scale

1/8" = 1'-0"

M1.201

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KEYNOTES

M4	PROVIDE BALANCING DAMPER IN VERTICAL SECTION OF RETURN AIR BOOT.
M5	ERV REMOTE CONTROL DISPLAY. RE: CONTROL'S DRAWINGS.
M11	CONCENTRIC WATER HEATER VENT.
M12	COMBUSTION AIR AND VENT CONNECTIONS TO GWH.
M13	MOUNT LOUVER AS HIGH AS POSSIBLE.

Date	Description
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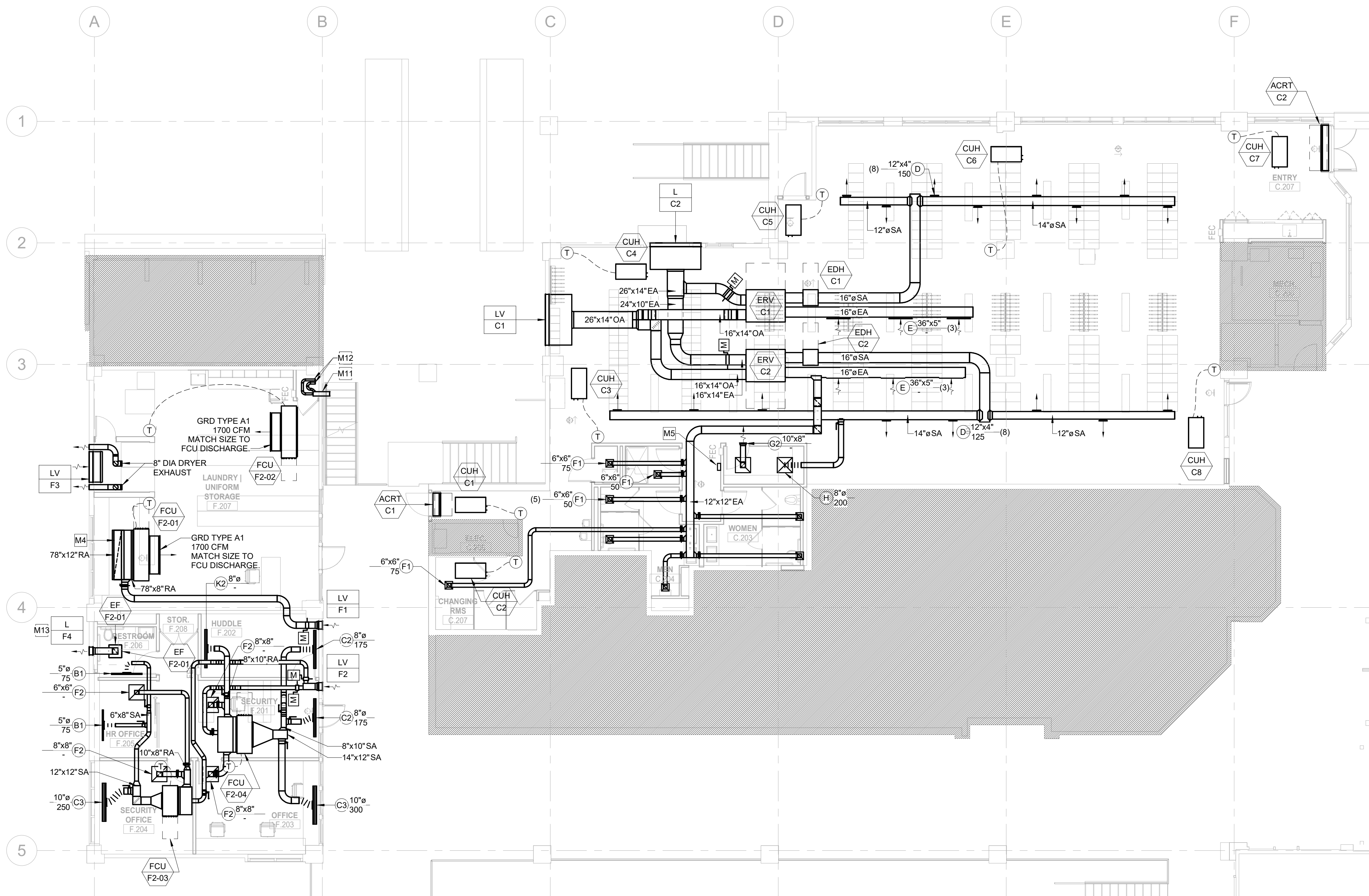
Description

MECHANICAL PLAN - C & F BUILDING
LEVEL 02

Scale

1/8" = 1'-0"

M1.202



3 MECHANICAL PLAN - A BUILDING LEVEL 02
SCALE: 1/8" = 1'-0"

1 MECHANICAL PLAN - A BUILDING LEVEL 03
SCALE: 1/8" = 1'-0"

2 MECHANICAL PLAN - A BUILDING LEVEL 04
SCALE: 1/8" = 1'-0"

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9. TEMPERATURE CONTROLS CONTRACTOR SHALL SUBMIT PLANS INDICATING ALL SPACE TEMPERATURE SENSORS, T-STATS, ETC. AS PART OF SUBMITTAL PROCESS FOR A/E REVIEW PRIOR TO ROUGH-IN.
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11. PROVIDE TURNING VANES IN ALL 90 DEGREE DUCT ELBOWS.
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KEYNOTES

M10	BUILDING A TEMPERATURE CONTROL SYSTEM TOUCHSCREEN INTERFACE.
-----	--

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Date	Description
2021.05.21	BP4D - GONDOLA SQUARE INTERIORS BLDG. A, C AND F - ISSUE FOR PERMIT AND CONSTRUCTION

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05/20/2021

Project Name

Steamboat Base Village
Redevelopment

Project Number

003.7835.000

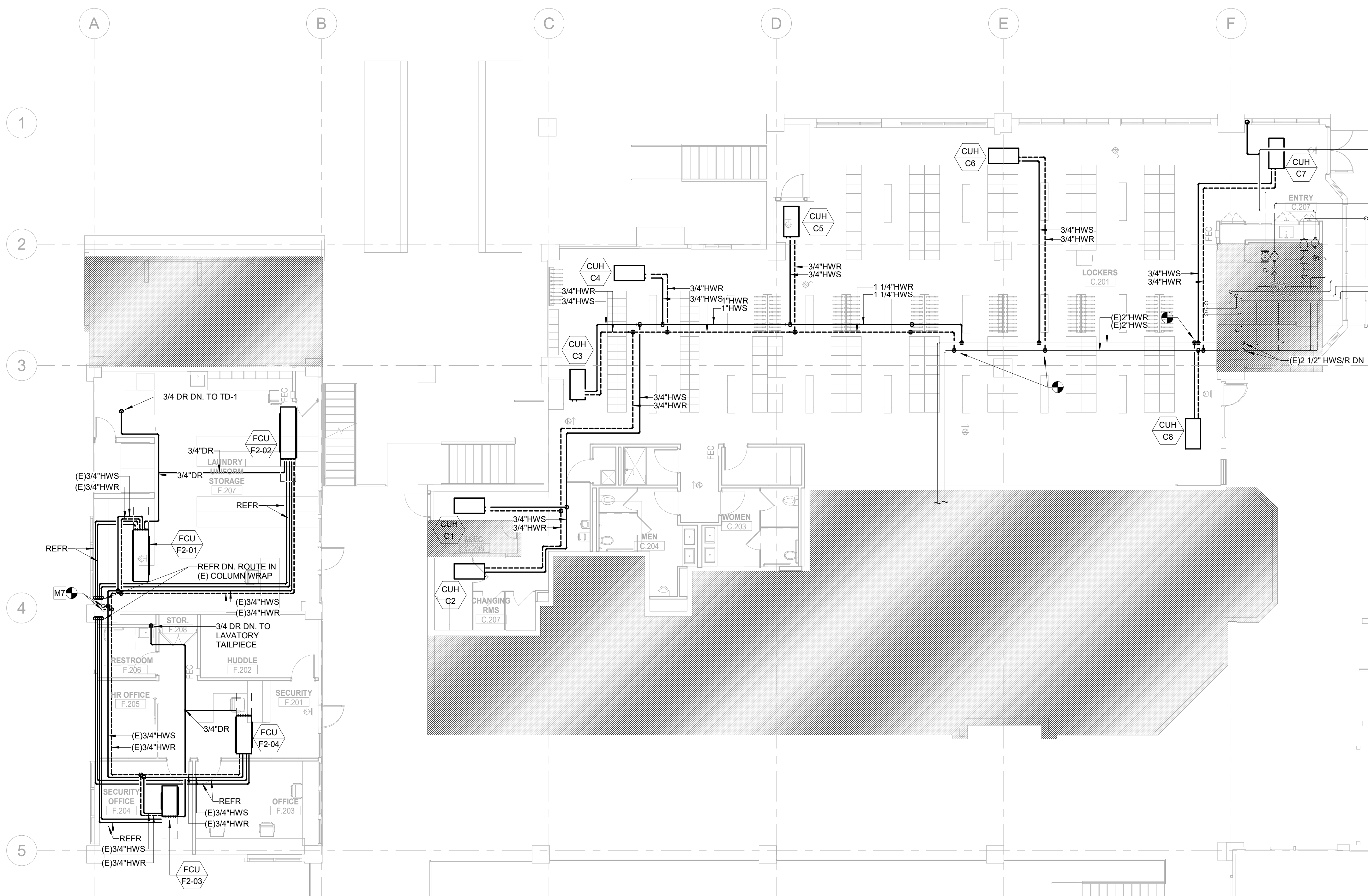
Description

MECHANICAL PLAN - A BUILDING
LEVEL 02, 03, & 04

Scale

1/8" = 1'-0"

M1.203



GENERAL NOTES:

1. THE DRAWINGS ARE DIAGRAMMATIC IN NATURE. THE CONTRACTOR IS RESPONSIBLE FOR ALL OFFSETS, TRANSITIONS, ELBOWS, ETC. AS REQUIRED IN DUCTWORK, PIPING, SUPPORTS, ETC. TO COMPLETE THE WORK IN A CLEAN, FUNCTIONAL INSTALLATION THAT IS FULLY COORDINATED WITH ALL OTHER TRADES. ANY PRICING EFFORT SHALL TAKE THESE FACTORS INTO ACCOUNT.
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13. PROVIDE 3/4\"/>
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KEYNOTES

M7 | CONNECT TO EXISTING 3/4\"/>



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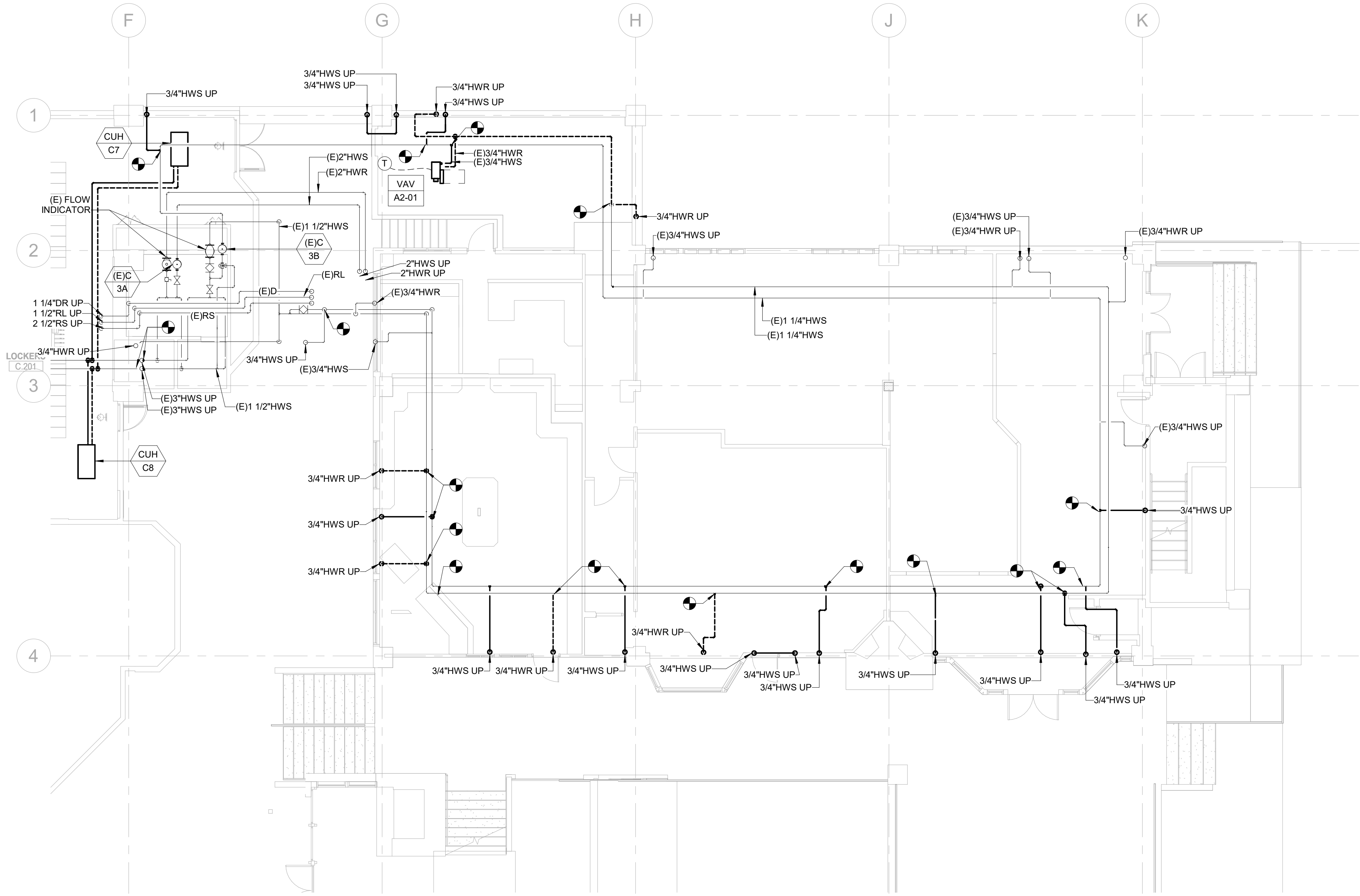
MECHANICAL PIPING PLAN - C & F
BUILDING LEVEL 02

