



**ROOFTOP UNIT SCHEDULE**

MARK	AREA SERVED	TONS	SUPPLY AIR CFM	RETURN AIR CFM	OUTSIDE AIR CFM	STATIC PRESS. IN. WG EXT.	MANUFACTURER	MODEL NO.	DX COOLING COIL				GAS HEATING SECTION					SUPPLY AIR FAN			SEER / EER	MCA	MOCBP (HACR BREAKER)	OPERATING WEIGHT (LBS.)		
									MBH	EAT °F (OUTSIDE DB)	EAT °F (OUTSIDE WB)	MIN. ROWS	MBH INPUT	MBH OUTPUT	AFUE %	EAT °F	LAT °F	RPM	MOTOR							
																			BHP	HP					VOLTS / PH	
RTU-1	EXISTING SPACES	8.5	3,400	3,050	350	---	CARRIER	48HCE-09	97.0	95	70	4	120.0 (1ST STAGE) 180.0 (2ND STAGE)	98.0 (1ST STAGE) 148.0 (2ND STAGE)	82%	65	95	867	1.72	2	208/3/60	---	/ 12.0	41.0	50	1,650
RTU-2	EXISTING SPACES	8.5	3,400	3,050	350	---	CARRIER	48HCE-09	97.0	95	70	4	120.0 (1ST STAGE) 180.0 (2ND STAGE)	98.0 (1ST STAGE) 148.0 (2ND STAGE)	82%	65	95	867	1.72	2	208/3/60	---	/ 12.0	41.0	50	1,650
RTU-3	EXISTING SPACES	10.0	4,000	3,600	400	---	CARRIER	48HCE-12	115.0	95	70	4	180.0 (1ST STAGE) 224.0 (2ND STAGE)	147.0 (1ST STAGE) 184.0 (2ND STAGE)	82%	65	95	942	2.41	3	208/3/60	---	/ 11.5	53.0	60	1,800
RTU-4	EXISTING SPACES	5.0	2,000	1,800	200	---	CARRIER	48GCE-06	60.0	95	70	4	82.0 (1ST STAGE) 110.0 (2ND STAGE)	65.0 (1ST STAGE) 88.0 (2ND STAGE)	80%	65	95	2133	1.02	2	208/3/60	16.0	/ 12.0	31.0	45	1,150
RTU-5	EXISTING SPACES	8.5	3,400	3,050	350	---	CARRIER	48HCE-09	97.0	95	70	4	120.0 (1ST STAGE) 180.0 (2ND STAGE)	98.0 (1ST STAGE) 148.0 (2ND STAGE)	82%	65	95	867	1.72	2	208/3/60	---	/ 12.0	41.0	50	1,650
RTU-6	EXISTING SPACES	3.0	1,200	1,075	125	---	CARRIER	48GCD-04	35.2	95	70	2	50.0 (1ST STAGE) 67.0 (2ND STAGE)	40.0 (1ST STAGE) 54.0 (2ND STAGE)	81%	65	95	1874	0.46	1	208/3/60	16.0	/ 12.0	21.0	30	950
RTU-7	EXISTING SPACES	4.0	1,600	1,450	150	---	CARRIER	48HCE-05	47.0	95	70	4	82.0 (1ST STAGE) 110.0 (2ND STAGE)	65.0 (1ST STAGE) 88.0 (2ND STAGE)	80%	65	95	1993	0.84	1	208/3/60	16.0	/ 12.0	26.0	30	1,050
RTU-8	EXISTING SPACES	12.5	5,000	4,500	500	---	CARRIER	48HCF-14	146.0	95	70	4	192.0 (1ST STAGE) 240.0 (2ND STAGE)	156.0 (1ST STAGE) 195.0 (2ND STAGE)	81%	65	95	718	2.39	3	208/3/60	---	/ 12.2	60.0	70	2,200
RTU-9	EXISTING SPACES	5.0	2,000	1,800	200	---	CARRIER	48GCE-06	60.0	95	70	4	82.0 (1ST STAGE) 110.0 (2ND STAGE)	65.0 (1ST STAGE) 88.0 (2ND STAGE)	80%	65	95	2133	1.02	2	208/3/60	16.0	/ 12.0	31.0	45	1,150
RTU-10	EXISTING SPACES	5.0	2,000	1,800	200	---	CARRIER	48GCE-06	60.0	95	70	4	82.0 (1ST STAGE) 110.0 (2ND STAGE)	65.0 (1ST STAGE) 88.0 (2ND STAGE)	80%	65	95	2133	1.02	2	208/3/60	16.0	/ 12.0	31.0	45	1,150

**ROOFTOP UNIT NOTES:**

- FACTORY ASSEMBLED, PACKAGED UNIT WITH ROOF CURB AND ALL STANDARD ACCESSORIES.
- UNIT SHALL BE SINGLE-WALL CONSTRUCTION.
- UNIT SHALL BE U.L. OR AGA APPROVED.
- UNIT SHALL BE OF DOWNFLOW DESIGN AND SHALL HAVE 100% ECONOMIZER FUNCTION.
  - UNIT SHALL HAVE 100% ECONOMIZER FUNCTION WITH DIFFERENTIAL ENTHALPY CONTROL AND MINIMUM OUTSIDE AIR SETTING, AND BAROMETRIC RELIEF.
- COMPRESSORS SHALL BE HIGH EFFICIENCY DESIGN.
- UNIT SHALL HAVE:
  - R410A REFRIGERANT.
  - ALL SECTIONS SHALL HAVE HINGED ACCESS DOORS.
  - MOTORS SHALL HAVE BUILT-IN OVERLOAD PROTECTION.
  - RTU-1, 2, 3, 5, 8: UNIT SHALL HAVE ADJUSTABLE PITCH MOTOR SHEAVES AND MOTOR PULLEYS.
  - RTU-4, 6, 7, 9, 10: UNIT SHALL HAVE DIRECT DRIVE, VANE AXIAL ECM SUPPLY FAN (FIELD ADJUSTABLE FAN SPEED CONTROL).
  - 2-STAGE GAS HEATING AND 2-STAGE COOLING.
  - 30% PLEATED FILTERS.
  - ALUMINIZED STEEL HEAT EXCHANGER.
  - FACTORY INSTALLED REMOTE SHUTDOWN TERMINALS.
  - DOUBLE-SLOPE DRAIN PAN WITH P-TRAP ASSEMBLY.
  - UNIT MOUNTED CONTROLS WITH FACTORY MOUNTED CONTROL BOARD.

- ACCESSORIES:
  - OUTSIDE AIR INTAKE HOOD AND RELIEF / EXHAUST HOOD.
  - MOTORIZED, LOW-LEAKAGE, OPPOSED BLADE OUTSIDE AIR DAMPERS.
  - CARBON DIOXIDE (CO<sub>2</sub>) SENSOR FOR OUTSIDE AIR CONTROL OVERRIDE (MOUNT IN RETURN AIR DUCTWORK).
  - DISCHARGE AIR SENSOR MOUNTED IN SUPPLY AIR DUCTWORK.
  - HUMIDI-MIZER DEHUMIDIFICATION CONTROL.
  - MERV-11 FILTERS.
  - STAINLESS STEEL, DOUBLE-SLOPE DRAIN PAN WITH P-TRAP ASSEMBLY.
  - FACTORY-AUTHORIZED SERVICE REPRESENTATIVE TO PERFORM STARTUP SERVICE.

- INSTALLATION:
  - UNITS SHALL BE ON MANUFACTURER PROVIDED, FULL PERIMETER, INSULATED ROOF CURB SUITABLE FOR THE ROOF DECK, INSULATION AND MEMBRANE (REFER TO ARCHITECTURAL DRAWINGS FOR ROOF CONSTRUCTION).
  - ROOF CURBS SHALL HAVE A BASE THAT FITS SLOPE OF ROOF AS REQUIRED. TOP OF ROOF CURB SHALL BE LEVEL.
  - ALL SERVICES TO THE UNIT SHALL ENTER WITHIN THE ROOF CURB. NO SEPARATE ROOF PENETRATIONS ARE ALLOWED.
- ACCEPTABLE MANUFACTURER'S - CARRIER, AON, MCQUAY.

**NOTES:**

- UNITS SHALL BE INSTALLED TO RESIST THE WIND PRESSURES DETERMINED IN ACCORDANCE WITH THE NEW YORK STATE BUILDING CODE.
- CARRIER'S FAN MOTOR BRAKE HORSEPOWER (BHP) LISTED IS THE "MAXIMUM CONTINUOUS BHP RATING" (FAN POWER). MINIMUM ALLOWABLE FAN MOTOR HORSEPOWER IS 1 HP.
  - FAN HORSEPOWER'S (HP) INDICATED ARE FOR LISTED MANUFACTURER'S COMPARISON MOTOR HORSEPOWER RATING.
- UNITS SUPPLY FAN RPM'S AND BHP'S ARE BASED ON 0.80" EXTERNAL STATIC PRESSURE (DUCTWORK ONLY). DIVISION 23 SHALL VERIFY UNITS ACTUAL STATIC PRESSURE (VIA AIRFLOW MEASUREMENTS OR EXISTING BALANCE REPORTS) AND COORDINATE WITH UNIT MANUFACTURER THE SUPPLY FANS EXACT RPM AND BHP PRIOR TO PURCHASING AND INSTALLING UNITS.

**HVAC SEQUENCE OF OPERATIONS**

- SEQUENCE OF OPERATIONS - HVAC DUCTWORK
  - ROOFTOP UNITS (RTU-1 THRU RTU-10).
    - GENERAL.
      - CONFIGURATION: CONSTANT-VOLUME MIXED-AIR SINGLE PATH.
    - SYSTEM RUN.
      - OCCUPIED MODE.
        - SUPPLY FAN: SUPPLY FAN SHALL RUN CONTINUOUSLY.
        - ECONOMIZER (WITH CO2 SENSOR).
          - THE CONTROL SYSTEM SHALL SENSE THE INCREASED OCCUPANTS / CARBON DIOXIDE AND INCREASE THE OUTSIDE AIR QUANTITY ON THE EQUIPMENT SERVING THAT AREA SUCH THAT THE CARBON DIOXIDE SHALL BE CONTROLLED SO AS NOT TO EXCEED 500 PPM (ADJUSTABLE) ABOVE THE OUTSIDE AIR CARBON DIOXIDE CONCENTRATION.
          - MINIMUM OUTSIDE AIR IS SUPPLIED TO ALL AREAS AT ALL TIMES DURING OCCUPIED MODE.
          - CARBON DIOXIDE SENSOR OVERRIDES MINIMUM OUTSIDE AIR SETPOINT TO INCREASE OUTSIDE AIR SHOULD THE CONDITIONS IN THE SPACE DEVIATE FROM DESIGN CONDITIONS.
      - GAS VALVE: CYCLE IN SEQUENCE WITH THE ECONOMIZER DAMPERS TO MAINTAIN THE DISCHARGE AIR TEMPERATURE AT SETPOINT AS RESET FROM SPACE TEMPERATURE.
        - BELOW 50° F (ADJUSTABLE) DISCHARGE AIR TEMPERATURE (FOR A PERIOD OF 5-MINUTES) AS SENSED BY THE DISCHARGE AIR TEMPERATURE SENSOR, THE SYSTEM SHALL BE DISABLED.
          - THE OUTSIDE AIR DAMPER SHALL CLOSE, THE SUPPLY FAN SHALL STOP AND THE GAS VALVE SHALL BE DISABLED.
        - ABOVE 115° F (ADJUSTABLE) DISCHARGE AIR TEMPERATURE (FOR A PERIOD OF 5-MINUTES) AS SENSED BY THE DISCHARGE AIR TEMPERATURE SENSOR, THE GAS VALVE SHALL CLOSE.
          - IF THE DISCHARGE AIR TEMPERATURE DOES NOT DROP BELOW 115° F, THE UNIT SHALL SHUT DOWN.
          - THE OUTSIDE AIR DAMPER SHALL CLOSE AND THE SUPPLY FAN SHALL STOP.
      - DX COOLING: CYCLE WHEN OUTSIDE AIR TEMPERATURE IS ABOVE THE DX COOLING SYSTEM ENABLE SETPOINT TO MAINTAIN SUPPLY AIR TEMPERATURE AT SETPOINT AS RESET FROM DISCHARGE AIR TEMPERATURE.

