

CAMPBELL + VAN DUSEN
ARCHITECTURE INTERIOR DESIGN
www.CVdStudio.com
CAMPBELL + VAN DUSEN Design Studio, LLC.
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Orlando, Florida 32801
Phone: 407.930.6016
FL LIC. NO. AA2603339

ARCHITECT OF RECORD
FRANK W. CAMPBELL AIA
FL LIC. NO. AR0016053
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TAGS
ENGINEERING
MEP, Fire Protection, Energy Modeling,
Sustainability Consulting
Certification of Authorization Number: 3916
Address: 1825 Lake Dr. Sanford, FL 32799
Tel: (407) 443-9568
www.tagseng.com

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CONSULTANT SEAL

PROJECT DESCRIPTION:
A NEW OFFICE BUILDING FOR
PROVIDENCE ONE PARTNERS
BUILDING - 01
7151 BUSINESS PARK LANE
HEATHROW, FLORIDA, 32746

OWNER REVIEW
SET

10.10.2025

NO.	DESCRIPTION	DATE

PROJECT TEAM
PRINCIPAL IN CHARGE
T. AGSAK
PROJECT MANAGER
L. YOUNG

CLIENT NAME
Providence One Partners

DESIGN PERIOD
24-0919-01

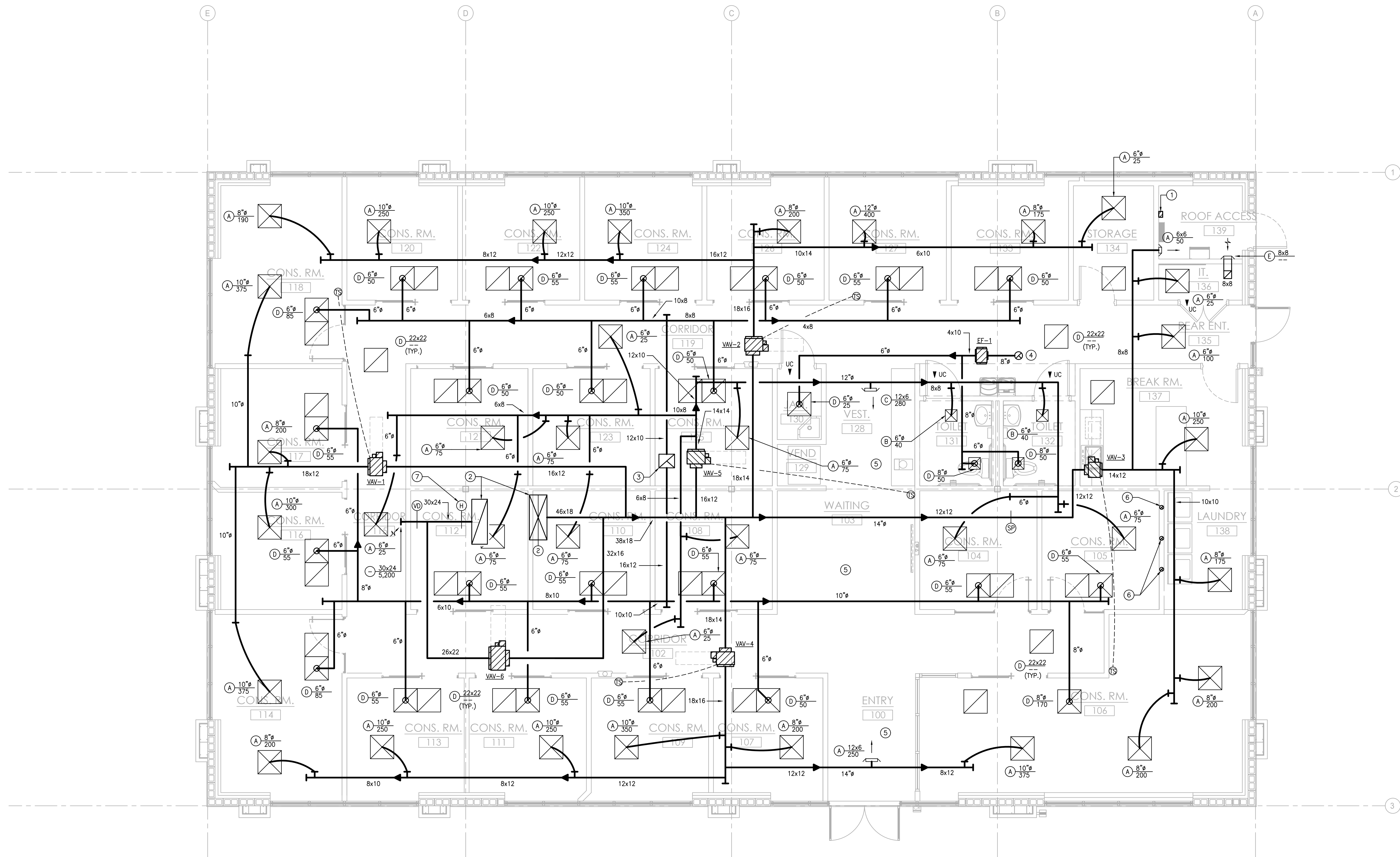
DATE FILED

MECHANICAL
FLOOR PLAN

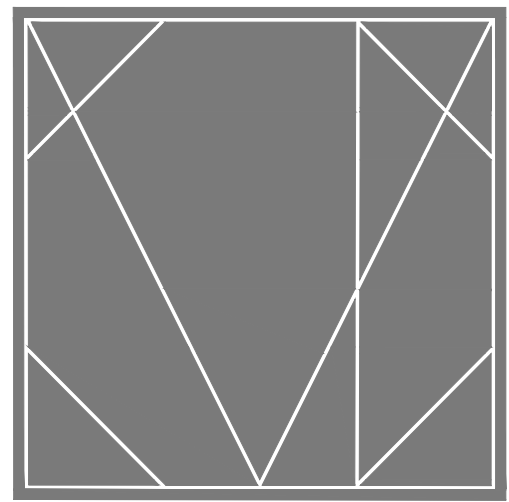
DATE REVISION

M2.0

- MECHANICAL KEY NOTES:
- 1 PROVIDE TRANE TRACER CONCEERGE CONTROL PANEL CONNECTED TO ALL VAV'S AND RTU. SOFTWARE IS WEB BASED AND SHOULD BE ACCESSIBLE TO AUTHORIZED PERSONNEL PER THE OWNER. COORDINATE EXACT LOCATION WITH ALL EQUIPMENT IN ROOM.
 - 2 46"x18" SA AND 46"x16" RA DOWN FROM RTU-1 ON ABOVE.
 - 3 16"x14" EA DUCTWORK FROM ABOVE.
 - 4 8" EA DUCTWORK FROM ABOVE.
 - 5 ALL NEW LIGHTING SUPPORTS MUST BE COORDINATED IN FIELD WITH NEW DUCTWORK AND EQUIPMENT. SUPPORTS MUST BE RIGID WHERE REQUIRED TO PREVENT LIGHTS FROM SWINGING DUE TO AIRFLOW FROM NEW DIFFUSERS.
 - 6 4" DRYER EA DUCTWORK FROM ABOVE.
 - 7 PROVIDE HUMIDISTAT IN RETURN AIR DUCTWORK AS SHOWN.



NORTH 1/M2.0 MECHANICAL FLOOR PLAN SCALE: 1/4" = 1'-0"



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TACS
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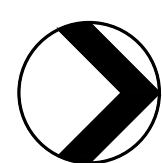
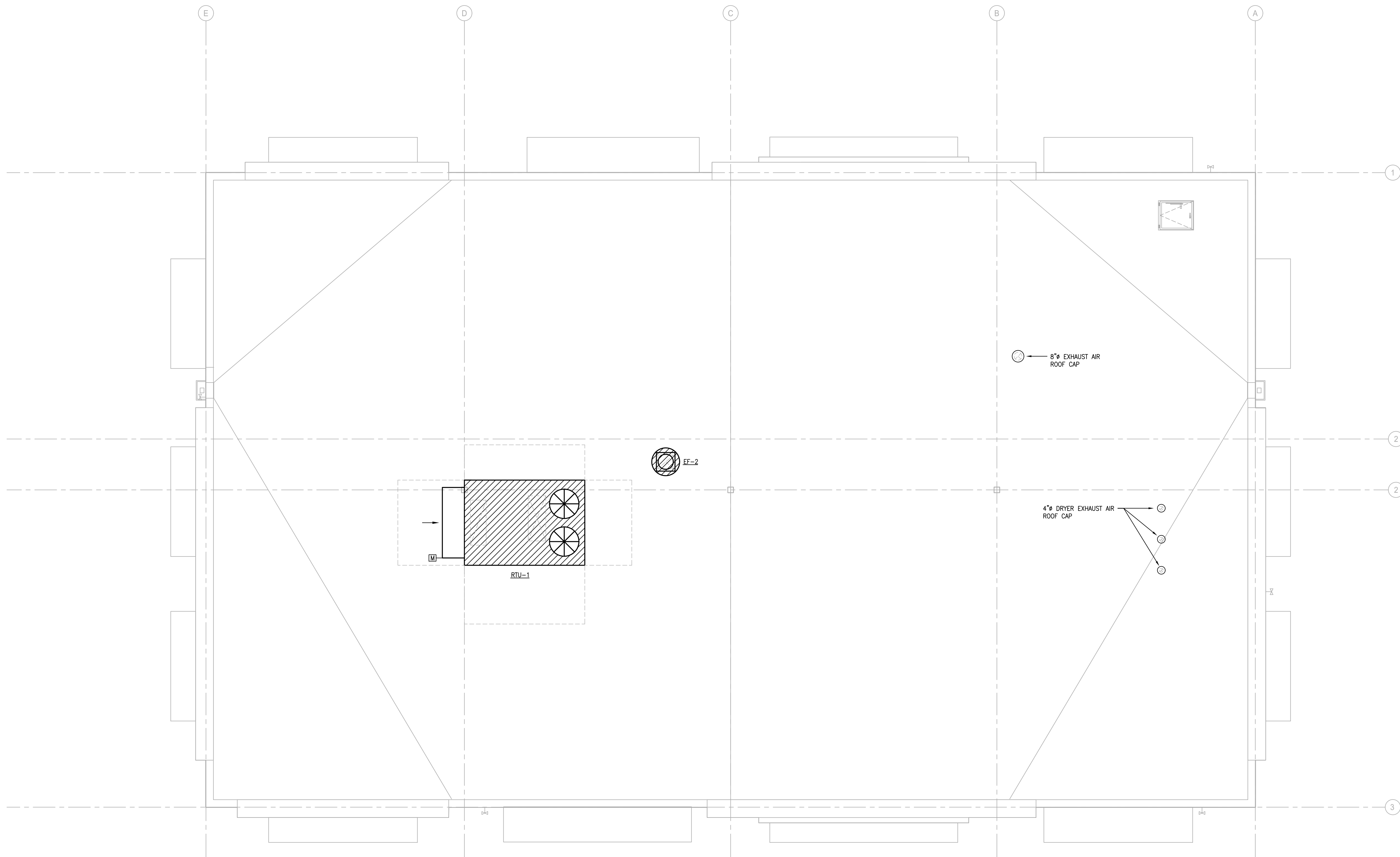
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PROJECT NUMBER
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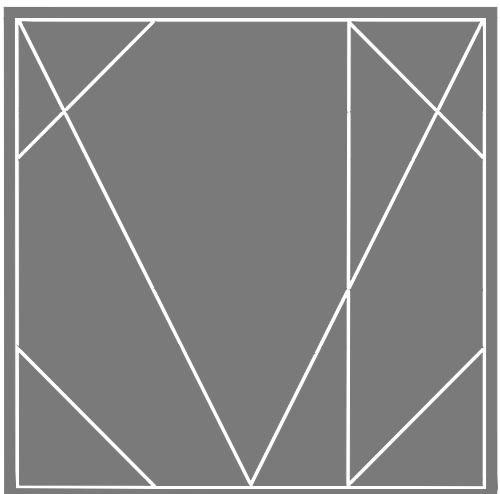
MECHANICAL
ROOF PLAN