Scale

1/8" = 1'-0"

M1.302

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1 MECHANICAL PIPING PLAN - A BUILDING LEVEL 02
SCALE: 1/8" = 1'-0"

GENERAL NOTES:

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KEYNOTES



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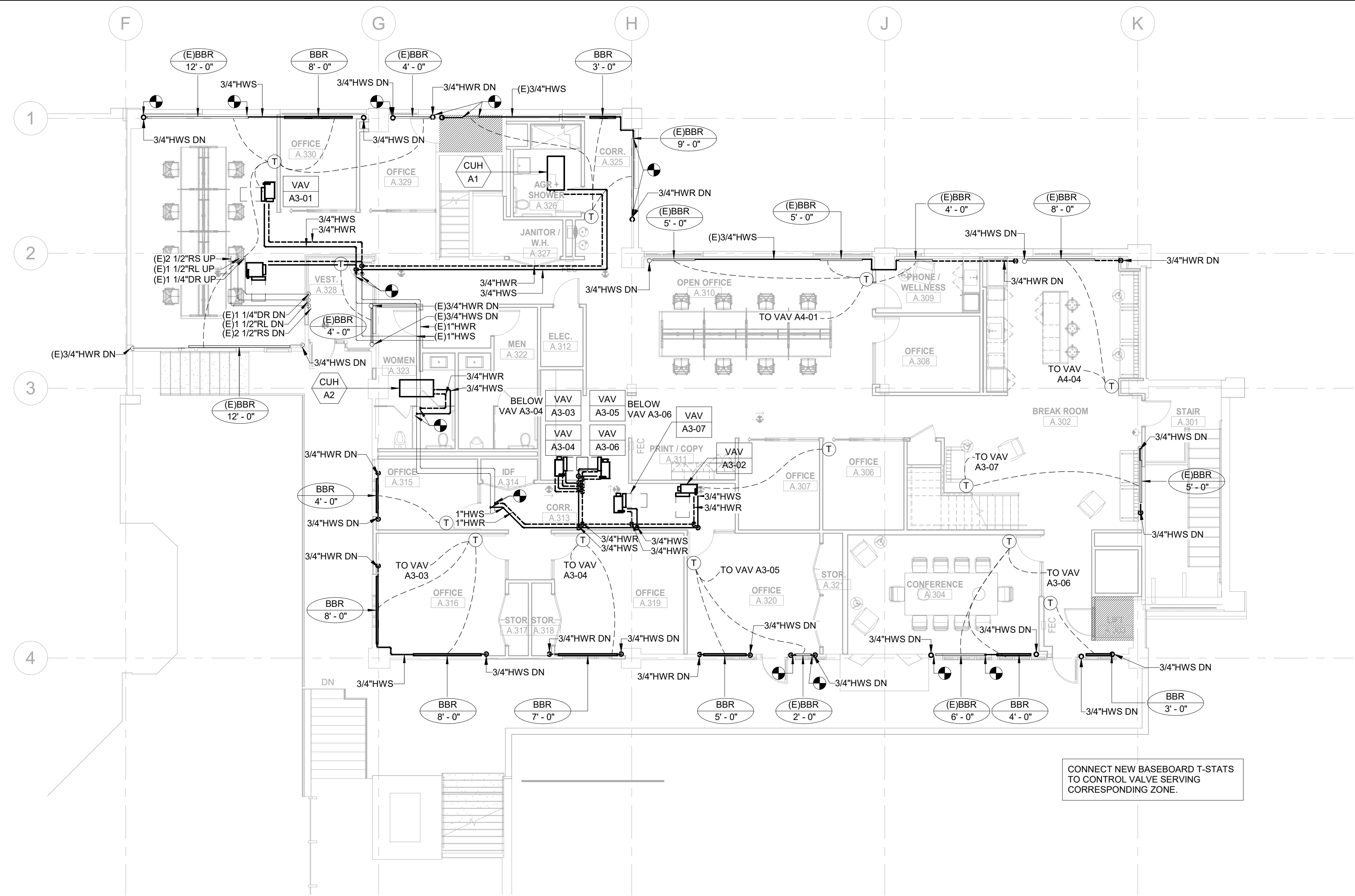
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MECHANICAL PIPING PLAN - A
BUILDING LEVEL 02

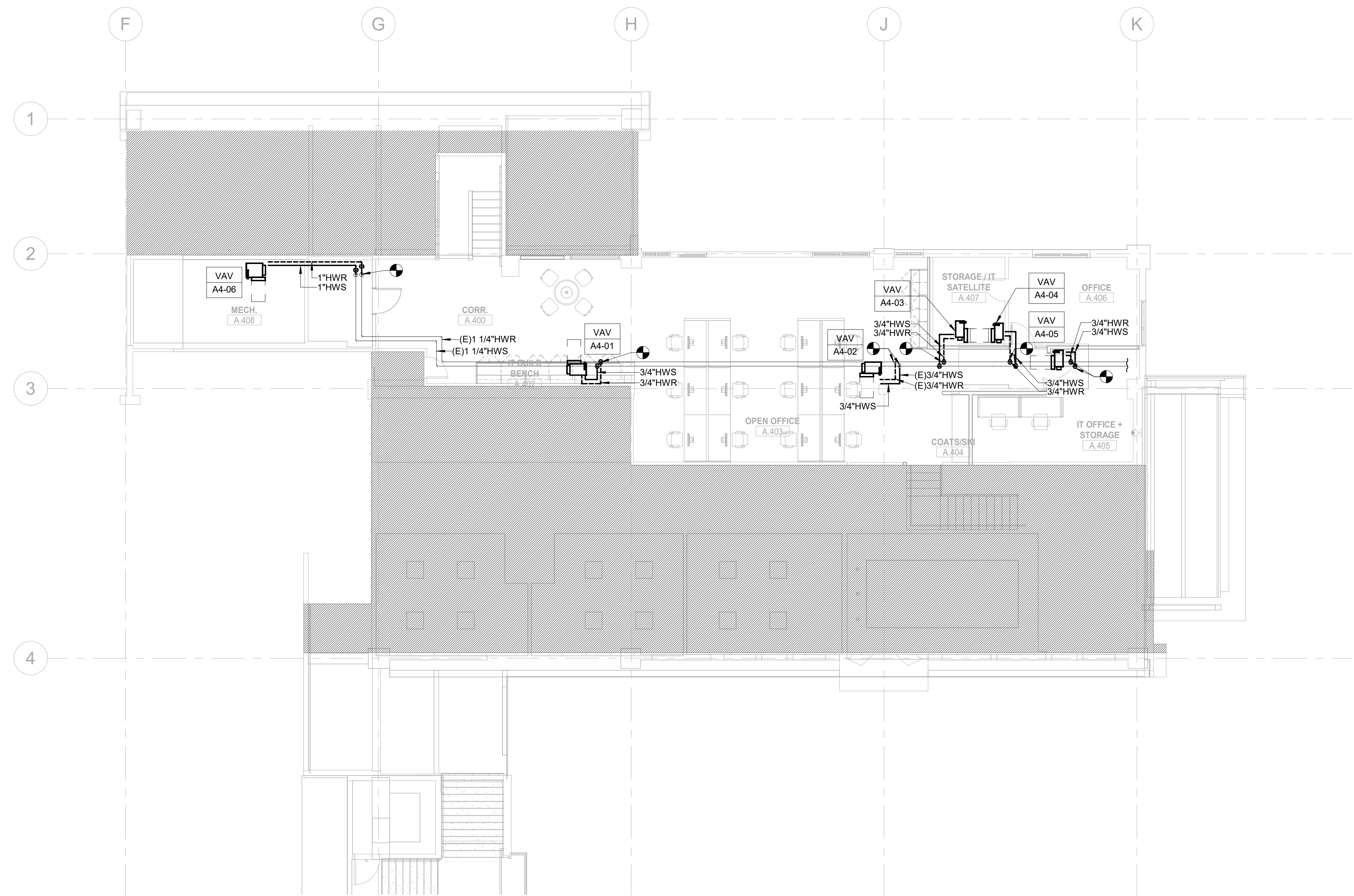
Scale

1/8" = 1'-0"

M1.303



1 MECHANICAL PIPING PLAN - A BUILDING LEVEL 03
SCALE: 1/8" = 1'-0"



2 MECHANICAL PIPING PLAN - A BUILDING LEVEL 04
SCALE: 1/8" = 1'-0"

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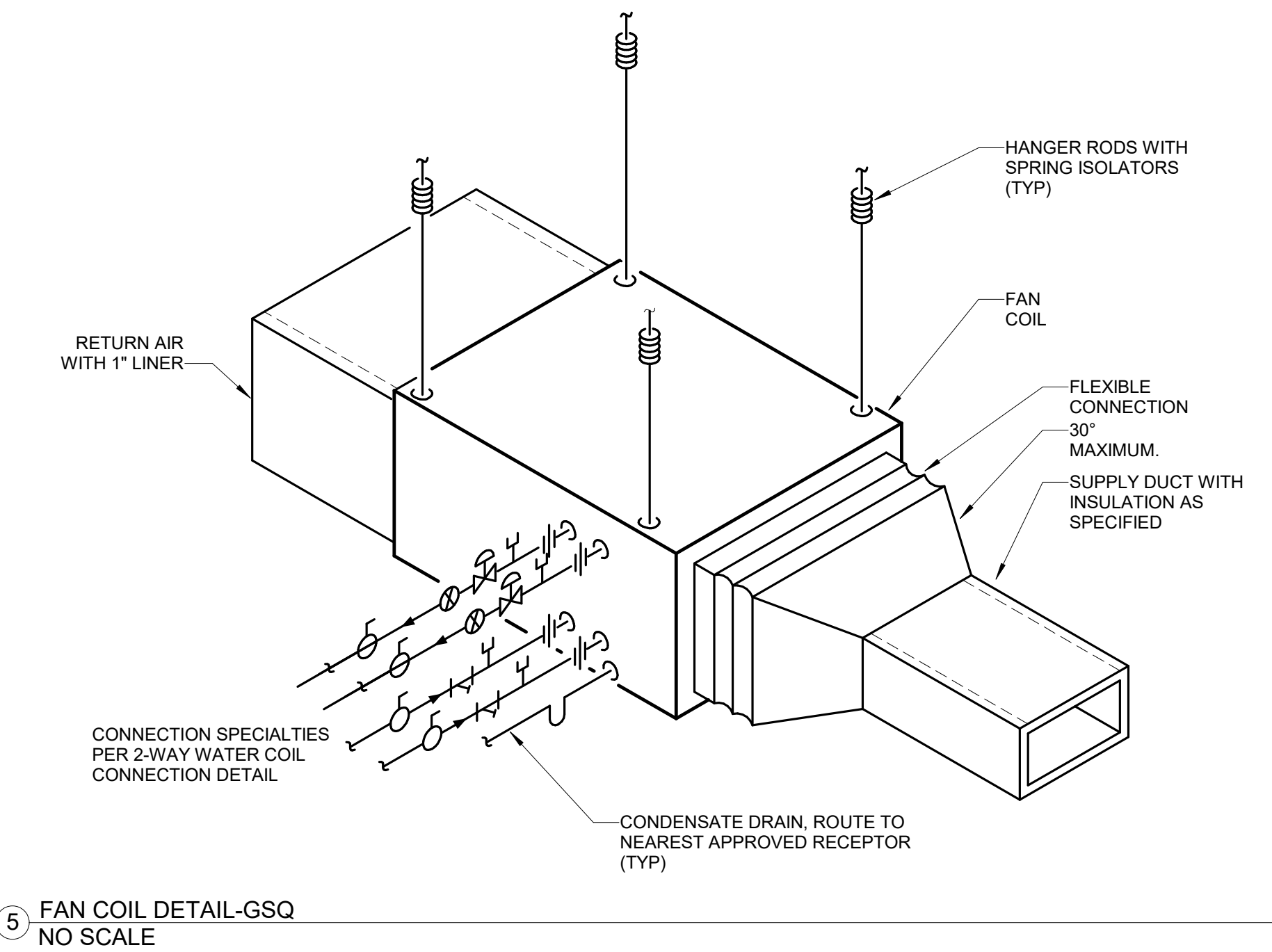
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MECHANICAL PIPING PLAN - A
BUILDING LEVEL 03 & 04