- UNOCCUPIED HEATING MODE.
  - SUPPLY FAN: SUPPLY FAN SHALL CYCLE TO MAINTAIN DISCHARGE AIR TEMPERAURE AT THE UNOCCUPIED HEATING SETPOINT (55° F, ADJUSTABLE).
  - ECONOMIZER DAMPERS: OUTSIDE AIR DAMPERS ARE FULLY CLOSED AND RETURN AIR DAMPER IS FULLY OPEN.
  - GAS VALVE: CYCLE AS FOLLOWS WHEN THE SUPPLY FAN IS ON:
    - BELOW 55° F (ADJUSTABLE) DISCHARGE AIR TEMPERATURE, FULLY OPEN GAS VALVE TO MAINTAIN SUPPLY AIR TEMPERATURE AT 90° F (ADJUSTABLE).
    - ABOVE 55° F (ADJUSTABLE) DISCHARGE AIR TEMPERATURE, CYCLE THE GAS VALVE TO MAINTAIN SUPPLY AIR TEMPERATURE AT 90° F (ADJUSTABLE).
  - DX COOLING: OFF.
- UNOCCUPIED COOLING MODE.
  - SUPPLY FAN: SUPPLY FAN SHALL CYCLE TO MAINTAIN DISCHARGE AIR TEMPERATURE AT THE UNOCCUPIED COOLING SETPOINT (85° F, ADJUSTABLE).
  - ECONOMIZER DAMPERS: ECONOMIZER DAMPERS SHALL BE ENABLED TO PROVIDE FREE COOLING WHEN THE OUTSIDE AIR TEMPERATURE IS BELOW THE DRY BULB ECONOMIZER SETPOINT.
    - ECONOMIZER AVAILABLE: OUTSIDE AIR AND EXHAUST AIR DAMPERS ARE FULLY OPEN AND RETURN AIR DAMPER IS FULLY CLOSED WHEN THE SUPPLY FAN IS ON.
    - ECONOMIZER NOT AVAILABLE: OUTSIDE AIR AND EXHAUST DAMPERS ARE FULLY CLOSED AND RETURN AIR DAMPER IS FULLY OPEN.
  - GAS VALVE: CLOSED.
  - DX COOLING: CYCLE WHEN OUTSIDE AIR TEMPERATURE IS ABOVE THE DX COOLING SYSTEM ENABLE SETPOINT TO MAINTAIN SUPPLY AIR TEMPERATURE AT 55° F (ADJUSTABLE).

- SYSTEM OFF.
  - THE SUPPLY FAN SHALL BE OFF.
  - THE OUTSIDE AIR DAMPERS SHALL BE CLOSED.
  - THE RETURN AIR DAMPER SHALL BE OPEN.
  - THE GAS VALVE SHALL CYCLE TO MAINTAIN THE MIXED AIR PLENUM TEMPERATURE AT 50° F (ADJUSTABLE).
  - THE DX COOLING SHALL BE OFF.
- SAFETIES AND ALARMS.
  - DISPLAY OFF-NORMAL ALARM WHENEVER SUPPLY FAN STATUS DOES NOT EQUAL COMMAND.
  - LOW LIMIT: MANUAL RESET LOW LIMIT THERMOSTAT SHALL STOP THE SUPPLY FAN AND DISPLAY AN ALARM SHOULD THE COIL DISCHARGE AIR TEMPERATURE FALL BELOW 38° F (ADJUSTABLE).
    - HEATING COIL VALVE SHALL OPEN FULLY, AND DAMPERS AND DX COOLING CONTROL VALVE SHALL BE INDEXED TO THEIR "SYSTEM OFF" CONDITIONS.
  - HIGH LIMIT: MANUAL RESET HIGH LIMIT THERMOSTAT LOCATED IN THE RETURN AIR SHALL STOP THE SUPPLY FAN AND DISPLAY AN ALARM SHOULD THE RETURN AIR TEMPERATURE RISE ABOVE 125° F (ADJUSTABLE).
    - DAMPERS AND CONTROL VALVES SHALL BE INDEXED TO THEIR "SYSTEM OFF" CONDITIONS.
  - SMOKE CONTROL.
    - DUCT SMOKE DETECTOR(S) SHALL STOP THE SUPPLY FAN AND DISPLAY ALARM WHEN PRODUCTS OF COMBUSTION ARE DETECTED IN THE AIR STREAM.
      - DAMPERS AND CONTROL VALVE SHALL BE INDEXED TO THEIR "SYSTEM OFF" CONDITIONS.
    - THE SUPPLY FAN SHALL BE INTERLOCKED TO SHUT DOWN UPON A COMMAND FROM THE BUILDING FIRE ALARM SYSTEM.
    - UPON A RETURN TO NORMAL, THE SUPPLY FAN SHALL START AFTER AN ADJUSTABLE DELAY TO PROVIDE A STAGGERED START OF ALL BUILDING LOADS.
  - FILTER CONDITION: MONITOR DIFFERENTIAL PRESSURE ACROSS FILTER AND DISPLAY AN ALARM WHEN DIFFERENTIAL PRESSURE SETPOINT IS EXCEEDED.

- FAILURE MODES.
  - FAN FAILURE: IF THE SUPPLY FAN FAILS TO OPERATE, THE SUPPLY FAN SHALL SHUT DOWN AND ALARM SHALL BE DISPLAYED.
    - DAMPERS AND CONTROL VALVE SHALL BE INDEXED TO THEIR "SYSTEM OFF" CONDITIONS.
  - SENSOR FAILURE: UPON THE FAILURE OF AN ANALOG SENSOR, ASSOCIATED DAMPERS AND CONTROL VALVES SHALL REMAIN AT THEIR LAST POSITION AND ALARM SHALL BE DISPLAYED.
  - POWER FAILURE.
    - FANS: UPON RESTORATION OF POWER, THE SUPPLY FANS SHALL START AFTER AN ADJUSTABLE DELAY TO PROVIDE A STAGGERED START OF ALL BUILDING LOADS.
    - DAMPERS: ECONOMIZER DAMPERS SHALL BE PROVIDED WITH SPRING RETURN ACTUATORS TO FAIL TO THEIR "SYSTEM OFF" POSITIONS.
    - VALVES: GAS VALVE SHALL BE PROVIDED WITH SPRING RETURN ACTUATOR TO FAIL OPEN TO THE COIL.

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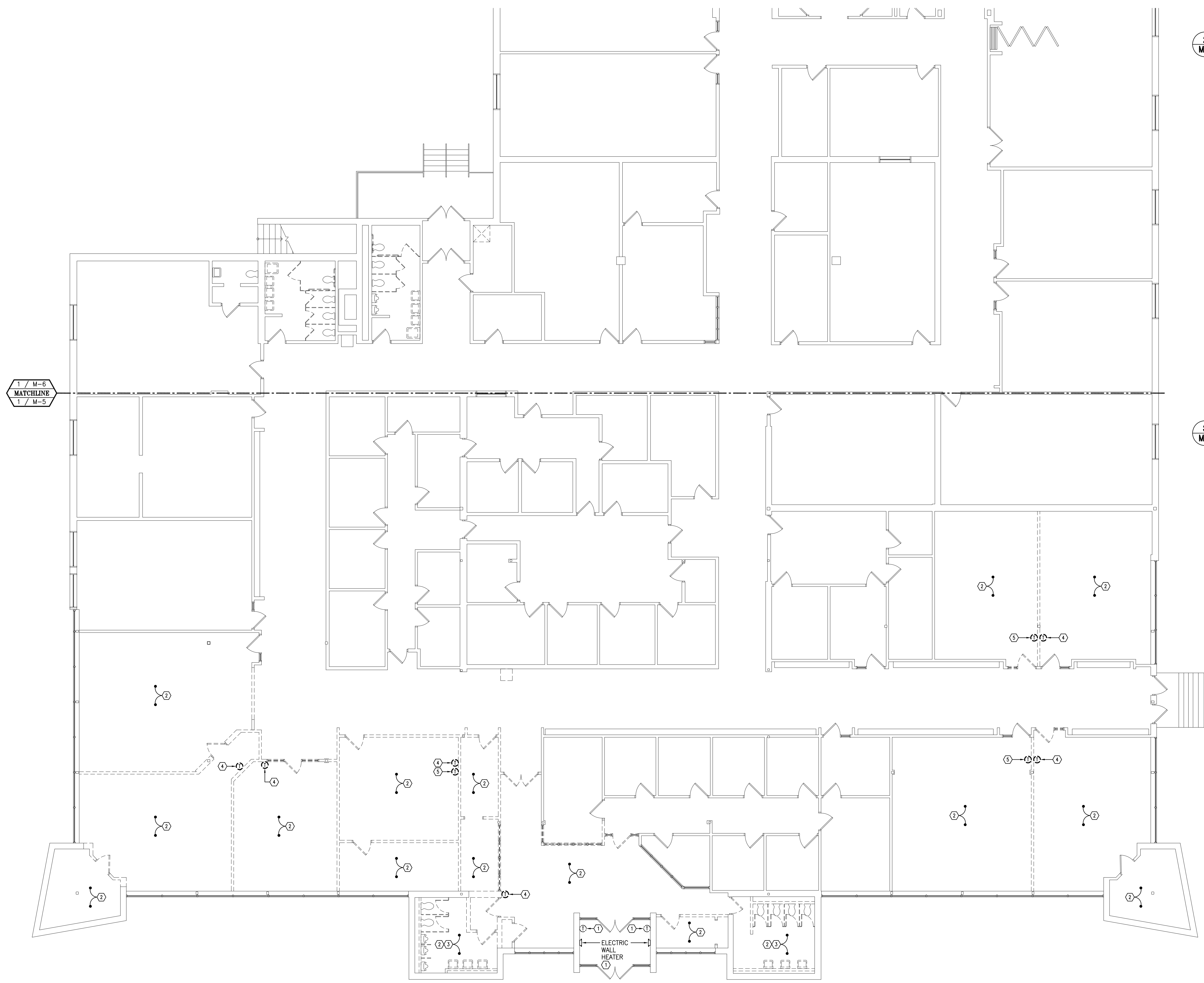
TITLE:  
HVAC  
SCHEDULES  
AND SEQUENCE  
OF OPERATIONS

