





**PACKAGED ROOFTOP UNIT SCHEDULE**

MARK	AREA SERVED	BASIS OF DESIGN		NOMINAL CAPACITY (TONS)	SUPPLY AIRFLOW (CFM)	FAN OUTSIDE AIRFLOW (CFM)	EXT. SP. (IN. WG)	NOM. MOTOR HP	DIRECT EXPANSION COOLING			ELECTRIC HEATING			ELECTRICAL DATA			NOTES						
		MANUFACTURE	MODEL						ENTERING AIR DB (°F)	WB (°F)	LEAVING AIR DB (°F)	WB (°F)	TOT. CAPACITY (BTU)	SENS. CAPACITY (BTU)	EER	ENT. AIR DB (°F)	LVG. AIR DB (°F)		KW INPUT	VOLTS	PHASE	MCA (AMPS)	MCCP (AMPS)	WEIGHT (LBS)
RTU-1	BACK OF HOUSE	LENNOX	LCT150H4E	12.5	4500	700	0.70	3.75	80.0	67.0	57.4	55.9	134100	91900	11	0.0	0.0	0	208	3	64	80	1644	1.3-14
RTU-2	SALES	LENNOX	LCT102H4E	8.5	3400	380	1.00	3.75	80.0	67.0	57.9	56.8	96200	71900	12.1	60.3	77.0	23	208	3	73	80	1495	
RTU-3	FRONT OF HOUSE	LENNOX	LCT072H4E	6.0	2400	200	0.50	1.5	80.0	67.0	57.4	56.4	70100	53100	12.2	62.8	84.9	23	208	3	68	70	865	

- NOTES:**
- FURNISHED BY WAWA, INSTALLED BY GC.
  - INCLUDE CO2 SENSOR FOR RTU2 ONLY. SENSOR TO BE INTERLOCKED WITH BAS.
  - INCLUDE HUMIDITROL HOT GAS REHEAT.
  - INCLUDE REMOTE WALL MOUNTED COMBINATION TEMPERATURE/HUMIDITY SENSOR.
  - INCLUDE WITH 2" FACTORY PLEATED MERV 8 FILTERS.
  - INCLUDE WITH 18" ROOF CURB.
  - INCLUDE WITH FACTORY INSTALLED HACR CIRCUIT BREAKERS AND DISCONNECT.
  - INCLUDE WITH FACTORY INSTALLED 15A GFCI SERVICE OUTLET. EC TO PROVIDE FIELD WIRING.
  - INCLUDE WITH FACTORY INSTALLED DISCONNECT.
  - INCLUDE WITH FACTORY INSTALLED SINGLE ENTHALPHY CONTROLLED ECONOMIZER AND UNIT POWERED EXHAUST FAN.
  - INCLUDE WITH FACTORY INSTALLED DIRTY FILTER SWITCH.
  - INCLUDE WITH FACTORY INSTALLED DRAIN PAN OVERFLOW SWITCH.
  - INCLUDE WITH FACTORY INSTALLED SUPPLY AND RETURN SMOKE DETECTORS.
  - PROVIDE WITH BAS MONITORING POINT OF THE OUTSIDE AIR DAMPER POSITION.

**AIR CURTAIN SCHEDULE**

MARK	MANUFACTURER	MODEL	AREA SERVED	HP	V	PH	FLA	HEAT INPUT (KW)	WEIGHT (LB)	NOTES
AC-1	POWERED AIRE	BCE-1-48	DELIVERY ROOM	0.5 hp	120	1	7.3	0	99	1.2,3,4
AC-2	POWERED AIRE	BCE-1-48	TRASH STAGING	0.5 hp	120	1	7.3	0	99	1.2,3,4

- NOTES:**
- PROVIDED BY GC.
  - MOUNT INSIDE BUILDING ABOVE DOOR.
  - PROVIDE ALL NECESSARY MOUNTING BRACKETS AND ACCESSORIES.
  - PROVIDE WITH MODEL SM-300 COMMERCIAL MAGNETIC REED DOOR SWITCH. ENERGIZE EXHAUST FAN ON WHEN DOOR IS OPEN.

**EXHAUST FAN SCHEDULE**

MARK	AREA SERVED	MANUFACTURER	MODEL	DESIGN AIRFLOW (CFM)	EXT. S.P. (IN. WG)	VOLTS	PHASE	HP	WEIGHT	NOTES
EF-1	RESTROOMS	GREENHECK	GB-098-6	375	0.38	120	1	0.167	59	1.2,3,4,5
EF-2	BACK OF HOUSE	GREENHECK	GB-098-6	400	0.38	120	1	0.167	59	1.2,3,4,5
EF-3	TRASH ROOM	GREENHECK	SP-B200	200	0.50	120	1	0.167	14	1.2,4,5

- NOTES:**
- PROVIDED BY GC.
  - PROVIDE DISCONNECT SWITCH.
  - PROVIDE 12" HIGH PREFABRICATED INSULATED ROOF CURB.
  - MECHANICAL CONTRACTOR TO PROVIDE EXHAUST FAN, & WIRE SPEED CONTROLLER.
  - WIRE FOR CONTINUOUS OPERATION.

**AIR DEVICE SCHEDULE**

TYPE	SERVICE	MFG	MODEL	STYLE	MOUNTING	FACE SIZE	NOTES
EG-1	EXHAUST	PRICE	630FF	LOUVERED GRILLE	SURFACE	12x12	4
RG-1	RETURN	PRICE	630FF	LOUVERED GRILLE	LAY-IN	24x24	4
RG-2	RETURN	PRICE	630FF	LOUVERED GRILLE	LAY-IN	24x12	4
RG-3	RETURN	PRICE	630FF	LOUVERED GRILLE	REF. PLANS	12x12	4
SD-1	SUPPLY	PRICE	AMD	MODULAR LOUVERED FACE DIFFUSER	LAY-IN	24x24	1,6
SD-2	SUPPLY	PRICE	SDGE	SPIRAL DUCT MOUNTED GRILLE	DUCT	20x4	(7,8)
SD-5	SUPPLY	PRICE	AMD	MODULAR LOUVERED FACE DIFFUSER	SURFACE	12x12	5,6
SD-6	SUPPLY	PRICE	AMD	MODULAR LOUVERED FACE DIFFUSER	LAY-IN	24x24	1,6,10

- NOTES:**
- FOR LAY-IN CEILING PROVIDE WITH 18"x18" FULL FACE APPEARANCE DIFFUSER NECK. PROVIDE WITH FACTORY SQUARE TO ROUND NECK ADAPTER MODEL "SR". ROUND NECK SIZE SHALL BE EQUAL TO FLEX SIZE SERVING DIFFUSER.
  - NOT USED.
  - NOT USED.
  - HINGE PREFERRED - "QR" STYLE (1/4 TURN FASTENERS) NOT ACCEPTABLE. FILTER TYPE RETURN GRILLS PROVIDED SOLELY FOR MAINTENANCE PURPOSES. OMIT FILTER UPON INSTALLATION.
  - PROVIDE WITH TYPE 6 BEVELED SURFACE MOUNT FRAME AND FACTORY SQUARE TO ROUND NECK ADAPTER MODEL "SR".
  - PROVIDE WITH BACKPAN INSTALLATION.
  - PROVIDE WITH DOUBLE DEFLECTION TURNING VANES.
  - PROVIDE WITH INTEGRAL OPPOSED BLADE DAMPER.
  - NOT USED.
  - PROVIDE WITH ADJUSTABLE PATTERN DEFLECTOR. PROVIDE WITH 12"x12" DIFFUSER NECK. PROVIDE WITH FACTORY SQUARE TO ROUND NECK ADAPTER MODEL "SR". ROUND NECK SIZE SHALL BE EQUAL TO FLEX SIZE SERVING DIFFUSER.

**DESTRATIFICATION FAN SCHEDULE**

MARK	MANUFACTURER	MODEL	AREA SERVED	VOLTS (V)	PHASE	FLA (A)	WEIGHT (LBS)	NOTES
DF-1	AIRLUS	A-10-SP-SH-120-X	RETAIL	120	1	0.14	7	1.2,3,4

- NOTES:**
- PROVIDED BY GC.
  - PROVIDE ALL NECESSARY MOUNTING BRACKETS AND ACCESSORIES.
  - PROVIDE WALL MOUNTED SPEED CONTROL IN OFFICE. 4 STEP SPEED CONTROL ON/OFF MODEL TRIAC-120-1.5. REFER TO ELECTRICAL PLANS.
  - COLOR: WHITE.