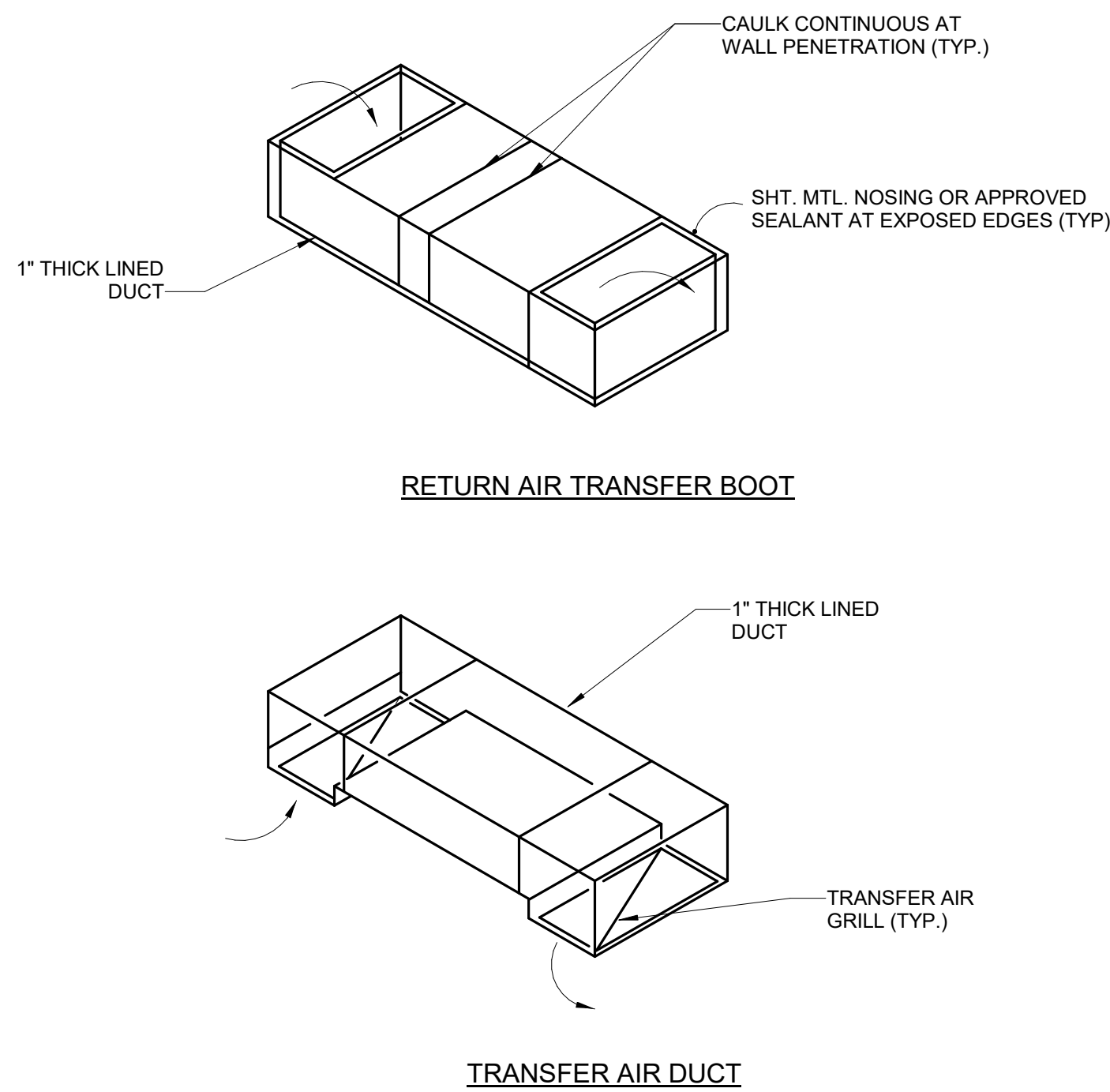
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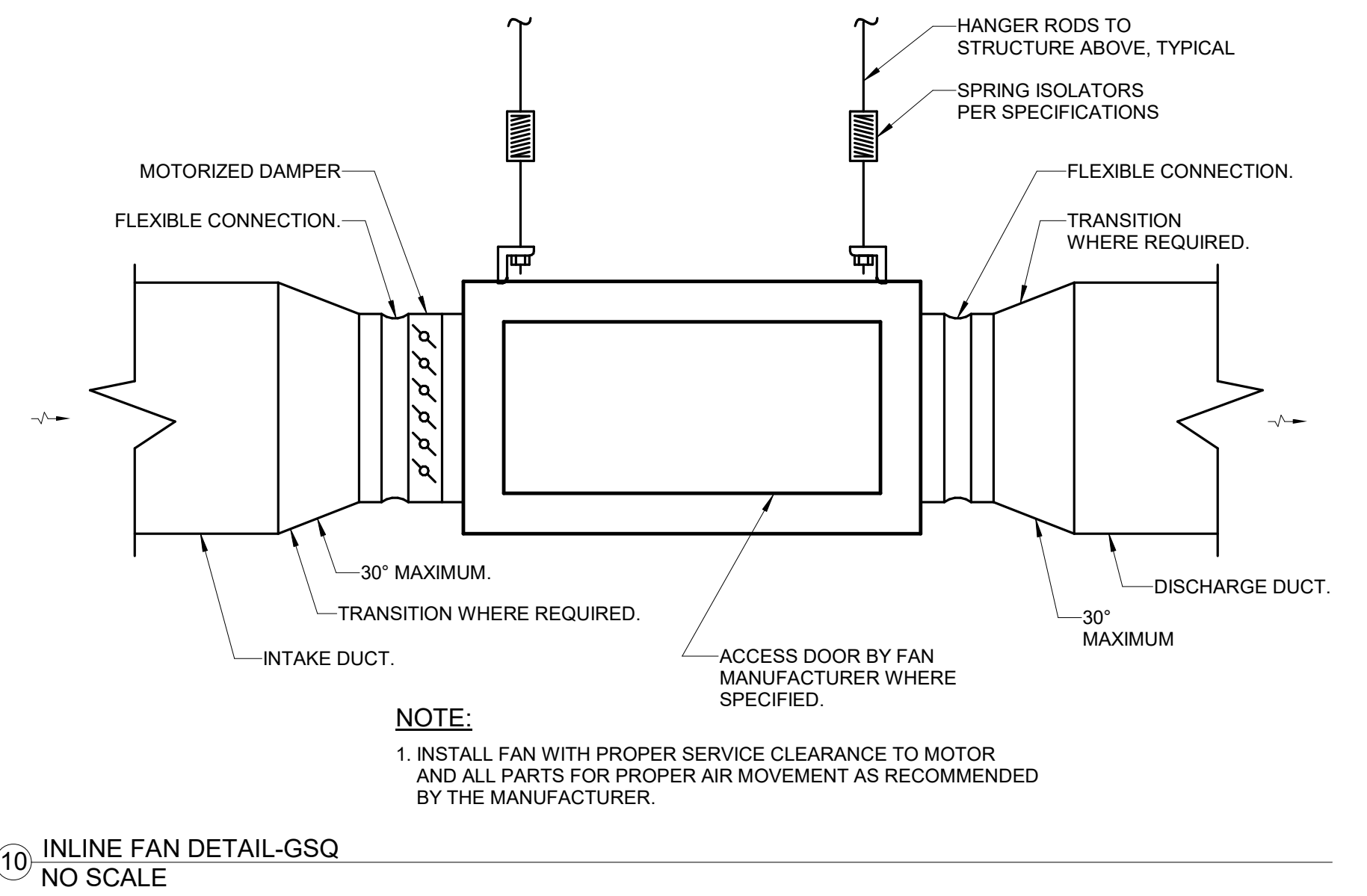
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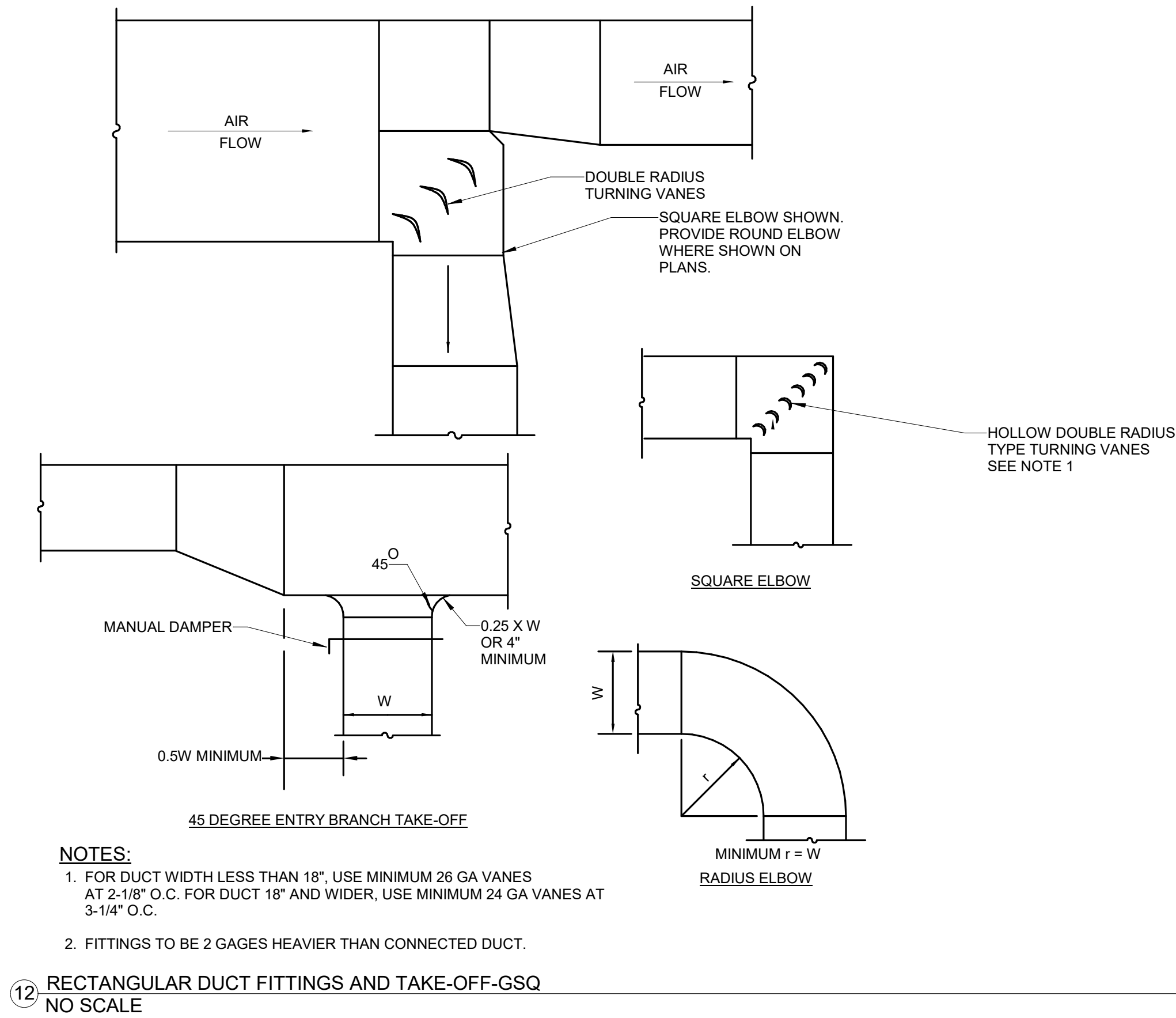
5 FAN COIL DETAIL-GSQ
NO SCALE



