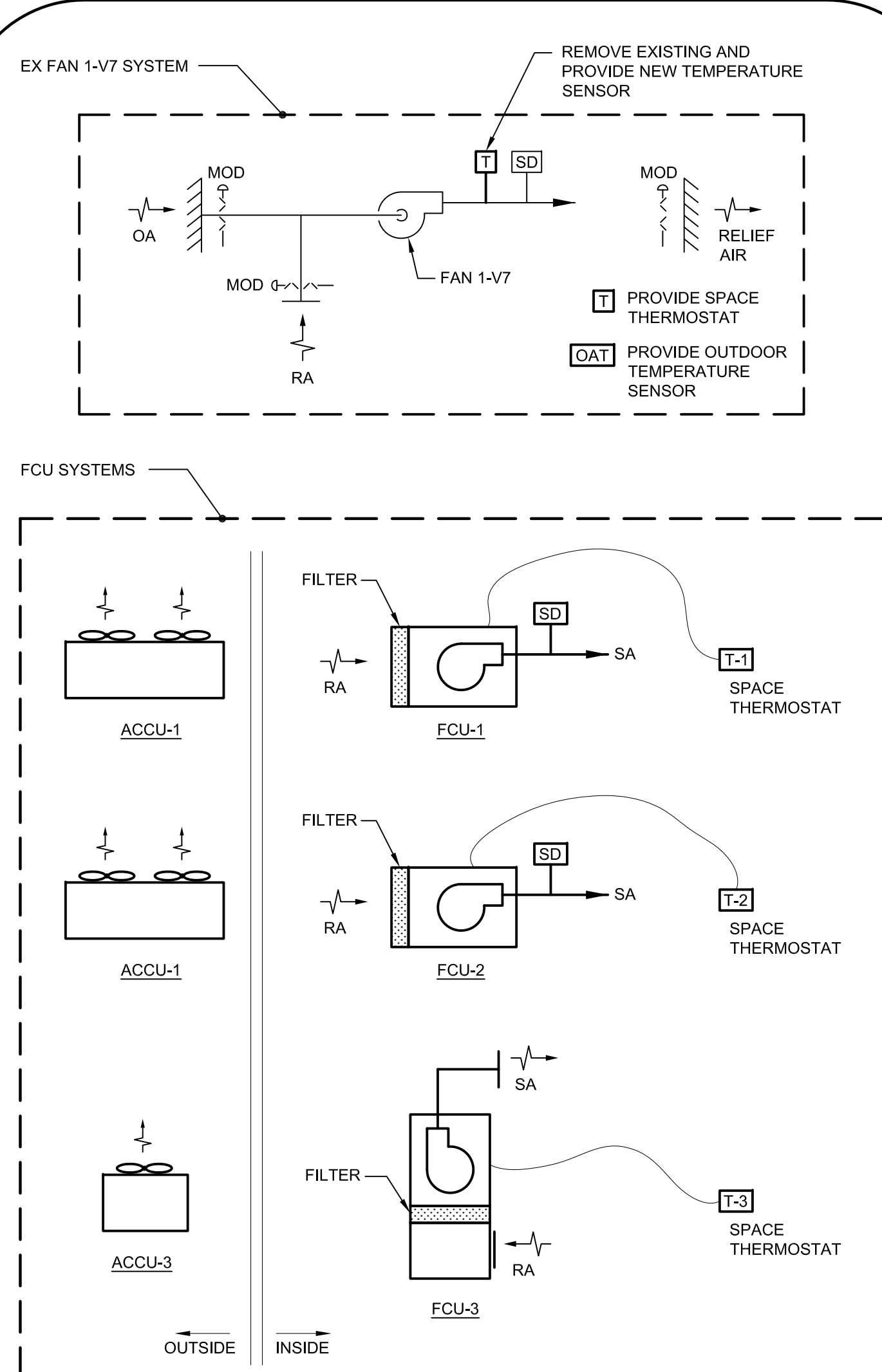
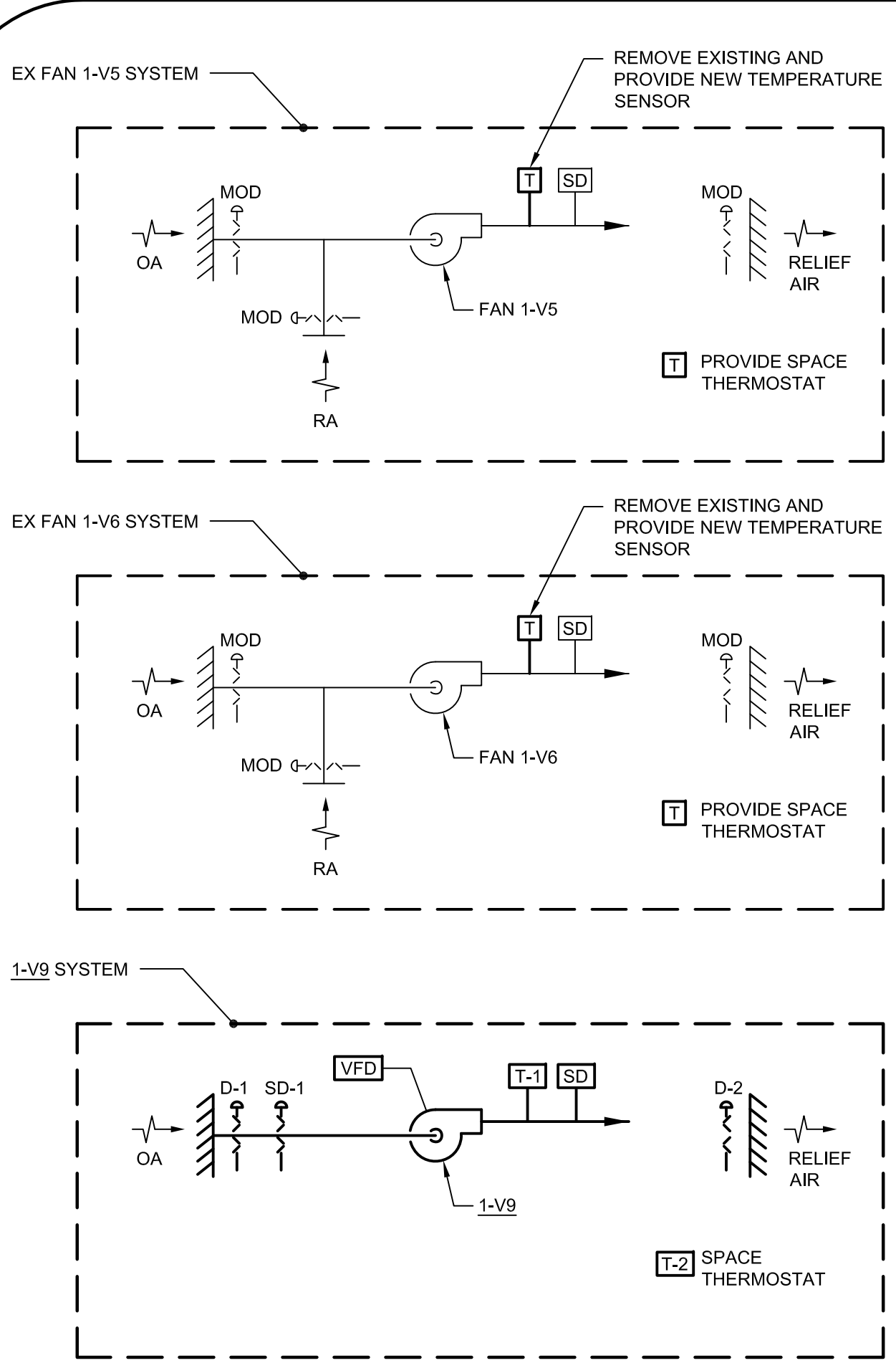


A three inches = one foot
B one and one-half inches = one foot
C one inch = one foot
D three-quarters inch = one foot
E one-half inch = one foot
F three-eighths inch = one foot
G one-quarter inch = one foot
H one-eighth inch = one foot



SOUTH MECHANICAL PENTHOUSE COOLING CONTROL

1. **SYSTEM CONTROL:**
- 1.1. MODIFY EXISTING VENTILATION FAN SYSTEM 1-V7 SUCH THAT IT IS LOCKED OUT (DE-ENERGIZED WITH OA DAMPER CLOSED) WHEN OUTDOOR TEMPERATURE SENSOR, OAT, IS ABOVE 75 DEG F (ADJUSTABLE). VENTILATION SYSTEM 1-V7 SHALL CONTINUE TO OPERATE UNDER EXISTING CONTROLS WHEN OAT IS BELOW 75 DEG F.
- 1.2. FAN COIL UNITS SHALL BE ENABLED / DISABLED THROUGH THE ECC. FCUs SHALL BE NORMALLY ENABLED.
- 1.3. DX FAN COIL UNIT (FCU-1, FCU-2 OR FCU-3) AND ASSOCIATED AIR COOLED CONDENSING UNIT (ACCU-1, ACCU-2 OR ACCU-3) SHALL OPERATE UNDER PACKAGED CONTROLS TO MAINTAIN SPACE TEMPERATURE SETPOINT (80 DEG F, ADJUSTABLE), AS SENSED BY THE ASSOCIATED THERMOSTAT (T-1, T-2 OR T-3).
- 1.4. ON A FALL IN SPACE TEMPERATURE BELOW SETPOINT, FCU SHALL BE DE-ENERGIZED.
2. **SAFETIES:**
- 2.1. SMOKE DETECTOR SHALL BE INTERLOCKED WITH FCU SUCH THAT IF SMOKE IS SENSED FCU IS DE-ENERGIZED. SMOKE DETECTOR SHALL BE HARDWIRED TO FCU IN ACCORDANCE WITH ATC GENERAL NOTES.
3. **MONITORING AND ALARMS:**
- 3.1. IN ADDITION TO EXISTING MONITORING AND ALARMS FOR FAN SYSTEM 1-V7, ECC SHALL PROVIDE COMPLETE MONITORING AND ALARMS FOR FCU SYSTEMS IN ACCORDANCE WITH THE FOLLOWING:
- OUTSIDE AIR TEMPERATURE, OAT
 - FCU ENABLE / DISABLE [TYP OF 3]
 - FCU STATUS (OPERATING / NOT OPERATING) [TYP OF 3]
 - SPACE TEMPERATURE, T-1 - SETPOINT
 - SPACE TEMPERATURE, T-1 - ACTUAL
 - SPACE TEMPERATURE, T-2 - SETPOINT
 - SPACE TEMPERATURE, T-2 - ACTUAL
 - SPACE TEMPERATURE, T-3 - SETPOINT
 - SPACE TEMPERATURE, T-3 - ACTUAL
 - SPACE TEMPERATURE ASSOCIATED WITH FAN 1-V7 - SETPOINT
 - SPACE TEMPERATURE ASSOCIATED WITH FAN 1-V7 - ACTUAL
 - DISCHARGE AIR TEMPERATURE ASSOCIATED WITH FAN 1-V7 - SETPOINT
 - DISCHARGE AIR TEMPERATURE ASSOCIATED WITH FAN 1-V7 - ACTUAL
 - SMOKE DETECTOR, SD (ALARM ONLY) [TYP OF 3]
- ECC SHALL ALARM WHEN ANY POINT'S ACTUAL STATUS DOES NOT MEET COMMAND STATUS AFTER 30 SECONDS (EXCEPT ALARM ON ANY SPACE TEMPERATURE GREATER THAN 90 DEG F).