SA JOB #: 14082.07 DATE: 6-29-2021

DRAWING #: M-2







**2 HVAC NOTES:**

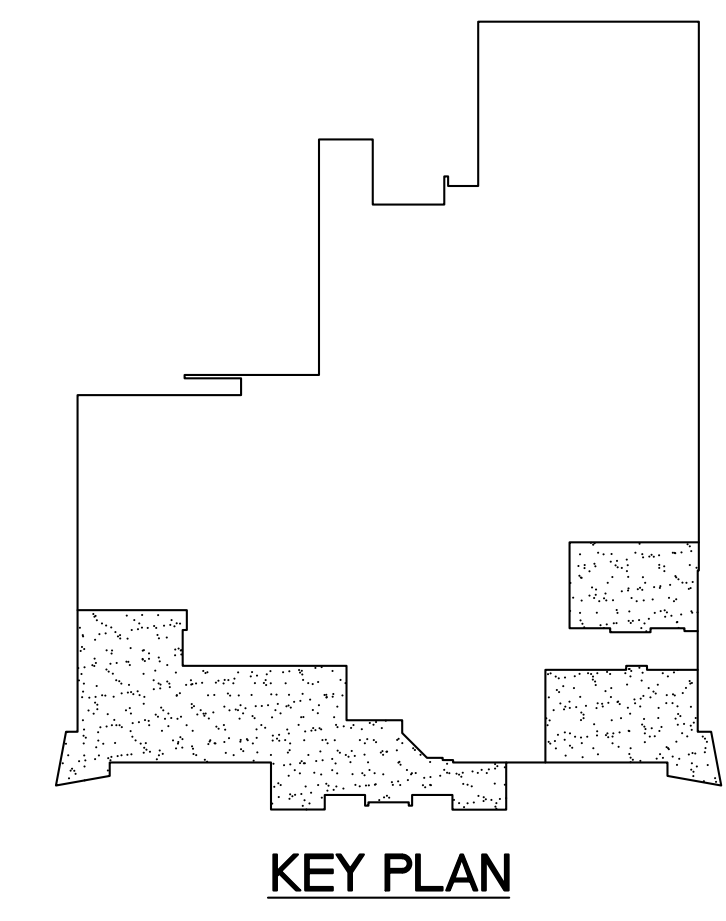
1. EXISTING TO REMAIN.
  2. DISCONNECT AND REMOVE EXISTING DIFFUSER / GRILLE ALONG WITH ALL ASSOCIATED DUCTWORK CONNECTIONS, HANGERS, ETC. PREPARE EXISTING SUPPLY AIR DUCTWORK FOR NEW CONNECTION.
  3. CAP EXISTING EXHAUST AIR DUCTWORK AIR AND WATERTIGHT AT JOIST LEVEL ABOVE CEILING.
  4. DISCONNECT AND RELOCATE EXISTING THERMOSTAT ALONG WITH ASSOCIATED BRACKETS, ETC. TO LOCATION INDICATED ON DRAWING 1/M-7
  5. DISCONNECT AND REMOVE EXISTING THERMOSTAT ALONG WITH ALL ASSOCIATED BRACKETS, ETC.
1. MODIFY / EXTEND EXISTING CONTROL WIRING TO CONNECT TO RELOCATED THERMOSTAT SHOWN ON DRAWING 1/M-7 AS REQUIRED FOR A COMPLETE INSTALLATION AND OPERATIONAL SYSTEM.

**3 HVAC GENERAL NOTES:**

1. WHERE CFM'S ARE NOT INDICATED, PRIOR TO REMOVING EXISTING DIFFUSERS / GRILLES, MEASURE AND RECORD EXISTING AIR DEVICES CFM'S.

1 / M-6  
MATCHLINE  
1 / M-5

**1 PARTIAL FLOOR PLAN - HVAC DEMOLITION**  
SCALE: 1/8" = 1'-0"



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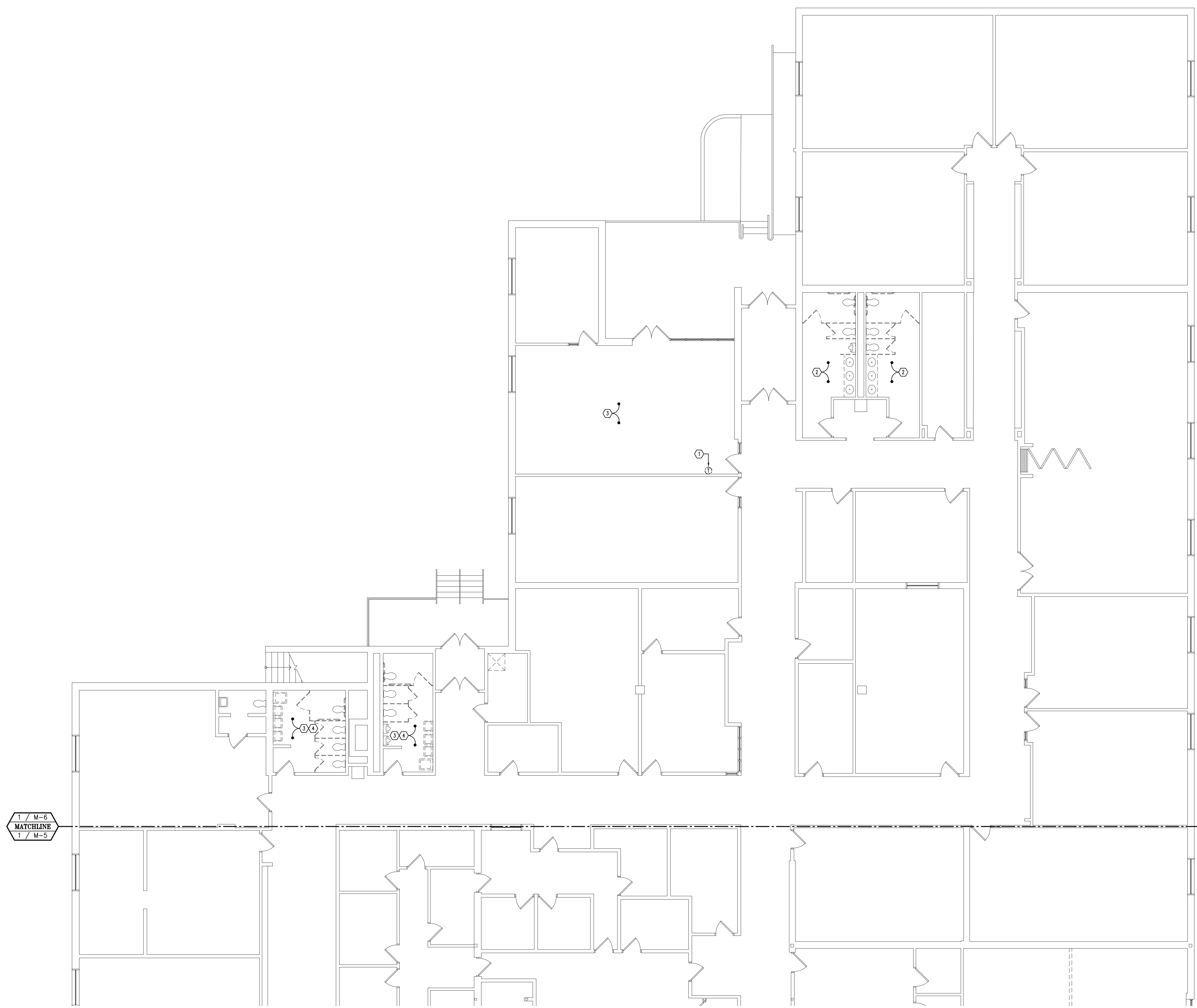
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**PARTIAL FLOOR PLAN - HVAC DEMOLITION**

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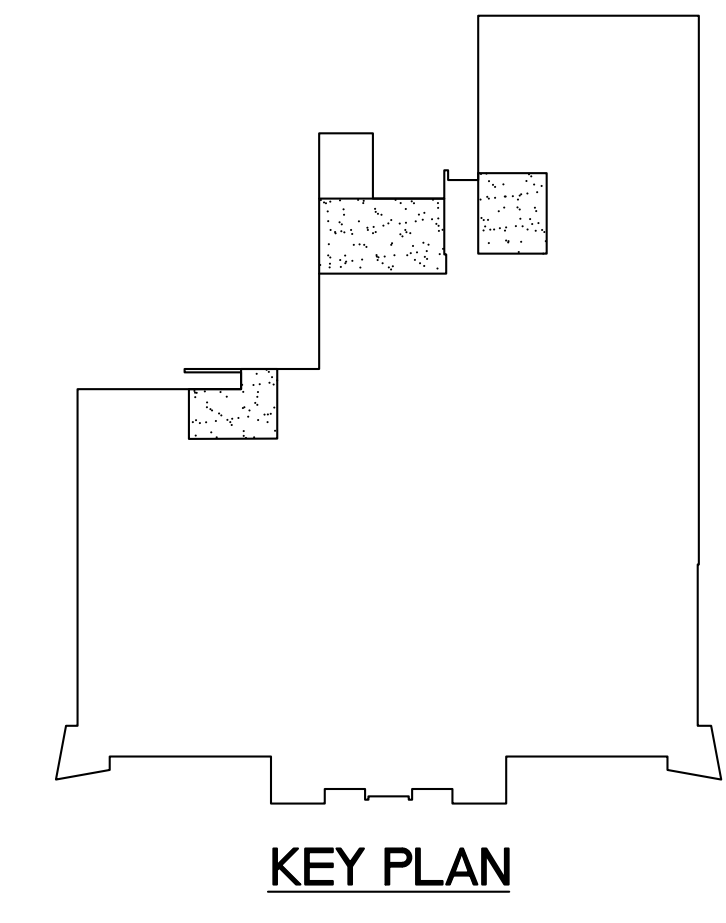


**2 HVAC NOTES:**

1. EXISTING TO REMAIN.
2. DISCONNECT AND REMOVE EXISTING DIFFUSER / GRILLE ALONG WITH ALL ASSOCIATED DUCTWORK CONNECTIONS, HANGERS, ETC. PREPARE EXISTING SUPPLY AIR AND EXHAUST AIR DUCTWORK FOR NEW CONNECTION.
3. DISCONNECT AND REMOVE EXISTING DIFFUSER / GRILLE ALONG WITH ALL ASSOCIATED DUCTWORK CONNECTIONS, HANGERS, ETC. PREPARE EXISTING SUPPLY AIR DUCTWORK FOR NEW CONNECTION.
4. DISCONNECT AND REMOVE EXISTING CEILING EXHAUST FAN ALONG WITH ALL ASSOCIATED HANGERS, BRACKETS, ETC. CAP DUCTWORK AT EXISTING WALL PENETRATION AIR AND WATERTIGHT.

**3 HVAC GENERAL NOTES:**

1. WHERE CFM'S ARE NOT INDICATED, PRIOR TO REMOVING EXISTING DIFFUSERS / GRILLES, MEASURE AND RECORD EXISTING AIR DEVICES CFM'S.



**KEY PLAN**

1 / M-6  
MATCHLINE  
1 / M-5

**1 PARTIAL FLOOR PLAN - HVAC DEMOLITION**  
SCALE: 1/8" = 1'-0"

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TITLE:  
**PARTIAL FLOOR PLAN - HVAC DEMOLITION**

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SA JOB #: **14082.07** DATE: **6-29-2021**

DRAWING #: **M-6**



1 / M-8  
MATCHLINE  
1 / M-7

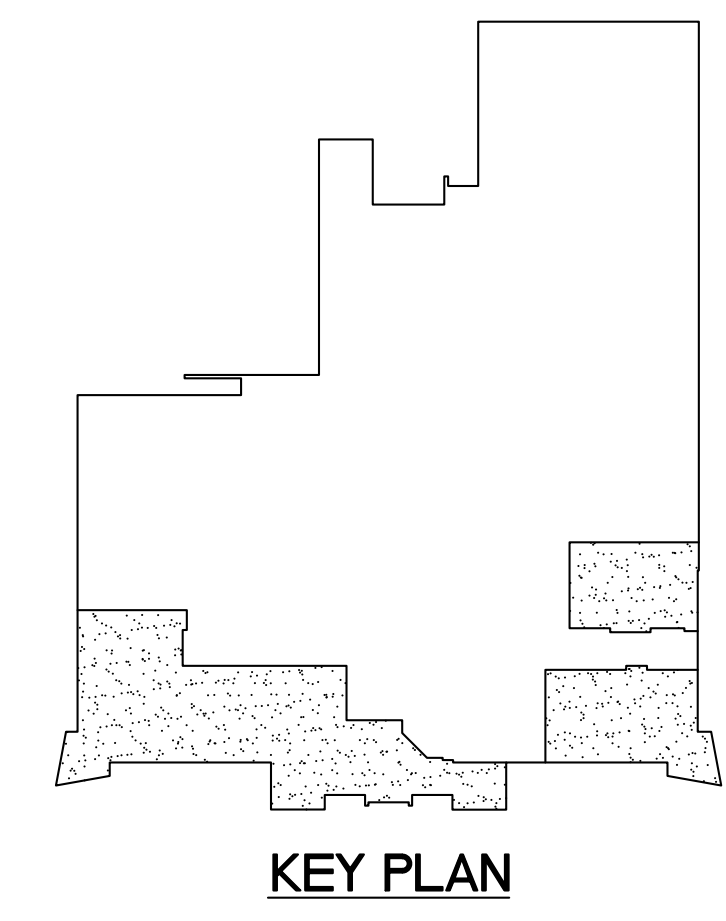
**2 HVAC NOTES:**

1. EXISTING TO REMAIN.
2. CONNECT NEW DUCTWORK TO EXISTING DUCTWORK. MODIFY / EXTEND EXISTING DUCTWORK AS REQUIRED FOR A COMPLETE INSTALLATION AND OPERATIONAL SYSTEM.
3. EXISTING, RELOCATED THERMOSTAT.
  - A. MODIFY / EXTEND EXISTING CONTROL WIRING AS REQUIRED FOR A COMPLETE AND OPERATIONAL SYSTEM.