DATE NUMBER
M3.0



1/M3.0 MECHANICAL ROOF PLAN

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



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DATE FILE

MECHANICAL
SCHEDULES

SHEET NUMBER

M4.0

BUILDING 1 HVAC SEQUENCE OF OPERATION:

1. GENERAL OVERVIEW

THE SYSTEM CONSISTS OF A CONSTANT VOLUME ROOFTOP UNIT (RTU) SUPPLYING CONDITIONED AIR TO VARIABLE AIR VOLUME (VAV) TERMINALS WITH A BYPASS DAMPER. THE RTU PROVIDES COOLING, ELECTRIC HEATING, AND HOT GAS REHEAT FOR DEHUMIDIFICATION. EACH VAV TERMINAL IS CONTROLLED BY A PROGRAMMABLE THERMOSTAT, ALLOWING INDEPENDENT ZONE CONTROL. A HUMIDITY SENSOR IN THE RETURN AIR DUCT MONITORS AND CONTROLS DEHUMIDIFICATION. THE SYSTEM IS CONTROLLED VIA WEB-BASED TRACER CONCIERGE BMT0215AB021000, WHICH MANAGES SCHEDULING, TEMPERATURE CONTROL, HUMIDITY CONTROL, STATIC PRESSURE REGULATION, AND ALARM MONITORING.

2. SYSTEM STARTUP AND NORMAL OPERATION

RTU STARTUP - THE RTU IS ENABLED VIA TRACER CONCIERGE BASED ON A TIME SCHEDULE OR MANUAL OVERRIDE. THE SUPPLY FAN OPERATES CONTINUOUSLY DURING OCCUPIED HOURS. THE RTU MAINTAINS A CONSTANT DISCHARGE AIR TEMPERATURE SETPOINT IN COOLING MODE. THE ELECTRIC HEATING ELEMENTS IN THE RTU ACTIVATE AS NEEDED DURING HEATING MODE.

VAV TERMINAL OPERATION

EACH VAV TERMINAL HAS A PROGRAMMABLE THERMOSTAT FOR INDEPENDENT TEMPERATURE CONTROL. THE DAMPER MODULATES BASED ON THE THERMOSTAT'S SETPOINT. IF THE ZONE TEMPERATURE RISES ABOVE THE COOLING SETPOINT (75°F, ADJUSTABLE), THE DAMPER OPENS TO INCREASE AIRFLOW. IF THE ZONE TEMPERATURE DROPS BELOW THE HEATING SETPOINT (70°F, ADJUSTABLE), THE DAMPER CLOSES TO REDUCE AIRFLOW (DOWN TO A MINIMUM AIRFLOW SETTING).

BYPASS DAMPER CONTROL

A STATIC PRESSURE SENSOR IN THE SUPPLY DUCT MONITORS SYSTEM PRESSURE. IF STATIC PRESSURE EXCEEDS THE SETPOINT, THE BYPASS DAMPER MODULATES OPEN TO DIVERT EXCESS AIR BACK TO THE RETURN PLENUM OR RTU RETURN. IF STATIC PRESSURE DROPS BELOW THE SETPOINT, THE BYPASS DAMPER CLOSES TO MAINTAIN PROPER DUCT PRESSURE.

3. COOLING MODE

THE RTU COOLING COIL OPERATES BASED ON DISCHARGE AIR TEMPERATURE CONTROL. WHEN THE SUPPLY AIR TEMPERATURE RISES ABOVE THE COOLING SETPOINT, THE RTU COMPRESSOR(S) CYCLE ON TO PROVIDE COOLING. VAV DAMPERS MODULATE BASED ON ZONE DEMAND FROM THEIR RESPECTIVE THERMOSTATS. THE BYPASS DAMPER OPENS AS NEEDED TO MAINTAIN STATIC PRESSURE WHEN VAV DAMPERS CLOSE.

4. HEATING MODE

HEATING IS PROVIDED ONLY BY THE RTU'S ELECTRIC HEATING ELEMENTS; THERE IS NO TERMINAL REHEAT. WHEN A ZONE CALLS FOR HEATING, THE VAV DAMPER CLOSES TO MINIMUM AIRFLOW, AND THE RTU HEATING ELEMENTS CYCLE ON TO MAINTAIN THE SUPPLY AIR TEMPERATURE SETPOINT. THE BYPASS DAMPER MODULATES TO MAINTAIN STATIC PRESSURE.

5. DEHUMIDIFICATION & HOT GAS REHEAT

A HUMIDITY SENSOR IN THE RETURN AIR DUCT MONITORS SPACE HUMIDITY LEVELS. IF THE HUMIDITY EXCEEDS THE SETPOINT (50% RH, ADJUSTABLE), THE RTU ENTERS DEHUMIDIFICATION MODE. THE COMPRESSOR RUNS TO OVERCOOL THE AIR, REMOVING MOISTURE. HOT GAS REHEAT IS ACTIVATED TO WARM THE SUPPLY AIR BACK TO A COMFORTABLE TEMPERATURE BEFORE DISTRIBUTION. VAV DAMPERS REMAIN ACTIVE, MODULATING TO MAINTAIN INDIVIDUAL ZONE TEMPERATURE SETPOINTS WHILE STILL ALLOWING DEHUMIDIFICATION. ONCE HUMIDITY LEVELS RETURN TO ACCEPTABLE LEVELS, THE SYSTEM RESUMES NORMAL COOLING OPERATION.

6. VENTILATION:

THE RTU INTRODUCES OUTSIDE AIR AT A FIXED MINIMUM RATE TO MEET VENTILATION REQUIREMENTS. DAMPER SHALL CLOSE WHEN THE UNIT IS OFF.

7. UNOCCUPIED MODE & NIGHT SETBACK

DURING UNOCCUPIED HOURS, TRACER CONCIERGE AND PROGRAMMABLE THERMOSTATS ADJUST THE SYSTEM TO SETBACK MODE. THE RTU FAN CYCLES ON ONLY WHEN HEATING OR COOLING IS REQUIRED. COOLING AND HEATING SETPOINTS ARE WIDENED TO REDUCE ENERGY CONSUMPTION. IF THE TEMPERATURE OR HUMIDITY DRIFTS BEYOND SETBACK LIMITS, THE RTU AND ASSOCIATED VAV TERMINALS ACTIVATE TO RESTORE CONDITIONS.

8. ALARM MONITORING & FAULT DETECTION

TRACER CONCIERGE PROVIDES WEB-BASED MONITORING FOR SYSTEM PERFORMANCE AND FAULTS. ALARMS ARE GENERATED FOR: HIGH/LOW SUPPLY AIR TEMPERATURE, EXCESSIVE OR LOW DUCT STATIC PRESSURE, RTU FAN FAILURE, COMPRESSOR OR HEATING ELEMENT FAULTS, HUMIDITY SENSOR FAILURE OR EXCESSIVE HUMIDITY LEVELS, COMMUNICATION OR SENSOR FAILURES NOTIFICATIONS AND ALARMS ARE VIEWABLE REMOTELY VIA TRACER CONCIERGE.

9. PROVIDE RELAY AND ANY OTHER ANCILLARY ELECTRICAL DEVICES AS REQUIRED FOR INTERLOCKING OF EXHAUST FANS AS SHOWN IN FAN SCHEDULE.

10. RTU AUTOMATIC SHUTDOWN:

PROVIDE A SMOKE DETECTOR IN THE SUPPLY AIR DUCT FOR THE RTU. UNIT SHALL SHUT DOWN UPON DETECTION OF SMOKE IN ACCORDANCE WITH NFPA AND FLORIDA MECHANICAL CODE REQUIREMENTS. PROVIDE AUDIBLE / VISUAL ALARM. PROVIDE ALL REQUIRED POWER AND CONTROL WIRING.

STACKED WASHER DRYER VENT LENGTH CALC	
VERTICAL LENGTH:	16.0
HORIZONTAL LENGTH:	1.0
1ST 90 ELBOW (10.0'):	10.0
ADD'TL 90 ELBOWS (10.0' EACH):	0.0
45 ELBOWS (5.0' EACH):	0.0
TOTAL EQ. LENGTH (FT):	27.0
DRYER BASIS OF DESIGN IS LG DLGX4001. MANUFACTURERS INSTALLATION INSTRUCTIONS OUTLINE A MAXIMUM DRYER DUCT LENGTH OF 55 EQUIVALENT FT.	