NORTH MECHANICAL PENTHOUSE VENTILATION CONTROL

1. **SYSTEM CONTROL:**
- 1.1. EXISTING VENTILATION FAN SYSTEMS 1-V5 AND 1-V6 SHALL BE PROVIDED WITH NEW CONTROLS AS INDICATED AND SHALL BE CONNECTED TO THE EXISTING ECC.
- 1.2. SMOKE DAMPER SD-1 SHALL BE NORMALLY OPEN.
- 1.3. ON A RISE IN SPACE TEMPERATURE ABOVE SETPOINT (80 DEG F, ADJUSTABLE), AS SENSED BY REVERSE ACTING THERMOSTAT T-1, THE FOLLOWING SHALL OCCUR:
- 1.3.1. OA DAMPER D-1 AND RELIEF AIR DAMPER D-2 SHALL OPEN.
- 1.3.2. ONCE DAMPERS ARE PROVED OPEN VIA END SWITCH, FAN 1-V9 SHALL BE ENERGIZED THRU THE VFD. VFD SHALL MODULATE ON A P-I-D LOOP IN RESPONSE TO REVERSE ACTING THERMOSTAT T-1 TO MAINTAIN SETPOINT (SEE ABOVE).
- 1.4. ON A FALL IN SPACE TEMPERATURE BELOW SETPOINT, FAN 1-V9 SHALL BE DE-ENERGIZED AND DAMPERS D-1 AND D-2 SHALL BE CLOSED.
2. **SAFETIES:**
- 2.1. SMOKE DETECTOR SHALL BE INTERLOCKED WITH SMOKE DAMPER SD-1 AND FAN 1-V9 SUCH THAT IF SMOKE IS SENSED SMOKE DAMPER SD-1 SHALL CLOSE AND FAN 1-V9 SHALL DE-ENERGIZE. SMOKE DETECTOR SHALL BE HARDWIRED TO FAN 1-V9 IN ACCORDANCE WITH ATC GENERAL NOTES. SMOKE DAMPER SD-1 SHALL BE OPEN AT ALL TIMES UNLESS ACTIVATED BY SMOKE DETECTOR.
3. **MONITORING AND ALARMS:**
- 3.1. IN ADDITION TO EXISTING MONITORING AND ALARMS FOR FAN SYSTEMS 1-V5 AND 1-V6, ECC SHALL PROVIDE COMPLETE MONITORING AND ALARMS FOR FAN SYSTEM 1-V9 IN ACCORDANCE WITH THE FOLLOWING:
- OA DAMPER POSITION - COMMAND
 - OA DAMPER POSITION - ACTUAL (VIA END SWITCHES)
 - RELIEF AIR DAMPER POSITION - COMMAND
 - RELIEF AIR DAMPER POSITION - ACTUAL (VIA END SWITCHES)
 - 1-V9 FAN STATUS - COMMAND (ON / OFF)
 - 1-V9 FAN STATUS - ACTUAL (ON / OFF)
 - VFD STATUS - COMMAND (HZ OR %)
 - VFD STATUS - ACTUAL (HZ OR %)
 - DISCHARGE AIR TEMPERATURE, T-1 (MONITORING ONLY)
 - SPACE TEMPERATURE, T-2 - SETPOINT
 - SPACE TEMPERATURE, T-2 - ACTUAL
 - SMOKE DETECTOR, SD (ALARM ONLY)
 - SPACE TEMPERATURE ASSOCIATED WITH FAN 1-V5 - SETPOINT
 - SPACE TEMPERATURE ASSOCIATED WITH FAN 1-V5 - ACTUAL
 - DISCHARGE AIR TEMPERATURE ASSOCIATED WITH FAN 1-V5 - SETPOINT
 - DISCHARGE AIR TEMPERATURE ASSOCIATED WITH FAN 1-V5 - ACTUAL
 - SPACE TEMPERATURE ASSOCIATED WITH FAN 1-V6 - SETPOINT
 - SPACE TEMPERATURE ASSOCIATED WITH FAN 1-V6 - ACTUAL
 - DISCHARGE AIR TEMPERATURE ASSOCIATED WITH FAN 1-V6 - SETPOINT
 - DISCHARGE AIR TEMPERATURE ASSOCIATED WITH FAN 1-V6 - ACTUAL
- ECC SHALL ALARM WHEN ANY POINT'S ACTUAL STATUS DOES NOT MEET COMMAND STATUS AFTER 30 SECONDS (EXCEPT SPACE TEMPERATURE T-2).

ATC GENERAL NOTES

1. THE ATC CONTRACTOR SHALL FURNISH AND INSTALL ALL ELECTRICAL WIRING AND CONDUIT FROM POWER SOURCE, INCLUDING TERMINATION TO ALL REQUIRED ATC RELATED POWER CONNECTIONS INCLUDING, BUT NOT LIMITED TO, DDC CONTROLLERS, SENSORS, AND DAMPER ACTUATORS (INCLUDING SMOKE DAMPERS), ATC PANELS, ETC. THE ATC CONTRACTOR SHALL BE WHOLLY RESPONSIBLE FOR ALL POWER REQUIREMENTS NECESSARY FOR A COMPLETE INSTALLATION FROM THE POWER SOURCE TO ALL ATC RELATED CONNECTIONS.
2. THE ATC CONTRACTOR SHALL PROVIDE ALL POINTS REQUIRED TO ACCOMPLISH THE CONTROL SEQUENCES INDICATED ON THE DRAWINGS AND IN THE SPECIFICATIONS. ALL POINTS SHALL BE TIED INTO THE ENGINEERING CONTROL CENTER (ECC). IN ADDITION, THE ATC CONTRACTOR SHALL PROVIDE ALL POINTS REQUIRED TO CONTROL, OPERATE AND MONITOR ALL EQUIPMENT AND DEVICES (IE, FANS, FAN COIL UNITS, DAMPERS, SENSORS, ETC.) INDICATED THROUGHOUT THE CONTRACT DOCUMENTS.
3. PROVIDE EQUIPMENT STATUS FOR ALL MECHANICAL EQUIPMENT. EQUIPMENT FAILURES SHALL BE ALARMED AT THE ECC. PROVIDE END SWITCHES FOR ALL MOTOR OPERATED DAMPERS. END SWITCHES SHALL BE INTERFACED WITH THE ECC.
4. ALL SAFETIES FOR AIR HANDLING EQUIPMENT (SMOKE DETECTORS, SMOKE DAMPERS) SHALL BE HARDWIRED TO THE FAN STARTER.
5. PROVIDE CURRENT SENSING RELAYS FOR ALL MECHANICAL EQUIPMENT AS REQUIRED TO PROVIDE EQUIPMENT STATUS. EQUIPMENT STATUS SHALL BE INDICATED AT THE ECC.
6. ALL NEW CONTROLS SHALL FULLY INTEGRATE INTO THE EXISTING JOHNSON 'METASYS' ENGINEERING CONTROL CENTER.
7. PROVIDE GRAPHICAL REPRESENTATION FOR ALL EXISTING AND NEW SYSTEMS, SERVING THE PENTHOUSES, THROUGH THE EXISTING ECC.

MECHANICAL ABBREVIATIONS

AMPS	A	FACE VELOCITY	FV
AIR CHANGES / HOUR	AC / HR	GALLON(S)	GAL
AIR COOLED CONDENSING UNIT	ACCU	GALLONS PER MINUTE	GPM
AIR FOIL	AF	HEIGHT	H
ABOVE FINISHED FLOOR	AFF	HORSEPOWER	HP
AIR HANDLING UNIT	AHU	HEAT EXCHANGER	HX
AIR PRESSURE DROP	APD	KILOWATT	KW
ARCHITECTURAL	ARCH	LENGTH	L
AUTOMATIC TEMPERATURE CONTROLS	ATC	LEAVING AIR TEMPERATURE	LAT
BUILDING AUTOMATION SYSTEM	BAS	POUNDS	LBS
BACK-FLOW PREVENTER	BFP	LEAVING WATER TEMPERATURE	LWT
BRAKE HORSEPOWER	BHP	MAXIMUM	MAX
BACKWARD INCLINED	BI	THOUSAND BRITISH THERMAL UNITS PER HOUR	MBH
BRITISH THERMAL UNIT	BTU	MINIMUM CIRCUIT AMPACITY	MCA
BRITISH THERMAL UNITS PER HOUR	BTUH	MECHANICAL EQUIPMENT ROOM	MER
CAPACITY	CAP	MAXIMUM FUSE SIZE	MFS
CUBIC FEET PER MINUTE	CFM	MINIMUM	MIN
CONDENSER WATER SUPPLY	CS	MAXIMUM OVERCURRENT PROTECTION	MOP
CONDENSER WATER RETURN	CR	MEDIUM PRESSURE STEAM	MPS
CHILLED WATER SUPPLY	CWS	NORMALLY CLOSED	NC
CHILLED WATER RETURN	CWR	NOT IN CONTRACT	NIC
CONNECT TO EXISTING	CX	NORMALLY OPEN / NUMBER	NO
CONTRACTING OFFICER'S TECHNICAL REPRESENTATIVE	COTR	OPEN END DUCT	OED
DRY BULB	DB	PUMPED DISCHARGE	PD
DIFFERENTIAL BYPASS VALVE	DBV	QUANTITY	QTY
DESIGNATION	DESIG	RETURN AIR	RA
DIAMETER	DIA	RELATIVE HUMIDITY	RH
DOWN	DN	REDUCED PRESSURE BACK-FLOW PREVENTER	RPBFP
DIFFERENTIAL PRESSURE SENSOR	DPS	REVOLUTIONS PER MINUTE	RPM
DRAWING(S)	DWG	SUPPLY AIR	SA
EXHAUST AIR	EA	SMOKE DAMPER	SD
ENTERING AIR TEMPERATURE	EAT	STATIC PRESSURE	SP
ENGINEERING CONTROL CENTER	ECC	TESTING AND BALANCING	TAB
ENERGY EFFICIENCY RATIO	EER	TOTAL STATIC PRESSURE	TSP
EXHAUST FAN	EF	TYPICAL	TYP
EXTERNAL STATIC PRESSURE	ESP	UNLESS OTHERWISE NOTED	UON
EXISTING TO REMAIN	ETR	VOLTS	V
ENTERING WATER TEMPERATURE	EWT	VARIABLE AIR VOLUME	VAV
FLEXIBLE CONNECTION / FORWARD CURVED	FC	VARIABLE FREQUENCY DRIVE	VFD
FAN COIL UNIT	FCU	WIDTH	W
FULL LOAD AMPS	FLA	WET BULB	WB
FEET PER MINUTE	FPM	WATER PRESSURE DROP	WPD
FEET	FT		

MECHANICAL LEGEND

PIPING ELBOW DOWN		OPEN ENDED DUCT	
PIPING ELBOW UP		FLEXIBLE DUCT AND EQUIPMENT CONNECTOR	
PIPE CONNECTION BOTTOM		NEW DUCTWORK	
PIPE CONNECTION TOP		DUCT TRANSITION ROUND TO RECTANGULAR	
FLOOR DRAIN		DUCT TRANSITION	
SUPPLY AIR DUCT UP (DASHED LINES FOR DOWN)		CHANGE IN DUCT ELEVATION (R-RISE, D-DROP)	
RETURN & EXHAUST AIR DUCT UP (DASHED LINES FOR DOWN)		DUCT SIZE (FIRST FIGURE IS SIDE SHOWN)	
OUTSIDE AIR DUCT UP (DASHED LINES FOR DOWN)		BALANCING DAMPER	
FLEXIBLE CONNECTION		MOTOR OPERATED DAMPER	
FLEXIBLE DUCT		SMOKE DETECTOR	
DOUBLE THICKNESS TURNING VANES		THERMOSTAT	
EXISTING DUCTWORK		CONNECT TO EXISTING	