**ELECTRICAL UNIT HEATER SCHEDULE**

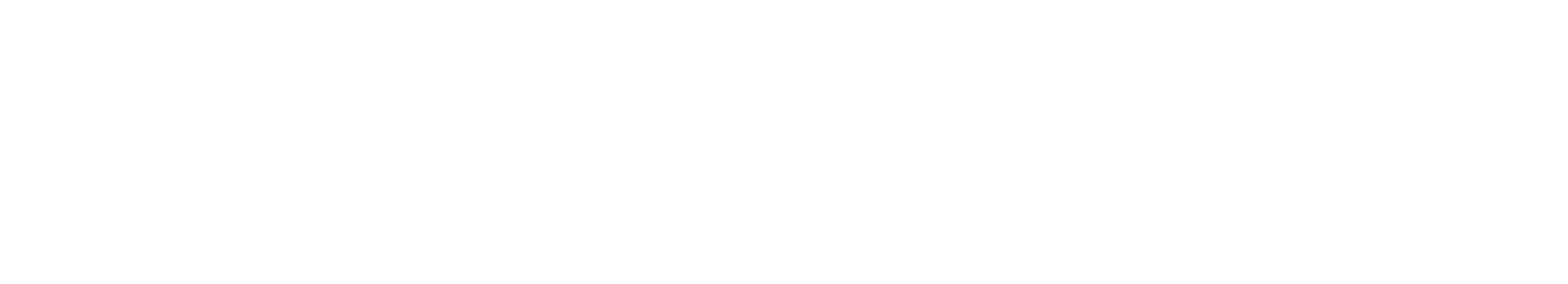
MARK	MANUFACTURER	MODEL	AREA SERVED	FLA	V	PH	HEATING INPUT (KW)	NOTES
FFH-1	QMARK	EFF-1500	WATER SERVICE	12.5-A	120	1	1.5	1,2,5,4

- NOTES:**
- PROVIDED BY GC.
  - COORDINATE MOUNTING FRAME TYPE WITH ARCHITECTURAL DRAWINGS.
  - PROVIDE FACTORY ACCESSORIES AS REQUIRED FOR CORRECT CEILING-TYPE INSTALLATION.
  - PROVIDE WITH INTERNAL DISCONNECT SWITCH, FACTORY FAN DELAY SWITCH, FACTORY HIGH TEMPERATURE CUTOUT SWITCH, AND INTEGRAL THERMOSTAT.

**CONTROL SEQUENCE OF OPERATIONS: RTU (ELECTRIC)**

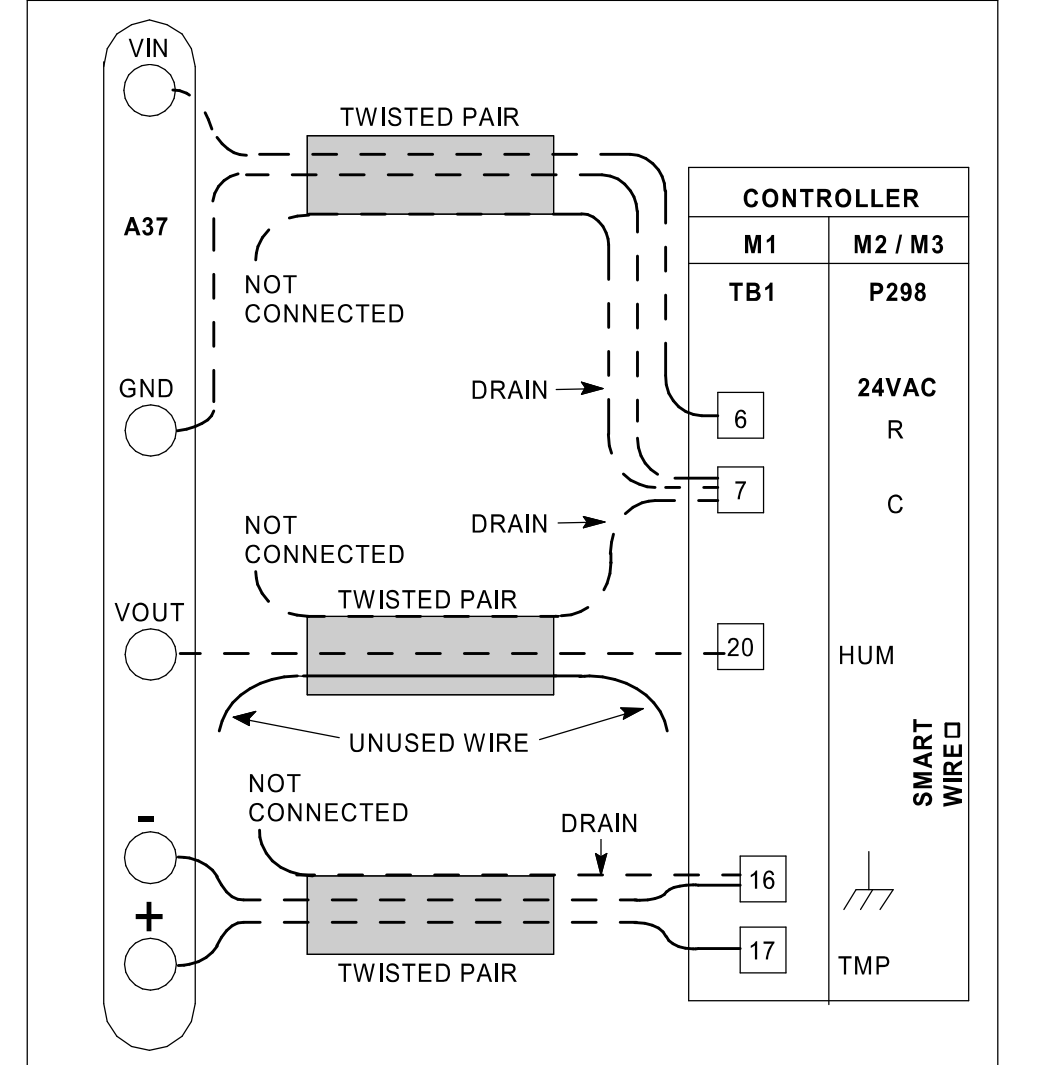
- RTU SEQUENCE OF OPERATION**
- 24 HOUR CYCLE - COOLING**
- SUPPLY AIR FAN SHALL RUN CONTINUOUSLY.
  - OUTSIDE AIR DAMPER SHALL BE IN MINIMUM POSITION.
  - RESTROOM EXHAUST FANS SHALL BE ENERGIZED (24/7).
  - THERMOSTAT SHALL CYCLE COMPRESSOR(S) TO MAINTAIN ROOM SET TEMPERATURE.
- 24 HOUR CYCLE - HEATING**
- SUPPLY AIR FAN SHALL RUN CONTINUOUSLY.
  - OUTSIDE AIR DAMPER SHALL BE IN MINIMUM POSITION.
  - RESTROOM EXHAUST FANS SHALL BE ENERGIZED (24/7).
  - THERMOSTAT SHALL MODULATE HEATING ELEMENTS TO ACHIEVE ROOM SET TEMPERATURE.
- 24 HOUR CYCLE - DEHUMIDIFICATION**
- SUPPLY AIR FANS SHALL RUN CONTINUOUSLY.
  - MECHANICAL OUTSIDE AIR DAMPERS SHALL BE IN MINIMUM POSITION.
  - RESTROOM EXHAUST FANS SHALL BE ENERGIZED (24/7).
  - HUMIDISTAT SHALL CYCLE COOLING COIL STAGES TO MAINTAIN SET POINT HUMIDITY (SET AT 50%).
- SMOKE DETECTOR**
- WHEN SMOKE DETECTOR IS ACTIVATED SUPPLY AIR FAN SHALL SHUTDOWN.
  - FIRE ALARM SHALL BE SIGNALLED.
  - SUPPLY AIR FAN SHALL BE MANUALLY RESET. KEYPAD SET IN MANAGER'S OFFICE.