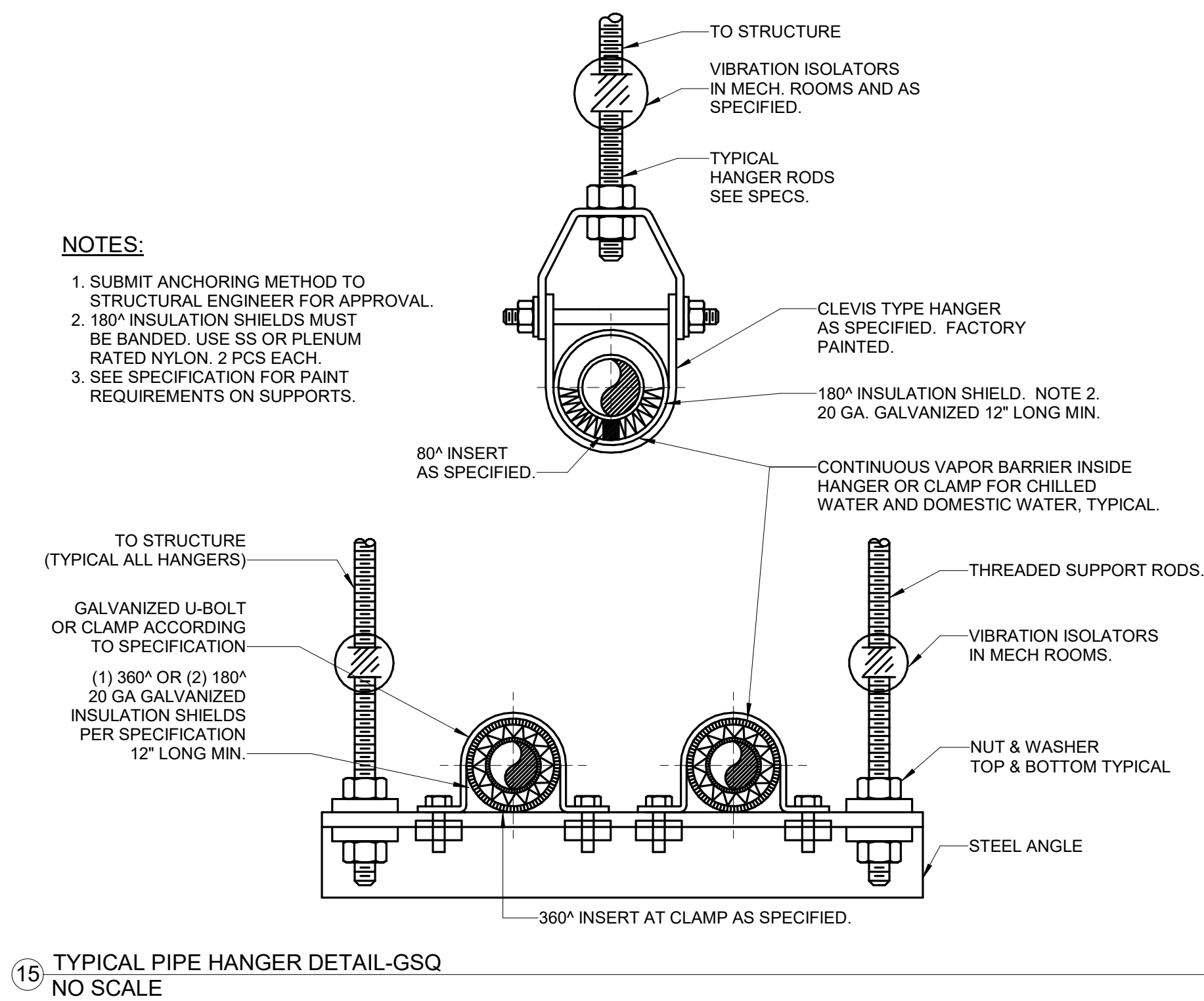
14 RETURN AIR TRANSFER BOOT AND AIR DUCT-GSQ
NO SCALE



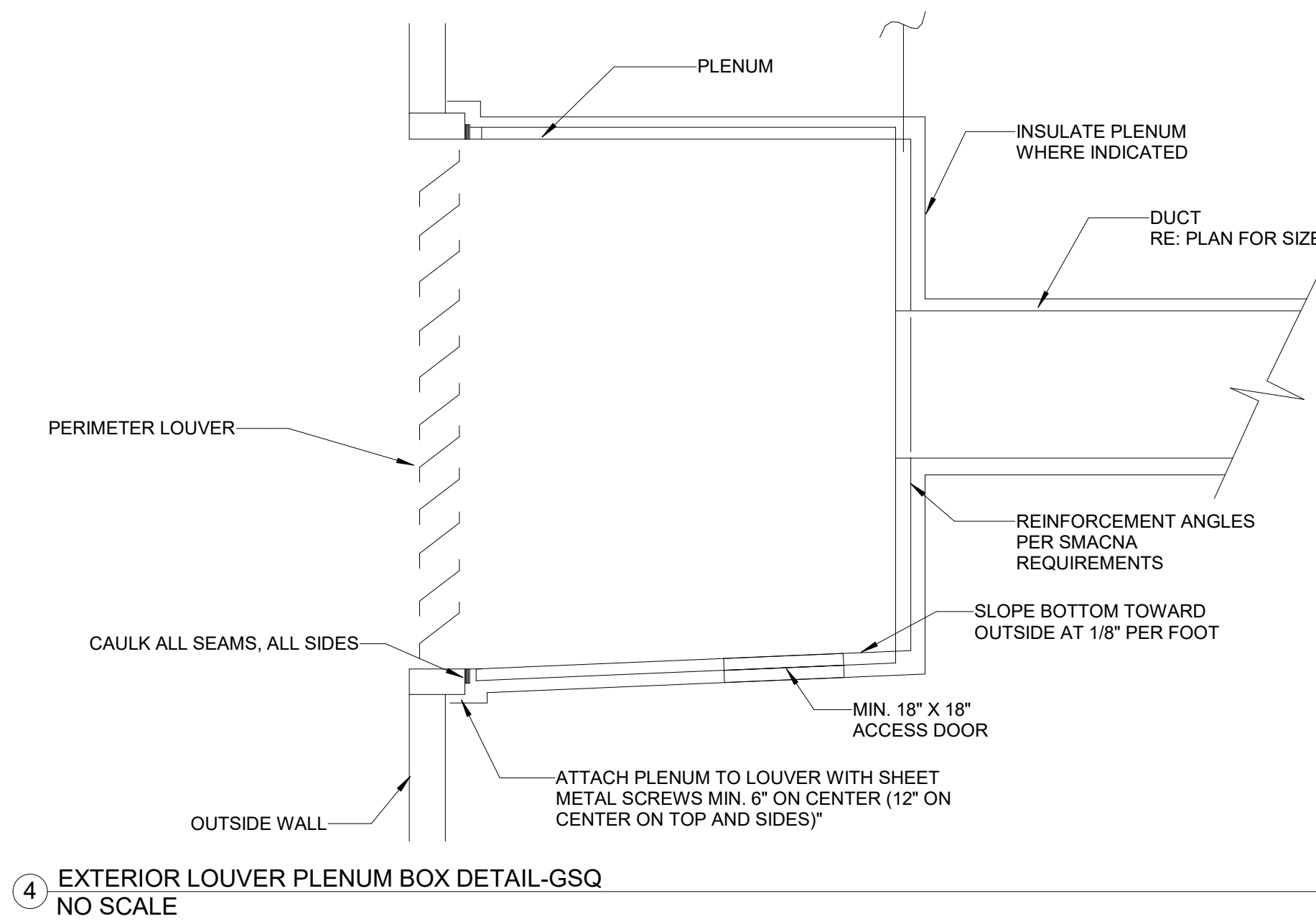
10 INLINE FAN DETAIL-GSQ
NO SCALE



12 RECTANGULAR DUCT FITTINGS AND TAKE-OFF-GSQ
NO SCALE



15 TYPICAL PIPE HANGER DETAIL-GSQ
NO SCALE



4 EXTERIOR LOUVER PLENUM BOX DETAIL-GSQ
NO SCALE

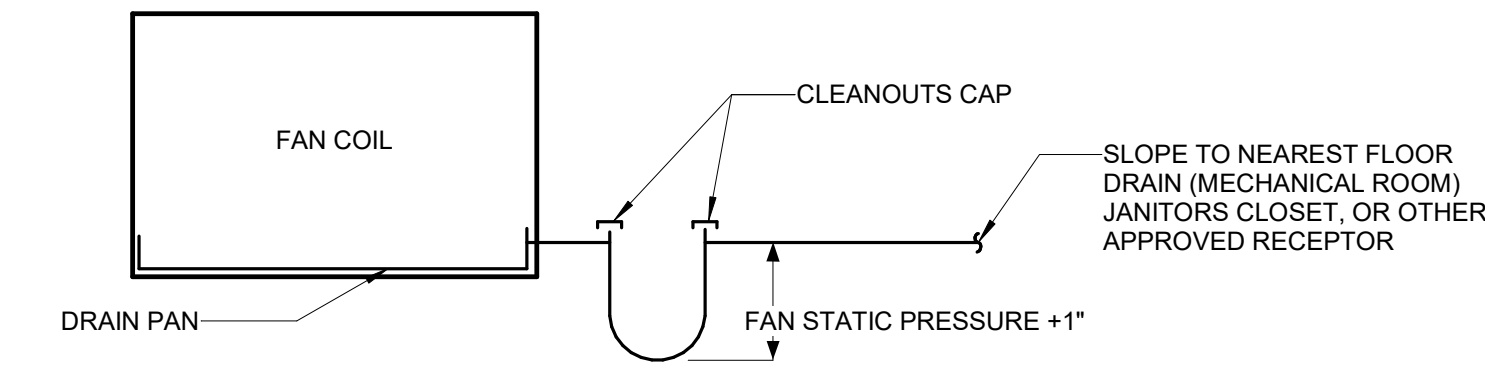
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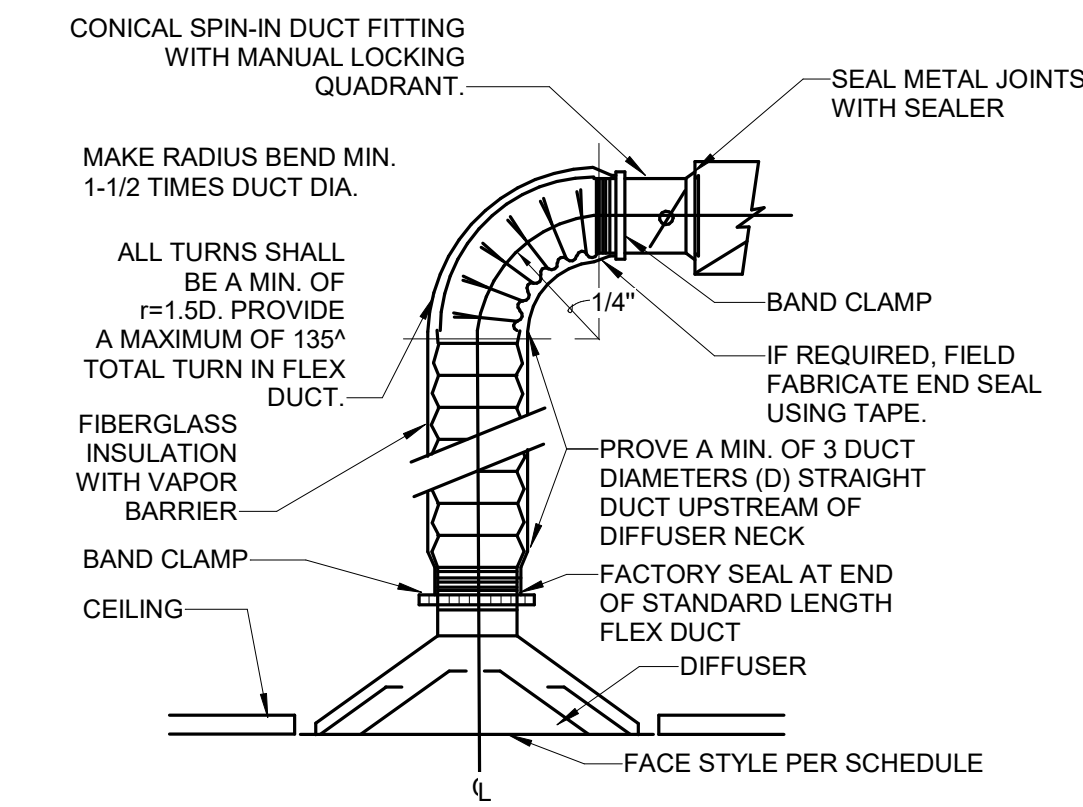
Project Name
**Steamboat Base Village
Redevelopment**
Project Number
003.7835.000
Description
MECHANICAL DETAILS