MECHANICAL GENERAL NOTES

1. THE MECHANICAL CONTRACT DRAWINGS ARE DIAGRAMMATIC AND ARE INTENDED TO INDICATE SCOPE AND THE GENERAL ARRANGEMENT OF THE SYSTEMS, WHERE APPLICABLE THE FOLLOWING NOTES SHALL APPLY TO ALL MECHANICAL (HVAC AND PIPING) SYSTEMS.
2. THOUGH SOME DUCTWORK AND PIPING OFFSETS AND TRANSITIONS ARE INDICATED, IT IS NOT THE INTENT OF THE DRAWINGS TO SHOW ALL OFFSETS AND TRANSITIONS REQUIRED. THE CONTRACTOR SHALL FULLY COORDINATE THE MECHANICAL WORK WITHIN ITSELF AND WITH THE WORK OF ALL OTHER TRADES TO PROVIDE COMPLETE AND OPERABLE SYSTEMS WITHOUT INTERFERENCES.
3. PROVIDE APPROVED FIRE STOPPING MATERIAL AROUND ALL DUCTWORK AND PIPING PENETRATIONS THROUGH FIRE RATED FLOORS AND WALLS. REFER TO ARCHITECTURAL DRAWINGS FOR LOCATIONS OF FIRE RATED FLOORS AND WALLS. PROVIDE FIRE DAMPERS AT ALL DUCT PENETRATIONS THROUGH FLOORS AND FIRE RATED WALLS AND FIRE/SMOKE DAMPERS AT ALL PENETRATIONS THROUGH SHAFT ENCLOSURES.
4. SUPPORT ALL EQUIPMENT (IE, AHU'S, HEATERS, FANS, AIR TERMINAL UNITS, ETC.) FROM STRUCTURE WITH SPECIFIED VIBRATION ISOLATION.
5. ALL DUCT SIZES REFER TO INTERNAL FREE AREA.
6. ALL DUCTWORK SHALL BE CONSTRUCTED OF RIGID SHEET METAL UNLESS OTHERWISE NOTED.
7. DUCTWORK AND PIPING MAINS SHALL BE INSTALLED TO MAINTAIN ACCESS TO ALL NEW AND EXISTING EQUIPMENT.
8. REFER TO MECHANICAL DETAILS FOR TYPICAL EQUIPMENT CONNECTIONS.
9. PROVIDE CONDENSATE DRAIN PIPING FROM EACH AIR HANDLING UNIT TO NEAREST ROOF/FLOOR DRAIN. PROVIDE CLEAN OUT AT EACH ELBOW.
10. PATCH AND SEAL ALL REMAINING OPENINGS THROUGH FLOORS, WALLS, AND ROOF RESULTING FROM DEMOLITION OR NEW WORK WITH MATERIALS AND FINISHES TO MATCH EXISTING CONSTRUCTION AND FIRE RATING.
11. AS AN INTEGRAL PART OF THESE DOCUMENTS, THE CONTRACTOR SHALL REFER TO THE SPECIFICATIONS FOR ADDITIONAL INFORMATION.
12. CONTRACTOR SHALL VISIT THE SITE AND VERIFY EXISTING CONDITIONS PRIOR TO THE BEGINNING OF ANY WORK. FAILURE TO VISIT THE SITE SHALL IN NO WAY RELIEVE THE CONTRACTOR FROM ANY RESPONSIBILITY.
13. CONTRACTOR SHALL USE CARE WHEN PERFORMING SELECTIVE DEMOLITION. THE CONTRACTOR SHALL BE RESPONSIBLE FOR DAMAGE TO BUILDING FINISHES, EQUIPMENT, STRUCTURE, AND MECHANICAL/ELECTRICAL SYSTEMS AND EQUIPMENT. SHOULD ANY DAMAGE OCCUR THE CONTRACTOR SHALL RESTORE DAMAGED AREAS/ITEMS TO ORIGINAL CONDITION TO MEET THE VA COTR'S SATISFACTION.
14. CONTRACTOR SHALL NOTIFY AND COORDINATE WITH THE OWNER ANY UTILITY OUTAGES. VA COTR SHALL BE GIVEN A MINIMUM OF 72 HOURS NOTICE (THREE WORKING DAYS) FOR ANY OUTAGES.
15. HVAC SHALL BE MAINTAINED TO ALL AREAS OUTSIDE OF THE CURRENT PHASE OF THE RENOVATED AREA AT ALL TIMES. PROVIDE TEMPORARY CONNECTIONS AS REQUIRED TO COORDINATE OUTAGES WITH THE OWNER A MINIMUM OF 72 HOURS (THREE WORKING DAYS) IN ADVANCE.
16. CONTRACTOR SHALL FABRICATE DUCTWORK AND PLENUMS IN FIELD AS NECESSARY DUE TO SIZE LIMITATIONS IN ACCESS ROUTE TO WORK AREA.
17. CONTRACTOR, ALONG WITH TAB CONTRACTOR AND CONTROLS VENDOR, SHALL PERFORM FUNCTIONAL SITE ACCEPTANCE TESTING WHERE EACH PIECE OF NEW EQUIPMENT SHALL BE VERIFIED OPERATIONAL FOR ALL MODES OF OPERATION AS DESCRIBED IN CONTROL SEQUENCES. CONTRACTORS SHALL VERIFY THAT ALL ALARMS OPERATE AS EXPECTED THROUGH THE ECC. VA COTR SHALL BE GIVEN A MINIMUM OF 72 HOURS NOTICE (THREE WORKING DAYS) PRIOR TO FUNCTIONAL SITE ACCEPTANCE TESTING SO THAT VA COTR MAY WITNESS TESTING.
18. CONTRACTOR SHALL VIDEO TAPE EQUIPMENT AND MAINTENANCE OPERATION TRAINING SESSIONS.

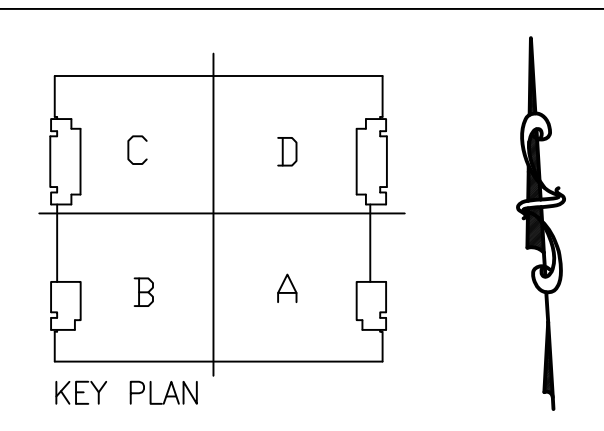
DRAWING LIST

DWG. No.	DESCRIPTION
	MECHANICAL DRAWINGS
M-0	MECHANICAL GENERAL NOTES, LEGEND, ABBREVIATIONS, AND CONTROLS
M-1	SEVENTH FLOOR PLAN - MECHANICAL - FLOOR PLAN
M-2	SEVENTH FLOOR PLAN - NORTH PENTHOUSE - MECHANICAL - NEW WORK
M-3	SEVENTH FLOOR PLAN - SOUTH PENTHOUSE - MECHANICAL - NEW WORK
M-4	MECHANICAL SECTIONS
M-5	MECHANICAL SCHEDULES AND DETAILS

Revisions	Date

Consultants

BURDETTE KOEHLER MURPHY & ASSOCIATES, INC.
1423 CLARKVIEW ROAD, SUITE 500
BALTIMORE, MARYLAND 21209
410.323.0600 - FAX 410.377.2543



Seal

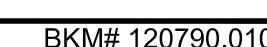
DERBY ENTERPRISES
1301 Enterprise Court, Suite 103-C1
Bel Air, Maryland 21014-1847
410.803.0009
fax 410.838.1603

Drawing Title MECHANICAL GENERAL NOTES, LEGEND, ABBREVIATIONS, AND CONTROLS
Approved: Associate Director of Operations
Approved: Medical Center Director

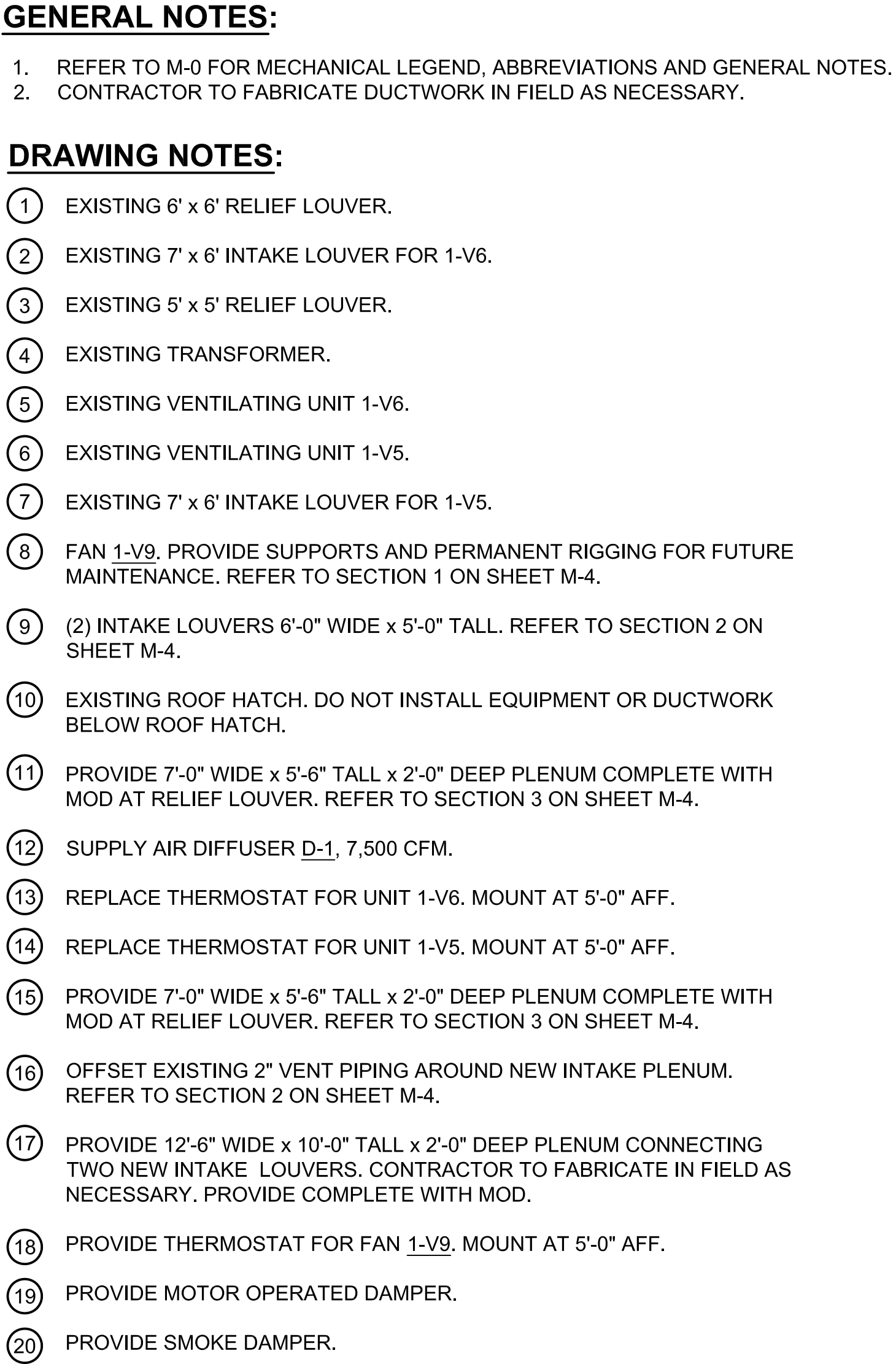
Project Title HVAC IMPROVEMENTS 7TH FLOOR
Building Number 1
Location BALTIMORE, MARYLAND

DELLC JOB NO. 121101D Date 03/29/13 Project No. 512-12-103 DRAWING NO. M-0 Dwg. 4 of 11

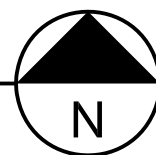







Location	BALTIMORE, MARYLAND
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SCALE: 1/8" = 1'-0"



MATCHLINE - REFER TO DRAWING M-3 FOR CONTINUATION.

		Consultants		<p>BURDETTE KOEHLER MURPHY & ASSOCIATES, INC. 1423 CLARKVIEW ROAD, SUITE 500 BALTIMORE, MARYLAND 21209 410.323.0600 — FAX: 410.377.2543</p>		 <p>KEY PLAN</p>		Seal		 <p>DERBY ENTERPRISES ARCHITECTURE PLANNING ENGINEERING</p> <p>1301 Enterprise Court, Suite 103—C1 410.803.0009 Bel Air, Maryland 21014—1847 fax 410.838.1603</p>		<p>Drawing Title SEVENTH FLOOR PLAN NORTH PENTHOUSE MECHANICAL NEW WORK</p>		<p>Project Title HVAC IMPROVEMENTS 7TH FLOOR</p>		<p>Date 03/29/13</p>		
								<p>Approved: Associate Director of Operations</p>		<p>Building Number 1</p>		<p>Checked MAF</p>		<p>Drawn CMD</p>		<p>Project No. 512-12-103</p>		
Revisions		Date								<p>Approved: Medical Center Director</p>		<p>Location BALTIMORE, MARYLAND</p>		<p>DRAWING NO. M-2</p>		<p>Dwg. 6 of 11</p>		