**AIR BALANCE SCHEMATIC**



**LENNOX SETUP PARAMETERS**

- UNIT ID CONFIGURATION (MECHANICAL CONTRACTOR TO DEFINE / AS APPLICABLE):**
- BACNET CONFIGURATION:** GO TO SETTINGS>GENERAL>CONFIGURATION ID1 POSITION 5 SET TO "B"
  - NETWORK CONFIGURATION:** GO TO SETUP>NETWORK INTEGRATION. SET TO BACNET
  - CONTROL MODE:** SET CONTROL MODE TO ROOM SENSOR; CO2 TEMP. & HUMIDITY TO "NO" ZE
  - ENTHALPHY CONFIGURATION:** CHANGE CONFG ID1 POSITION 2 FROM D (DUAL ENTHALPY) TO S (SINGLE ENTHALPY)
  - FRESH AIR COOLING:** SETUP>TEST & BALANCE>DAMPER. SCROLL TO FRESH AIR COOLING SET TO "NO"
  - FRESH AIR HEAT:** SETUP>TEST & BALANCE>DAMPER. SCROLL TO FRESH AIR HEAT SET TO "NO"
- INDIVIDUAL PARAMETER CONFIGURATIONS (MECHANICAL CONTRACTOR TO DEFINE / AS APPLICABLE):**
- PARAMETER 105 DEHUMID MODE: 7 NO CONDITIONS
  - PARAMETER 106 DEHUMID SETPOINT: 50 THIS IS A CENTERED SET POINT (+/-)
  - PARAMETER 107 DEHUMID DEADBAND: 3 (DEFAULT) THIS IS THE ACTUAL +/- VALUE
  - PARAMETER 117 CO2 DAMPER MAX OPEN %: 50
  - PARAMETER 118 CO2 START OPEN PPM: 1200
  - PARAMETER 119 CO2 FULL OPEN PPM: 1500
  - PARAMETER 121 FREE COOL MAX DAMPER: 100%
  - PARAMETER 137 OCC HEAT SET POINT: 68 (BACK UP)
  - PARAMETER 139 OCC COOLING SET POINT: 72 (BACK UP)
  - PARAMETER 154 OCC BLOWER MODE: ON-CONTINUOUS 1
  - PARAMETER 155 FREE COOL LOCK OUT SET POINT: 29 (DISABLED)
  - PARAMETER 159 FREE COOL SUPPLY SET POINT: 55 (DEFAULT)
  - PARAMETER 160 ECON FREE COOL SET POINT: 55 (DEFAULT)
  - PARAMETER 161 ECON FREE COOL OFFSET: 10 (DEFAULT)
  - PARAMETER 162 FREE COOL ENTHALPY SET POINT (SINGLE ENTHALPY): 19 MA (50% HUM + 60F)
  - PARAMETER 163 ECON FREE COOL ENTHALPY OFFSET: 1 (DEFAULT)
  - PARAMETER 164 ECONOMIZER PROFILE: 2 (DEFAULT)
- CFM VALUES / MSAV FAN SPEEDS (AIR BALANCER TO DEFINE / IF APPLICABLE):**
- HEAT CFM VALUE: PER THE HVAC SCHEDULE
  - HIGH COOL CFM VALUE: PER THE HVAC SCHEDULE
  - LOW COOL CFM VALUE: MATCH THE HIGH COOL CFM VALUE
  - VENTILATION CFM VALUE: MATCH THE HIGH COOL CFM VALUE



- TYPICAL LENNOX SENSOR WIRING DIAGRAM. INSTALLER TO USE SEPARATE TWISTED-PAIR, SHIELDED CABLES AS NOTED.**
- WIRE RUNS OF 50' (15 m) OR LESS:**  
USE THREE SEPARATE SHIELDED CABLES CONTAINING 20AWG MINIMUM, TWISTED PAIR CONDUCTORS WITH OVERALL SHIELD (BELDEN TYPE 8762 OR 88760 (PLENUM) OR EQUIVALENT). CONNECT CABLE SHIELD DRAIN WIRES AS SHOWN IN DIAGRAM.
- WIRE RUNS OF 150' (46 m) OR LESS:**  
USE THREE SEPARATE SHIELDED CABLES CONTAINING 18AWG MINIMUM, TWISTED PAIR CONDUCTORS WITH OVERALL SHIELD (BELDEN TYPE 8762 OR 88760 (PLENUM) OR EQUIVALENT). CONNECT CABLE SHIELD DRAIN WIRES AS SHOWN IN DIAGRAM.
- TEMPERATURE/HUMIDITY SENSOR WIRING DIAGRAM**
- M3.0 NOT TO SCALE

**VENTILATION SCHEDULE**

ROOM NAME	OCCUPANCY CATEGORY	AREA (SF)	SF PER PERSON	# OF PEOPLE	OA PER AREA (CFM/SF)	OA PER PERSON (CFM/PERSON)	Outdoor Airflow	ZONE EFF. (E <sub>z</sub> )	TOTAL OA (CFM)
VESTIBULE	Corridor/Transition	92	0 SF	0.0	0.06	0.0	6 CFM	0.5	7
OFFICE	Office - Enclosed	59	215 SF	0.3	0.06	5.0	5 CFM	0.8	6
ASSOCIATE AREA	Office - Enclosed	75	215 SF	0.3	0.06	5.0	6 CFM	0.8	8
RETAIL	Merchandising Sales Area - Retail	2193	72 SF	30.6	0.12	7.5	492 CFM	0.8	616
FOOD SERVICE	Food Preparation	388	54 SF	7.2	0.18	7.5	124 CFM	0.8	155
TRASH/STAGING	Food Preparation	80	359 SF	0.2	0.12	0.0	10 CFM	0.8	12
WOMEN'S RESTROOM	Restrooms	134	108 SF	1.2	0.00	0.0	0 CFM	0.8	0
ELECTRICAL ROOM	Equipment Room	113	0 SF	0.0	0.00	5.0	0 CFM	0.8	0
MEN'S RESTROOM	Restrooms	127	108 SF	1.2	0.00	0.0	0 CFM	0.8	0
REAR VESTIBULE	Corridor/Transition	65	0 SF	0.0	0.06	0.0	3 CFM	0.8	4
DELIVERY ROOM	Active Storage	136	359 SF	0.4	0.12	0.0	16 CFM	0.8	20
SPECIALTY BEVERAGE	Food Preparation	210	54 SF	3.9	0.18	7.5	67 CFM	0.8	84
COFFEE	Food Preparation	112	54 SF	2.1	0.18	7.5	36 CFM	0.8	45
HALLWAY	Corridor/Transition	138	0 SF	0.0	0.06	0.0	8 CFM	0.8	10
WATER SERVICE ROOM	Equipment Room	60	0 SF	0.0	0.00	5.0	0 CFM	0.8	0
BACK OF HOUSE	Food Preparation	136	54 SF	2.5	0.18	7.5	44 CFM	0.8	54
WASHROOM	Food Preparation	324	54 SF	6.0	0.18	7.5	104 CFM	0.8	129
SELF-SERVICE BEVERAGE	Personal Services Sales Area - Retail	121	72 SF	1.7	0.12	7.5	27 CFM	0.8	34
									TOTAL = 1184 CFM

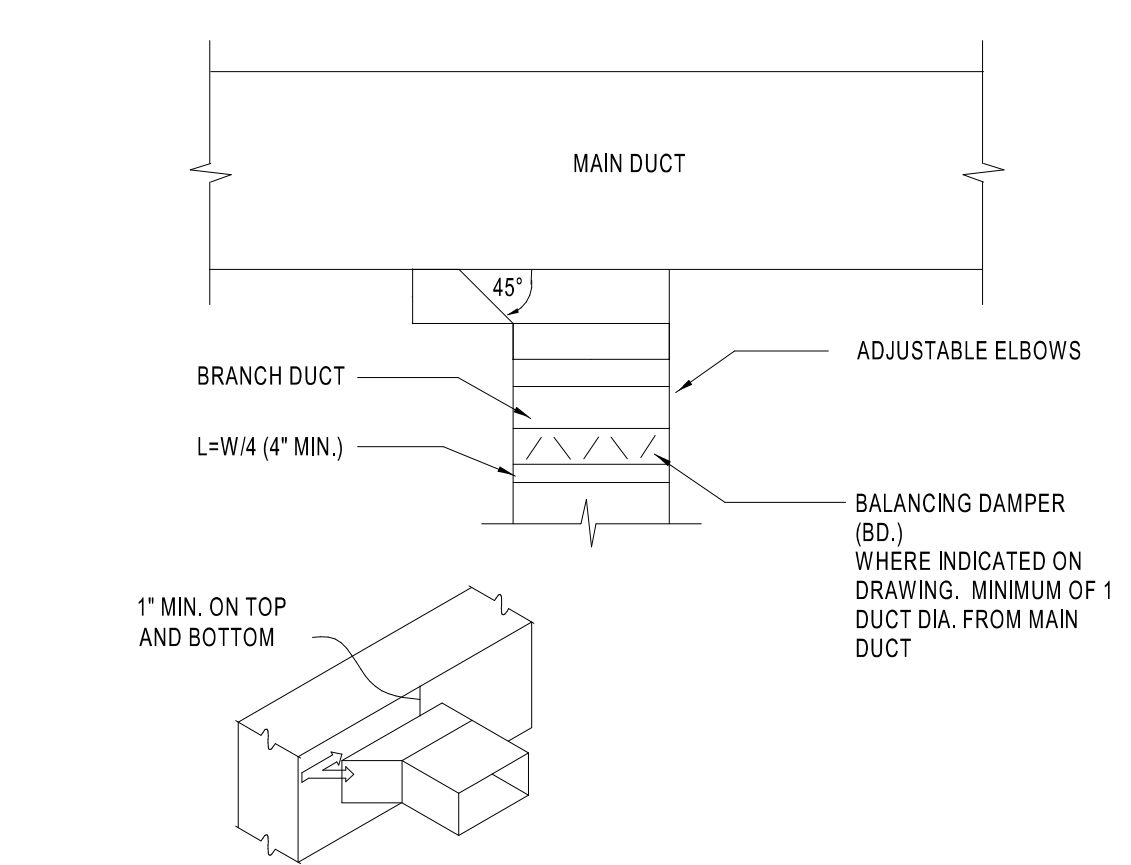
E<sub>z</sub> = 0.8 (WARM AIR CEILING SUPPLY & CEILING RETURN)  
TOTAL OSA PROVIDED 1,280 CFM > TOTAL REQUIRED OSA 1,183 CFM