KEY:		TYPE	NECK SIZE AND DUCT RUN-OUT SIZE, UNLESS NOTED OTHERWISE.	NOTE: REFER TO ARCHITECTURAL REFLECTED CEILING PLAN FOR CEILING, DIFFUSER BORDER TYPE, AND FINAL LOCATION OF AIR DEVICES.
A	SUPPLY DIFFUSER	METALAIRE 5700	24"x24" FACE, 4 WAY PATTERN UNO, 2-CONE, LAY-IN CEILING SUPPLY DIFFUSER, ALUMINUM CONSTRUCTION, WHITE FINISH. SEE PLANS FOR NECK SIZE.	
B	SUPPLY DIFFUSER	METALAIRE 5700	12"x12" FACE, 4 WAY PATTERN UNO, 2-CONE, LAY-IN CEILING SUPPLY DIFFUSER, ALUMINUM CONSTRUCTION, WHITE FINISH. SEE PLANS FOR NECK SIZE.	
C	SIDEWALL SUPPLY GRILLE	METALAIRE H4004-1	SIDEWALL SUPPLY GRILLE, DOUBLE DEFLECTION, ADJUSTABLE VERTICAL FACE, HORIZONTAL REAR BLADE, ALUMINUM CONSTRUCTION. OPPOSED BLADE DAMPER, WHITE FINISH. REFER TO PLANS FOR NECK / GRILLE SIZE.	
D	RETURN / EXHAUST CEILING GRILLE	METALAIRE CC5	24"x24" EGGRATE GRILLE, 1/2"x1/2"x1/2" CORE, CEILING RETURN / EXHAUST GRILLE, ALUMINUM CONSTRUCTION, WHITE FINISH. SEE PLANS FOR NECK / GRILLE SIZE.	
E	SIDEWALL RETURN / EXHAUST GRILLE	METALAIRE CC5	EGGRATE GRILLE, 1/2"x1/2"x1/2" CORE, RETURN / EXHAUST GRILLE, ALUMINUM CONSTRUCTION, WHITE FINISH. SEE PLANS FOR NECK SIZE.	
NOTES: 1. REFER TO ARCHITECTURAL REFLECTED CEILING PLAN FOR CEILING, DIFFUSER BORDER TYPE, AND FINAL LOCATION OF AIR DEVICES. 2. COORDINATE COLOR OPTIONS WITH ARCHITECT PRIOR TO ORDERING. PRICE AS STANDARD COLOR OPTIONS. 3. ACCEPTABLE ALTERNATIVE MANUFACTURERS ARE TITUS AND PRICE.				

3 AIR DEVICE SCHEDULE

NOT TO SCALE

OUTSIDE AIR CALCULATIONS AND SALON EXHAUST AIR CALCULATIONS VERIFYING COMPLIANCE WITH TABLE 403.1.1 FBC - 2023 MECHANICAL AND ASHRAE 62.1						
OUTDOOR AIR						
ROOM TYPE	OCCUPANCY CLASSIFICATION	AREA (SQ.FT.)	VENTILATION REQUIRED (CFM/SQ.FT.)	VENTILATION REQUIRED (CFM/PERSON)	NUMBER OF PEOPLE	TOTAL VENTILATION REQUIRED (CFM)
CONSULTATION ROOM	BARBER	2,721	0.06	7.5	56	1,405
BREAK / ENTRY / WAITING / VESTIBULE	OFFICE SPACES	500	0.06	5	17	115
JANITOR / ROOF ACCESS / STORAGE / IT / LAUNDRY	STORAGE	229	0.12	-	-	27
CORRIDOR	CORRIDOR	796	0.06	-	-	48
					TOTAL	1,595
UNIT MARK						
RTU-1					OUTSIDE AIR REQUIRED PER RTU (CFM)	TOTAL VENTILATION PROVIDED (CFM)
					1,595	1,800
					TOTAL	1,595
NOTES: 1. THE AREA SQ.FT. IS THE NET AREA EXCLUDING ALL WALLS THICKNESS AND UNCONDITIONED AREAS.						
EXHAUST AIR						
ROOM TYPE	OCCUPANCY CLASSIFICATION	AREA (SQ.FT.)	EXHAUST REQUIRED (CFM/SQ.FT.)	TOTAL EXHAUST REQUIRED (CFM)		
CONS ROOM	BARBER	2,721	0.50	1,361		
RESTROOM	RESTROOM	92	-	100		
JANITOR	STORAGE	23	-	25		
				TOTAL	1,486	
UNIT MARK						
EF-1					TOTAL EXHAUST REQUIRED (CFM)	TOTAL EXHAUST PROVIDED (CFM)
					125	125
EF-2					1,361	1,405
					TOTAL	1,486
NOTES: 1. THE AREA SQ.FT. IS THE NET AREA EXCLUDING ALL WALLS THICKNESS AND UNCONDITIONED AREAS.						

2 OUTSIDE AIR CALCULATIONS

M

HIGHEST CONCENTRATION REFRIGERANT CIRCUIT	MANUFACTURERS REFRIGERANT CHARGE	CONDITIONED AREA SERVED	CEILING HEIGHT	VOLUME OF AREA SERVED
RTU-1	12.9 LBS	4,338 SQUARE FEET	10'	43,380
AMOUNT OF REFRIGERANT				
REFRIGERANT TYPE	PER OCCUPIED SPACE	2022 ASHRAE 34 TABLE 4-2	PROVIDED AMOUNT OF REFRIGERANT	PER AREA SERVED
R-454B	R-454B = 3.1 LBS PER 1,000 CUBIC FEET		0.3 LBS PER 1,000 CUBIC FEET	
REFERENCE ASHRAE 15-2022 SECTION 7.2.3.3 CONNECTED VIA DUCTED AIR DISTRIBUTION SYSTEM.				
PER THE CALCULATIONS ABOVE, THE PROVIDED REFRIGERANT AMOUNT OF 0.3 LBS / 1,000 CUBIC FEET IS ACCEPTABLE AS IT IS BELOW THE THE 3.1 LBS / 1,000 CUBIC FEET LIMIT.				

6 REFRIGERANT VOLUME CALCULATIONS

M

UNIT DESIGNATION	VAV-1	VAV-2	VAV-3	VAV-4	VAV-5	VAV-6
MANUFACTURER	TRANE	TRANE	TRANE	TRANE	TRANE	TRANE
MODEL NO. - INLET SIZE	VCCF12	VCCF14	VCCF10	VCCF12	VCCF12	VCCF24
COOLING CFM						
MAX.	1,250	1,840	1,000	1,875	1,035	5,250
MIN.	315	460	250	470	260	0
VOLTAGE/PHASE	120/1	120/1	120/1	120/1	120/1	120/1

NOTES:

- VAV UNITS SHALL MAINTAIN A ROOM NC-40 SOUND CRITERIA. SOUND ATTENUATION SHALL BE PROVIDED IF NECESSARY TO MEET THIS CONDITION.
- MAXIMUM PRESSURE DROP SHALL NOT EXCEED 0.25" W.G. AT MAXIMUM DESIGN FLOW RATE.
- VAV TERMINALS SHALL BE PROVIDED WITH 24V CONTROL TRANSFORMER.
- REFER TO FLOOR PLAN TO VERIFY RIGHT / LEFT HAND CONFIGURATION.

5 VAV UNIT SCHEDULE

M

DESIGNATION	EF-1	EF-2		
LOCATION	CEILING	ROOF		
SERVICE	TOILET & JAN	CONS		
MANUFACTURER	GREENHECK	GREENHECK		
MODEL NO.	CSP-A200	G-120-A		
FAN DATA				
TYPE	CENTRIFUGAL	CENTRIFUGAL		
DRIVE	DIRECT	DIRECT		
CFM	125	1,405		
STAT. PRESSURE "WG	0.35	0.75		
MOTOR HP (MIN.)	72 WATTS	1/2		
RPM	686	1,507		
VOLTAGE / PHASE	115/1	115/1		
WEIGHT (LBS)	50	75		
NOTES	1, 3 & 5	1, 2, 4 & 5		

NOTES:

- PROVIDE BACKDRAFT DAMPER.
- PROVIDE MANUFACTURERS ROOF CURB FOR EF-2.
- INTERLOCK EF-1 WITH OCCUPANCY SENSOR OR LIGHT SWITCH IN TOILET 131, TOILET 132 AND JAN 130.
- INTERLOCK EF-2 WITH RTU-1. EXHAUST FAN SHALL RUN CONTINUOUSLY DURING OCCUPIED HOURS.
- ACCEPTABLE ALTERNATIVE MANUFACTURERS ARE LOREN COOK AND PENN FANS.

4 FAN SCHEDULE

M

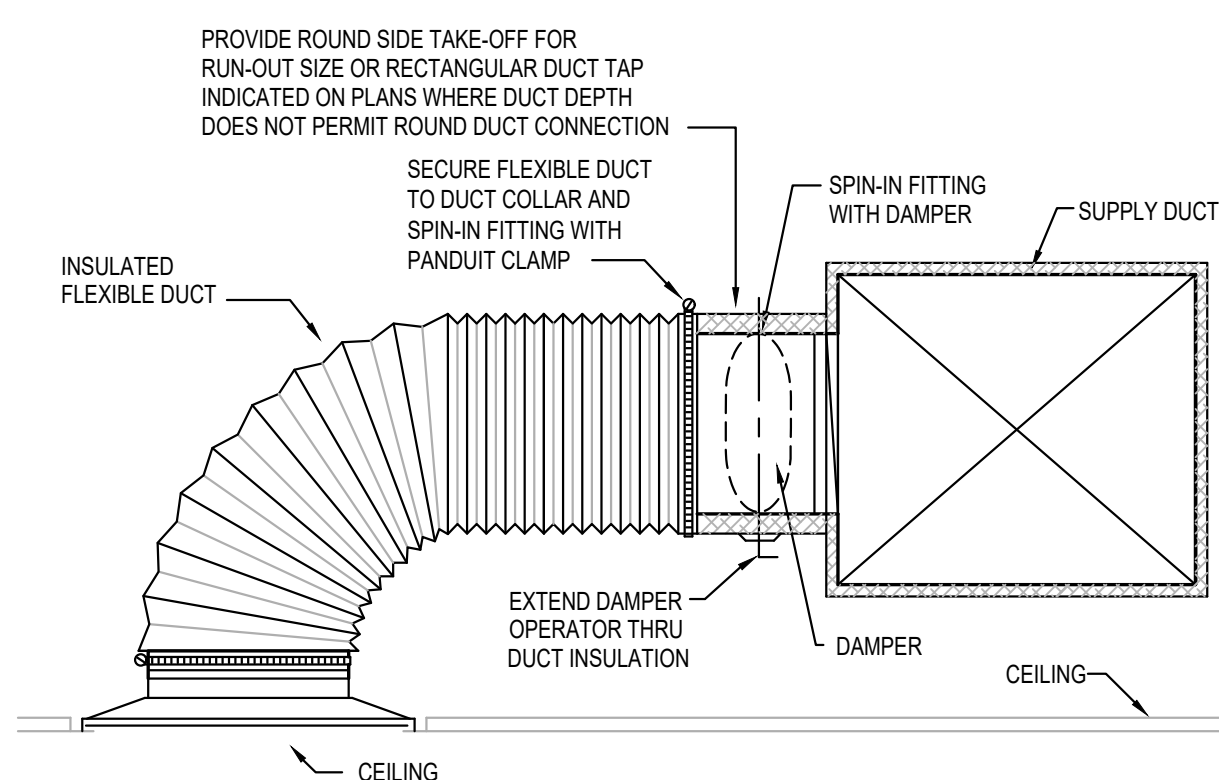
DESIGNATION	RTU-1		
NOMINAL TONS	17.5		
EER	11.0		
CFM	7,000		
OUTSIDE AIR CFM	1,800		
EST. EXTERNAL S.P. ("W.G.)	1.5"		
MIN. FAN H.P.	3.0		
COOLING DATA			
SENSIBLE MBH	153.8		
TOTAL MBH	204.0		
EAT ("F D.B./W.B.)	78.9/66.3		
LAT ("F D.B./W.B.)	59.0/57.0		
REFRIGERANT	R-454B		
HEATING DATA			
KW	54.0		
EAT/LAT ("F D.B.)	64.0/88.0		
HOT GAS REHEAT MBH	161.0		
EAT ("F D.B./W.B.)	73.0/64.0		
LAT ("F D.B.)	75.4		
EQUIPMENT SPECIFICATION			
MANUFACTURER	TRANE		
MODEL NO.	TSK210A350P		
VOLTAGE/PHASE	208/3		
MCA (AMPS)	164.0		
MOP (AMPS)	175.0		
WEIGHT (LBS)	2,100		