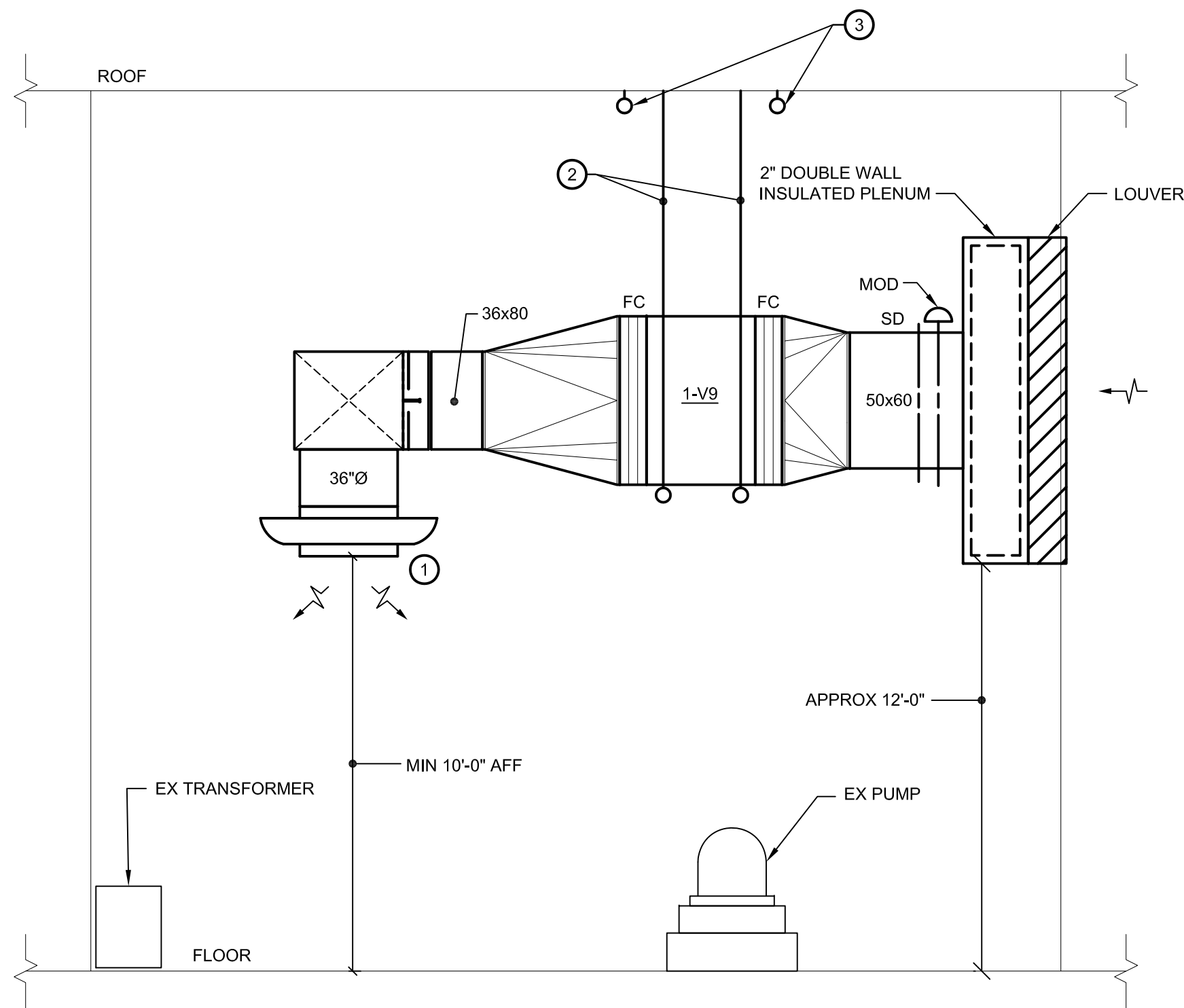
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				Project No. 512-12-103
ations	Building Number 1	Cheeked MAF	Drawn CMD	DRAWING NO. M-3
	Location BALTIMORE, MARYLAND			Dwg. 7 Of 11



DEPARTMENT OF
VETERANS AFFAIRS

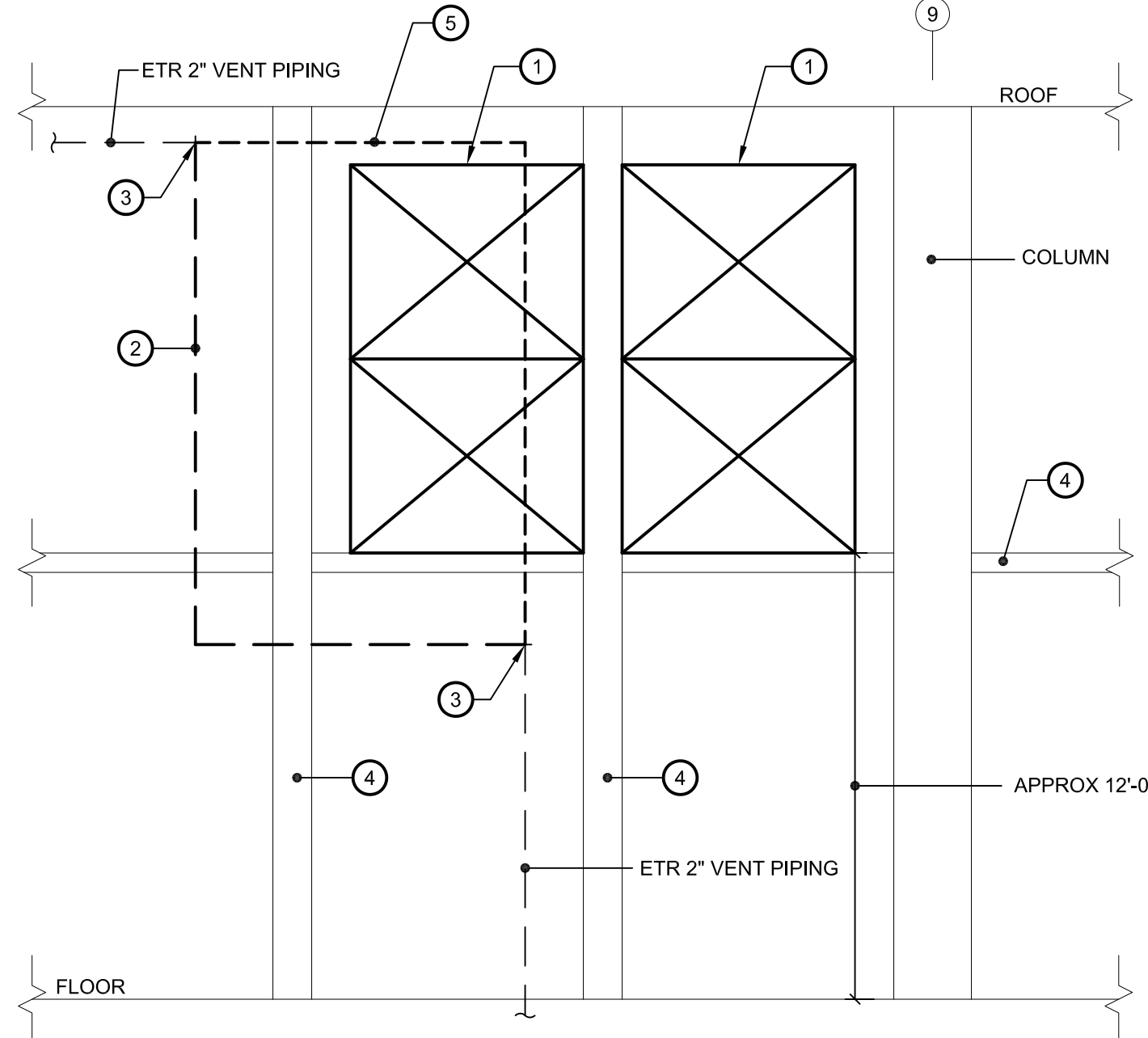
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three-eighths inch = one foot
one-eighth inch = one foot



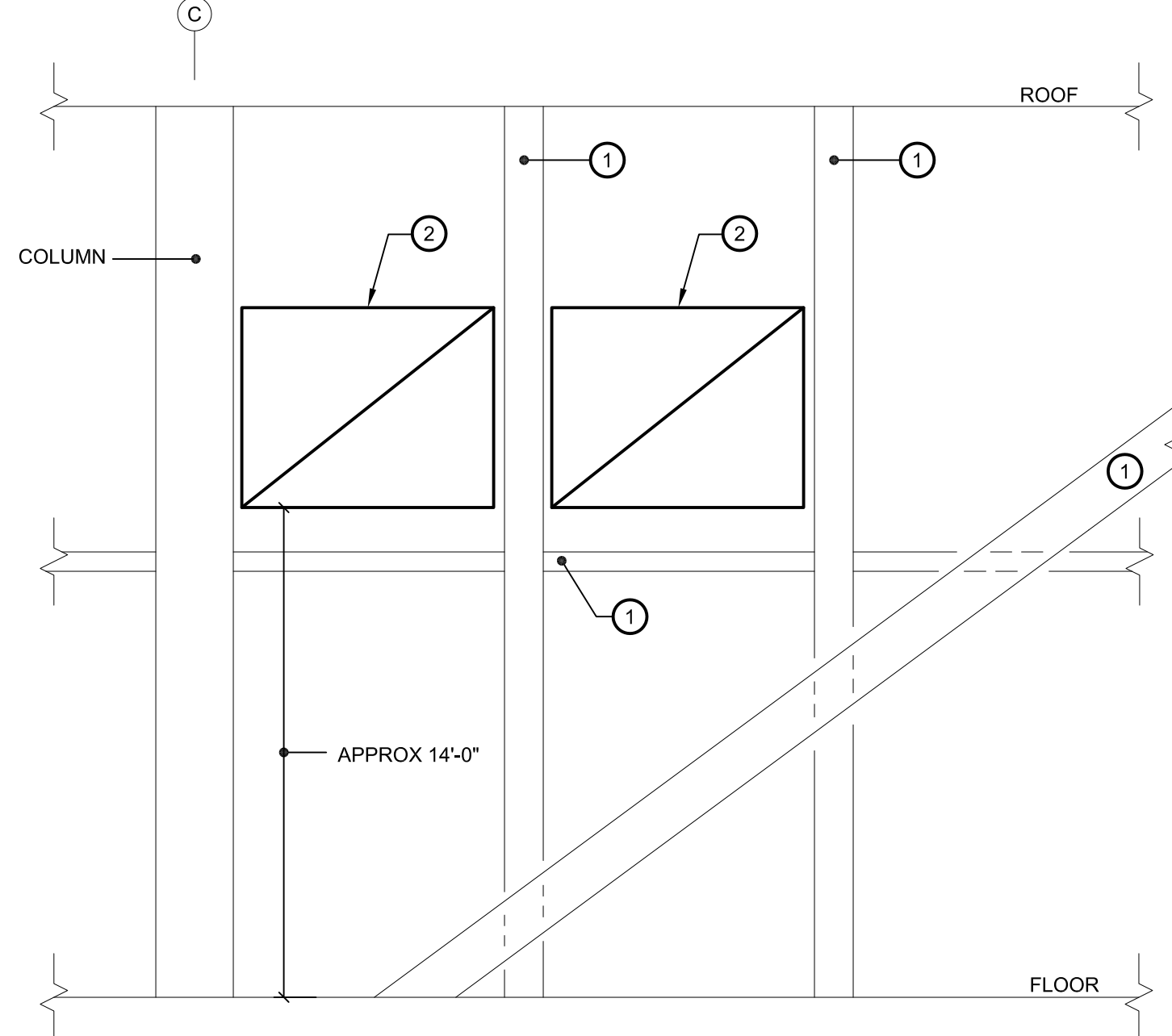
1 NORTH PENTHOUSE - NEW SA FAN
SCALE: 1/4" = 1'-0"

- 1 SUPPLY AIR DEVICE D-1.
- 2 SUPPORT 1x9 FROM STRUCTURE ABOVE.
- 3 PROVIDE PERMANENT RIGGING AND ALLOW EASE OF RAISING/LOWERING 1x9 FOR FUTURE MAINTENANCE.