Scale
NO SCALE

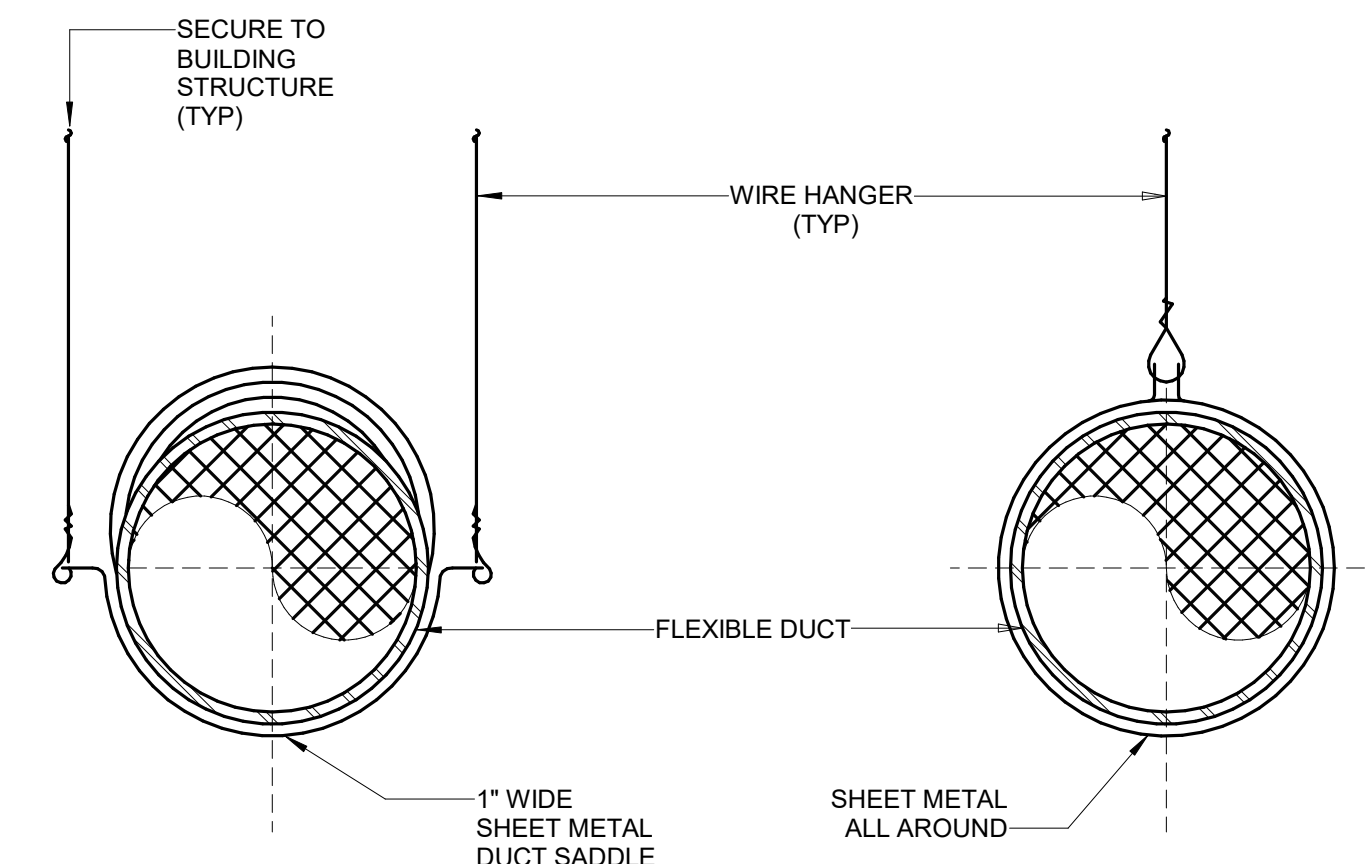


NOTE:
1. INSULATE CONDENSATE DRAIN WHEN ABOVE CEILINGS.

9 FAN COIL UNIT CONDENSATE DRAIN DETAIL-GSQ
NO SCALE

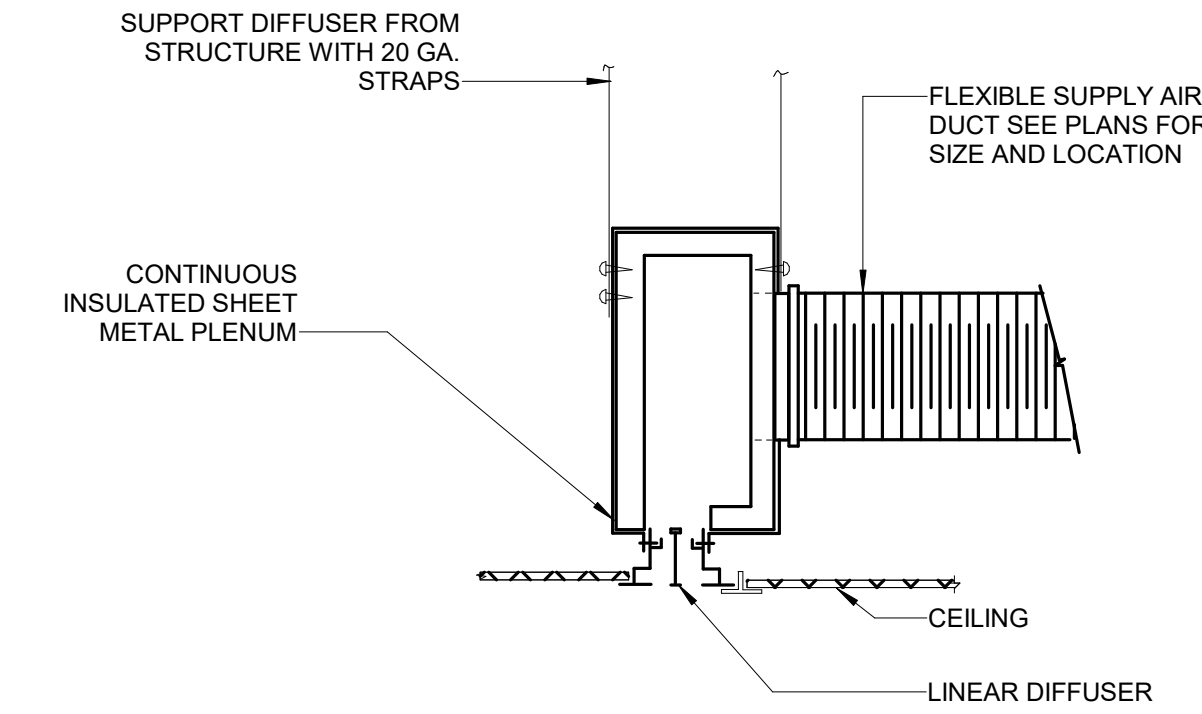


5 CEILING DIFFUSER DETAIL-GSQ
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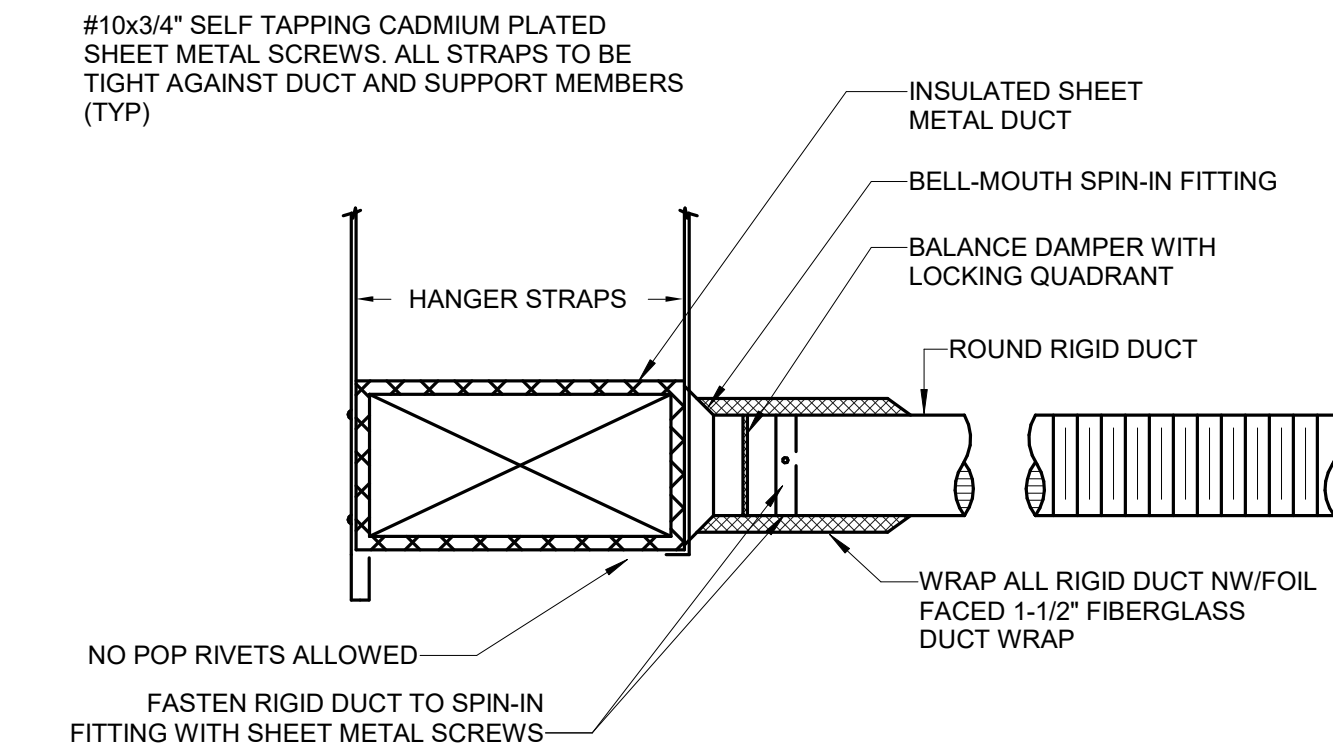


NOTE:
1. SUPPORT AT 3' MAX.