NOTES:

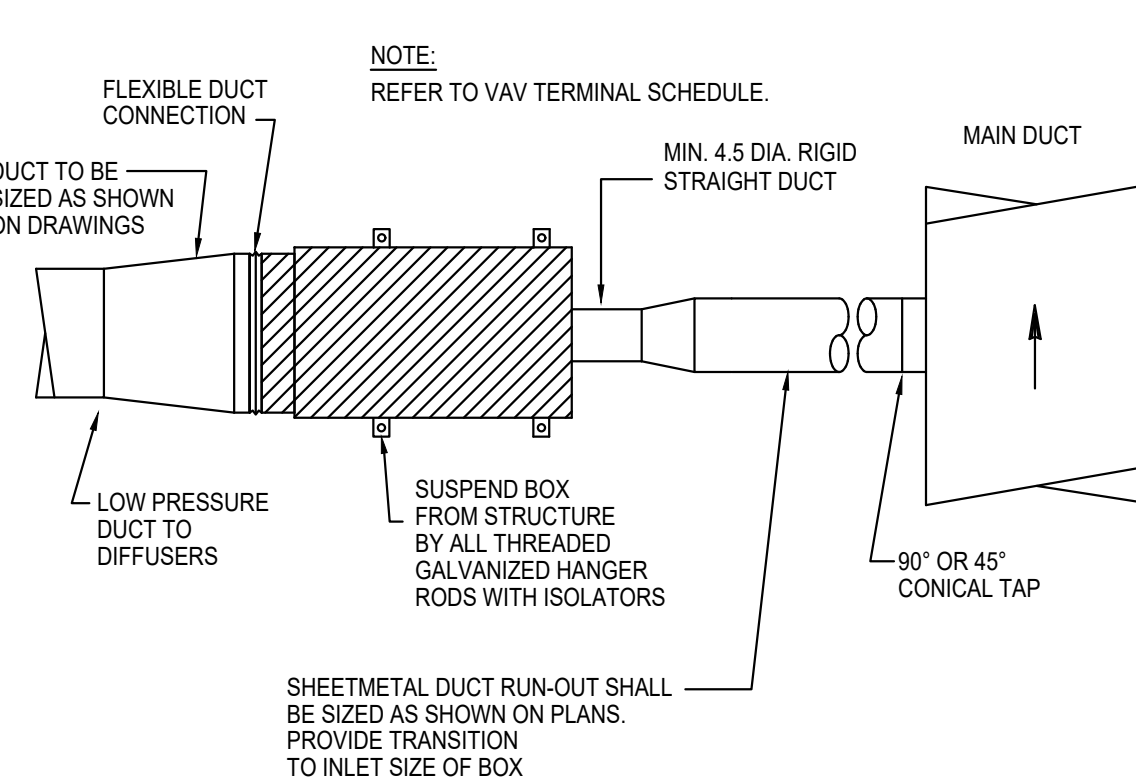
- PROVIDE MANUFACTURERS FULL PERIMETER 14" HIGH ROOF CURB.
- ESTIMATED EXTERNAL STATIC PRESSURE INCLUDES LOSSES THROUGH DUCTWORK, AIR DEVICES, ETC. AND 0.10" W.G. FOR DIRTY FILTERS.
- PROVIDE MANUFACTURER'S MOTORIZED OUTSIDE AIR DAMPERS ON ALL INTAKE HOODS OF RTU'S.
- LEAVING AIR TEMPERATURE IS CONDITION OF SUPPLY AIR LEAVING THE UNIT AFTER FAN HEAT PICKUP.
- INTERLOCK RTU-1 WITH EF-2.
- PROVIDE MANUFACTURERS 2" MERV 8 AIR FILTERS.
- ACCEPTABLE ALTERNATIVE MANUFACTURERS ARE CARRIER AND DAIKIN.

1 DX ROOFTOP UNIT SCHEDULE

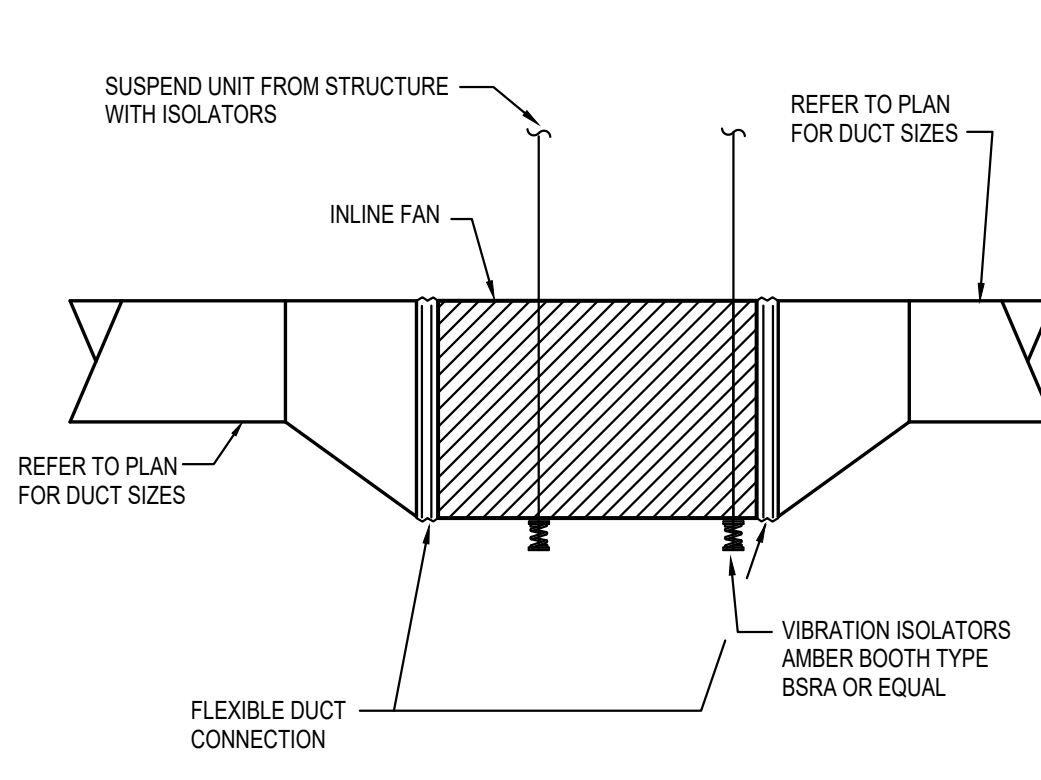
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17 CEILING DIFFUSER CONNECTION DETAIL



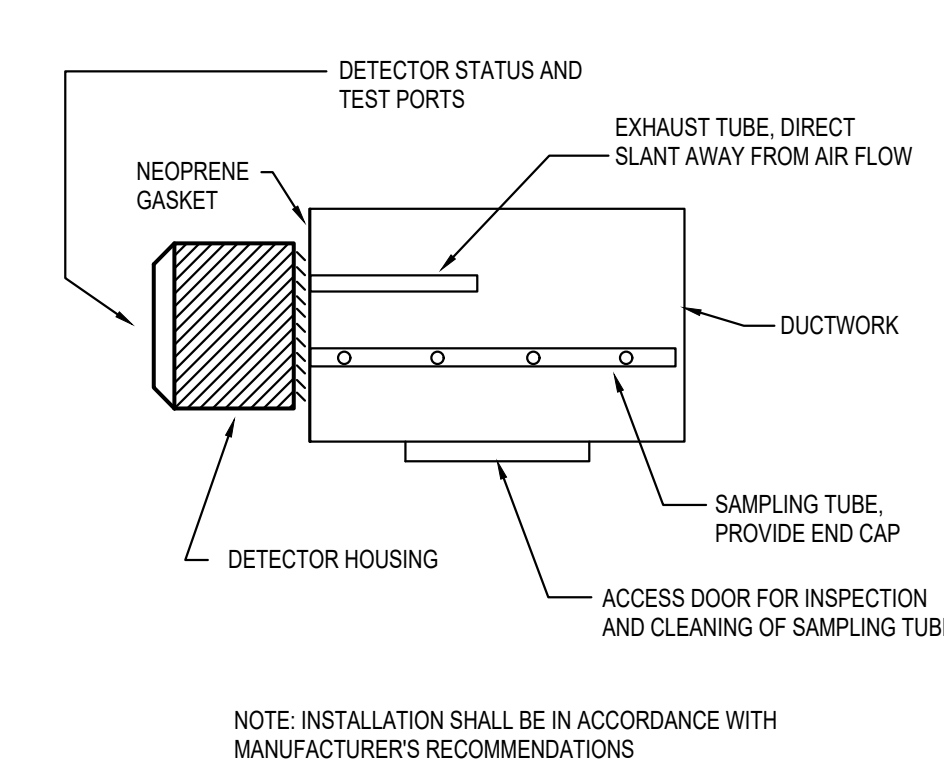
16 VAV TERMINAL BOX DETAIL
M NOT TO SCALE