**3 HVAC GENERAL NOTES:**

1. PROVIDE VOLUME DAMPERS AT ALL NEW TO EXISTING BRANCH DUCTWORK TAPS.
2. RETURN AIR SYSTEM AS SHOWN ON THESE DRAWINGS IS A PLENUM RETURN AIR SYSTEM.
  - A. VERIFY EXACT LOCATION OF EXISTING RETURN AIR DUCTWORK TO ENSURE NEW RETURN AIR DUCTWORK AS SHOWN WILL GET BACK TO ASSOCIATED EXISTING ROOFTOP UNIT.
  - B. IF THE EXISTING RETURN AIR SYSTEM IS A DUCTED SYSTEM, CONNECT NEW RETURN AIR DUCTWORK TO EXISTING RETURN AIR MAIN BRANCH DUCTWORK.
    - 1). MODIFY / EXTEND EXISTING DUCTWORK AS REQUIRED FOR A COMPLETE INSTALLATION AND OPERATIONAL SYSTEM.
3. COORDINATE EXACT LOCATIONS AND MOUNTING HEIGHTS OF EXISTING, RELOCATED THERMOSTATS IN THE FIELD WITH ARCHITECT AND OWNER PRIOR TO INSTALLATION TO AVOID CONFLICTS WITH WALL MOUNTED ARCHITECTURAL ITEMS.

**1 PARTIAL FLOOR PLAN - HVAC DUCTWORK**  
SCALE: 1/8" = 1'-0"



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**PARTIAL FLOOR PLAN - HVAC DUCTWORK**

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SA JOB #: 14082.07 DATE: 6-29-2021

DRAWING #: M-7

**2 HVAC NOTES:**

1. EXISTING TO REMAIN.
2. CONNECT NEW DUCTWORK TO EXISTING DUCTWORK. MODIFY / EXTEND EXISTING DUCTWORK AS REQUIRED FOR A COMPLETE INSTALLATION AND OPERATIONAL SYSTEM.

**3 HVAC GENERAL NOTES:**

1. PROVIDE VOLUME DAMPERS AT ALL NEW TO EXISTING BRANCH DUCTWORK TAPS.
2. RETURN AIR SYSTEM AS SHOWN ON THESE DRAWINGS IS A PLENUM RETURN AIR SYSTEM.
  - A. VERIFY EXACT LOCATION OF EXISTING RETURN AIR DUCTWORK TO ENSURE NEW RETURN AIR DUCTWORK AS SHOWN WILL GET BACK TO ASSOCIATED EXISTING ROOFTOP UNIT.
  - B. IF THE EXISTING RETURN AIR SYSTEM IS A DUCTED SYSTEM, CONNECT NEW RETURN AIR DUCTWORK TO EXISTING RETURN AIR MAIN BRANCH DUCTWORK.
    - 1). MODIFY / EXTEND EXISTING DUCTWORK AS REQUIRED FOR A COMPLETE INSTALLATION AND OPERATIONAL SYSTEM.
3. COORDINATE EXACT LOCATIONS AND MOUNTING HEIGHTS OF EXISTING, RELOCATED THERMOSTATS IN THE FIELD WITH ARCHITECT AND OWNER PRIOR TO INSTALLATION TO AVOID CONFLICTS WITH WALL MOUNTED ARCHITECTURAL ITEMS.

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SA PROJECT TEAM: PRINCIPAL P.Silvestri  
 PROJ. ARCH. S.Hunt DRAFTER \_\_\_\_\_  
 JOB CAPT. \_\_\_\_\_ INTERIORS N.Catuzza

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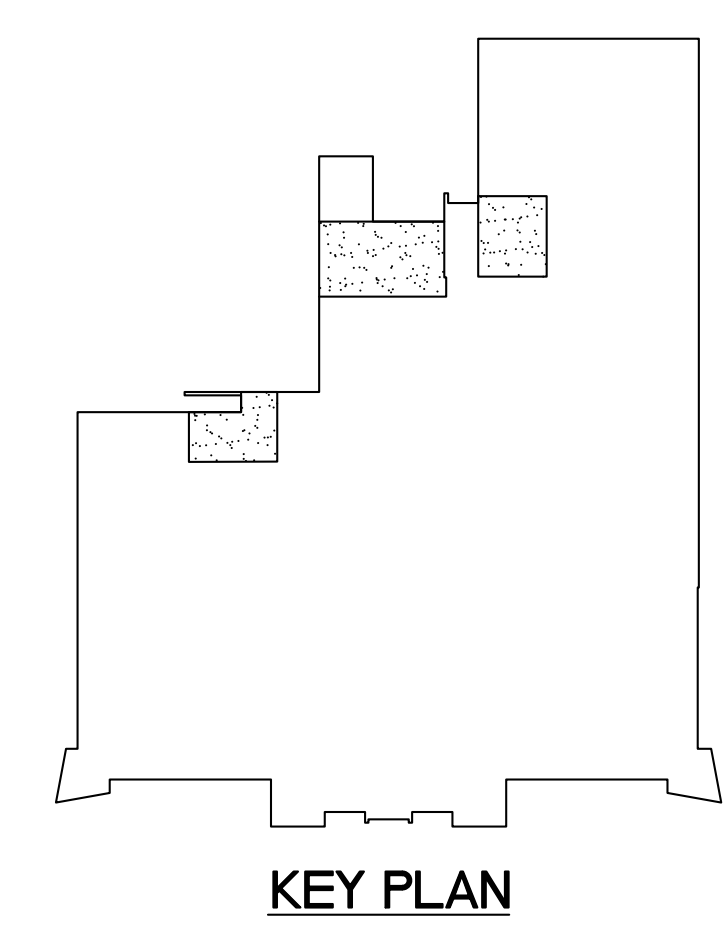
TITLE:  
**PARTIAL FLOOR PLAN - HVAC DUCTWORK**



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SA JOB #: 14082.07 DATE: 6-29-2021