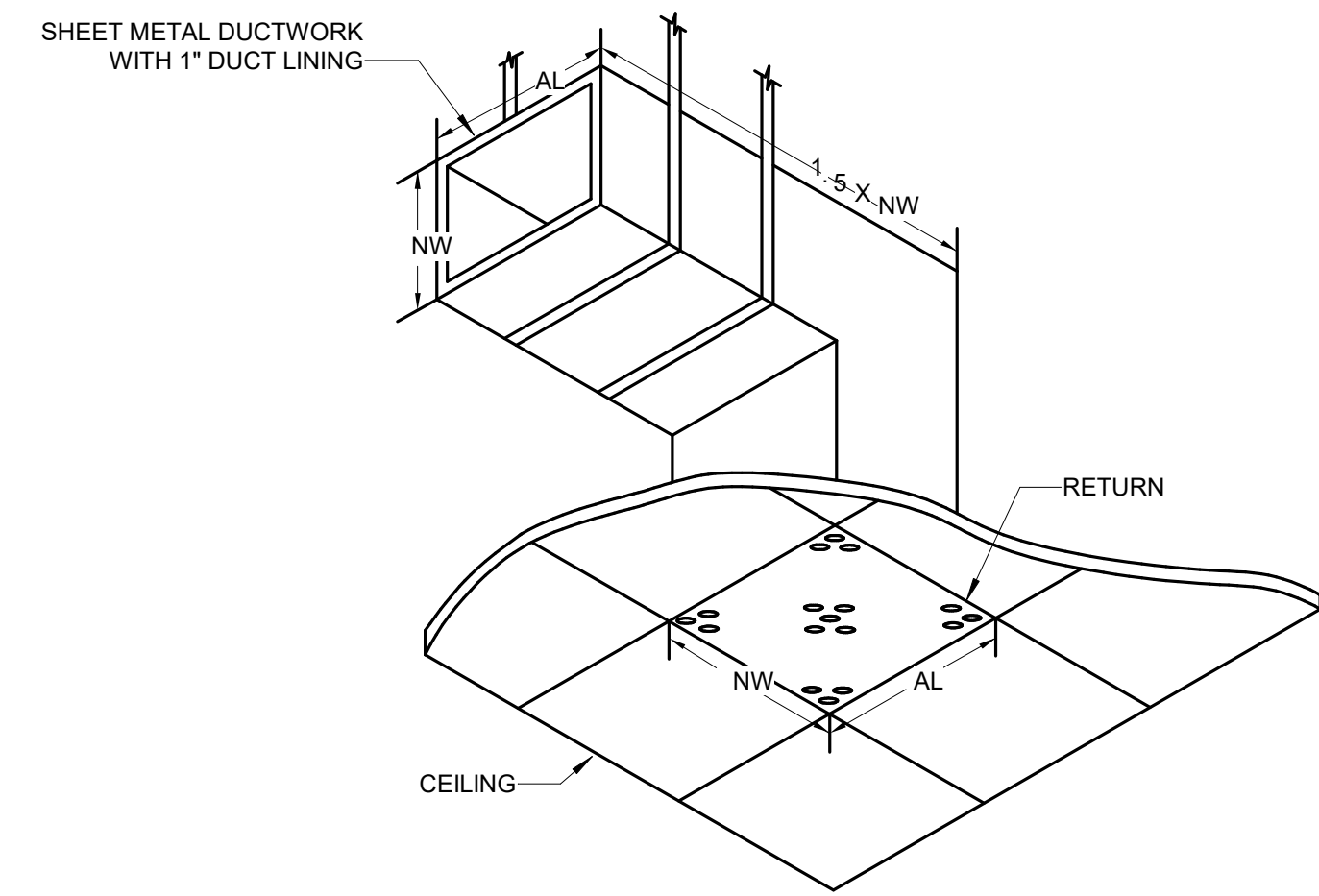
1 FLEXIBLE DUCT SUPPORT-GSQ
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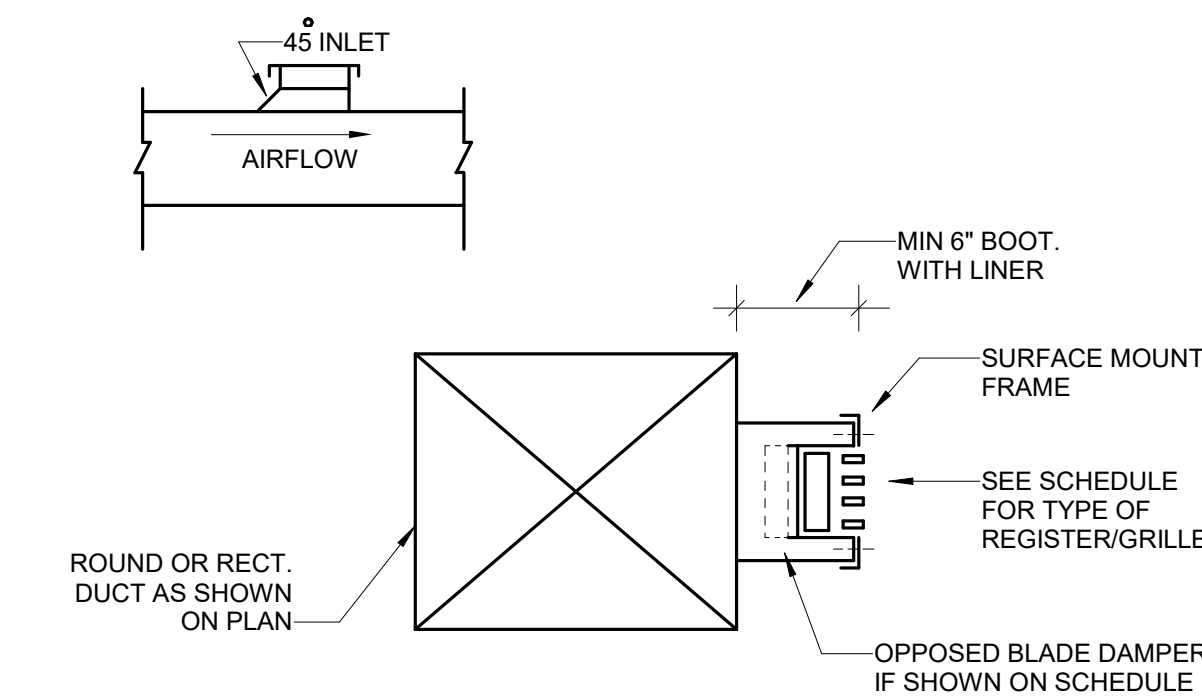
10 LINEAR DIFFUSER AND PLENUM DETAIL-GSQ
NO SCALE



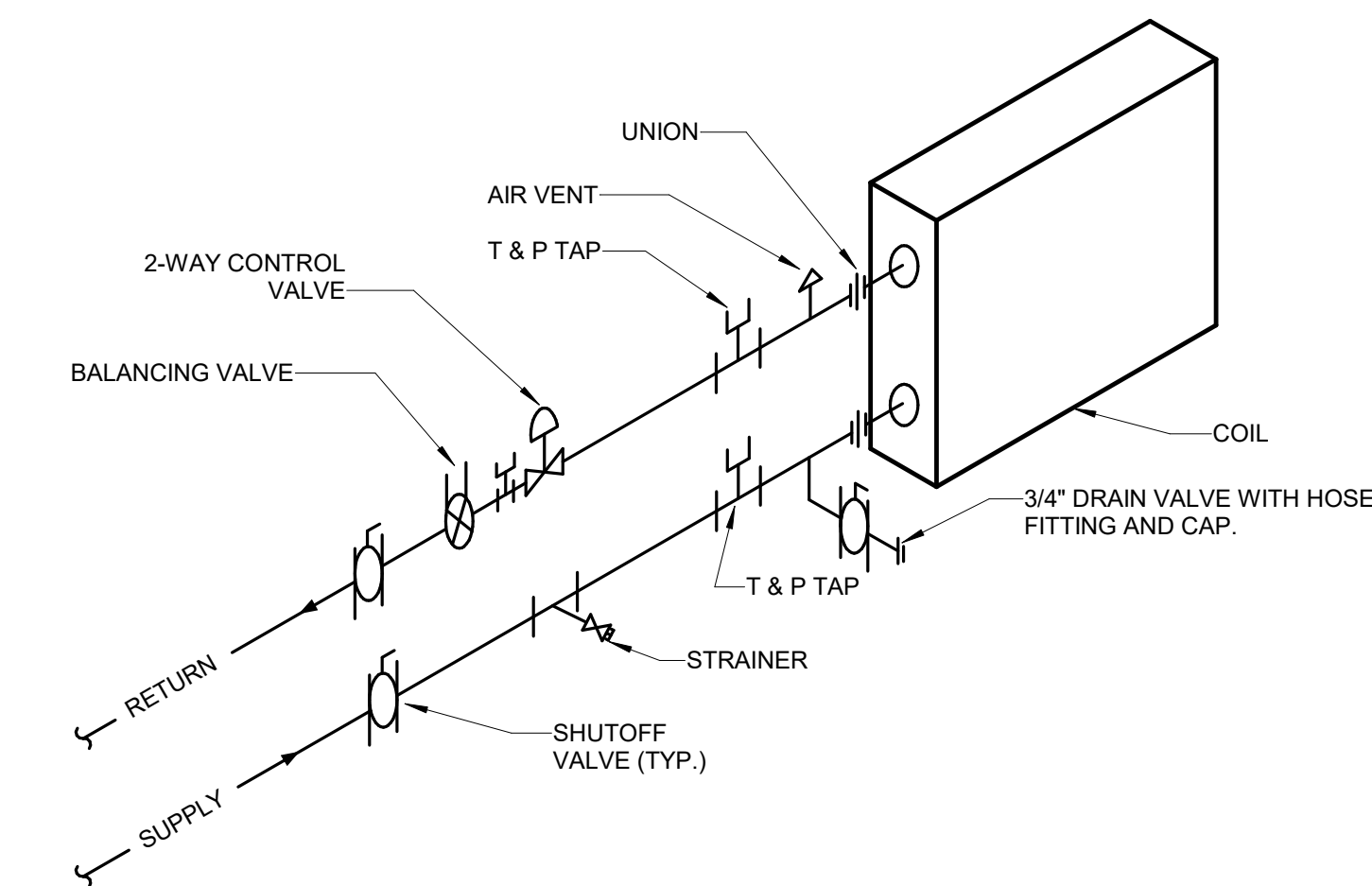
6 FLEX DUCT/ SPIN-IN FITTING DETAIL-GSQ
NO SCALE



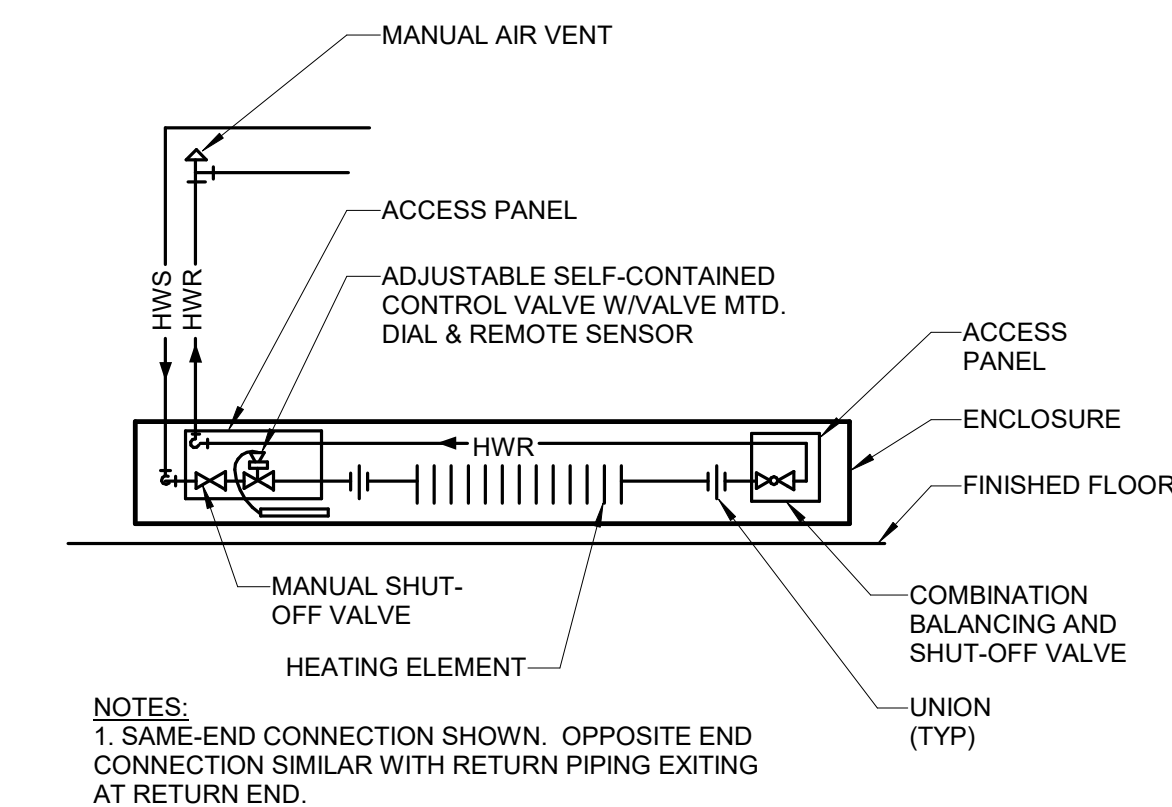
2 RETURN AIR BOOT DETAIL-GSQ
NO SCALE



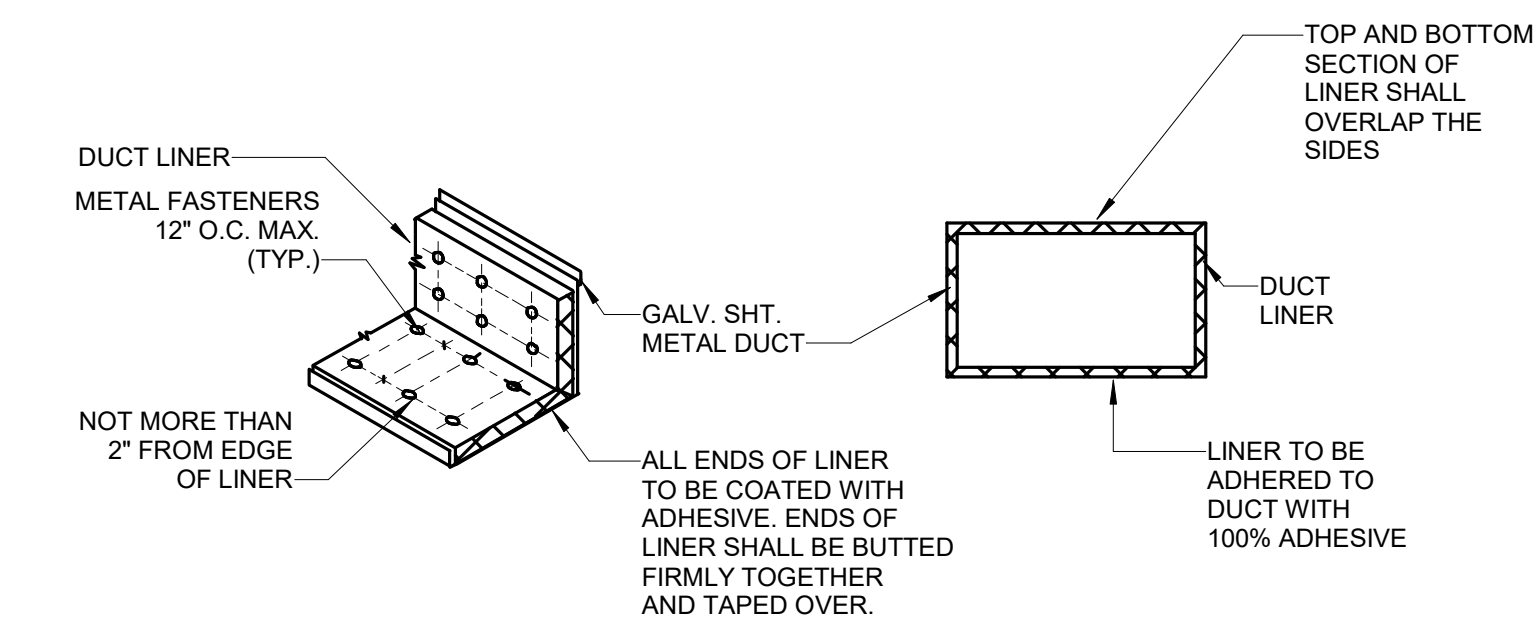
7 DUCT MOUNTED AIR DEVICE DETAIL-GSQ
NO SCALE