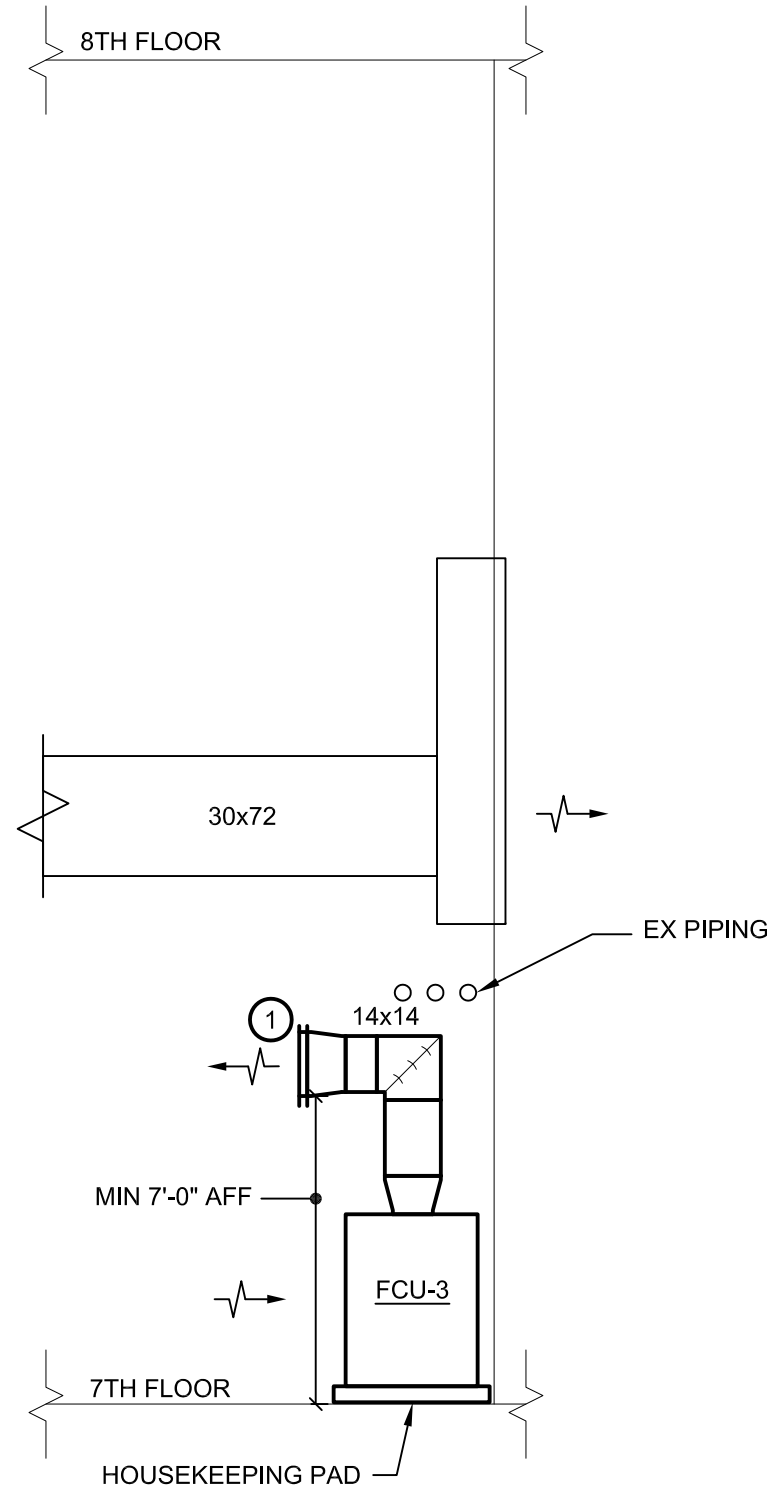
2 NORTH PENTHOUSE - NEW INTAKE LOUVERS
NO SCALE

- 1 PROVIDE (2) 6'-0" WIDE x 5'-0" TALL INTAKE LOUVERS. REFER TO ARCHITECTURAL DRAWINGS.
- 2 PROVIDE 2" VENT PIPING.
- 3 RE-ROUTE VENT PIPING AROUND NEW INTAKE LOUVER.
- 4 EXISTING STEEL.
- 5 REMOVE EXISTING 2" VENT PIPING WHERE IT CONFLICTS WITH LOUVERS AND PLENUM.



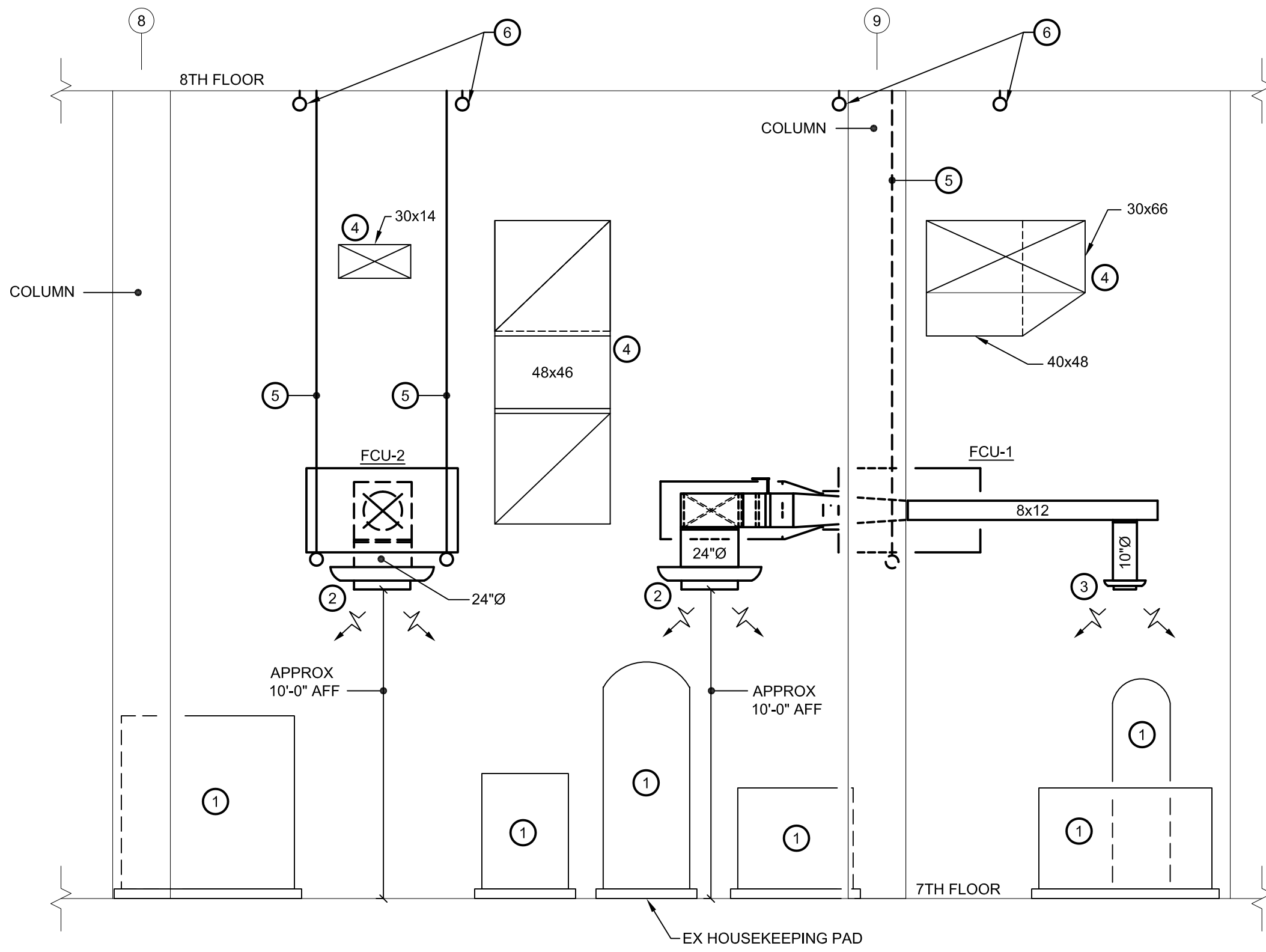
3 NORTH PENTHOUSE - NEW EXHAUST LOUVERS
NO SCALE

- 1 EXISTING STEEL.
- 2 PROVIDE 7'-0" WIDE x 5'-6" TALL EXHAUST LOUVER. REFER TO ARCHITECTURAL DRAWINGS.



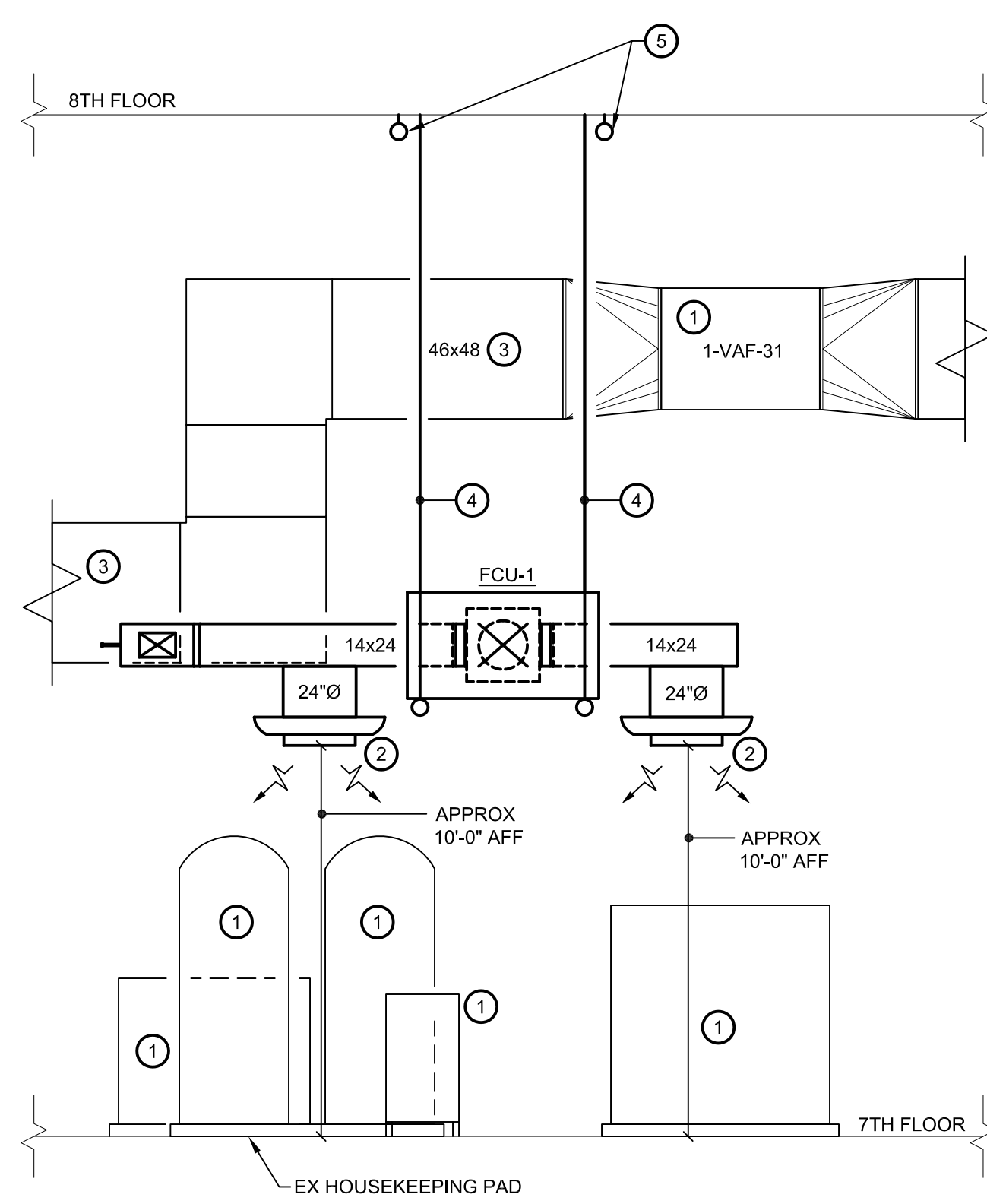
4 SOUTH PENTHOUSE - NEW VERTICAL FCU-3
SCALE: 1/4" = 1'-0"

- 1 SUPPLY AIR DEVICE D-4.



5 SOUTH PENTHOUSE - NEW HORIZONTAL FCU-1 & 2
SCALE: 1/4" = 1'-0"

- 1 EXISTING EQUIPMENT.
- 2 SUPPLY AIR DEVICE D-2.
- 3 SUPPLY AIR DEVICE D-3.
- 4 EXISTING DUCTWORK.
- 5 SUPPORT FCU FROM STRUCTURE ABOVE.
- 6 PROVIDE PERMANENT RIGGING TO RAISE/LOWER FCU FOR FUTURE MAINTENANCE.



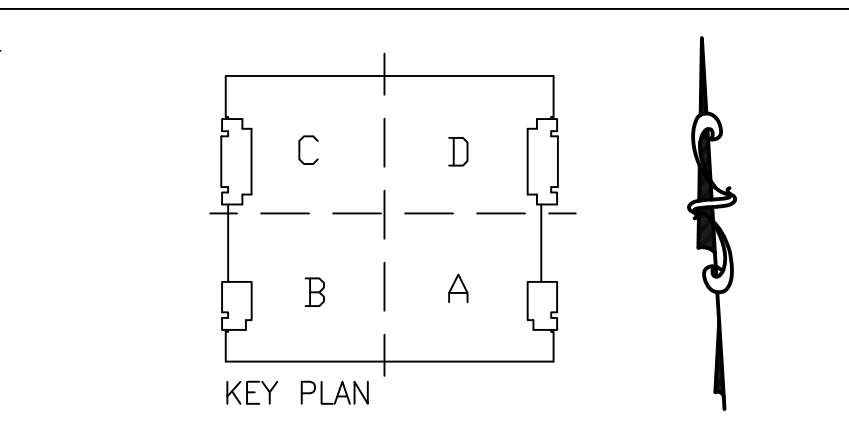
6 SOUTH PENTHOUSE - NEW HORIZONTAL FCU-1
SCALE: 1/4" = 1'-0"

- 1 EXISTING EQUIPMENT.
- 2 SUPPLY AIR DEVICE D-2.
- 3 EXISTING DUCTWORK.
- 4 SUPPORT FCU FROM STRUCTURE ABOVE.
- 5 PROVIDE PERMANENT RIGGING TO RAISE/LOWER FCU FOR FUTURE MAINTENANCE.