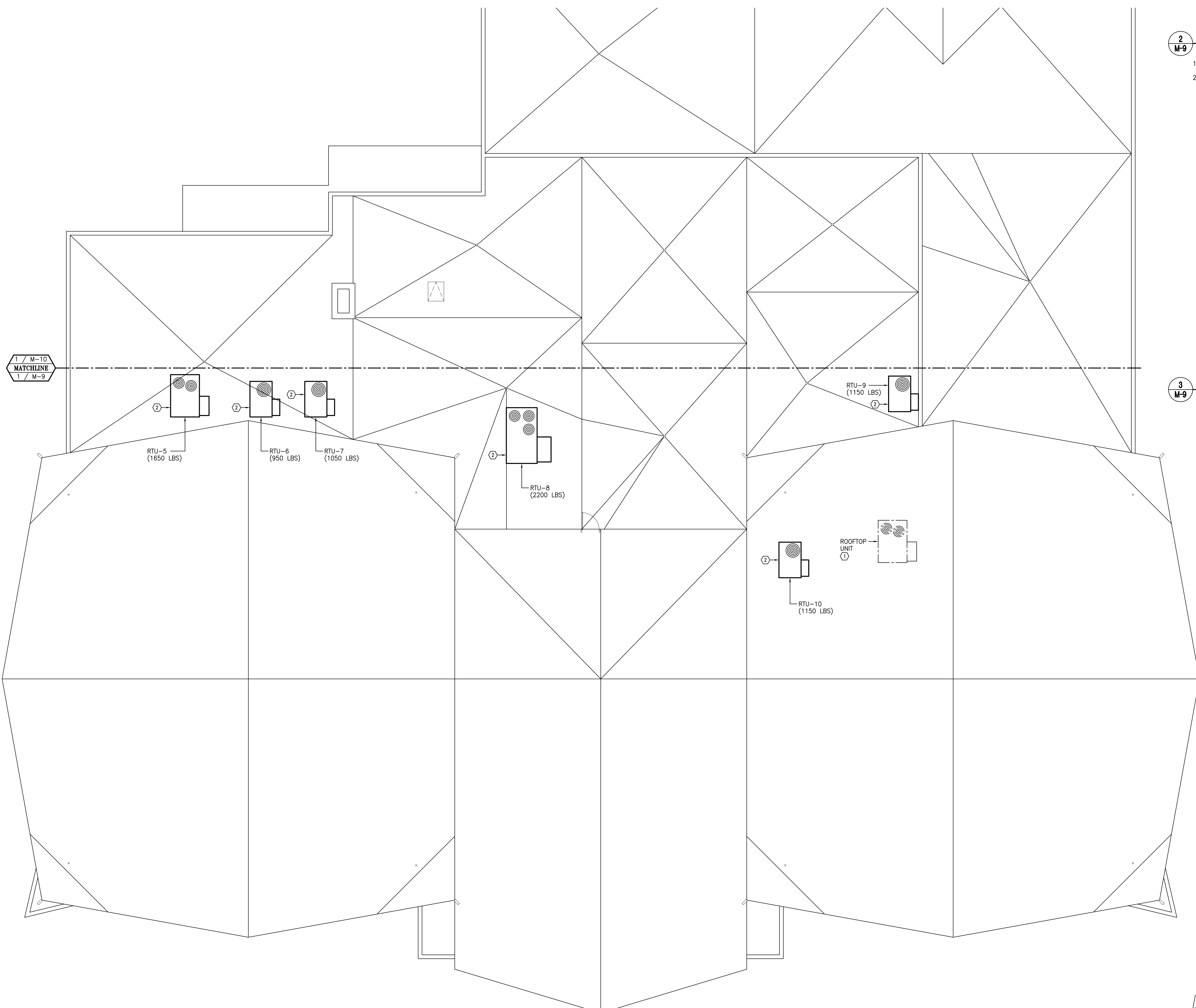
DRAWING #: M-8



1 / M-8  
 MATCHLINE  
 1 / M-7

**1 PARTIAL FLOOR PLAN - HVAC DUCTWORK**  
 SCALE: 1/8" = 1'-0"



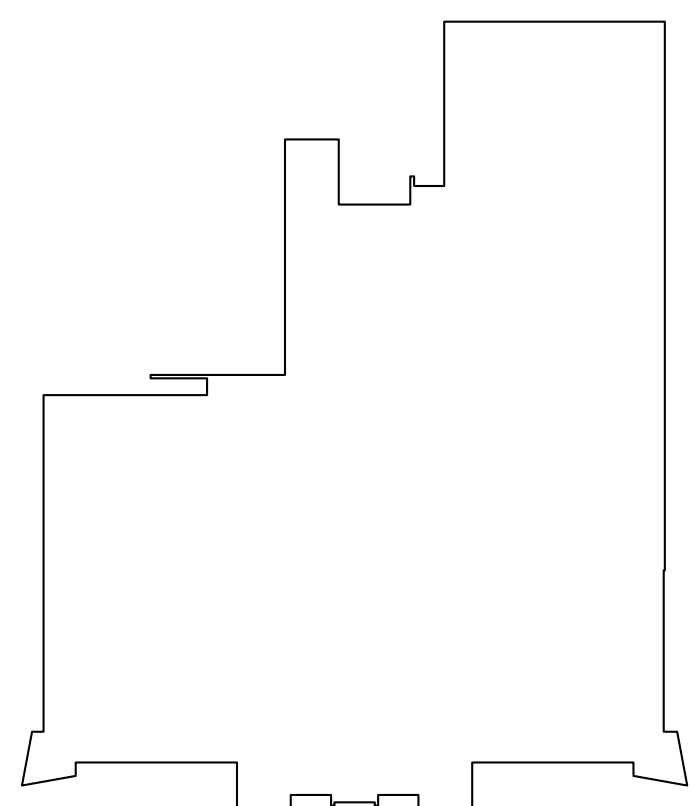


**2 HVAC NOTES:**

1. EXISTING TO REMAIN.
2. DISCONNECT AND REMOVE EXISTING ROOFTOP UNIT AND PREPARE EXISTING ROOF CURB FOR NEW CONNECTION. REFER TO SCHEDULES FOR NEW ROOFTOP UNIT REQUIREMENTS.
- A. CONNECT EXISTING DUCTWORK TO ROOFTOP UNIT, MODIFY / EXTEND EXISTING DUCTWORK AS REQUIRED FOR A COMPLETE INSTALLATION AND OPERATIONAL SYSTEM.

**3 HVAC GENERAL NOTES:**

1. DIVISION 23 TO PROVIDE AND INSTALL ALL EQUIPMENT.
2. DIVISION 7 SHALL REPAIR / REPLACE EXISTING ROOF FLASHING AND SEALING OF ALL ROOF OPENINGS PRIOR TO NEW EQUIPMENT INSTALLATION.
3. DIVISION 23 SHALL VERIFY EXISTING ROOFTOP UNIT SIZES (TONNAGE) AND EXISTING ROOF CURB SIZE WITH NEW ROOFTOP UNIT SIZES PRIOR TO REMOVING EXISTING ROOFTOP UNITS AND INSTALLING NEW ROOFTOP UNITS.
  - A. PROVIDE ROOF CURB ADAPTER AS REQUIRED FOR A COMPLETE INSTALLATION AND OPERATIONAL SYSTEM.
4. REPLACE ALL EXISTING TO REMAIN ROOFTOP UNITS FILTERS WITH NEW MERV-11 FILTERS AT THE END OF COMPLETION OF INSTALLATION AND JUST PRIOR TO TESTING AND BALANCING.
  - A. ADJUST EXISTING UNITS FAN SPEEDS AND / OR REPLACE EXISTING UNITS MOTOR AND SHEAVES AS REQUIRED TO ACHIEVE REBALANCED MINIMUM CFM'S AS INDICATED ON THE DRAWINGS. CONSULT UNIT MANUFACTURERS PRIOR TO MAKING ANY ADJUSTMENTS FOR APPROVAL (APPROVAL MUST BE SUBMITTED IN WRITING).



**1 PARTIAL ROOF PLAN - HVAC DUCTWORK**  
SCALE: 1/8" = 1'-0"

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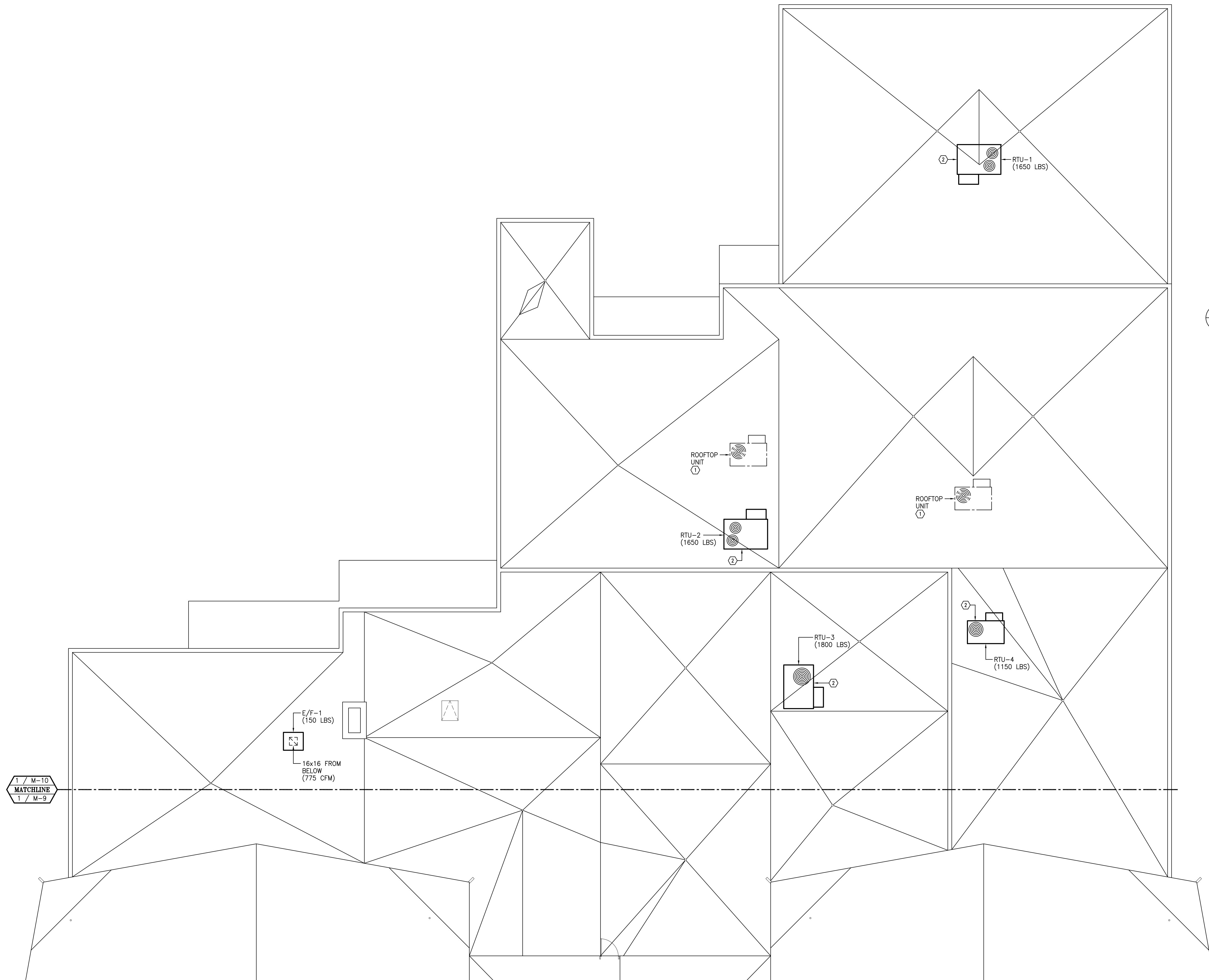
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ROOF PLAN -  
HVAC  
DUCTWORK**

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DRAWING #: **M-9**



**2 HVAC NOTES:**

1. EXISTING TO REMAIN.
2. DISCONNECT AND REMOVE EXISTING ROOFTOP UNIT AND PREPARE EXISTING ROOF CURB FOR NEW CONNECTION. REFER TO SCHEDULES FOR NEW ROOFTOP UNIT REQUIREMENTS.
- A. CONNECT EXISTING DUCTWORK TO ROOFTOP UNIT, MODIFY / EXTEND EXISTING DUCTWORK AS REQUIRED FOR A COMPLETE INSTALLATION AND OPERATIONAL SYSTEM.

**3 HVAC GENERAL NOTES:**

1. DIVISION 7 AND DIVISION 23 TO COORDINATE ALL ROOF OPENINGS, ROOF PENETRATIONS, AND EQUIPMENT PAD INSTALLATIONS.
2. DIVISION 7 TO CUT ALL ROOF OPENINGS.
3. DIVISION 23 TO PROVIDE AND INSTALL ALL NEW EQUIPMENT AND NEW EQUIPMENT CURBS.
4. DIVISION 7 TO PROVIDE ROOF FLASHING AND SEALING OF ALL ROOF OPENINGS.
  - A. DIVISION 7 SHALL REPAIR / REPLACE EXISTING ROOF FLASHING AND SEALING OF ALL EXISTING ROOF OPENINGS PRIOR TO NEW EQUIPMENT INSTALLATION.
5. DIVISION 23 SHALL VERIFY EXISTING ROOFTOP UNIT SIZES (TONNAGE) AND EXISTING ROOF CURB SIZE WITH NEW ROOFTOP UNIT SIZES PRIOR TO REMOVING EXISTING ROOFTOP UNITS AND INSTALLING NEW ROOFTOP UNITS.
  - A. PROVIDE ROOF CURB ADAPTER AS REQUIRED. FOR A COMPLETE INSTALLATION AND OPERATIONAL SYSTEM.
6. REPLACE ALL EXISTING TO REMAIN ROOFTOP UNITS FILTERS WITH NEW MERV-11 FILTERS AT THE END OF COMPLETION OF INSTALLATION AND JUST PRIOR TO TESTING AND BALANCING.
  - A. ADJUST EXISTING UNITS FAN SPEEDS AND / OR REPLACE EXISTING UNITS MOTOR AND SHEAVES AS REQUIRED TO ACHIEVE REBALANCED MINIMUM CFM'S AS INDICATED ON THE DRAWINGS. CONSULT UNIT MANUFACTURERS PRIOR TO MAKING ANY ADJUSTMENTS FOR APPROVAL (APPROVAL MUST BE SUBMITTED IN WRITING).