**AIR BALANCE**

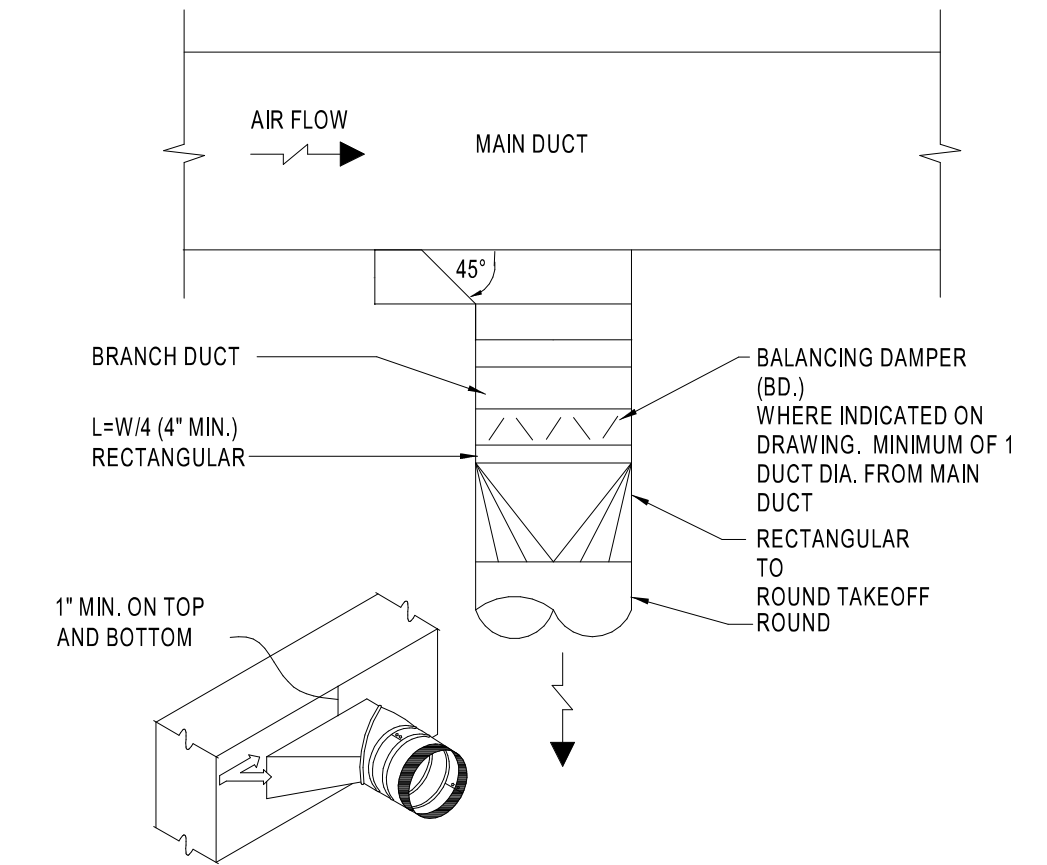
MARK	OUTSIDE AIRFLOW (CFM)	EXHAUST AIRFLOW (CFM)	TOTAL AIRFLOW
EF-1	375	-375	CFM
EF-2	400	-400	CFM
EF-3	200	-200	CFM
RTU-1	700	700	CFM
RTU-2	380	380	CFM
RTU-3	200	200	CFM
			TOTAL POSITIVE = 305 CFM