15
M

INLINE FAN DETAIL

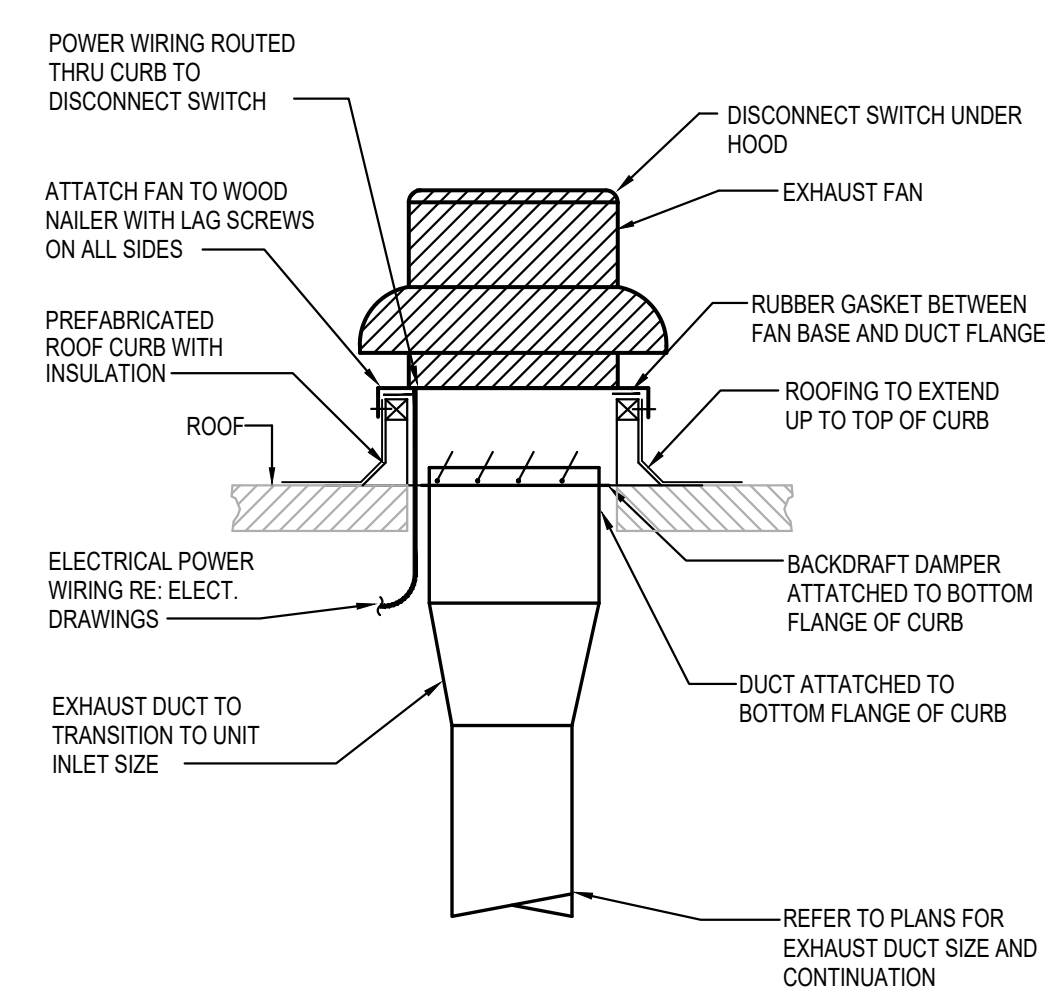
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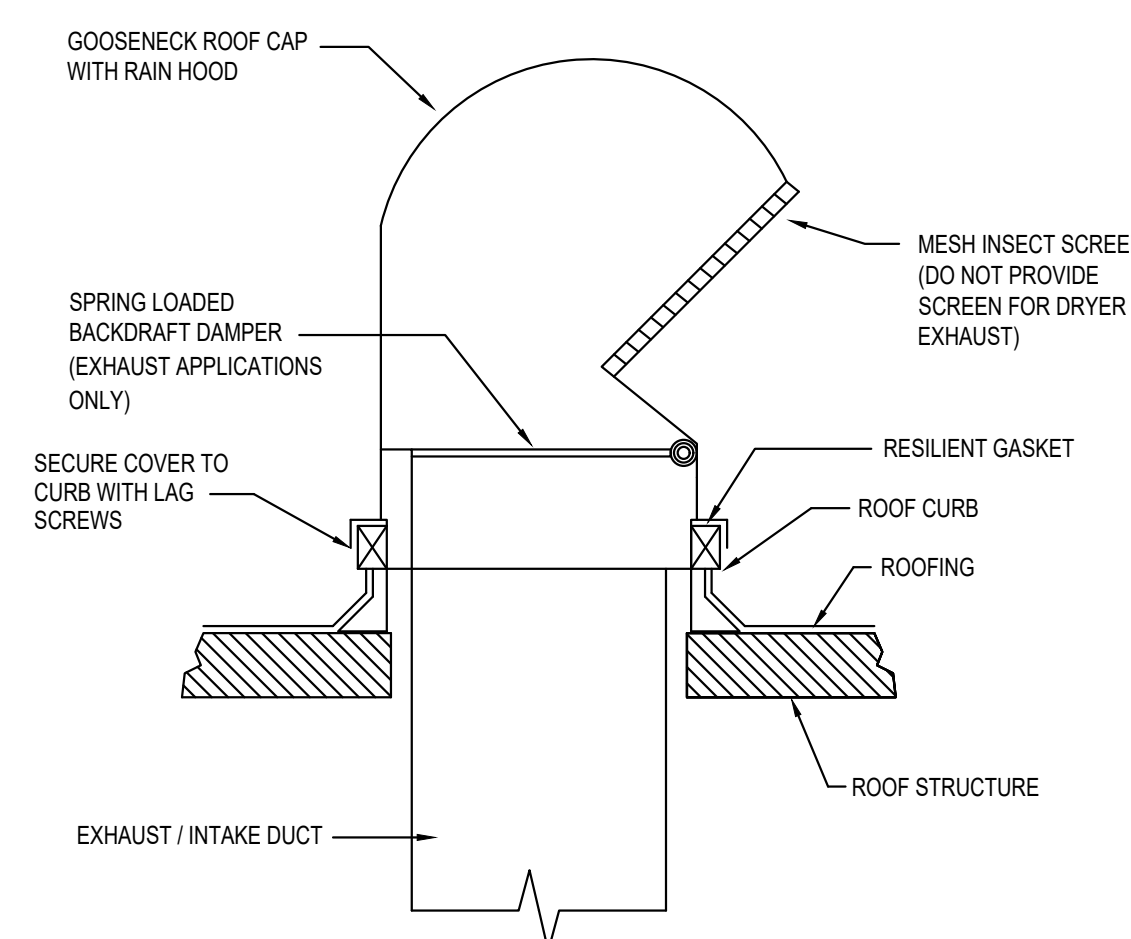
14
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DUCT DETECTOR DETAIL

NOT TO SCALE



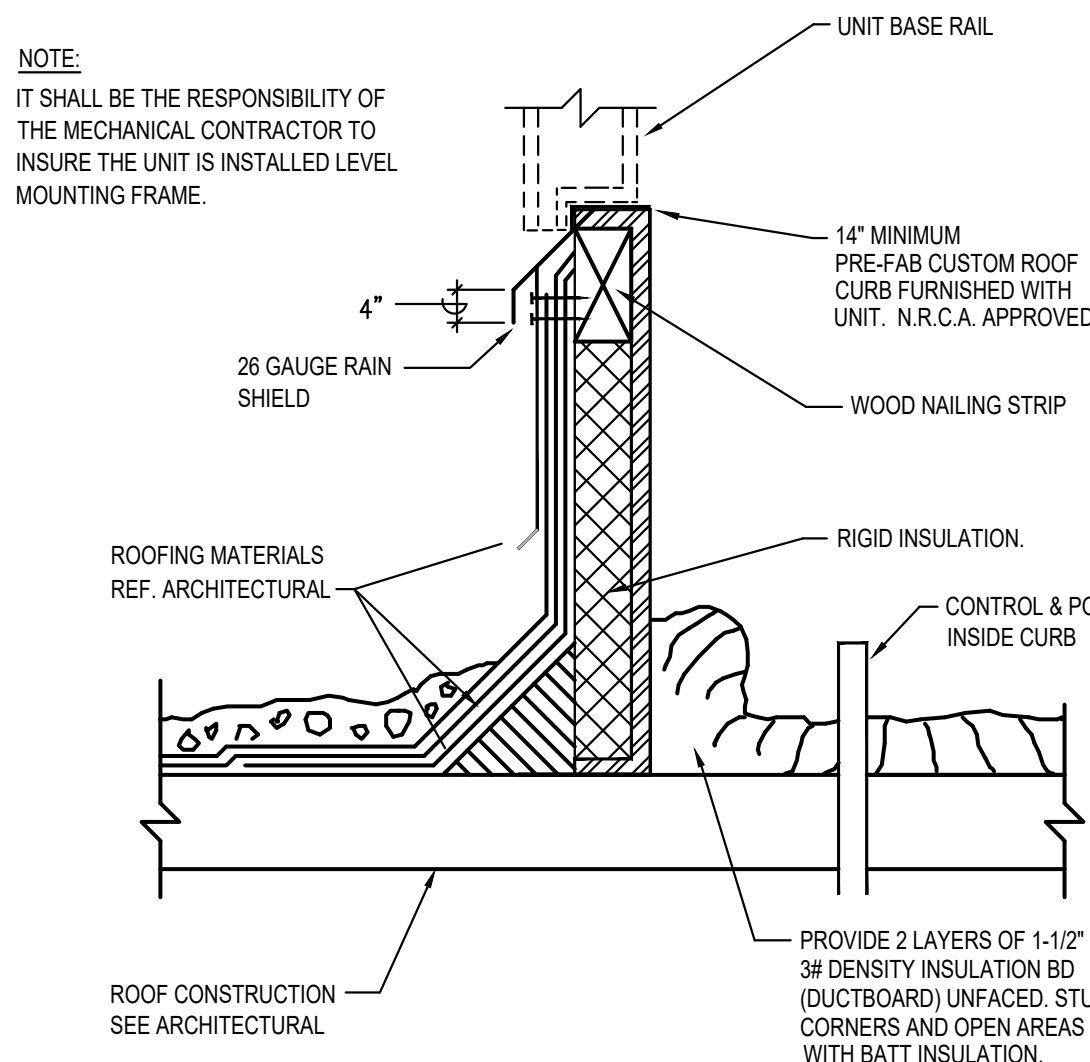
13 ROOF MOUNTED EXHAUST FAN
M NOT TO SCALE