Revisions	Date

Consultants

BURDETTE KOEHLER MURPHY & ASSOCIATES, INC.
1423 CLARKVIEW ROAD, SUITE 500
BALTIMORE, MARYLAND 21209
410.323.0600 - FAX 410.377.2543



Seal

DERBY ENTERPRISES
1301 Enterprise Court, Suite 103-C1
Bel Air, Maryland 21014-1847
410.803.0009
fax 410.838.1603

Drawing Title
MECHANICAL SECTIONS

Approved: Associate Director of Operations

Approved: Medical Center Director

Project Title
HVAC IMPROVEMENTS
7TH FLOOR

Building Number
1

Location
BALTIMORE, MARYLAND

DELLC
JOB NO. 121101D
Date
03/29/13
Project No.
512-12-103
DRAWING NO.
M-4
Dwg. 8 Of 11

DEPARTMENT OF
VETERANS AFFAIRS

AIR DEVICE SCHEDULE								
DESIG	DUTY	SIZE (IN)	CFM RANGE	INLET/NECK SIZE (IN)	MAX SP	MAX NC	DESCRIPTION	MANUFACTURER / MODEL
①	SUPPLY	65	7500	36	0.10"	48	ADJUSTABLE HEAVY DUTY ROUND CEILING DIFFUSER	TITUS XC-310
②	SUPPLY	43	2100	24	0.10"	32	ADJUSTABLE HEAVY DUTY ROUND CEILING DIFFUSER	TITUS XC-310
③	SUPPLY	18	400	10	0.10"	30	ADJUSTABLE HEAVY DUTY ROUND CEILING DIFFUSER	TITUS XC-310
④	SUPPLY	16x16	1100	16x16	0.10"	30	SINGLE DEFLECTION - REGISTER 3/4" SPACING	TITUS 301 RL