**HVAC GENERAL NOTES:**

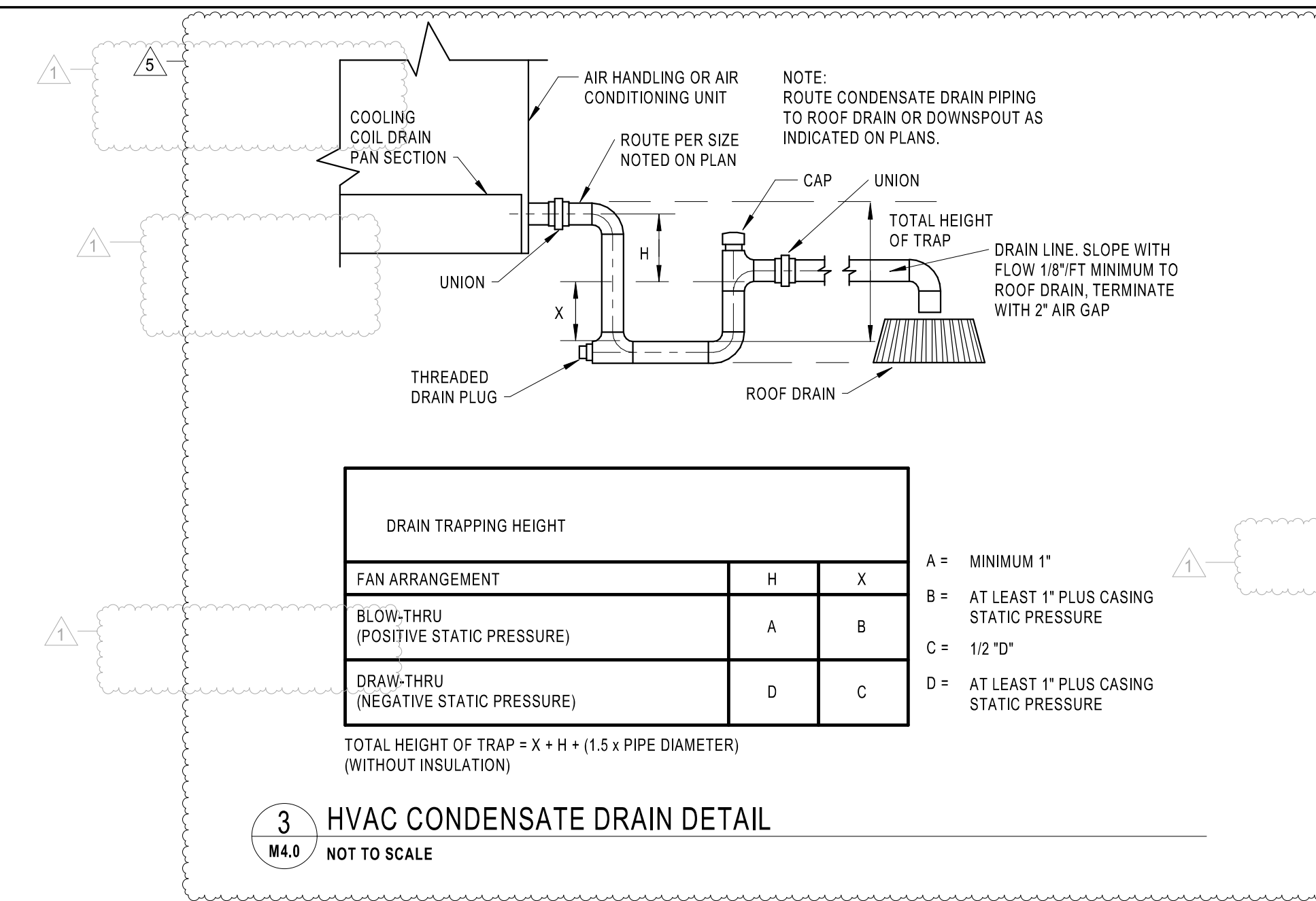
- REFER TO WRITTEN BOOK SPECIFICATIONS FOR ADDITIONAL INFORMATION.
- THE WORK TO BE DONE UNDER THESE SPECIFICATIONS AND THE DRAWINGS CONSISTS OF FURNISHING ALL EQUIPMENT, MATERIALS, LABOR AND SERVICES, AND PERFORMING ALL OPERATIONS TO COMPLETE THE MECHANICAL CONSTRUCTION WORK FOR THIS PROJECT. ANY WORK NOT SPECIFICALLY COVERED BY THESE SPECIFICATIONS OR INDICATED ON THE MECHANICAL/ELECTRICAL/PLUMBING PLANS, BUT NECESSARY TO COMPLETE OR PERFECT ANY PART OF THIS INSTALLATION IN A SUBSTANTIAL MANNER, SHALL BE PROVIDED WITHOUT EXTRA COST TO OWNER.
- THE TERM "FURNISH" SHALL MEAN TO OBTAIN AND SUPPLY TO THE JOB SITE. THE TERM "INSTALL" SHALL MEAN TO FIX IN POSITION AND CONNECT FOR USE. THE TERM "PROVIDE" SHALL MEAN TO FURNISH AND INSTALL. THE TERM "MECHANICAL WORK" OR "WORK" SHALL MEAN ALL LABOR, MATERIAL, EQUIPMENT, SCAFFOLDING, RIGGING, TOOLS, SUPERVISION, SERVICES AND OTHER INCIDENTALS NECESSARY FOR COMPLETE AND OPERABLE INSTALLATION.
- THE CONTRACTOR SHALL FURNISH AND INSTALL ALL EQUIPMENT, MATERIALS AND LABOR TO PROVIDE A COMPLETE AND OPERATIONAL SYSTEM AS INDICATED ON THE DESIGN DOCUMENTS.
- CONTRACTOR SHALL PROVIDE ALL ROOFING OPENINGS, FLASHINGS, AUXILIARY STEEL, THREADED RODS, VIBRATION ISOLATORS, TURNBUCKLES, ETC. TO SUPPORT HIS EQUIPMENT ON OR FROM THE STRUCTURE.
- ANY CHANGES AND/OR MODIFICATIONS MUST BE REVIEWED AND APPROVED BY THE ENGINEER OR OWNER'S REPRESENTATIVE PRIOR TO CONSTRUCTION.
- REMOVE ALL TRASH, DEBRIS AND DEMOLITION MATERIAL FROM PREMISES AT THE END OF EACH WORK DAY.
- SCHEDULE ALL WORK, CUTTING AND BUILDING SERVICE INTERRUPTIONS WITH BUILDING OWNER AND CONSTRUCTION MANAGER, PRIOR TO COMPLETING WORK.
- FIELD ADJUST THE DIRECTION OF BLOW FOR ALL SUPPLY AIR DEVICES SO THAT THE DEVICES DO NOT BLOW DIRECTLY INTO SOFFITS, CURTAIN WALLS, REFRIGERATED CASES OR EXHAUST HOODS.
- ALL NEW AND EXISTING PIPES AND DUCTS SHALL HAVE UL FIRE RATED SLEEVES AND/OR FIRE RATED DAMPERS, WHEN PASSING THROUGH FIRE RATED CONSTRUCTION.
- COORDINATE LOCATION OF NEW DUCTWORK, AIR DEVICES AND EQUIPMENT WITH LIGHT FIXTURES, SPRINKLER PIPING AND HYDRONIC PIPING.
- ALL TEMPERATURE AND HUMIDITY SENSORS SHALL BE INSTALLED 5' ABOVE FINISHED FLOOR UNLESS NOTED OTHERWISE ON PLAN. COORDINATE FINAL LOCATIONS WITH EQUIPMENT, FURNITURE, TENANT AND ARCHITECT PRIOR TO INSTALLATION.
- VERIFY ALL EQUIPMENT VOLTAGES, WIRING REQUIREMENTS, AND REQUIRED BREAKER SIZES WITH THE ELECTRICAL CONTRACTOR PRIOR TO ORDERING EQUIPMENT.
- THE MECHANICAL CONTRACTOR SHALL HAVE A QUALIFIED HVAC TECHNICIAN FROM THE UNIT MANUFACTURER PROVIDE AN EQUIPMENT OPERATION CHECK AFTER UNIT START-UP AND PRIOR TO CERTIFIED AIR BALANCING. THE CERTIFICATION, SIGNED BY THE TECHNICIAN, MUST BE INCLUDED IN THE GENERAL CONTRACTOR CLOSING DOCUMENTS FOR THE STORE.
- MECHANICAL PLANS ARE DIAGRAMMATIC IN NATURE. NOT SHOWING EVERY ITEM IN EXACT LOCATION OR DETAIL. MEASUREMENTS AND LOCATIONS MUST BE FIELD VERIFIED AND COORDINATED WITH ARCHITECTURAL, HVAC, FIRE PROTECTION, STRUCTURAL, ELECTRICAL AND OTHER BUILDING DRAWINGS.
- CONTRACTOR TO INCLUDE IN BID ALL COSTS TO MAKE FIELD COORDINATION AND ADJUSTMENT TO DUCTWORK FOR FIT INTO EXISTING STRUCTURE. CONTRACTOR SHALL VERIFY AND FIELD COORDINATE FINAL LOCATION OF MECHANICAL EQUIPMENT.
- CONTRACTOR SHALL SECURE AND PAY FOR ALL REQUIRED PERMITS AND INSPECTIONS AND PERFORM ALL TESTS CALLED FOR OR REQUIRED AS A PART OF HIS WORK. FURNISHED APPROVED CERTIFICATE OF FINAL INSPECTION, AND TURN OVER TO OWNER AT COMPLETION OF PROJECT.
- CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATION OF ALL TRADES, LANDLORD REQUIREMENTS, CEILING HEIGHTS AND EXISTING STRUCTURAL CONDITIONS PRIOR TO FABRICATION OF ANY DUCTWORK OR ORDERING OF EQUIPMENT.
- ALL INSTALLATION OF THE MECHANICAL EQUIPMENT SHALL COMPLY WITH THE MANUFACTURER'S SPECIFICATION AND CLEARANCE REQUIREMENTS.
- ALL HVAC WORK SHALL BE IN ACCORDANCE WITH NFPA 90A, 90B, 96, 54 AND NFC 101. LIFE SAFETY CODE.
- INSTALLATION SHALL COMPLY WITH ALL LOCAL, STATE AND NATIONAL CODES, AND WITH LATEST ASHRAE PUBLICATIONS. WORK SHALL BE NEAT AND WORKMANSHIP SHALL BE ACCEPTABLE TO BUILDING STANDARDS. BUILDING SHALL COMPLY WITH THE INTERNATIONAL ENERGY CONSERVATION CODE AS ADOPTED PER SECTION 101.2 AND ANY AMENDMENTS OF THE VCC.
- CONTRACTOR SHALL FURNISH AND INSTALL A COMPLETE TEMPERATURE CONTROL SYSTEM TO INCLUDE: PANELS, MODULES, RELAYS, WIRING, THERMOSTATS, SENSORS, DAMPERS, ACTUATORS AND ALL MISCELLANEOUS ITEMS AS REQUIRED TO FULFILL THE DESIGN INTENT AS INDICATED ON THE PLANS AND IN THE CODED NOTES. THERMOSTATS AND SENSORS SHALL BE LOCATED GENERALLY AS SHOWN BUT THEIR EXACT LOCATION SHALL BE FIELD COORDINATED TO AVOID INTERFERENCE WITH WALL MOUNTED WORK.
- DURING THE BIDDING PERIOD, EACH CONTRACTOR SHALL VISIT THE SITE TO DETERMINE CONDITIONS AFFECTING THE WORK. BIDS SHALL SERVE AS EVIDENCE OF KNOWLEDGE OF EXISTING CONDITIONS AND ANY MODIFICATIONS WHICH ARE REQUIRED TO MEET THE INTENT OF THE DRAWINGS AND SPECIFICATIONS. CONTRACTOR TO VISIT THE SITE DOES NOT RELIEVE THE CONTRACTOR OF RESPONSIBILITY IN PERFORMANCE OF WORK REQUIRED CONDITIONS IN EVIDENCE THEREBY SHALL NOT BE JUSTIFICATION FOR ADDITIONAL COMPENSATION.
- THE EQUIPMENT SHALL BE LOCATED TO ALLOW FOR EASY ACCESS FOR SERVICING, ADJUSTING OR MAINTENANCE AND SPACE FOR REMOVAL OF INTERNAL ASSEMBLIES. PROVIDE MINIMUM CLEARANCES FOR ALL EQUIPMENT PER THE MANUFACTURER'S RECOMMENDATIONS.
- PROVIDE ALL CONTROL EQUIPMENT, MOTOR STARTERS, RELAYS, LINE VOLTAGE CONTROLS, TRANSFORMERS, LOW VOLTAGE CONTROLS, AND DEVICES NECESSARY FOR THE COMPLETE OPERATION OF THE HEATING AND AIR CONDITIONING AND VENTILATING SYSTEM.
- ALL LOW VOLTAGE WIRING AND CONDUIT REQUIRED FOR MECHANICAL EQUIPMENT SHALL BE FURNISHED AND INSTALLED BY MECHANICAL CONTRACTOR.
- PROVIDE ALL FANS AND ROOFTOP UNITS WITH RELAYS TO SHUT DOWN WHEN FIRE ALARM IS INITIATED. COORDINATE LOCATION WITH THE ELECTRICAL CONTRACTOR FOR THE FIRE ALARM WIRING.
- IN THE EVENT OF FAN SHUT DOWN, ALL DUCT MOUNTED DETECTORS SHALL REMAIN IN OPERATION.
- CONTRACTOR TO PROVIDE TENANT WITH AS-BUILT DRAWINGS OF ALL CHANGES OR MODIFICATIONS MADE IN THE FIELD. TO THE ORIGINAL SET OF CONSTRUCTION DRAWINGS. CONTRACTOR TO TURN-OVER TO THE ARCHITECT/ENGINEER UPON COMPLETION OF THE PROJECT. PROVIDE ALL EQUIPMENT SHOP DRAWINGS, INFORMATION ON CONTROL DEVICES, CONTROL WIRING DIAGRAMS AND OTHER PERTINENT INFORMATION AT COMPLETION OF PROJECT.
- IT IS THE CONTRACTOR'S RESPONSIBILITY TO ENSURE THAT THE MECHANICAL EQUIPMENT COMPONENTS ARE INSTALLED AT LOCATIONS AND ELEVATIONS WHICH MAKE THEM READILY ACCESSIBLE FOR ROUTINE MAINTENANCE WITHOUT REQUIRING ANY EXTRAORDINARY MEASURES.
- THE MECHANICAL CONTRACTOR SHALL BE RESPONSIBLE FOR ADMINISTERING ALL WARRANTIES ON EQUIPMENT WHICH HE INSTALLS. THIS INCLUDES ALL CONDENSERS, REFRIGERANT PIPES, AND OTHER ITEMS FURNISHED BY OTHERS AS WELL AS THOSE FURNISHED BY HIM.
- FIELD VERIFY THE EXACT LOCATION OF ALL EQUIPMENT WITH ARCHITECT/OWNER PRIOR TO INSTALLATION. INFORM OWNER OF ANY EQUIPMENT ITEMS THAT REQUIRE RELOCATION.
- PROVIDE VIBRATION ISOLATION DEVICES AND FLEXIBLE CONNECTIONS TO ALL MOVING MACHINERY.
- DUCT DIMENSIONS SHALL BE INSIDE NET DIMENSIONS. ADD TO SHEET METAL SIZE FOR INSULATION THICKNESS. HOLD DUCTWORK TIGHT TO UNDERSIDE OF STRUCTURE UNLESS OTHERWISE NOTED OR REQUIRED BY FIELD CONDITIONS. IT IS REQUIRED TO COORDINATE EXACT MOUNTING HEIGHT IN FIELD WITH SITE INVESTIGATION. CONCEALED SUPPLY, RETURN, OUTSIDE AIR AND RELIEF AIR DUCTS SHALL BE SHEET METAL AND BE EXTERNALLY INSULATED WITH OWENS CORNING TYPE 150 2" THICK, FIBERGLASS FIBROUS GLASS BLANKET INSULATION WITH A MIN R-4 VALUE. EQUAL IS APPROVED. SEAL ALL JOINTS AND SEAMS PRIOR TO ADDING DUCTWRAP. INSULATION WRAP SHALL BE SEALED WITH FAB AND MASTIC MEETING UL 181.
- ALL DUCTWORK SHALL MAINTAIN SYSTEM PRESSURE. THE AIR DISTRIBUTION COMPONENTS SHALL BE SEALED IN ACCORDANCE WITH SMACNA REQUIREMENTS. TWO INCH PRESSURE CLASS.
- DUCT INSULATION CLOSURE SYSTEM SHALL CONSIST OF GLASS FABRIC AND NON MIGRATING MASTIC. SEAL AIR TIGHT.
- ALL FLEXIBLE DUCTS SHALL BE SUPPORTED EVERY 4'-0" WITH 2" WIDE GALVANIZED STEEL BANDS. MINIMUM ONE PER EACH SECTION OF FLEXIBLE DUCT. MAXIMUM LENGTH OF FLEX DUCT SHALL BE 8'-0" LONG AND SHALL MEET INSTALLATION AND MATERIAL REQUIREMENTS OF LOCAL CODES.
- ALL BRANCH TAKE-OFFS SHALL BE PROVIDED WITH MANUAL BALANCING DAMPERS LOCATED ABOVE ACCESSIBLE CEILING AS CLOSE TO MAIN TRUNK AS POSSIBLE. WHEN AIR DEVICE IS NOT ACCESSIBLE PROVIDE DAMPER AT AIR DEVICE.
- CONTRACTOR IS RESPONSIBLE FOR COORDINATING BOX-OUT LOCATIONS FOR ALL DRYWALL MOUNTED AIR DEVICES WITH GENERAL CONTRACTOR AND CEILING FRAMING. CONTRACTOR SHALL COORDINATE ALL DUCT AND DIFFUSER LOCATIONS WITH LIGHTING LAYOUTS AS REQUIRED.
- ALL SUPPLY DUCT BENDS FROM THE VERTICAL TO HORIZONTAL AND ANGLED TURNS OF DUCTWORK SHALL HAVE TURNING VANES INSTALLED.
- PROVIDE SMOOTH TRANSITIONS AT EQUIPMENT AND AIR DEVICES TO MATCH CONNECTION SIZES. ALL DUCTWORK SHALL BE SHEET METAL FABRICATED IN ACCORDANCE WITH ASHRAE GUIDE AND SMACNA MANUAL LATEST EDITIONS.
- WAWA TO PROVIDE T&B VERIFICATION BY WORKING DIRECTLY WITH A T&B CONTRACTOR. GC/MC SHALL BALANCE TO DESIGNED CFM VALUES ON FLOOR PLAN. ANY CORRECTIONS FOUND IN 3RD PARTY T&B REPORT WILL BE THE RESPONSIBILITY OF THE GC TO CORRECT. GC SHALL FORMALLY SUBMIT CORRECTED REPORT TO DESIGN TEAM FOR REVIEW.
- IT SHALL BE THE RESPONSIBILITY OF THIS T&B AGENCY TO PROVIDE THE LOCAL BUILDING DEPARTMENT AND OWNER WITH PROPER TEST & BALANCE DATA ON ABC OR NEBB FORMS.
- BUILDING AIR SYSTEMS SHALL BE BALANCED PER DATA INCLUDED ON THE DRAWINGS TO ACHIEVE RELATIVE AIR VOLUMES AS INDICATED ON THE DRAWINGS AND SCHEDULED HEREIN. REFER TO AIR FLOW DIAGRAM DETAIL.