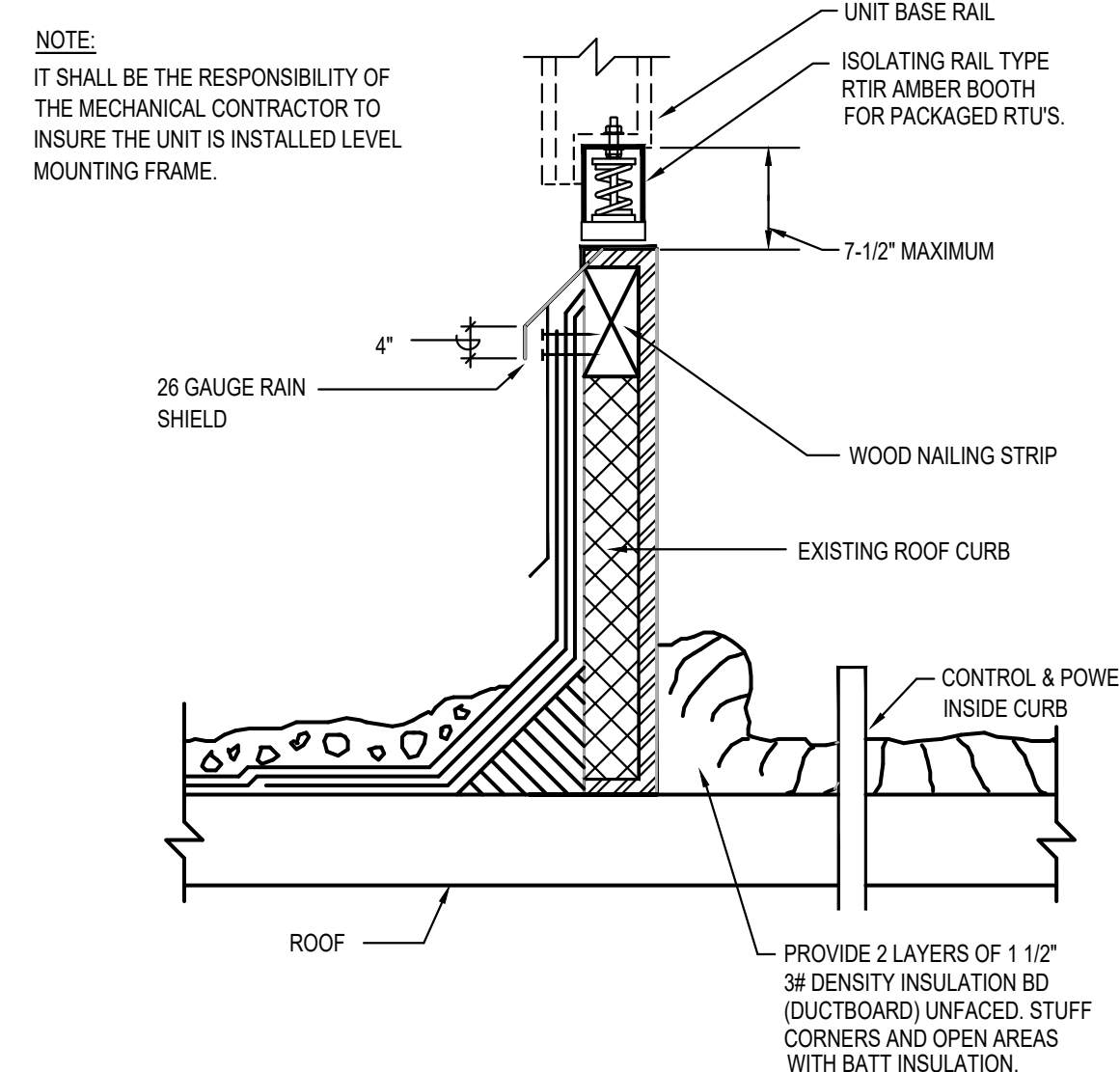
12
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**EXHAUST AIR GOOSENECK
ROOF VENT DETAIL**

NOT TO SCALE



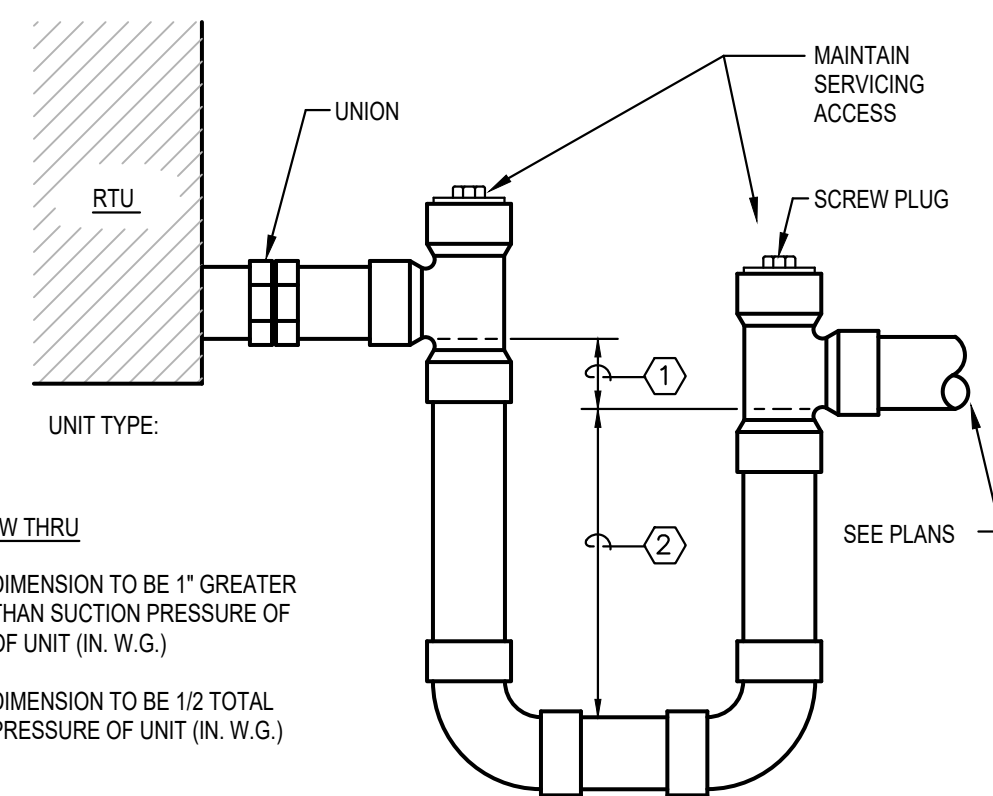
11 EXHAUST FAN ROOF CURB DETAIL



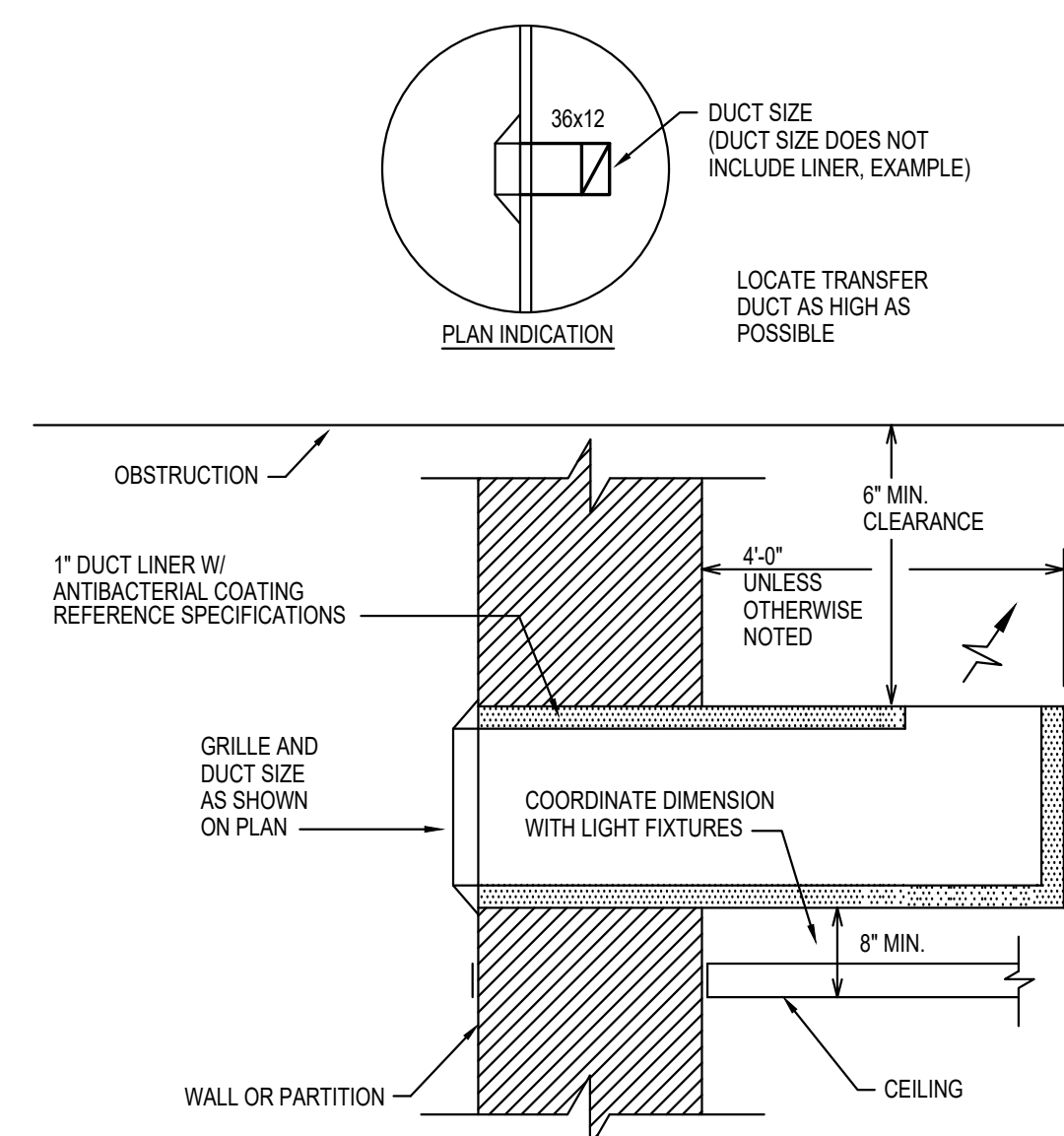
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RTU ROOF CURB DETAIL