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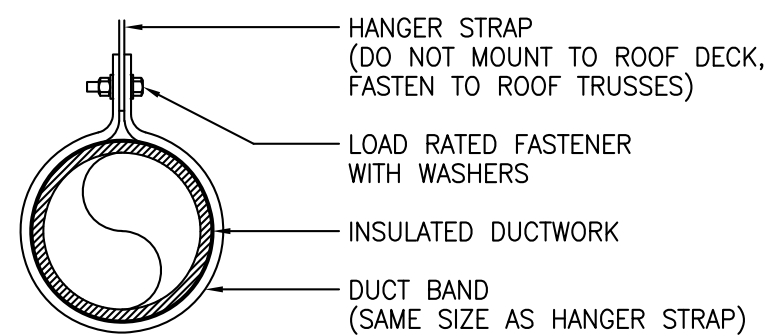
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**PARTIAL ROOF PLAN - HVAC DUCTWORK**

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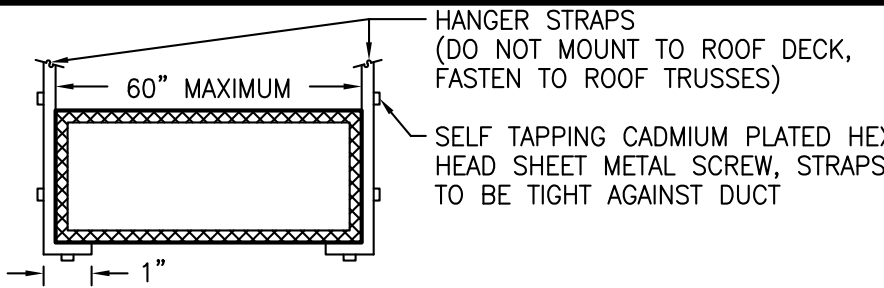
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**1 PARTIAL ROOF PLAN - HVAC DUCTWORK**  
 SCALE: 1/8" = 1'-0"

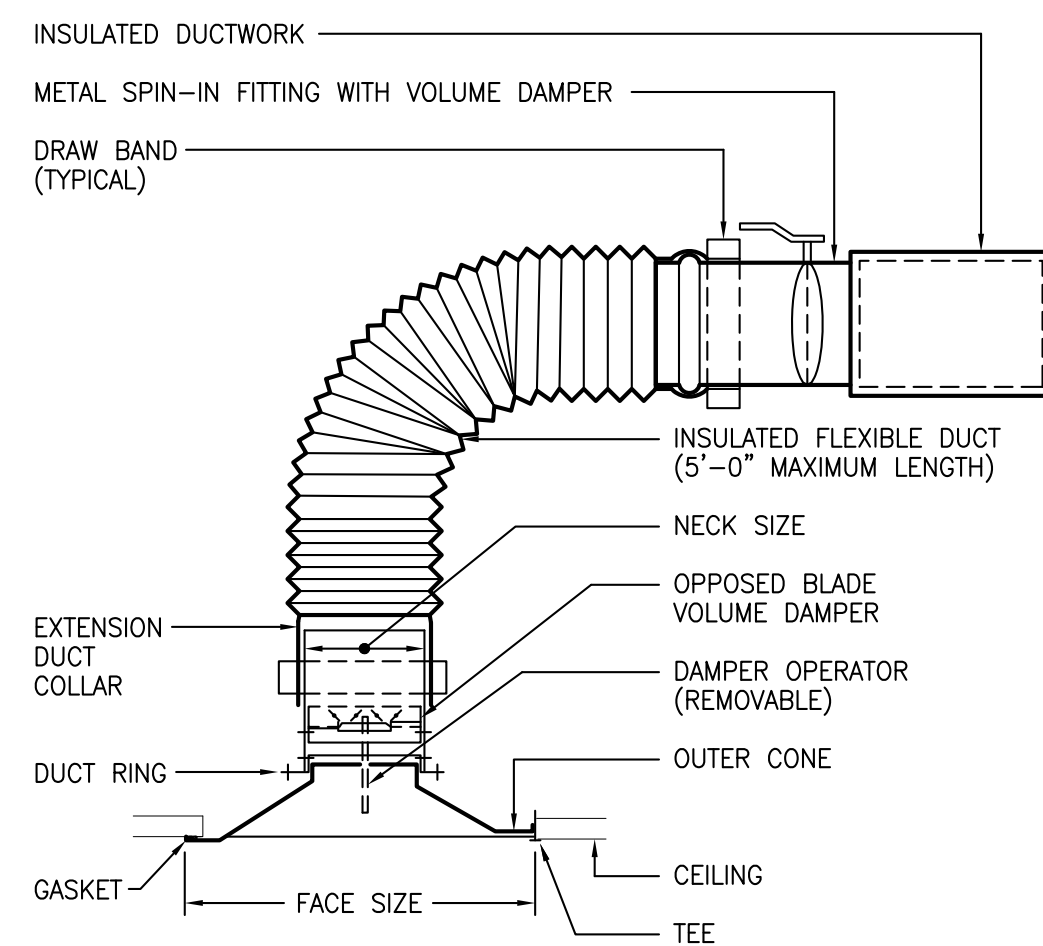


HANGER SIZES FOR ROUND DUCT				
DUCT DIAMETER	ROUND HANGERS	STRAP HANGERS	MAXIMUM SPACING	NUMBER OF HANGERS
UP THRU 18"	1/4" ROD	1" x 16 GAUGE	10'-0"	1
19" THRU 36"	3/8" ROD	1" x 12 GAUGE	10'-0"	1



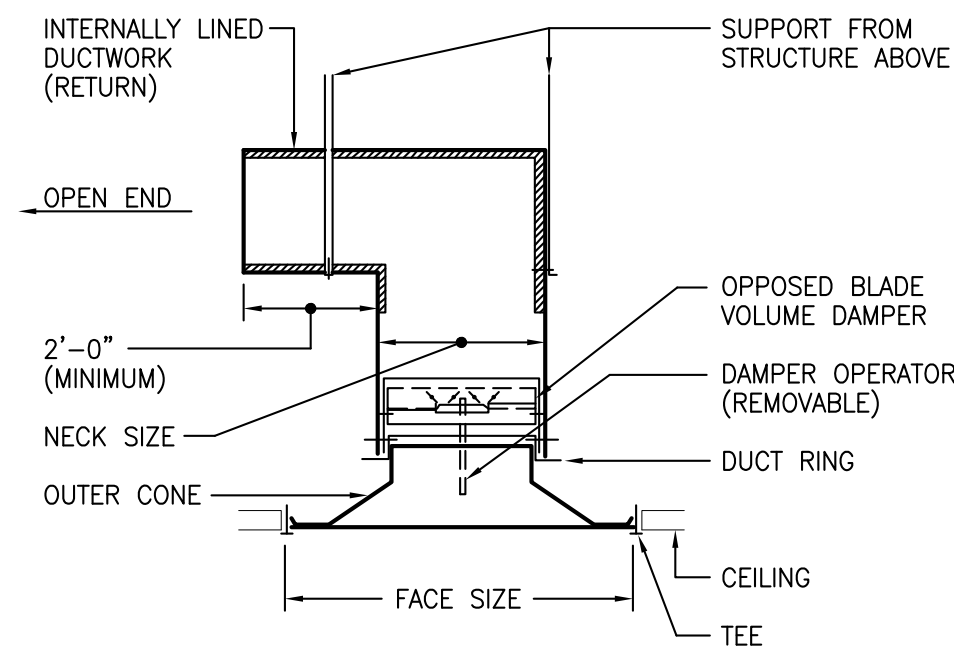
HANGER SIZES FOR RECTANGULAR DUCT				
LONGEST DIMENSION OF DUCT	ROUND HANGERS	STRAP HANGERS	MAXIMUM SPACING	
UP THRU 18"	1/4" ROD	1" x 16 GAUGE	10'-0"	
19" THRU 42"	1/4" ROD	1" x 16 GAUGE	10'-0"	
43" THRU 60"	3/8" ROD	1" x 16 GAUGE	10'-0"	

**DUCT HANGER DETAIL**

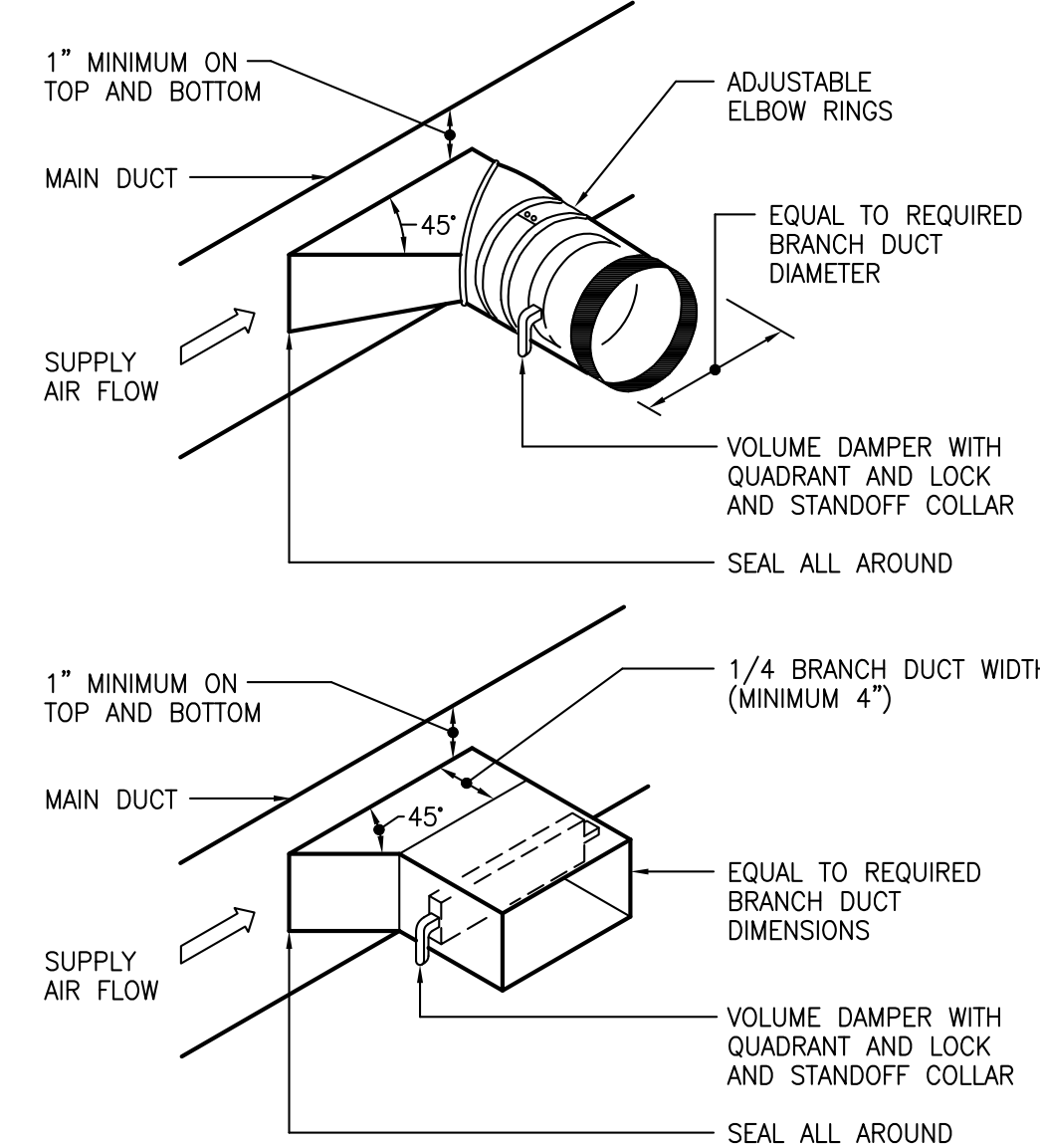


- INSTALLATION NOTES:**
1. FASTEN DUCT RING TO EXTENSION DUCT COLLAR WITH SHEET METAL SCREWS.
  2. "TAP-OUT" EITHER SIDE OR BOTTOM OF DUCT; TOP "TAP-OUT" IS NOT ACCEPTABLE.