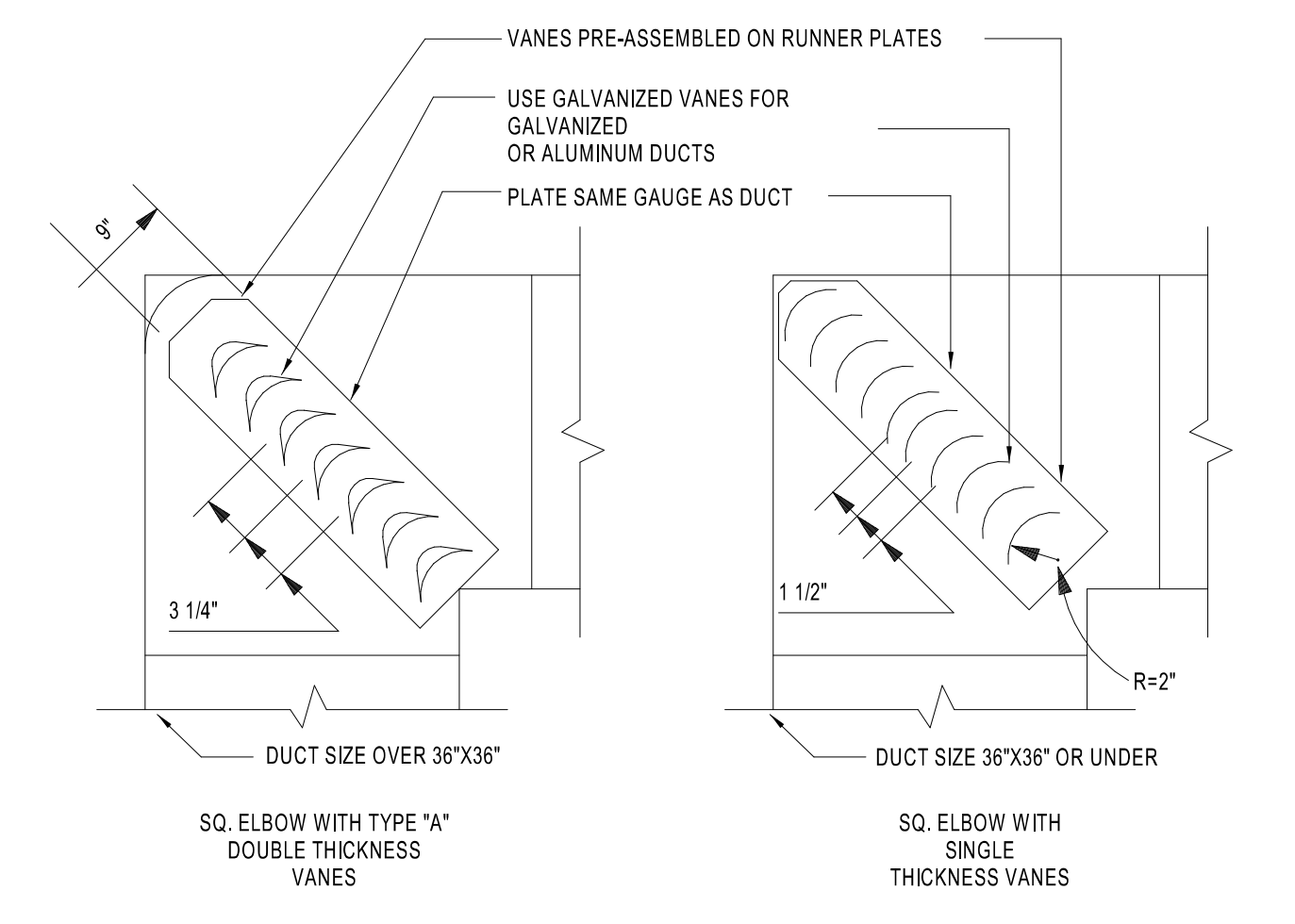
1 RECTANGULAR BRANCH CONNECTION  
M4.0 NTS