3 TYPICAL WATER COIL CONNECTION DETAIL (2 WAY CONTROL)-GSQ
NO SCALE



8 HOT WATER BASEBOARD DETAIL-GSQ
NO SCALE



4 DUCT LINER DETAIL-GSQ
NO SCALE

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Project Name

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Redevelopment

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MECHANICAL DETAILS

Scale

NOT TO SCALE

M8.001

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ROOFTOP UNIT SCHEDULE

CODE	AREA SERVED	LOCATION	MANUFACTURER/ MODEL NO.	SUPPLY FAN					COOLING CAPACITY (AIR-COOLED DX)							FILTER	ELECTRICAL				WEIGHT (LBS)	REMARKS	
				CFM	TSP "W.C. (ALT.)	ESP "W.C. (ALT.)	HP	MIN. OSA (CFM)	EAT (°F)		UNIT LAT (°F)		TOTAL MBH	SENS MBH	EER		TYPE	VOLT	PH	MCA			MOP
					DB	WB			DB	WB													
(E)RTU-1	BUILDING A	ROOF	TRANE TSD210F4R0	5,600	1.18	1	5	1,000	80.0	62.0	55.2	167	116	11.0	2" PANEL	460	3	43	60	2,500			
<div>GENERAL NOTES: 1. UNIT IS EXISTING TO REMAIN. 2. UNIT SHALL BE MODIFIED TO INCLUDE AN APR CONTROL VALVE ON THE LEAD COMPRESSOR CIRCUIT FOR TURNDOWN TO 4.5 TONS AT THE LOWEST STEP. ENGAGE OEM MANUFACTURER'S AUTHORIZED TECHNICIAN TO PERFORM MODIFICATION WORK.</div>																							

ENERGY RECOVERY VENTILATOR SCHEDULE

CODE (ERV)	AREA SERVED	MANUFACTURER/ MODEL NO.	SUPPLY FAN			EXHAUST FAN			FILTERS		HEATING (ELEC. PREHEAT)			HEAT RECOVERY										ELECTRICAL					WEIGHT LBS	REMARKS					
			MAX CFM	ESP "W.C. (ALT.)	HP	MAX CFM	ESP "W.C. (ALT.)	HP	TYPE	APD "W.C.	EAT (°F)	LAT (°F)	HTG. CAP. (KW)	COOLING				HEATING				VOLT	PH	MCA	DISC.	FUSE	FEEDER								
				OSA EAT (F) DB			WB							EXH EAT (F) DB	WB	OSA LAT (F) DB	WB	TOT. EFF.	OSA EAT (F) DB	WB	EXH EAT (F) DB							WB			OSA LAT (F) DB	WB	TOT. EFF.		
C1	BUILDING C LOCKER	GREENHECK / ERV-20-15L	1,200	0.75	3/4	1,200	0.75	3/4	MERV 8	0.06	-10.0	5.8	5.0	88.0	57.0	85.9	56.3	77.0	60.6	78.3%	5.8	2.1	16.7	14.2	60.0	47.7	85.3%	480	3	13.1	30A/3P	20A...	(3#12, #12G) 3/4"C	900	A,B
C2	BUILDING C LOCKER	GREENHECK / ERV-20-15L	1,200	0.75	3/4	1,200	0.75	3/4	MERV 8	0.06	-10.0	5.8	5.0	88.0	57.0	85.9	56.3	77.0	60.6	78.3%	5.8	2.1	16.7	14.2	60.0	47.7	85.3%	480	3	13.1	30A/3P	20A...	(3#12, #12G) 3/4"C	900	A,B
GENERAL NOTES: 1. INSTALL UNITS WITH ADEQUATE CLEARANCE FOR COIL PULL, FILTER REPLACEMENT AND TO FULLY OPEN ACCESS DOORS. 2. PROVIDE A MINIMUM OF 3 FEET CLEARANCE IN FRONT OF DISCONNECTS SWITCHES AND CONTROL PANELS. COMPLY FULLY WITH NEC. 3. UNIT STATIC PRESSURE CAPABILITY SHALL INCLUDE SCHEDULED EXTERNAL STATIC PRESSURE PLUS ALL SCHEDULED INTERNAL PRESSURE DROPS. 4. SCHEDULED FAN VALUES (CFM, SP AND HP) ARE ACTUAL AT ALTITUDE OF 6700 FT. 5. MAXIMUM WHEEL AND FILTER FACE VELOCITY = 500 FPM 6. REFER TO MECHANICAL CONTROLS DRAWINGS.																																			
REMARKS: A. 100% OUTSIDE AIR UNIT. B. SERVED BY (2) PERIMETER MECHANICAL LOUVERS. SEE LOUVER SCHEDULE.																																			

AIR CURTAIN SCHEDULE

CODE (ACRT)	MANUFACTURER/ MODEL NO.	SERVICE	LOCATION	TYPE	CFM	ELECTRICAL							WEIGHT (LBS)
						HP	VOLT	PH	FLA	DISC.	FUSE	FEEDER	
C1	MARS / STD2 36	ENTRY DOOR	BUILDING C LOCKER	AMBIENT	1350	1/2	115	1	5.1	\$ T.O.	-	(2#12, #12G) 3/4"C	70
C2	MARS / STD2 72	ENTRY DOOR	BUILDING C LOCKER	AMBIENT	2700	1/2 (x2)	115	1	10.2	\$ T.O.	-	(2#12, #12G) 3/4"C	130
<div>GENERAL NOTES: 1. PROVIDE DOOR SWITCH, RE: CONTROL DIAGRAMS.</div>													

ELECTRIC DUCT HEATER

CODE (EDH)	AREA SERVED	MANUFACTURER/ MODEL NO.	OSA CFM	HEATING COIL										REMARKS
				EAT	LAT	KW	CONTROL	ELECTRICAL					FEEDER	
								V	PH	FLA	FUSE	DISC.		
C1	BUILDING C	INDEECO QUA	1200	58.0	75.0	5.3	SCR	480	3	6.4	15A FRS-RK	30A/3P	(3#12,#12G) 3/4"C	A,B
C2	BUILDING C	INDEECO QUA	1200	58.0	75.0	5.3	SCR	480	3	6.4	15A FRS-RK	30A/3P	(3#12,#12G) 3/4"C	A,B
GENERAL NOTES														
1. MOUNT PER MANUFACTURER'S INSTALLATION INSTRUCTIONS INCLUDING ALL UL LISTING REQUIREMENTS.														
REMARK NOTES														
A. PROVIDE LINE VOLTAGE DUCT MOUNTED THERMOSTAT DOWNSTREAM OF HEATER.														
B. INTERLOCK HEATER WITH ERV SERVING SAME AREA.														

MECHANICAL LOUVER SCHEDULE

CODE (L)	MANUFACTURER / MODEL	SERVICE	LOCATION	AIRFLOW	VELOCITY	MINIMUM FREE AREA (SF)	FACE SIZE		PLENUM BOX DEPTH	REMARKS
							WIDTH (IN)	HEIGHT (IN)		
A1	RUSKIN / ELF6375DX	EF A3-01	BUILDING A	350	500	0.7	16	14	3'-0"	A,B
C1	RUSKIN / ELF6375DX	ERV-C1	BUILDING C	2400	500	4.8	80	18	3'-0"	A,B
C2	RUSKIN / ELF6375DX	ERV-C2	BUILDING C	2400	500	4.8	80	18	3'-0"	A,B
F1	RUSKIN / ELF6375DX	FCU-F1/F2	BUILDING F	200	500	0.4	12	12	3'-0"	A,B
F2	RUSKIN / ELF6375DX	FCU-F3/F4	BUILDING F	150	500	0.3	12	12	3'-0"	A,B
F3	RUSKIN / ELF6375DX	LAUNDRY MAKE-UP	BUILDING F	1600	500	3.2	48	20	1'-0"	A,B
F4	RUSKIN / ELF6375DX	RR EXHAUST	BUILDING F	100	500	0.2	12	12	3'-0"	A,B
<div>GENERAL NOTES 1. LOUVERS SCHEDULED HERE ARE CONNECTED TO MECHANICAL SYSTEMS.</div>										
<div>REMARK NOTES A. PROVIDE INSULATED PLENUM. SLOPE BASE OF PLENUM TO DRAIN WATER OUT THROUGH LOUVER FACE. RE: MECHANICAL DETAILS. B. PROVIDE BIRD SCREEN.</div>										

ENVIRONMENTAL FAN SCHEDULE

CODE (EF)	MANUFACTURER/ MODEL NO.	SERVICE	LOCATION	TYPE	CFM	ESP "W.C. (ALT.)	DRIVE	ELECTRICAL										REMARKS
								HP	VOLT	PH	FLA	DISC.	FUSE	FEEDER	MTG	CTRL		
A3-01	GREENHECK / CSP-A510-VG	RESTROOM EXHAUST	BUILDING A LEVEL 3	INLINE	350	.5	D	0.17	115	1	2.45	S.T.O.	--	(2#12, #12G) 3/4"	1	I		
A3-02	GREENHECK / SP-A780	ELEC	LEVEL 2	INLINE	500	.5	D	0.06	115	1	3.3	S.T.O.	--	(2#12, #12G) 3/4"	1	II		
A3-03	GREENHECK / SP-A780	ELEC	LEVEL 2	INLINE	500	.5	D	0.06	115	1	3.3	S.T.O.	--	(2#12, #12G) 3/4"	1	II		
F2-01	PANASONIC / WHISPERCEILING	RESTROOM EXHAUST	BUILDING F LEVEL 2	CEILING	100	.5	D	0.01	115	1	.27	S.T.O.	--	(2#12, #12G) 3/4"		III	A	
GENERAL NOTES:																		
1. DRIVE TYPE: D = DIRECT-PROVIDE RHEOSTAT SPEED CONTROLLER IN FAN HOUSING.																		
2. SCHEDULED FAN VALUES (CFM, SP AND HP) ARE ACTUAL AT ALTITUDE. MOTOR HP HAS BEEN ADJUSTED FROM SEA LEVEL CONDITIONS FOR OPERATION AT JOB SITE ELEVATION. JOB SITE ELEVATION = 6,700 FT.																		
MOUNTING (MTG):																		
1. INSTALL FAN WITH FLEXIBLE CONNECTIONS AT DUCT INLET AND OUTLET AND WITH HANGING VIBRATION ISOLATORS.																		
CONTROL (CTRL):																		
I. INTERLOCK ROOFTOP UNIT SERVING SAME AREA. RE: MECHANICAL CONTROLS DRAWINGS.																		
II. CONTROL VIA WALL SENSOR-ENERGIZE AT 75 F (ADJUSTABLE).																		
III. INTERLOCK FAN WITH FCU F2-03. RE: MECHANICAL CONTROLS DRAWINGS.																		
REMARK NOTES																		
A. PROVIDE INTEGRAL BACKDRAFT DAMPER, PROVIDE 1.5" EXTERNAL DUCT WRAP ON EXHAUST DUCT TO PERIMETER LOUVER.																		