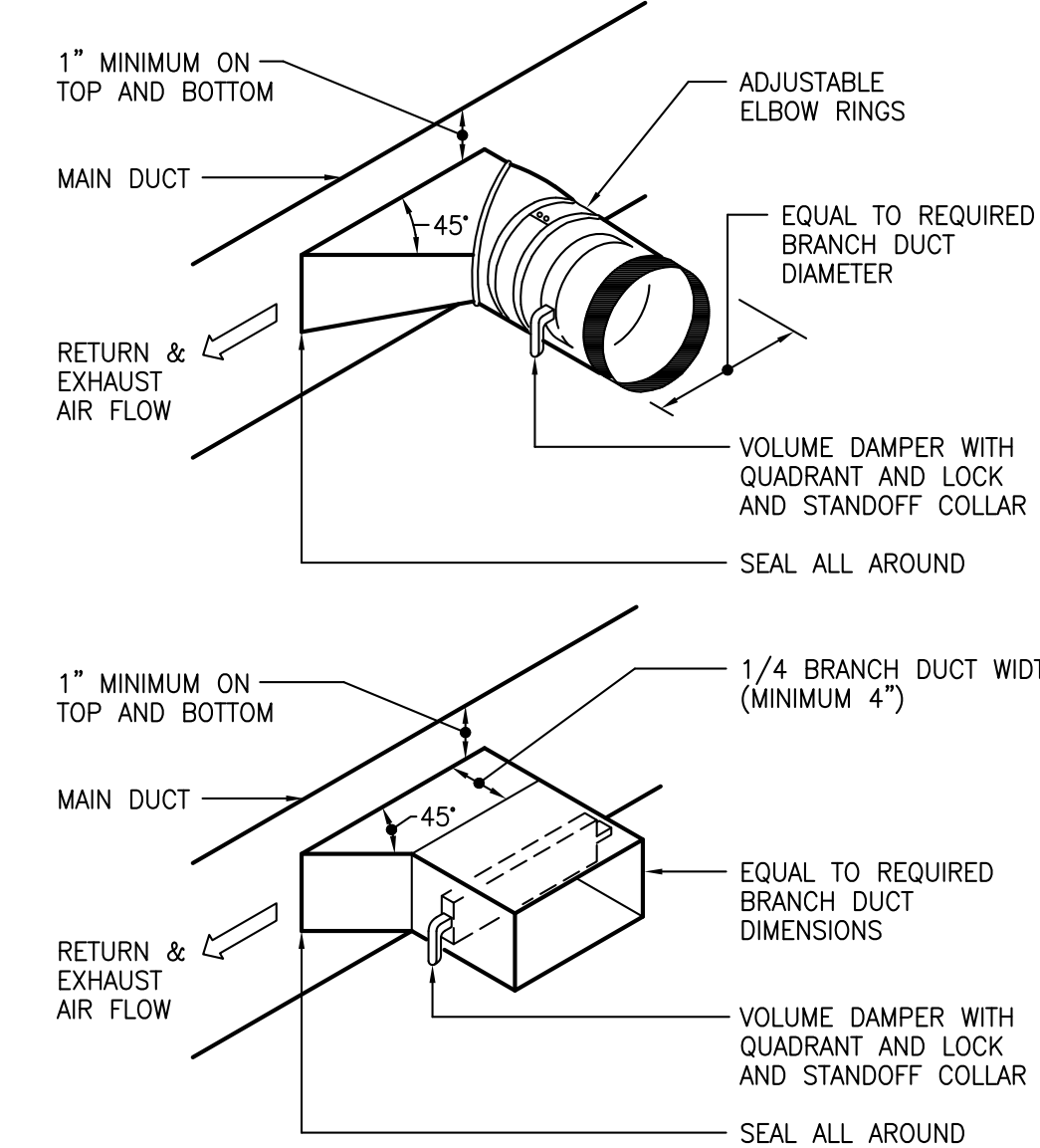
**CEILING DIFFUSER CONNECTION DETAIL**



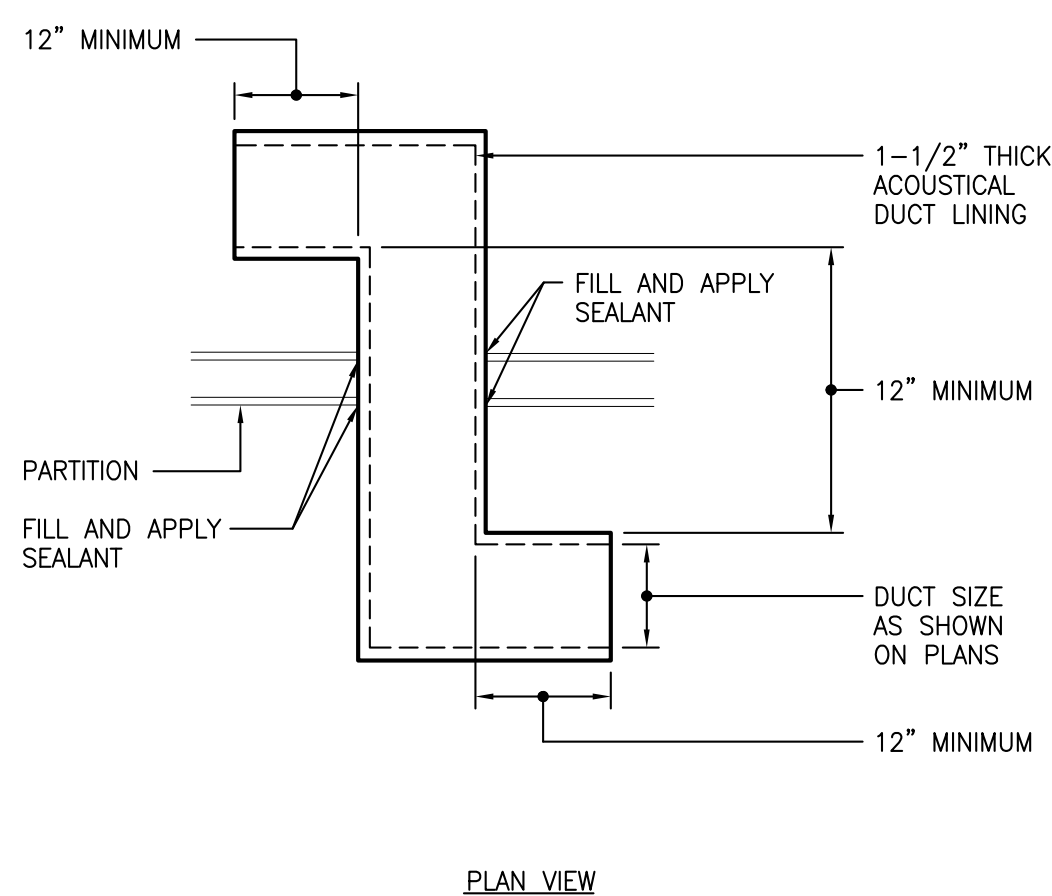
**RETURN GRILLE CONNECTION DETAIL**



**SUPPLY BRANCH TAKE-OFF FITTING DETAIL**

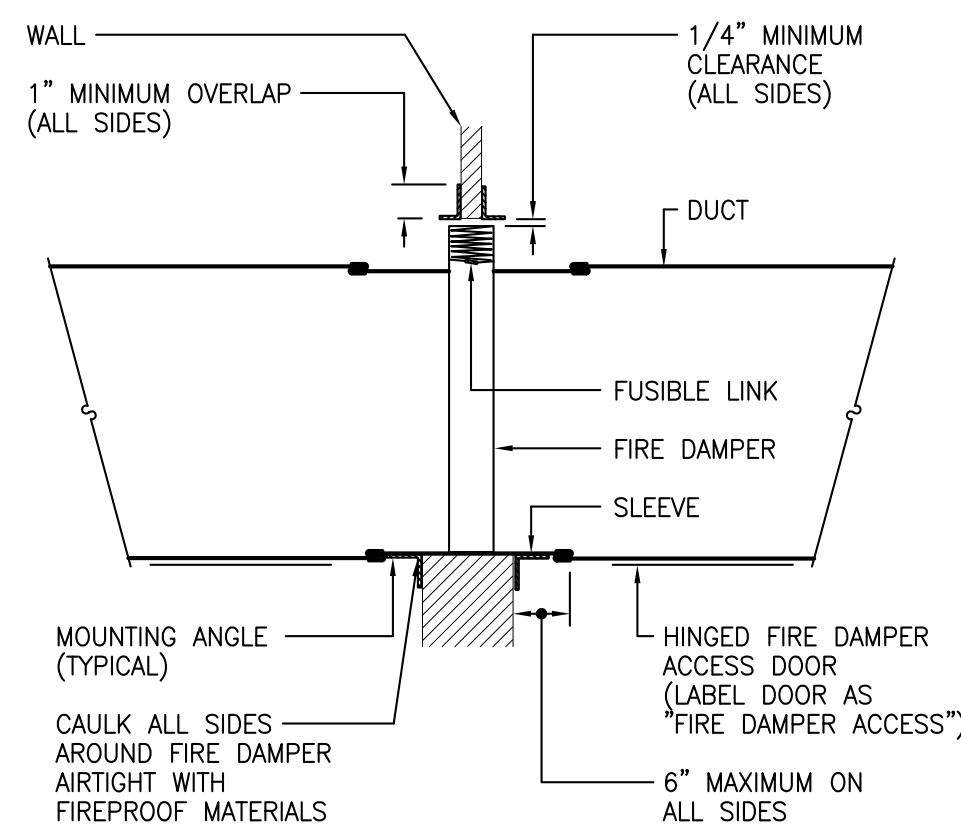


**RETURN / EXHAUST BRANCH TAKE-OFF FITTING DETAIL**



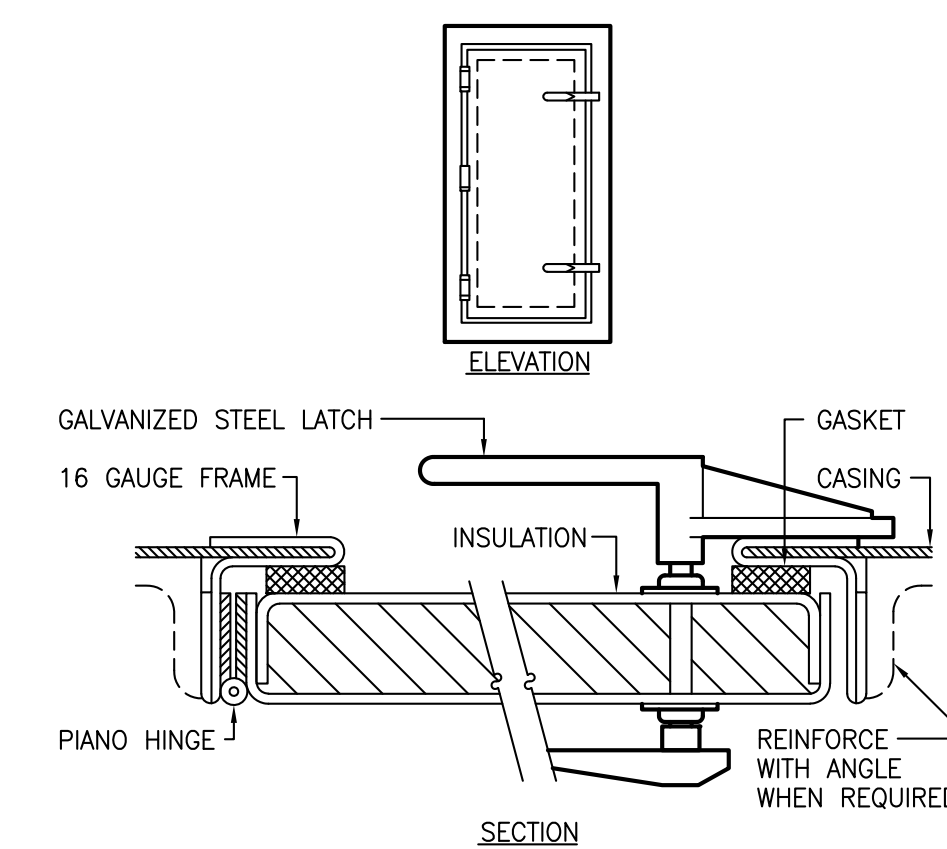
- NOTES:**
1. SUPPORT SILENCER FROM STRUCTURE ABOVE.