2 ROUND BRANCH CONNECTION  
M4.0 NTS



3 HVAC CONDENSATE DRAIN DETAIL  
M4.0 NOT TO SCALE



4 TURNING VANE DETAIL  
M4.0 NTS

DUCT SHALL BE SECURELY FASTENED TO RUNNERS.

ALL VANES SHALL BE SECURE AND STABLE IN INSTALLED OPERATION POSITION. IF NECESSARY AT CERTAIN VELOCITIES OR PRESSURES WELD VANES TO RUNNERS ON APPROPRIATE INTERVALS ALONG RUNNERS.

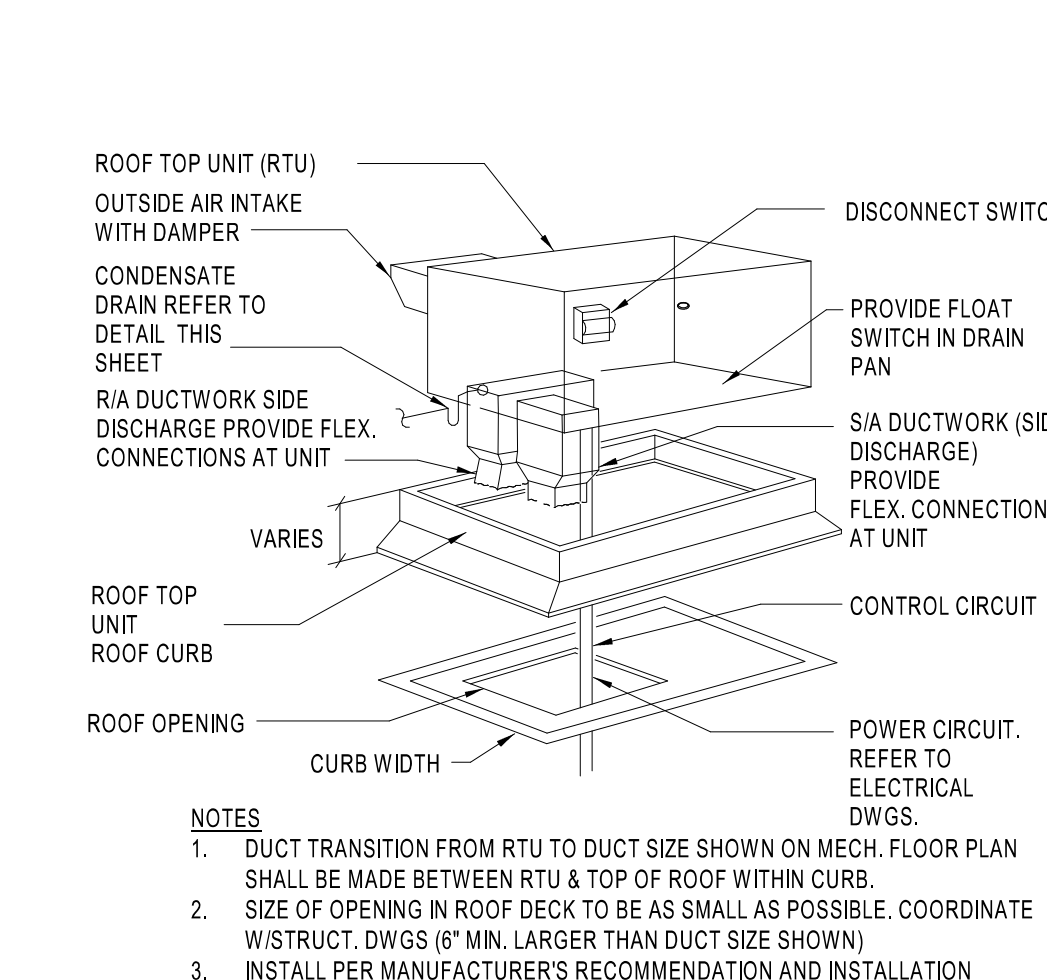
TO PREVENT LINER DAMAGE CARE MUST BE EXERCISED WHEN INSTALLING VANES IN LINED OR FIBROUS GLASS DUCT.

	R	SP	GA
SMALL	2"	1 1/2"	24
LARGE	4 1/2"	3 1/4"	22

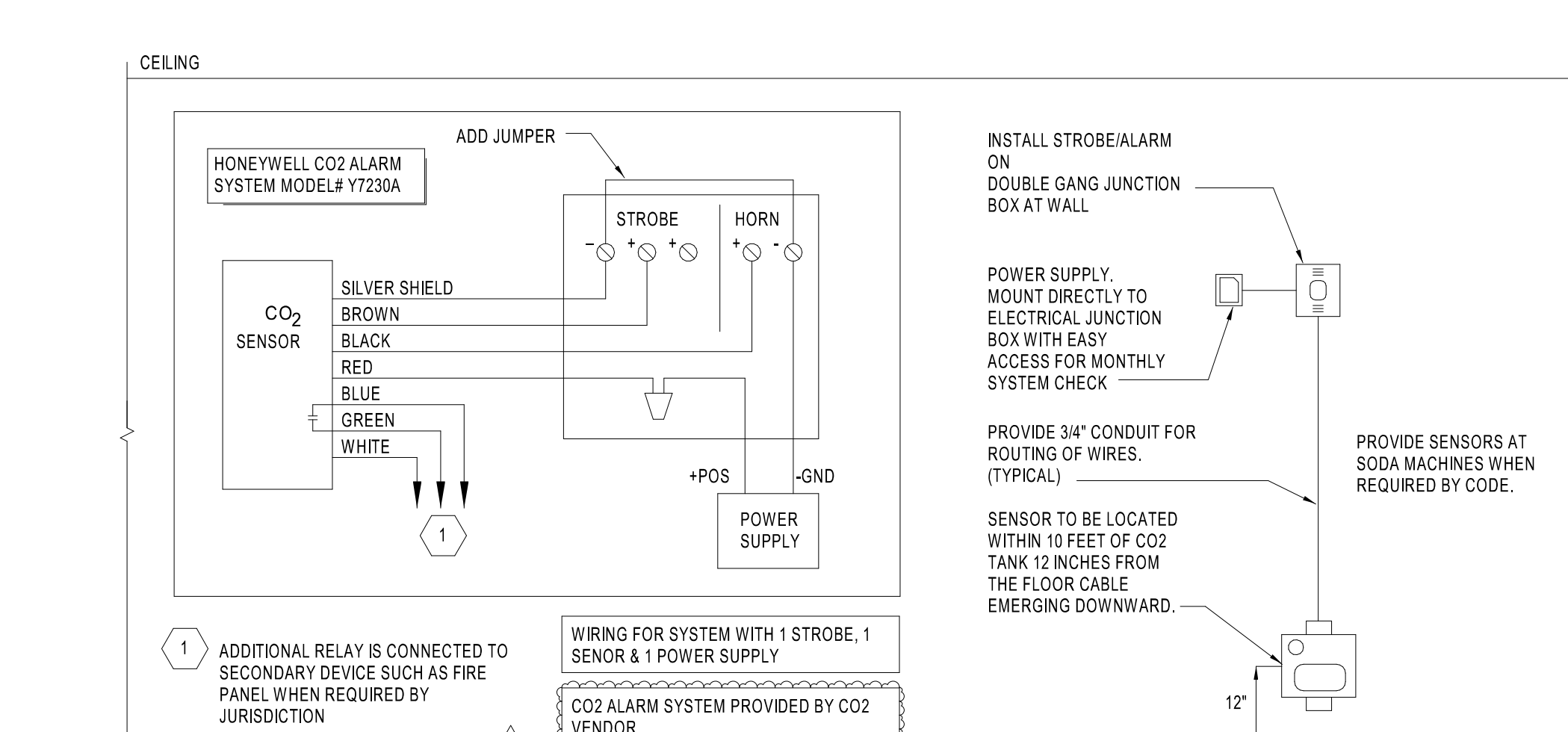
\* MAXIMUM UNSUPPORTED VANE LENGTH

SMALL SINGLE VANE 36"  
 LARGE SINGLE VANE 36"  
 SMALL DOUBLE VANE 60"  
 LARGE DOUBLE VANE 72"