GRILLE REGISTER DIFFUSER SCHEDULE

CODE	MANUFACTURER/ MODEL NO.	SERVICE	TYPE	ACCESSORIES	FACE SIZE	REMARKS
A1	PRICE / 520	SUPPLY	LOUVERED		NECK +2"	
A2	PRICE / 620	SUPPLY	LOUVERED		NECK +2"	A
A3	PRICE / 510	SUPPLY	DOUBLE DEFLECTION		NECK +2"	
B1	PRICE / SDS	SUPPLY	LINEAR SLOT	48" FACTORY PLENUM	(1) 1" SLOT, 48" LENGTH	
B2	PRICE / SDS	SUPPLY	LINEAR SLOT	48" FACTORY PLENUM	(2) 1" SLOT, 48" LENGTH	
B3	PRICE / SDS	SUPPLY	LINEAR SLOT	48" FACTORY PLENUM	(3) 1" SLOT, 48" LENGTH	
C1	PRICE / SDS	SUPPLY	LINEAR SLOT	60" FACTORY PLENUM	(1) 1" SLOT, 60" LENGTH	
C2	PRICE / SDS	SUPPLY	LINEAR SLOT	60" FACTORY PLENUM	(2) 1" SLOT, 60" LENGTH	
C3	PRICE / SDS	SUPPLY	LINEAR SLOT	60" FACTORY PLENUM	(3) 1" SLOT, 60" LENGTH	
D	PRICE / SDS	SUPPLY	LINEAR SLOT	AIR SCOOP		A
E	PRICE / SDGE	EXHAUST/RETURN	SPIRAL MOUNT	PERFORATED, AIR SCOOP		A
F1	PRICE / PDDR	EXHAUST/RETURN	PERFORATED		12"x12"	
F2	PRICE / PDDR	EXHAUST/RETURN	PERFORATED		24"x24"	
G1	PRICE / 510	EXHAUST/RETURN	LOUVERED		SEE PLANS	
G2	PRICE / 530	EXHAUST/RETURN	LOUVERED		SEE PLANS	
H	PRICE / SPD	SUPPLY	SQUARE CEILING		24"x24"	
J1	PRICE / SDR	RETURN	LINEAR SLOT	48" FACTORY PLENUM	(1) 1" SLOT, 48" LENGTH	
J2	PRICE / SDR	RETURN	LINEAR SLOT	48" FACTORY PLENUM	(2) 1" SLOT, 48" LENGTH	
J3	PRICE / SDR	RETURN	LINEAR SLOT	48" FACTORY PLENUM	(3) 1" SLOT, 48" LENGTH	
K1	PRICE / SDR	RETURN	LINEAR SLOT	60" FACTORY PLENUM	(1) 1" SLOT, 60" LENGTH	
K2	PRICE / SDR	RETURN	LINEAR SLOT	60" FACTORY PLENUM	(2) 1" SLOT, 60" LENGTH	
K3	PRICE / SDR	RETURN	LINEAR SLOT	60" FACTORY PLENUM	(3) 1" SLOT, 60" LENGTH	
<div>GENERAL NOTES: 1. NOT ALL GRD TYPES LISTED ON SCHEDULE MAY APPLY. 2. SEE PLANS FOR CFM AND NECK SIZE. 3. MAXIMUM NOISE CRITERIA (NC) SHALL BE 30 UNLESS OTHERWISE NOTED. 4. COLOR TO BE COORDINATED WITH ARCHITECT. 5. MATERIAL IS STEEL UNLESS OTHERWISE NOTED. 6. PROVIDE A REMOTE, THROUGH FACE, CABLE OPERATED BALANCING DAMPER WHEN INSTALLED IN AN INACCESSIBLE CEILING. 7. PROVIDE FRAME AND TRIM COMPATIBLE WITH CEILING SYSTEM. RE: ARCHITECTURAL RCP DRAWINGS. 8. PROVIDE SQUARE TO ROUND ADAPTER FOR RECTANGULAR FACE GRILLES CONNECTED TO ROUND BRANCH DUCTS.</div>						
<div>REMARK NOTES: A. ALUMINUM CONSTRUCTION.</div>						

Date	Description
2021.05.21	BPAD - GONDOLA SQUARE INTERIORS BLDG. A, C AND F - ISSUE FOR PERMIT AND CONSTRUCTION

Seal / Signature

66806

PROFESSIONAL ENGINEER

05/20/2021

Project Name

Steamboat Base Village
Redevelopment

Project Number

003.7835.000

Description

MECHANICAL SCHEDULES

Scale

MEP0.000

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FAN COIL SCHEDULE (HYDRONIC/DX)																															
CODE (FCU)	MANUFACTURER/ MODEL NO.	AREA SERVED	FAN		DX COOLING COIL					HEATING COIL			ELECTRICAL					CONDENSING UNIT CODE	MANUFACTURER / MODEL NO.	CAPACITY (MBH)	ELECTRICAL - CONDENSING UNIT							REMARKS			
			CFM	OA CFM	ESP (IN.)	EAT (°F) DB	WB	TOTAL MBH	SENS MBH	EAT (°F)	MBH	GPM	WPD (FT)	HP	VOLT	PH	MCA				FUSE	DISCON.	FEEDER	VOLT	PH	MCA	FUSE		DISCON.	FEEDER	E-POWER
F2-01	TRANE / FCB080	BUILDING F LAUNDRY	700	200	0.35	78.7	53.9	14.4	13.9	48.6	18.7	1.3	1.0	0.22	208	1	2.25	5A FRN-RK	30A/3P	(3#12, #12G) 3/4"	F1	TRANE / 4TTR6018J	14.4	208	1	12	15A FRN-RK	30A/3P	(3#12, #12G) 3/4"	N	B
F2-02	TRANE / FCB080	BUILDING F LAUNDRY	700	0	0.35	75.0	52.5	12.1	11.7	72.0	5.0	0.4	0.5	0.22	208	1	2.25	5A FRN-RK	30A/3P	(3#12, #12G) 3/4"	F2	TRANE / 4TTR6018J	12.1	208	1	12	15A FRN-RK	30A/3P	(3#12, #12G) 3/4"	N	A
F2-03	TRANE / FCB080	BUILDING F SECURITY OFFICES	400	50	.5	76.6	53.1	7.5	7.3	58.8	8.1	0.6	1.0	0.22	208	1	2.25	5A FRN-RK	30A/3P	(3#12, #12G) 3/4"	F3	TRANE / 4TTR6018J	7.5	208	1	12	15A FRN-RK	30A/3P	(3#12, #12G) 3/4"	N	B
F2-04	TRANE / FCB080	BUILDING F SECURITY OFFICES	650	100	.5	77.0	53.3	12.4	12.0	54.0	13.7	1.0	0.9	0.22	208	1	2.25	5A FRN-RK	30A/3P	(3#12, #12G) 3/4"	F4	TRANE / 4TTR6018J	12.4	208	1	12	15A FRN-RK	30A/3P	(3#12, #12G) 3/4"	N	B
GENERAL NOTES: 1. HEATING WATER: EWT = 150°F, LWT = 130°F, 30% PROPYLENE GLYCOL. 2. PROVIDE 1" MERV 8 FILTERS. 3. SCHEDULED FAN VALUES (CFM, SP AND HP) ARE ACTUAL AT ALTITUDE. MOTOR HP HAS BEEN ADJUSTED FROM SEA LEVEL CONDITIONS FOR OPERATION AT JOBSITE ELEVATION. JOB SITE ELEVATION = 6700 FT. 4. PROVIDE PREMIUM EFFICIENCY MOTORS FOR MOTORS 1 HP AND OVER PER MENA STANDARD MG1-2003, TABLES 12-12 AND 12-13.																															
REMARKS: A. PROVIDE ENCLOSURE WITH BOTTOM RETURN AND FRONT DISCHARGE. B. PROVIDE BACK RETURN WITH LINED RETURN DUCT. PROVIDE BALANCING DAMPER UPSTREAM OF OA CONNECTION.																															

CODE	MANUFACTURER/ MODEL NO.	CAPACITY (BTU/H·F)	GPM/FT	ROWS
BBR	SIGMA / SWE-06T	350	0.1	1

GENERAL NOTES:

1. EWT= 150 ° F, LWT= 130 ° F, 30% PROPYLENE GLYCOL.
2. REFER TO PLANS FOR ACTIVE FINNED LENGTH. MINIMUM FLOW FOR CIRCUIT IS 1 GPM.
3. PROVIDE WALL TO WALL ENCLOSURE UNLESS OTHERWISE NOTED.
4. ENCLOSURE COLOR SELECTED BY ARCHITECT
5. TUBE MATERIAL IS COPPER, FIN MATERIAL ALUMINUM UNLESS OTHERWISE NOTED.

VAV BOX SCHEDULE (HYDRONIC)															
CODE	AREA SERVED	MANUFACTURER/ MODEL NO.	DESIGN PRIMARY AIRFLOW			HEATING COIL						MAX RADIATED NC LEVEL	INLET (DIA.)	OUTLET SIZE	REMARKS
			COOLING MAX	HEATING MAX	DESIGN MIN	EAT (F)	LAT (F)	COIL (MBH)	ROWS	GPM	APD W.C.	WPD FT			
VAV - A2-01	SEE PLANS	PRICE SDV 6	365	300	300	53	90	9.3	1	1.0	0.09	0.65	30	6	12 X 8
VAV - A3-01	SEE PLANS	PRICE SDV 10	880	545	545	53	90	16.8	1	1.8	0.28	2.66	30	10	14 X 12.5
VAV - A3-02	SEE PLANS	PRICE SDV 6	320	200	200	53	90	6.2	1	0.7	0.07	0.35	30	6	12 X 8
VAV - A3-03	SEE PLANS	PRICE SDV 6	330	270	270	53	90	8.3	1	0.9	0.07	0.54	30	6	12 X 8
VAV - A3-04	SEE PLANS	PRICE SDV 6	250	155	155	53	90	4.8	1	0.5	0.05	0.19	30	6	12 X 8
VAV - A3-05	SEE PLANS	PRICE SDV 6	280	175	175	53	90	5.4	1	0.6	0.06	0.26	30	6	12 X 8
VAV - A3-06	SEE PLANS	PRICE SDV 8	500	255	255	53	90	7.9	1	0.8	0.15	0.44	30	8	12 X 10
VAV - A3-07	SEE PLANS	PRICE SDV 6	180	220	180	53	90	6.8	1	0.7	0.04	0.35	30	6	12 X 8
VAV - A4-01	SEE PLANS	PRICE SDV 12	1330	685	685	53	90	21.2	1	2.3	0.31	0.67	30	12	16 X 15
VAV - A4-02	SEE PLANS	PRICE SDV 12	1220	420	420	53	90	13	1	1.4	0.26	0.28	30	12	16 X 15
VAV - A4-03	SEE PLANS	PRICE SDV 6	225	120	120	53	90	3.7	1	0.4	0.04	0.03	30	6	12 X 8
VAV - A4-04	SEE PLANS	PRICE SDV 6	300	230	230	53	90	7.1	1	0.8	0.06	0.44	30	6	12 X 8
VAV - A4-05	SEE PLANS	PRICE SDV 6	285	275	275	53	90	8.5	1	0.9	0.06	0.54	30	6	12 X 8
VAV - A4-06	BYPASS	PRICE SDV 14	1790	1790	430	55	85	44.8	1	4.8	0.18	4.03	30	14	20 X 17.5
A															

GENERAL NOTES

- EWI = 150F. LWT=130°F. .30% PROPYLENE GLYCOL.
- PRIMARY AIR: 53° F, 1.0' W.C. INLET STATIC PRESSURE. 0.25" W.C. UNIT DOWNSTREAM STATIC PRESSURE UNLESS NOTED OTHERWISE.
- MAXIMUM NC LEVELS ARE RADIATED SOUND DATA BASED ON THE MAXIMUM COOLING CFM LISTED.
- CONTROLS SHALL BE BY MANUFACTURER OR BY TEMPERATURE CONTROL CONTRACTOR AND MOUNTED AT THE FACTORY. SEE SPECIFICATIONS. TEMPERATURE CONTROL CONTRACTOR TO PROVIDE 2-WAY CONTROL VALVE PACKAGE UNLESS NOTED OTHERWISE.
- MOUNT WITH 3 STRAIGHT DUCT DIAMETERS UPSTREAM OF THE BOX.

REMARK NOTES

A. REVERSE ACTING BYPASS VAV

[illegible]

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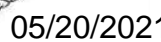
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△ Date	Description
- 2021.05.21	BP4D - GONDOLA SQUARE INTERIORS BLDG. A, C AND F - ISSUE FOR PERMIT AND CONSTRUCTION

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[illegible]

MECHANICAL SCHEDULES

Scale

NOT TO SCALE

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