**TRANSFER DUCT DETAIL**



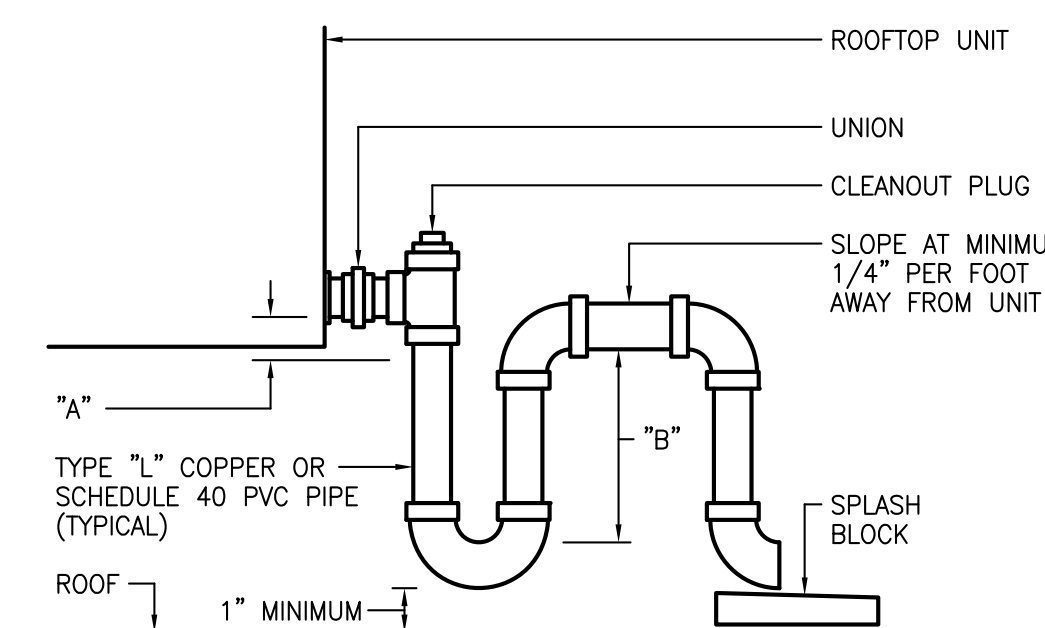
**FIRE DAMPER (OUTSIDE DUCT) DETAIL**

- NOTES:**
1. OPENINGS IN WALL SHALL BE 1/8" PER FOOT LARGER THAN DAMPER DIMENSIONS (3/16" LARGER PER FOOT FOR STAINLESS STEEL). MINIMUM CLEARANCE OF 1/4" REQUIRED FOR ALL INSTALLATIONS.
  2. SLEEVE GAUGE SHALL BE AT LEAST EQUAL TO THE GAUGE OF THE DUCT AS DEFINED BY THE APPROPRIATE SMACNA DUCT CONSTRUCTION STANDARDS AND NFPA 90A, WHEN ONE OR MORE OF THE FOLLOWING DUCT SLEEVE CONNECTIONS ARE USED:
    - A. PLAIN "S" SLIP.
    - B. HEMMED "S" SLIP.
    - C. STANDING "S" SLIP.
    - D. REINFORCED STANDING "S" SLIP.
    - E. INSIDE SLIP JOINT.
    - F. DOUBLE "S" SLIP.
  3. IF ANY OTHER DUCT SLEEVE CONNECTIONS ARE USED, THE SLEEVE SHALL BE MINIMUM 16-GAUGE FOR DAMPERS UP TO 36"W x 24"H AND 14-GAUGE IF WIDTH EXCEEDS 36" OR HEIGHT EXCEEDS 24".
  4. MOUNTING ANGLE SHALL BE MINIMUM OF 2"x1"x14-GAUGE AND BOLTED, TACK WELDED OR SCREWED TO SLEEVE AT MAXIMUM SPACING OF 12" AND WITH MINIMUM OF TWO CONNECTIONS IN EACH SIDE, TOP AND BOTTOM. MOUNTING ANGLES SHALL OVERLAP WALL A MINIMUM OF 1" ON ALL FOUR SIDES.
  5. DAMPER SHALL BE BOLTED, TACK WELDED OR SCREWED TO SLEEVE ON SAME SPACING AS ANGLES. SLEEVES SHALL NOT EXTEND MORE THAN 6" OUTSIDE OF WALL.



- NOTE:**
1. ALL DOORS TO OPEN AGAINST PRESSURE.
  2. LABEL DOOR "FIRE DAMPER ACCESS".

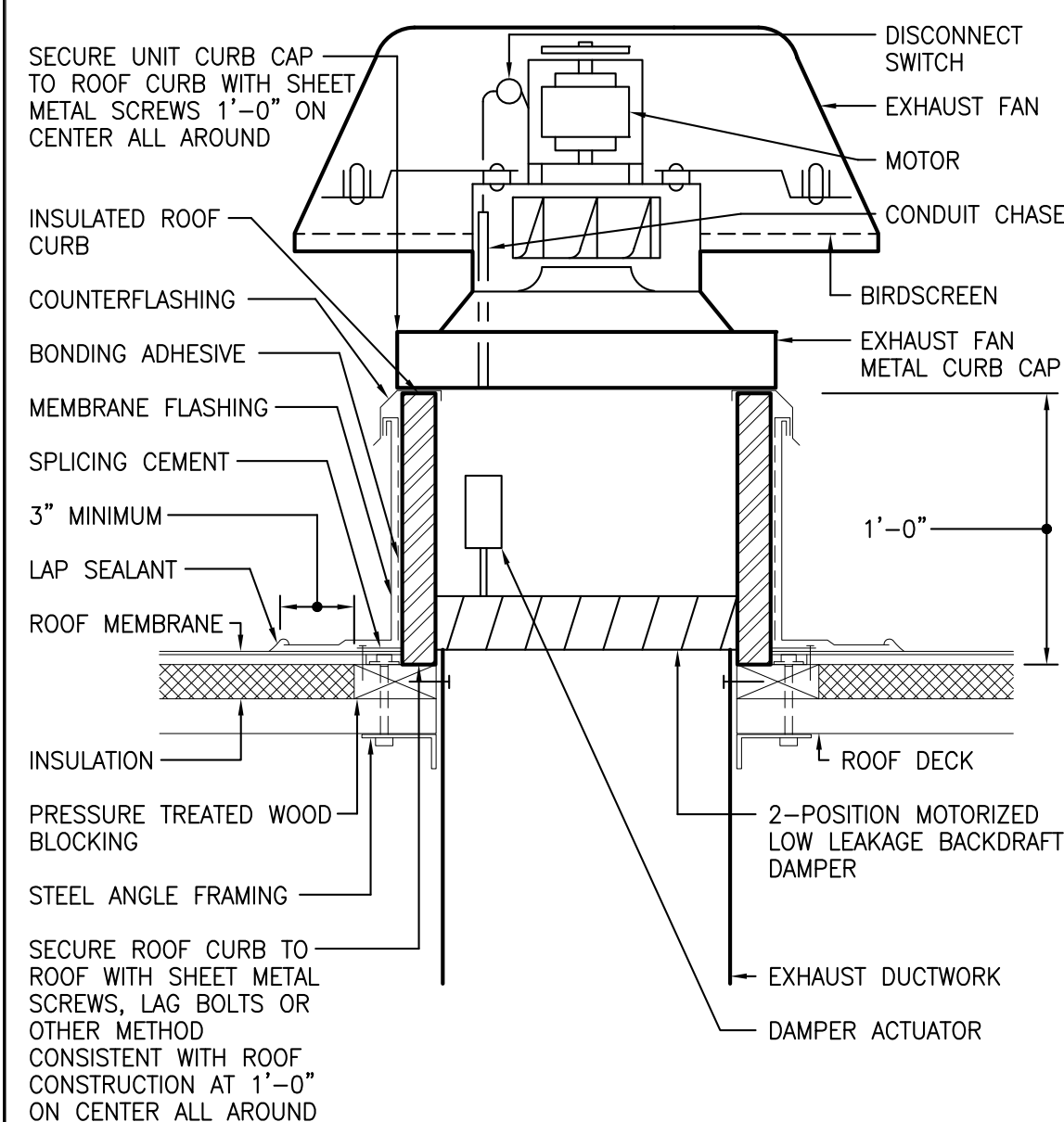
**DUCT ACCESS DOOR DETAIL**



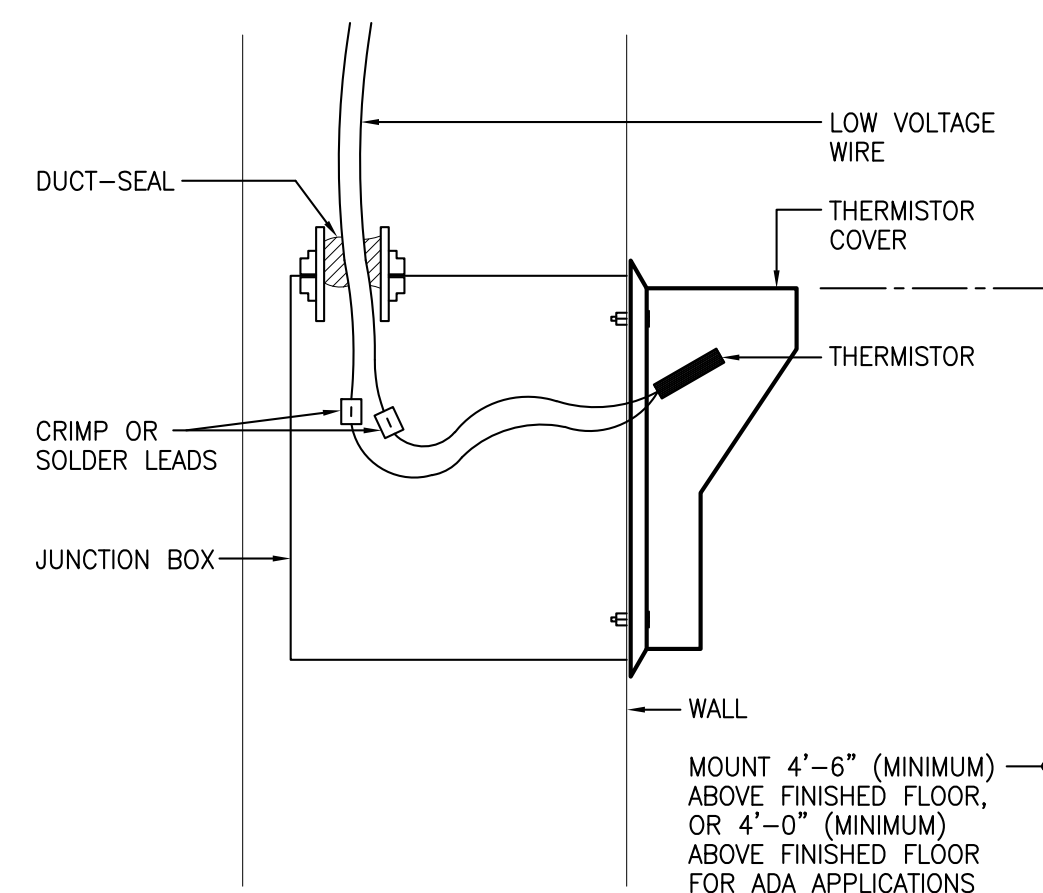
COIL CONFIGURATION	DIMENSION "A"	DIMENSION "B"
BLOW-THRU	1"	FAN DISCHARGE STATIC PRESSURE PLUS 1"
DRAW-THRU	FAN SUCTION STATIC PRESSURE PLUS 1"	2-1/2"

- NOTES:**
1. MINIMUM "A" OR "B" DIMENSION SHALL NOT BE LESS THAN 1".
  2. COPPER CONDENSATE DRAIN LINES SHALL BE INSULATED WITH MINIMUM 1-1/2" THICK ARMAFLEX II SLIP-ON TYPE INSULATION.
  3. DISCHARGE CONDENSATE PIPING A MINIMUM OF 3'-0" AWAY FROM UNIT TO SPLASH BLOCK ON ROOF (UNLESS PROHIBITED BY LOCAL CODE).

**ROOFTOP UNIT CONDENSATE TRAP DETAIL**



**ROOF MOUNTED EXHAUST FAN DETAIL**



**THERMOSTAT MOUNTING DETAIL**

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