NOT TO SCALE



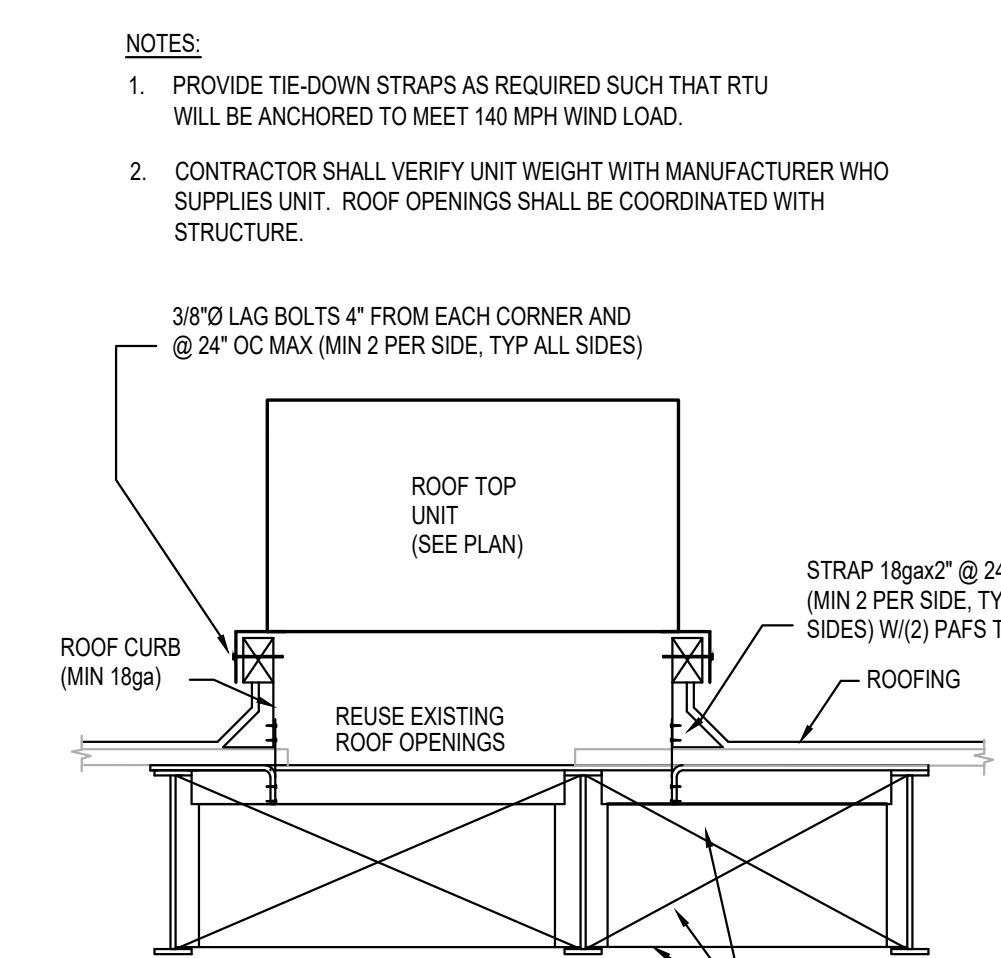
9 CONDENSATE DRAIN DETAIL
M NOT TO SCALE



8
M

TRANSFER DUCT DETAIL

NOT TO SCALE



7
M

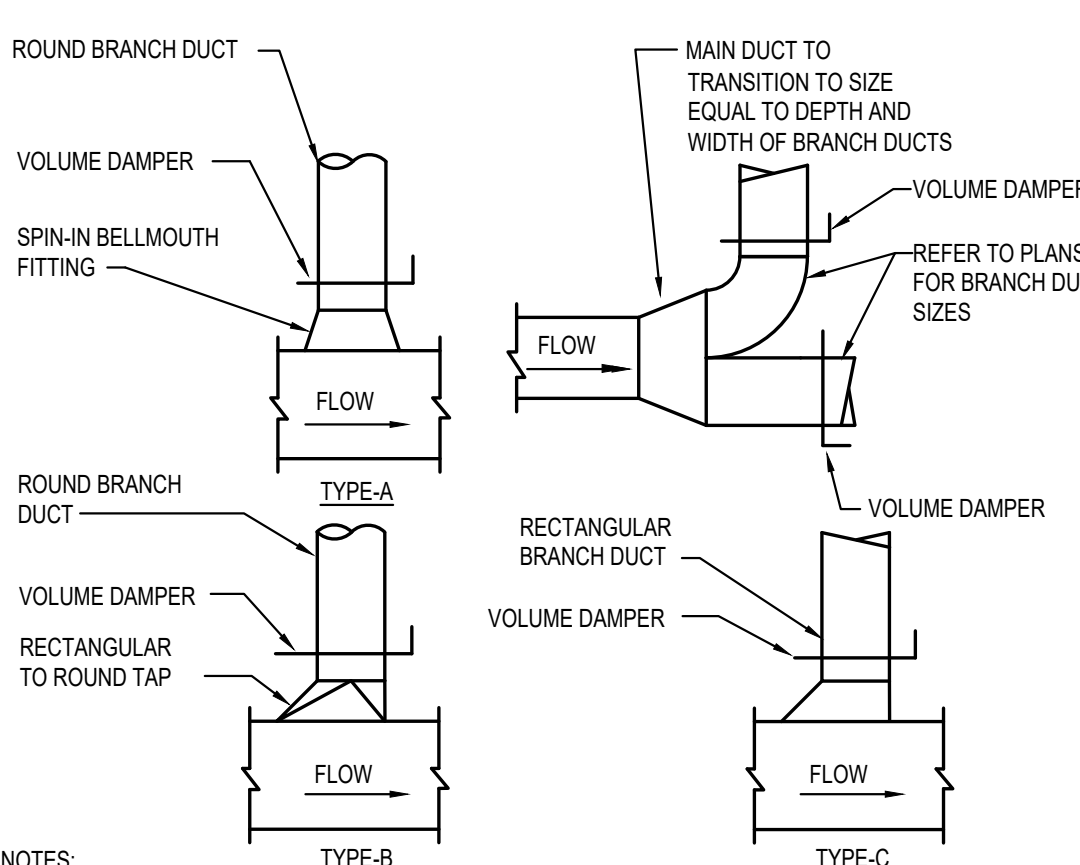
ROOF TOP UNIT TIE DOWN DETAIL
NOT TO SCALE

RECTANGULAR DUCT HANGERS								
MINIMUM SIZE								
MAXIMUM HALF OF DUCT PERMITTER	PAIR AT 10 FT SPACING		PAIR AT 8 FT SPACING		PAIR AT 5 FT SPACING		PAIR AT 4 FT SPACING	
	STRAP	WIRE/ROD	STRAP	WIRE/ROD	STRAP	WIRE/ROD	STRAP	WIRE/ROD
P/2 = 30"	1" x 22 GA	10 GA. (135")	1" x 22 GA	10 GA. (135")	1" x 22 GA	12 GA. (108")	1" x 22 GA	12 GA. (108")
P/2 = 72"	1" x 18 GA	3/8"	1" x 20 GA	1/4"	1" x 22 GA	1/4"	1" x 22 GA	1/4"
P/2 = 96"	1" x 16 GA	3/8"	1" x 18 GA	3/8"	1" x 20 GA	3/8"	1" x 22 GA	1/4"
P/2 = 120"	1-1/2" x 16 GA	1/2"	1" x 16 GA	3/8"	1" x 18 GA	3/8"	1" x 20 GA	1/4"
P/2 = 168"	1-1/2" x 16 GA	1/2"	1-1/2" x 16 GA	1/2"	1" x 16 GA	3/8"	1" x 16 GA	3/8"
P/2 = 192"	NOT GIVEN	1/2"	1-1/2" x 16 GA	1/2"	1" x 16 GA	3/8"	1" x 16 GA	3/8"
WHEN STRAPS ARE LAP JOINED USE THESE MINIMUM FASTENERS					SINGLE HANGER MAXIMUM ALLOWABLE LOAD			
					STRAP		WIRE OR ROD (DIA.)	
1" x 18, 20, 22 GA-TWO #10 OR ONE 1/4" BOLT					1" x 22 GA - 260 LBS.		1/08" - 80 LBS	
1" x 16 GA - TWO 1/4" DIA.					1" x 20 GA - 320 LBS.		0.135" - 120 LBS	
1 1/2" x 16 GA - TWO 3/8" DIA					1" x 18 GA - 420 LBS.		0.162" - 160 LBS	
PLACE FASTENERS IN SERIES, NOT SIDE BY SIDE					1" x 16 GA - 700 LBS.		1/4" - 270 LBS	
					1 1/2" x 16 GA. - 1100 LBS		3/8" - 680 LBS	
							1/2" - 1250 LBS	
							5/8" - 2000 LBS	
							3/4" - 3000 LBS	