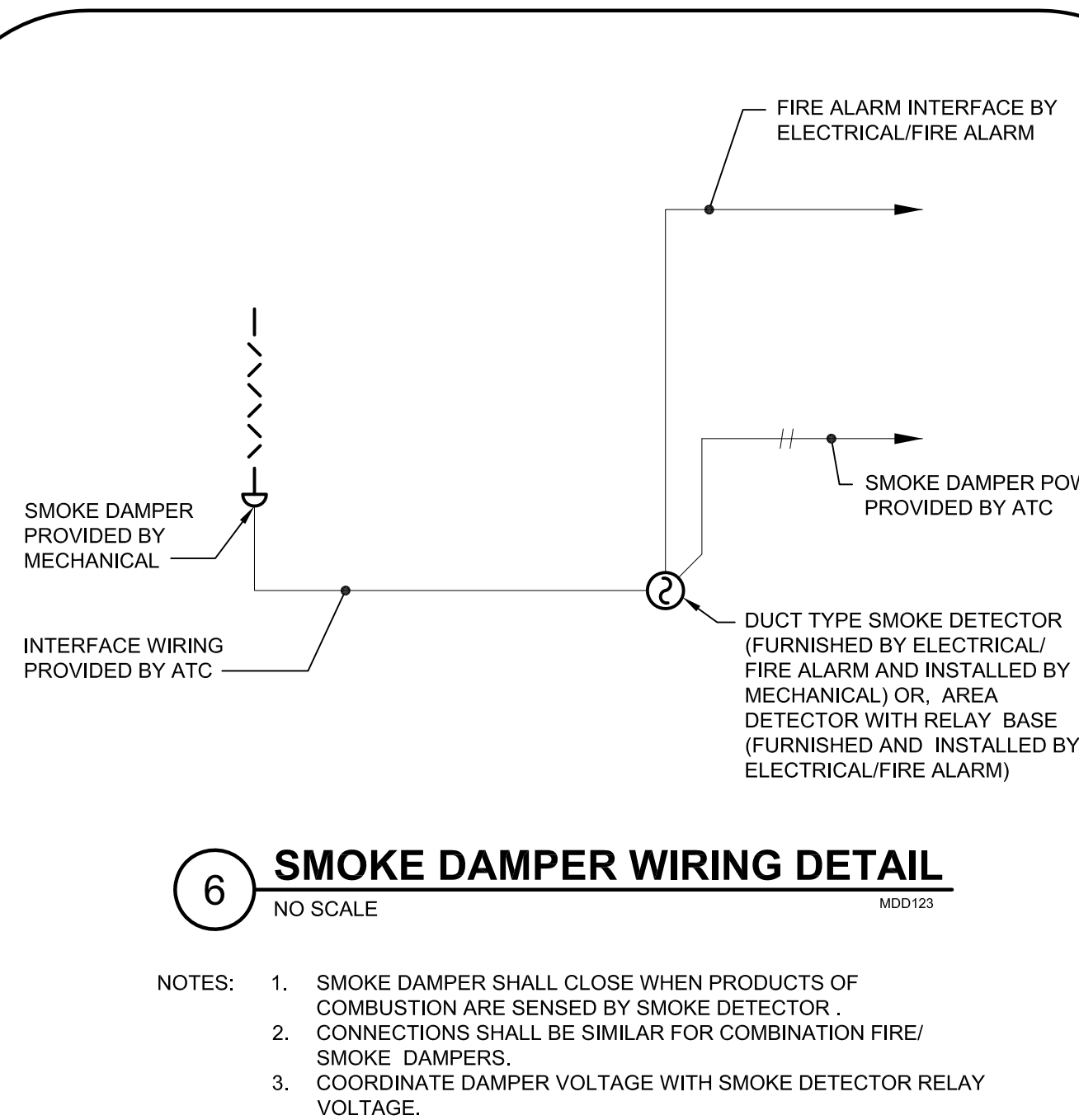
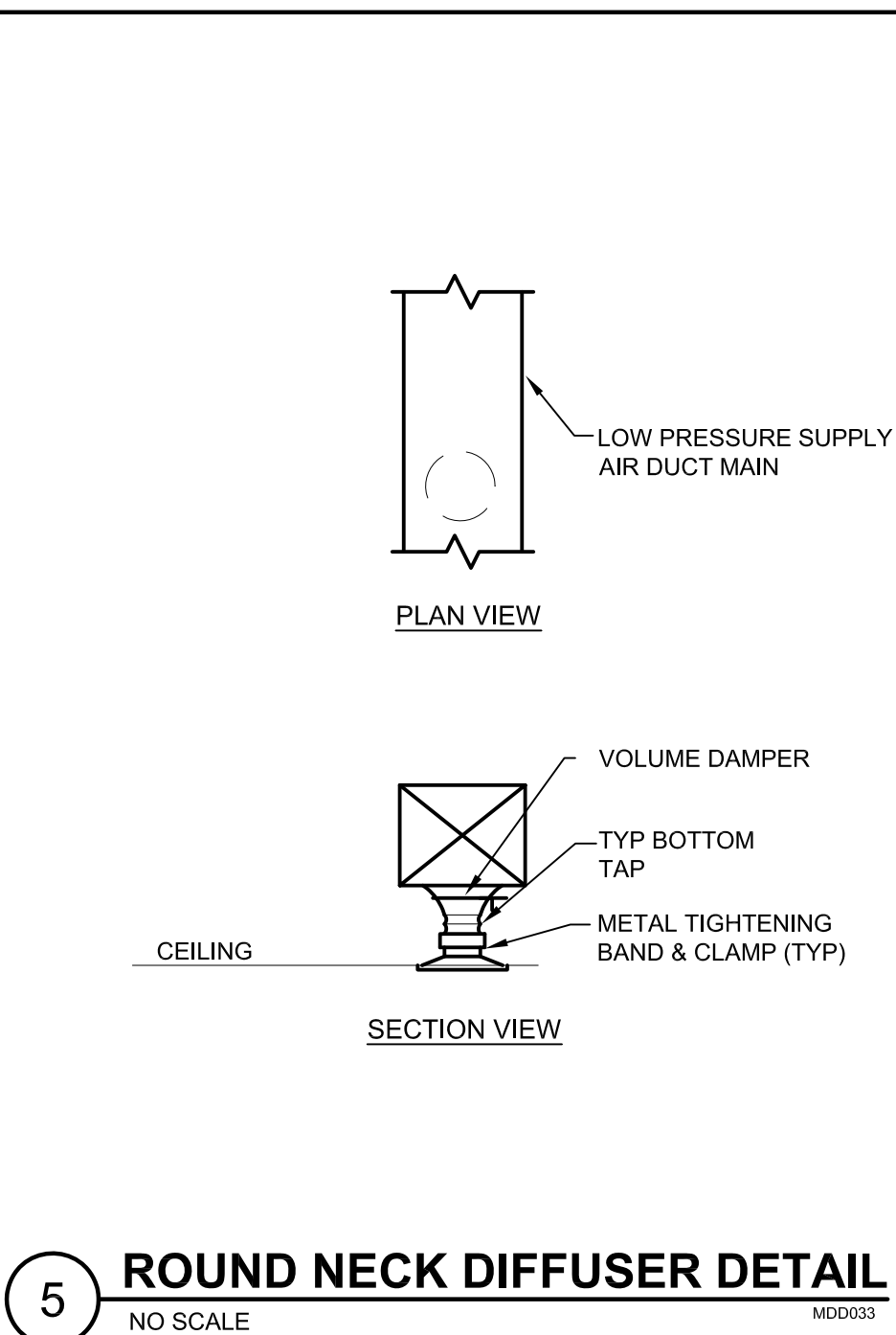
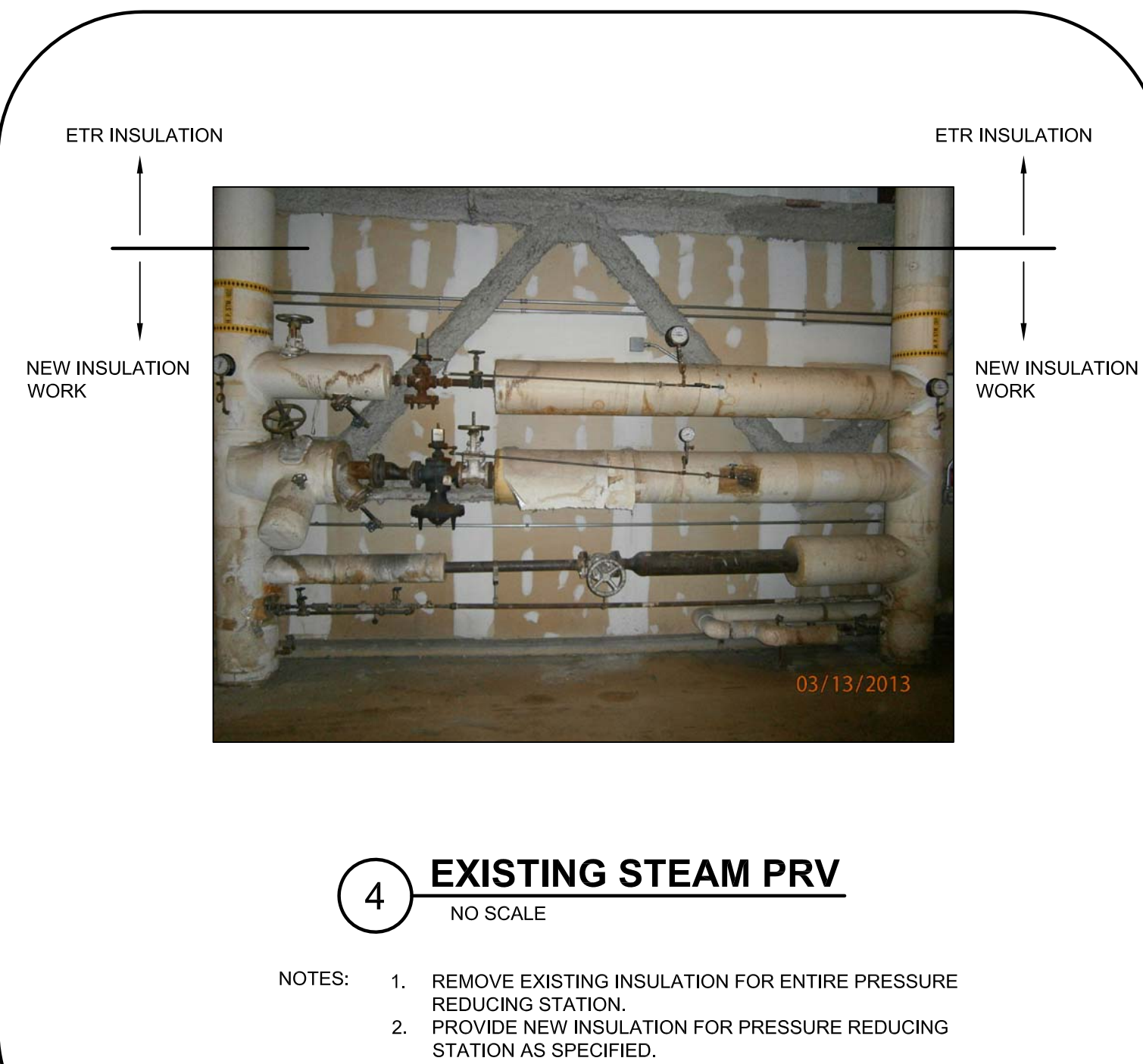
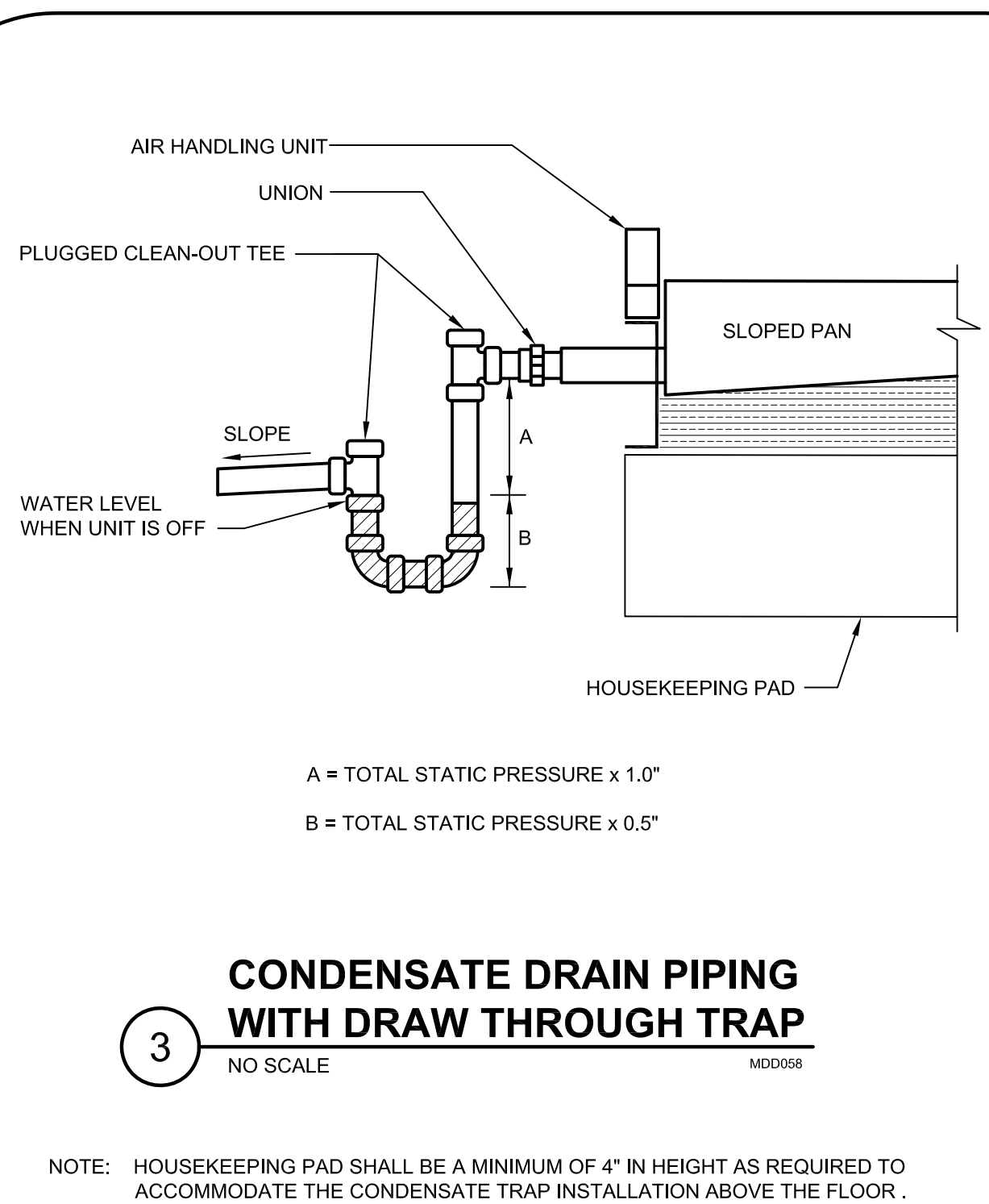
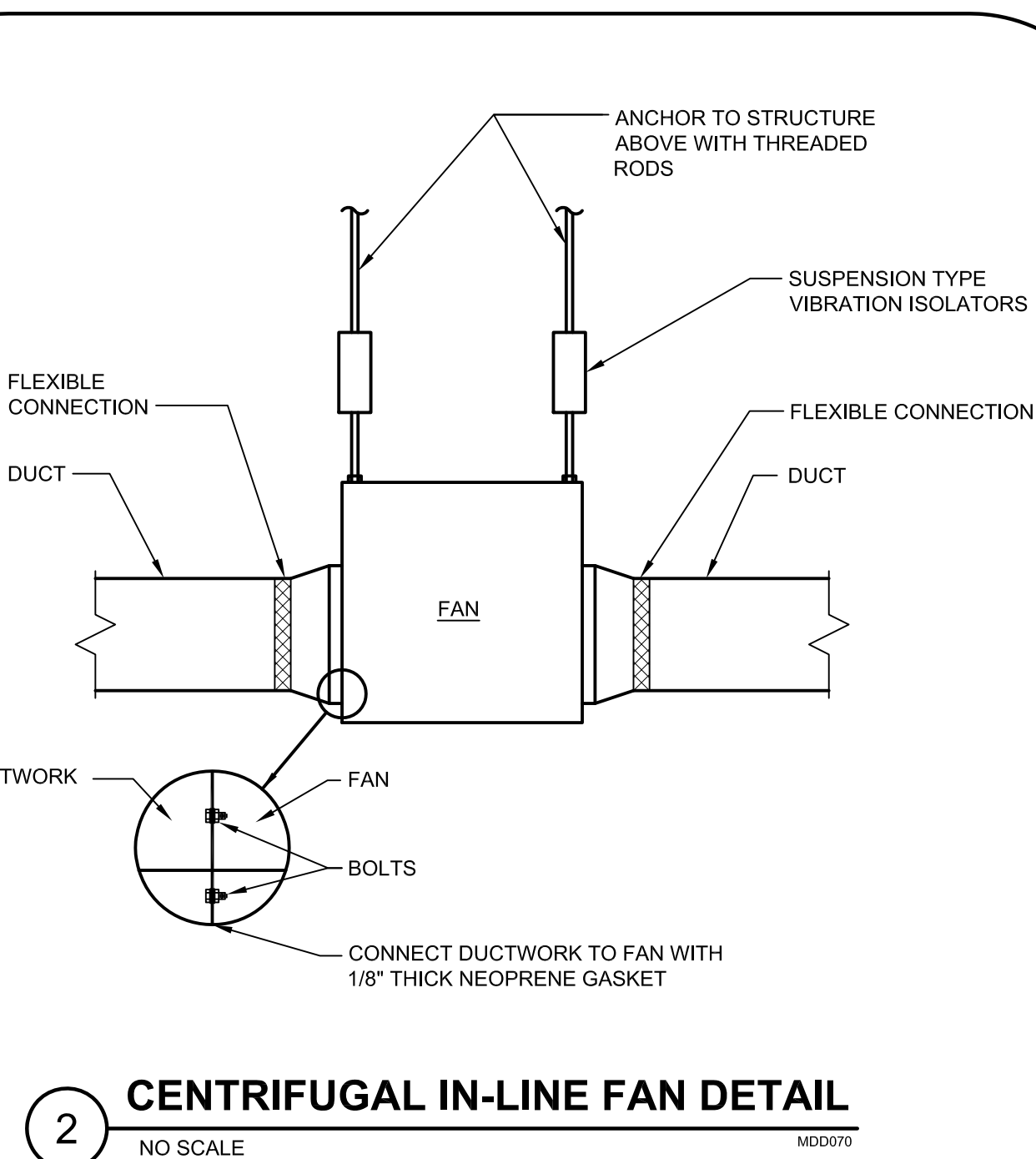
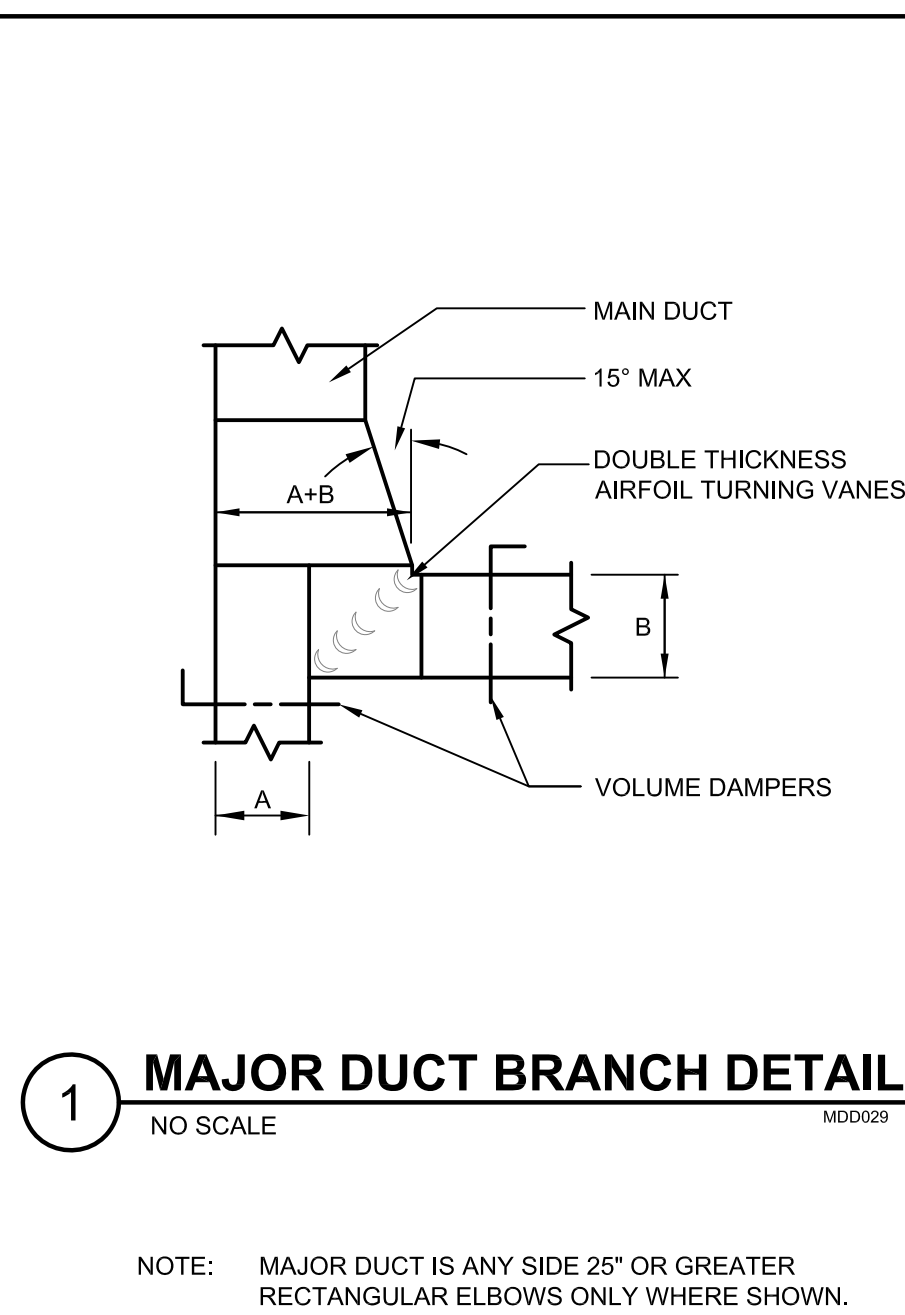
NOTE: MANUFACTURERS MAY PROVIDE ALUMINUM OR STEEL AIR DEVICES UNLESS OTHERWISE INDICATED.