RECTANGULAR DUCTWORK HANGER SUPPORT GUIDELINES

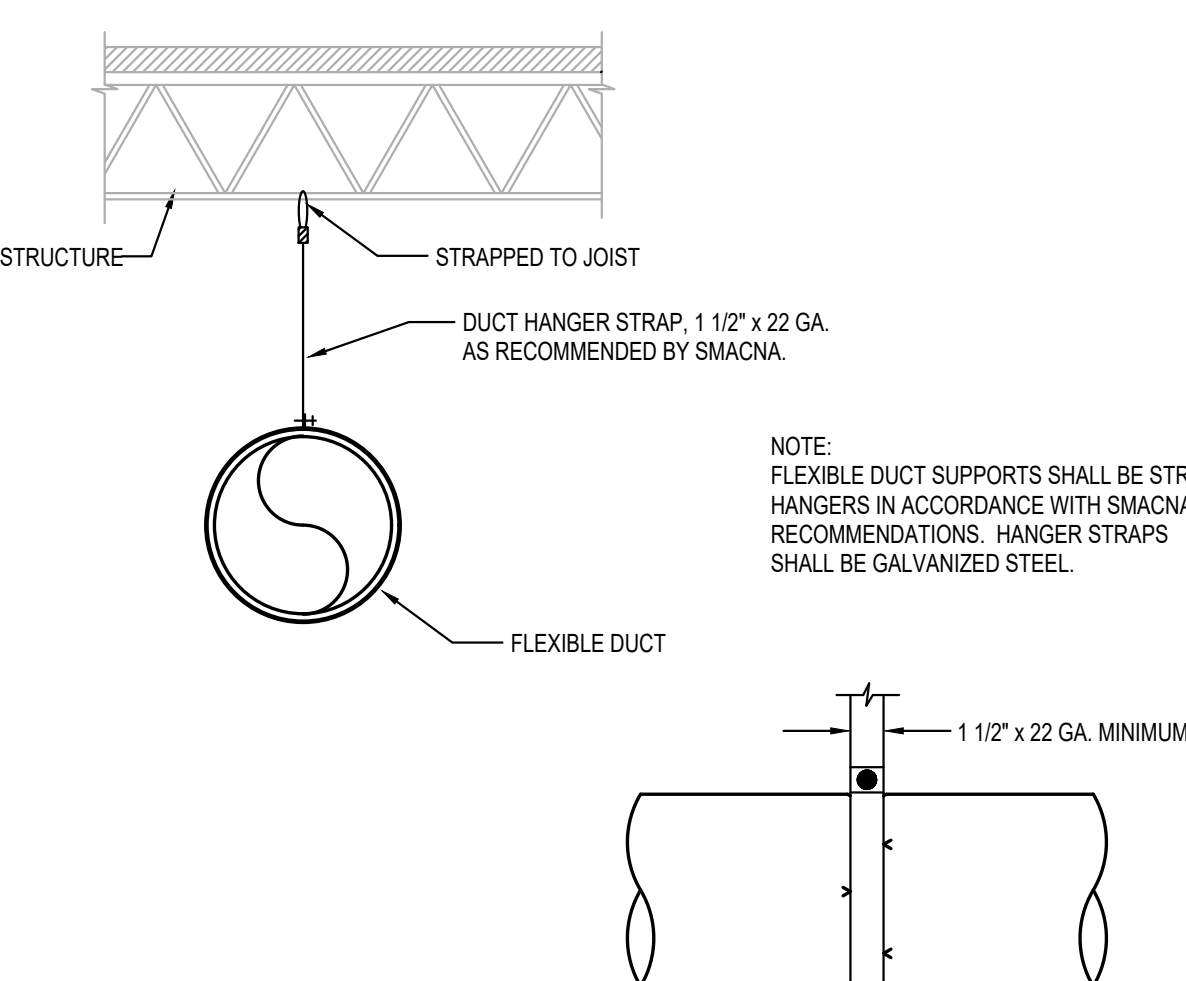
MINIMUM HANGER SIZES FOR ROUND DUCT				
DUCT DIAMETER	MAXIMUM SPACING	WIRE DIA.	ROD	STRAP
10" OR LESS	12'	ONE 12 GA.	1/4"	1" x 22 GA.
11 - 18"	12'	TWO 12 GA OR ONE 8 GA.	1/4"	1" x 22 GA.
19 - 24"	12'	TWO 10 GA.	1/4"	1" x 22 GA.
25 - 36"	12'	TWO 8 GA.	3/8"	1" x 22 GA.
37 - 50"	12'	NA	1/4"	TWO 1" x 20 GA.
51 - 60"	12'	NA	1/4"	TWO 1" x 18 GA.
61 - 84"	12'	NA	1/4"	TWO 1" x 16 GA.

ROUND DUCTWORK HANGER SUPPORT GUIDELINES

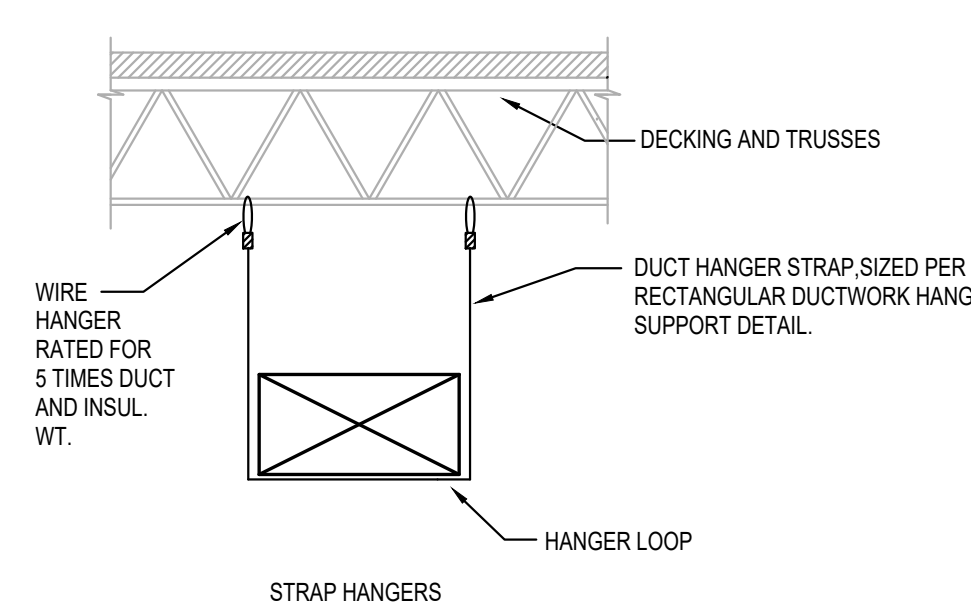


4
M

BRANCH DUCT DETAILS
NOT TO SCALE

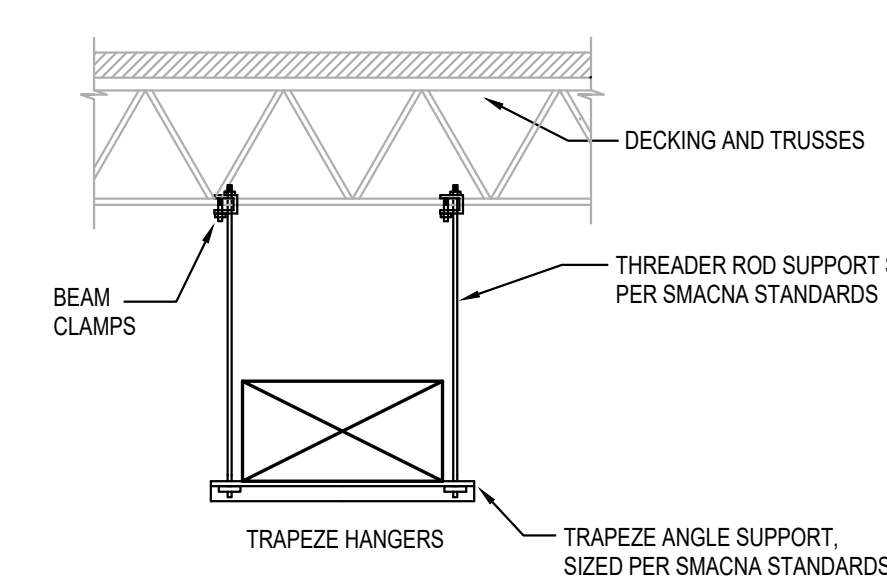


3 FLEXIBLE DUCT SUPPORTS
M NOT TO SCALE



2
M

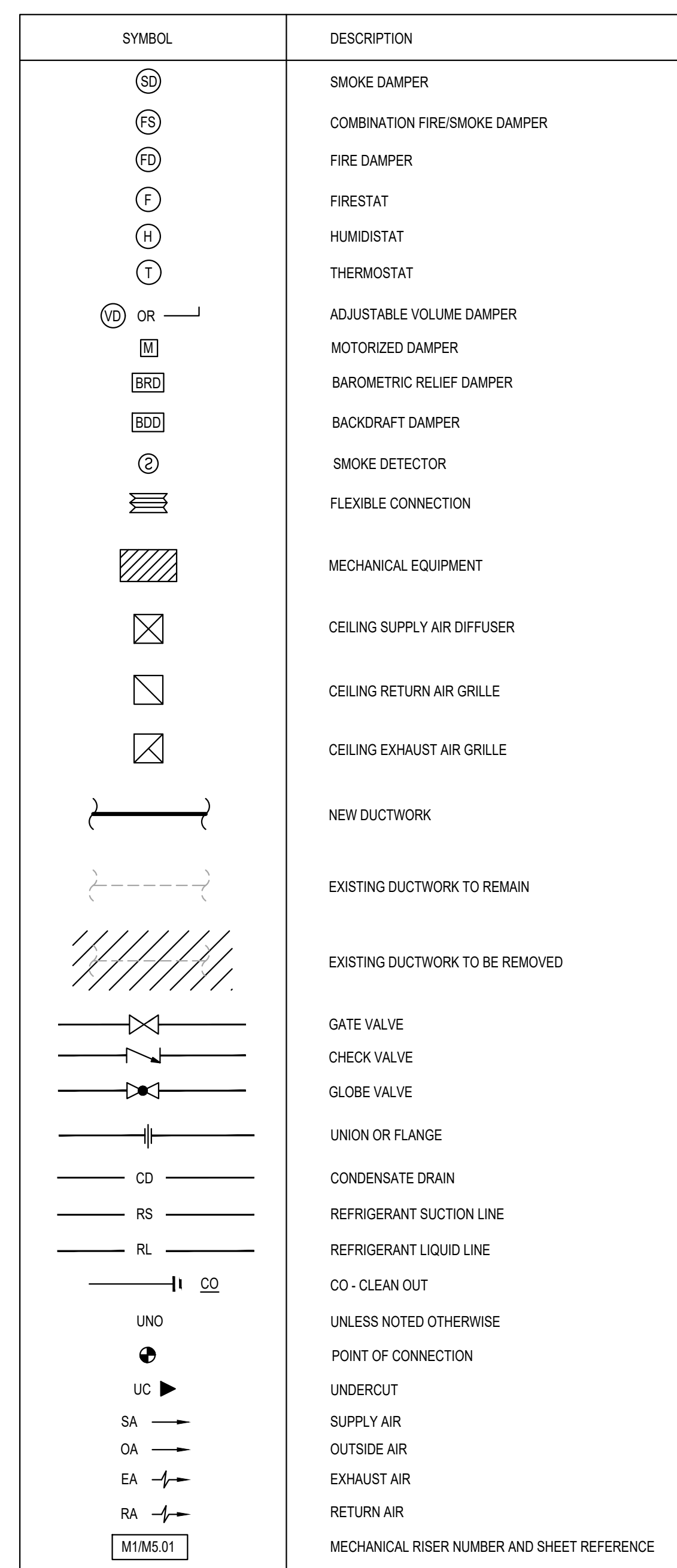
MAIN DUCT SUPPORTS/HANGERS
NOT TO SCALE



1
M

MECHANICAL SYMBOLS

NOT TO SCALE



NOTE: NOT ALL SYMBOLS ABOVE ARE NOT NECESSARILY USED ON THE DRAWINGS