DESIGN CONDITIONS SCHEDULE				
ROOM DESCRIPTION	SUMMER		WINTER	
	db (F)	% RH	db (F)	% RH
NORTH PENTHOUSE	95°	100 %	55°	0 %
SOUTH PENTHOUSE	85°	50 %	55°	0 %

FAN SCHEDULE															
FAN NO	LOCATION	AREA SERVED	CFM	ESP (IN)	MOTOR				RPM	MIN FAN DIA	WHEEL TYPE	CLASS	DRIVE TYPE	METHOD OF CONTROL	MANUFACTURER / MODEL
					HP	MAX BHP	VOLTS	PHASE							
1-V9	NORTH PH	NORTH PH	30,000	0.5	7.5	6.4	460	3	1725	61"	AF	I	BELT	VFD	GREENHECK / TBH-CA

SPLIT SYSTEM AIR CONDITIONING UNIT SCHEDULE																					
AREA SERVED	COOLING CAPACITY (TOTAL MBH)	INDOOR UNIT										OUTDOOR UNIT									
		DESIG	LOCATION	CFM	MOUNTING	FILTER EFFICIENCY	WEIGHT (LBS)	ELECTRICAL			MANUFACTURER / MODEL	DESIG	LOCATION	REFRIGERANT	WEIGHT (LBS)	ELECTRICAL			MANUFACTURER / MODEL	NOTES	
								HP	VOLTS	PHASE						MCA	MOP	VOLTS			PHASE
SOUTH PENTHOUSE	144	FCU-1	SOUTH PENTHOUSE	4,200	HORIZONTAL SUSPENDED	30%	600	5	480	3	McQUAY / LAH010A	ACCU-1	ROOF	R410A	650	27.0	35 A	480	3	McQUAY / RCS 12F	1, 2, 3, 4, 5
SOUTH PENTHOUSE	144	FCU-2	SOUTH PENTHOUSE	4,200	HORIZONTAL SUSPENDED	30%	600	5	480	3	McQUAY / LAH010A	ACCU-2	ROOF	R410A	650	27.0	35 A	480	3	McQUAY / RCS 12F	1, 2, 3, 4, 5
SOUTH PENTHOUSE	36	FCU-3	SOUTH PENTHOUSE	1,100	VERTICAL FLOOR MTD	30%	400	1	480	3	McQUAY / LAH003A	ACCU-3	ROOF	R410A	250	8.0	15 A	480	3	AAON / CB-B-036-3-F-1-D0H0A00	1, 2, 3, 4, 5

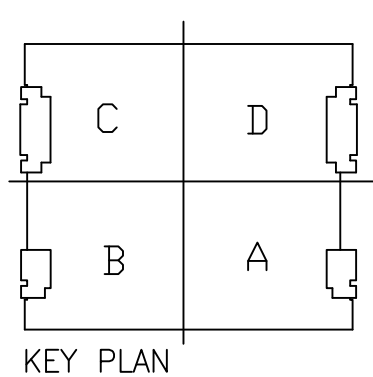
- NOTES:
1. PROVIDE DOUBLE SUCTION REFRIGERANT PIPING RISERS AND TRAPS AS RECOMMENDED BY MANUFACTURER. QUANTITY AND SIZES OF REFRIGERANT PIPING SHALL BE AS RECOMMENDED BY MANUFACTURER.
 2. PROVIDE SINGLE POINT POWER CONNECTIONS AT INDOOR UNIT AND OUTDOOR UNIT.
 3. INDOOR UNIT IS TOTAL RECIRCULATING - NO OUTDOOR AIR PROVIDED.
 4. CONTRACTOR SHALL PROVIDE CONDENSATE PUMP FOR INDOOR UNIT.
 5. OUTDOOR UNITS SHALL BE PROVIDED WITH LOW-AMBIENT OPERATION DOWN TO 0° F AMBIENT CONDITIONS.



Revisions	Date

Consultants

BURDETTE KOEHLER MURPHY & ASSOCIATES, INC.
1423 CLARKVIEW ROAD, SUITE 500
BALTIMORE, MARYLAND 21209
410.323.0600 - FAX 410.377.2543



Seal

DERBY ENTERPRISES
1301 Enterprise Court, Suite 103-C1 Bel Air, Maryland 21014-1847
410.803.0009 fax 410.838.1603

Drawing Title
MECHANICAL SCHEDULES AND DETAILS
Approved: Associate Director of Operations
Approved: Medical Center Director

Project Title
HVAC IMPROVEMENTS 7TH FLOOR
Building Number 1
Location BALTIMORE, MARYLAND
Checked MAF
Drawn CMD

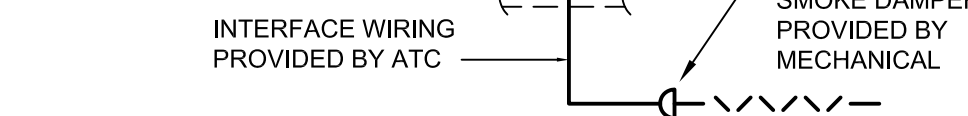
DELLC JOB NO. 121101D
Date 03/29/13
Project No. 512-12-103
DRAWING NO. M-5
Dwg. 9 of 11



 SMOKE DETECTOR, DUCT TYPE

W	WIRE
WP	WEATHERPROOF
XFMR	TRANSFORMER

3) COORDINATE DAMPER VOLTAGE WITH SMOKE DETECTOR RELAY VOLTAGE.



DEPARTMENT OF
VETERANS AFFAIRS

Dwg. 10 Of 11

	410.803.0009
px	410.838.1603

Dwg. 10 Of 11

three inches = one foot
one and one-half inches = one foot
one inch = one foot
three-quarters inch = one foot
one-half inch = one foot
three-eighths inch = one foot
one-quarter inch = one foot
one-eighth inch = one foot



1 SEVENTH FLOOR PLAN - ELECTRICAL - NEW WORK
SCALE: 1/16" = 1'-0"



0 8' 16' 32' 48'
SCALE: 1/16"=1'-0"

				Consultants		BURDETTE KOEHLER MURPHY & ASSOCIATES, INC. 1423 CLARKVIEW ROAD, SUITE 500 BALTIMORE, MARYLAND 21209 410.323.0600 — FAX 410.377.2543		 KEY PLAN		Seal		 ARCHITECTURE PLANNING ENGINEERING DERBY ENTERPRISES 1301 Enterprise Court, Suite 103-C1 Bel Air, Maryland 21014-1847 410.803.0099 410.838.1603		Drawing Title SEVENTH FLOOR PLAN ELECTRICAL NEW WORK		Project Title HVAC IMPROVEMENTS 7TH FLOOR		Date 03/29/13		 DEPARTMENT OF VETERANS AFFAIRS	
								Approved: Associate Director of Operations		Building Number 1		Checked YR		Drawn IP		DRAWING NO. E-1					
Revisions		Date										Approved: Medical Center Director		Location BALTIMORE, MARYLAND		Dwg. 11 Of 11					

GENERAL NOTES:

- REFER TO DRAWING E-0 FOR ELECTRICAL LEGEND AND ABBREVIATIONS.
- PROVIDE CONNECTION OF ACCU UNITS LOCATED ON ROOF TO EXISTING LIGHTNING PROTECTION SYSTEM.

DRAWING NOTES:

- EXISTING 225A, 480/277V, 3Ø, 4W PANEL "7D-H" TO REMAIN.
- PROVIDE 25A, 480V, 3 POLE BRANCH CIRCUIT BREAKER IN EXISTING PANEL "7D-H". AIC RATING OF NEW BRANCH CIRCUIT BREAKER TO MATCH AIC RATING OF EXISTING BRANCH CIRCUIT BREAKERS.
- PROVIDE AND EXTEND NEW BRANCH CIRCUIT WIRING 3 #10 + 1 #10 GRD IN 3/4" CONDUIT TO NEW 25A, 3 POLE CIRCUIT BREAKER IN PANEL "7D-H".
- 3 #10 + 1 #10 GRD IN 3/4" CONDUIT.
- EXISTING 400A, 480/277V, 3Ø, 4W PANEL "7A-H" (2 SECTIONS) TO REMAIN.
- 30A, 600V, 3Ø NON-FUSED SAFETY SWITCH IN NEMA 1 ENCLOSURE.
- 30A, 600V, 3Ø NON-FUSED SAFETY SWITCH IN NEMA 3R ENCLOSURE.
- 60A, 600V, 3Ø NON-FUSED SAFETY SWITCH IN NEMA 3R ENCLOSURE.
- PROVIDE TWO (2) 20A, 480V, 3 POLE BRANCH CIRCUIT BREAKERS IN EXISTING PANEL "7A-H" FOR FCU-1 AND FCU-2. AIC RATING OF NEW CIRCUIT BREAKERS TO MATCH AIC RATING OF EXISTING CIRCUIT BREAKERS.
- PROVIDE AND EXTEND NEW BRANCH CIRCUIT WIRING 3 #12 + 1 #12 GRD IN 3/4" CONDUIT TO NEW 20A, 3 POLE CIRCUIT BREAKER IN PANEL "7A-H".
- PROVIDE TWO (2) 15A, 480V, 3P BRANCH CIRCUIT BREAKERS IN EXISTING PANEL "7A-H" FOR FCU-3 AND ACCU-3. AIC RATING OF NEW CIRCUIT BREAKERS TO MATCH AIC RATING OF EXISTING BRANCH CIRCUIT BREAKERS.
- PROVIDE AND EXTEND NEW BRANCH CIRCUIT WIRING 3 #12 + 1 #12 GRD IN 3/4" CONDUIT TO NEW 15A, 3 POLE CIRCUIT BREAKER IN PANEL "7A-H".
- PROVIDE TWO (2) 35A, 480V, 3 POLE BRANCH CIRCUIT BREAKERS IN EXISTING PANEL "7A-H" FOR ACCU-1 AND ACCU-2. AIC RATING OF NEW BRANCH CIRCUIT BREAKERS TO MATCH AIC RATING OF EXISTING BRANCH CIRCUIT BREAKERS.
- PROVIDE AND EXTEND NEW BRANCH CIRCUIT WIRING 3 #10 + 1 #10 GRD IN 3/4" CONDUIT TO NEW 35A, 3 POLE CIRCUIT BREAKER IN PANEL "7A-H".
- VARIABLE FREQUENCY DRIVE WITH INPUT CIRCUIT BREAKER AND BYPASS BY DIVISION 23. MOUNT VFD ON KINDORF SUPPORT, COORDINATE EXACT LOCATION IN FIELD.
- EXISTING 100A, 208/120V, 3Ø, 4W (2 SECTIONS) PANEL "7A-L" TO REMAIN.
- PROVIDE 20A, 120V, 1 POLE BRANCH CIRCUIT BREAKER IN EXISTING PANEL "7A-L" FOR CONDENSATE PUMPS. AIC RATING OF NEW CIRCUIT BREAKER TO MATCH AIC RATING OF EXISTING CIRCUIT BREAKERS.
- PROVIDE AND EXTEND NEW BRANCH CIRCUIT WIRING 2 #12 + 1 #12 GRD IN 3/4" CONDUIT TO NEW 20A, 1 POLE CIRCUIT IN PANEL "7A-L".
- CONDENSATE PUMP.
- DUCT SMOKE DETECTOR FOR 1-V9. REFER TO SMOKE DETECTOR/SMOKE DAMPER WIRING DIAGRAM ON DRAWING E-0. PROVIDE MODIFICATION AND PROGRAMMING TO EXISTING FIRE ALARM SYSTEM AS NECESSARY TO ACCOMMODATE NEW DEVICES.
- DUCT SMOKE DETECTOR FOR FCU-2 SHALL BE CONNECTED TO EXISTING FIRE ALARM SYSTEM. DETECTOR SHALL INITIATE SUPERVISORY ALARM AT FIRE ALARM CONTROL PANEL AND SHUT OFF FCU UPON DETECTION OF SMOKE. PROVIDE MODIFICATION AND PROGRAMMING TO EXISTING FIRE ALARM SYSTEM AS NECESSARY TO ACCOMMODATE NEW DEVICES.
- DUCT SMOKE DETECTOR FOR FCU-1 SHALL BE CONNECTED TO EXISTING FIRE ALARM SYSTEM. DETECTOR SHALL INITIATE SUPERVISORY ALARM AT FIRE ALARM CONTROL PANEL AND SHUT OFF FCU UPON DETECTION OF SMOKE. PROVIDE MODIFICATION AND PROGRAMMING TO EXISTING FIRE ALARM SYSTEM AS NECESSARY TO ACCOMMODATE NEW DEVICES.