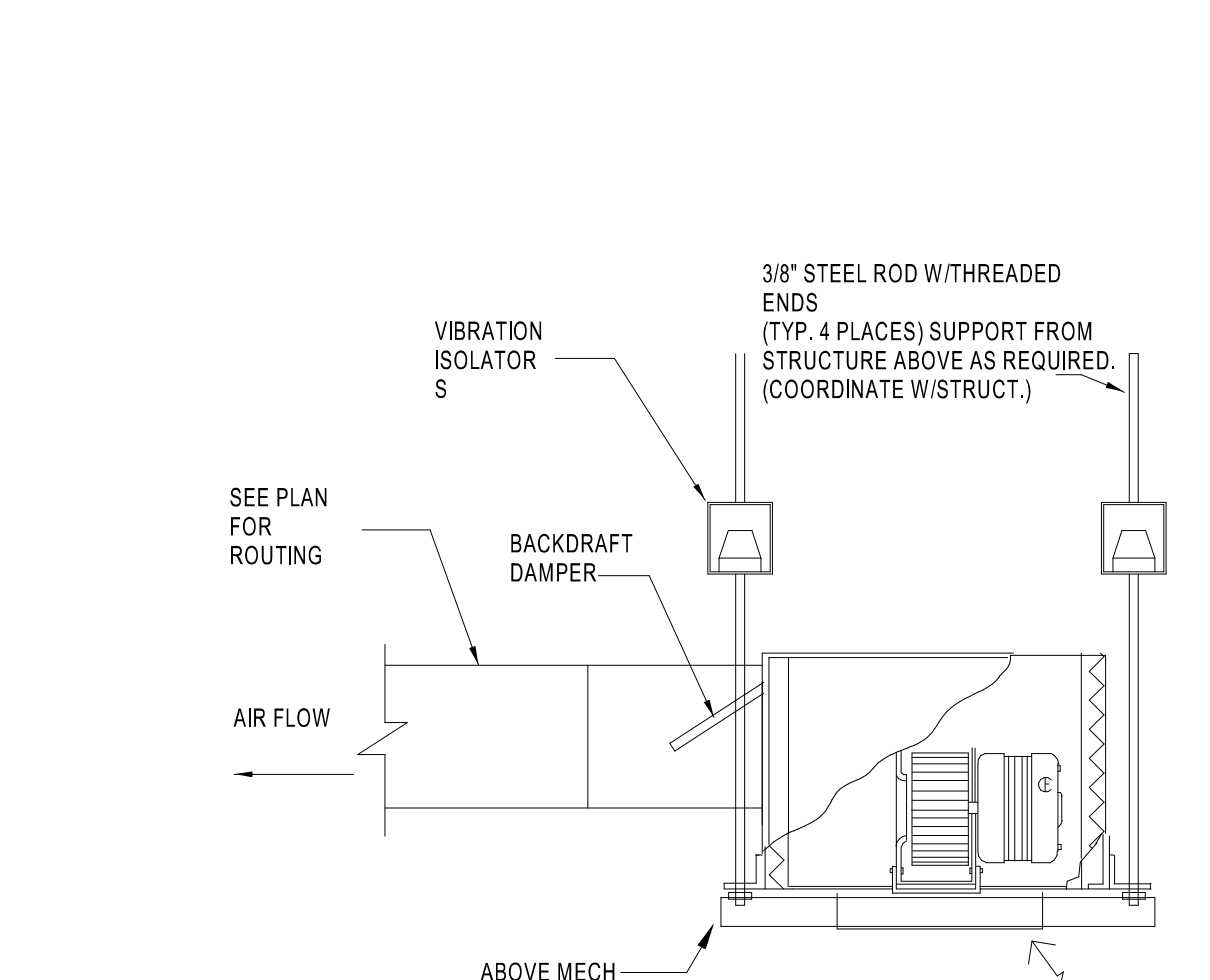
NOTE: FOLLOW PER SMACNA STANDARDS.



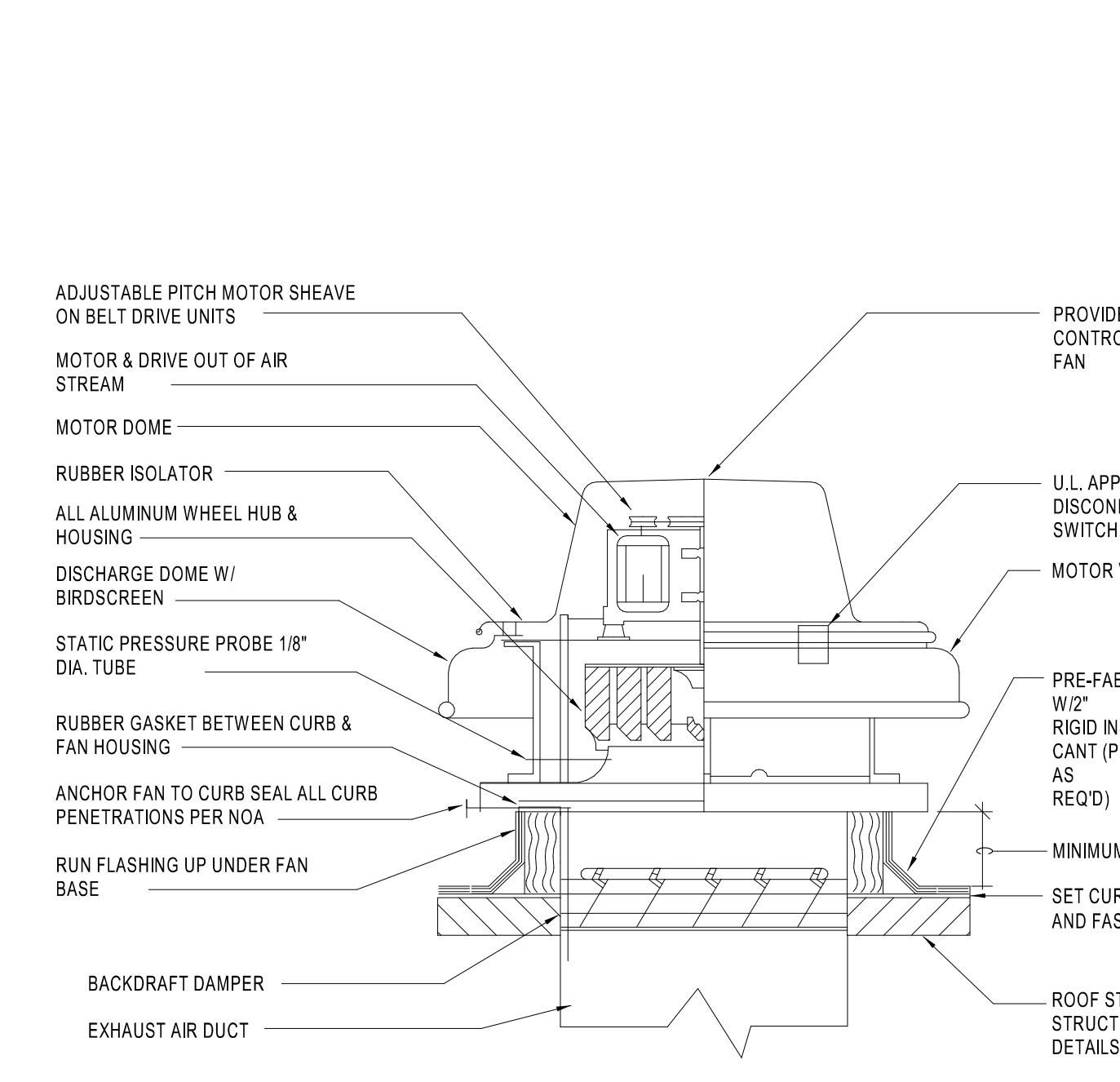
5 ROOF TOP UNIT MOUNTING DETAIL  
M4.0 NTS



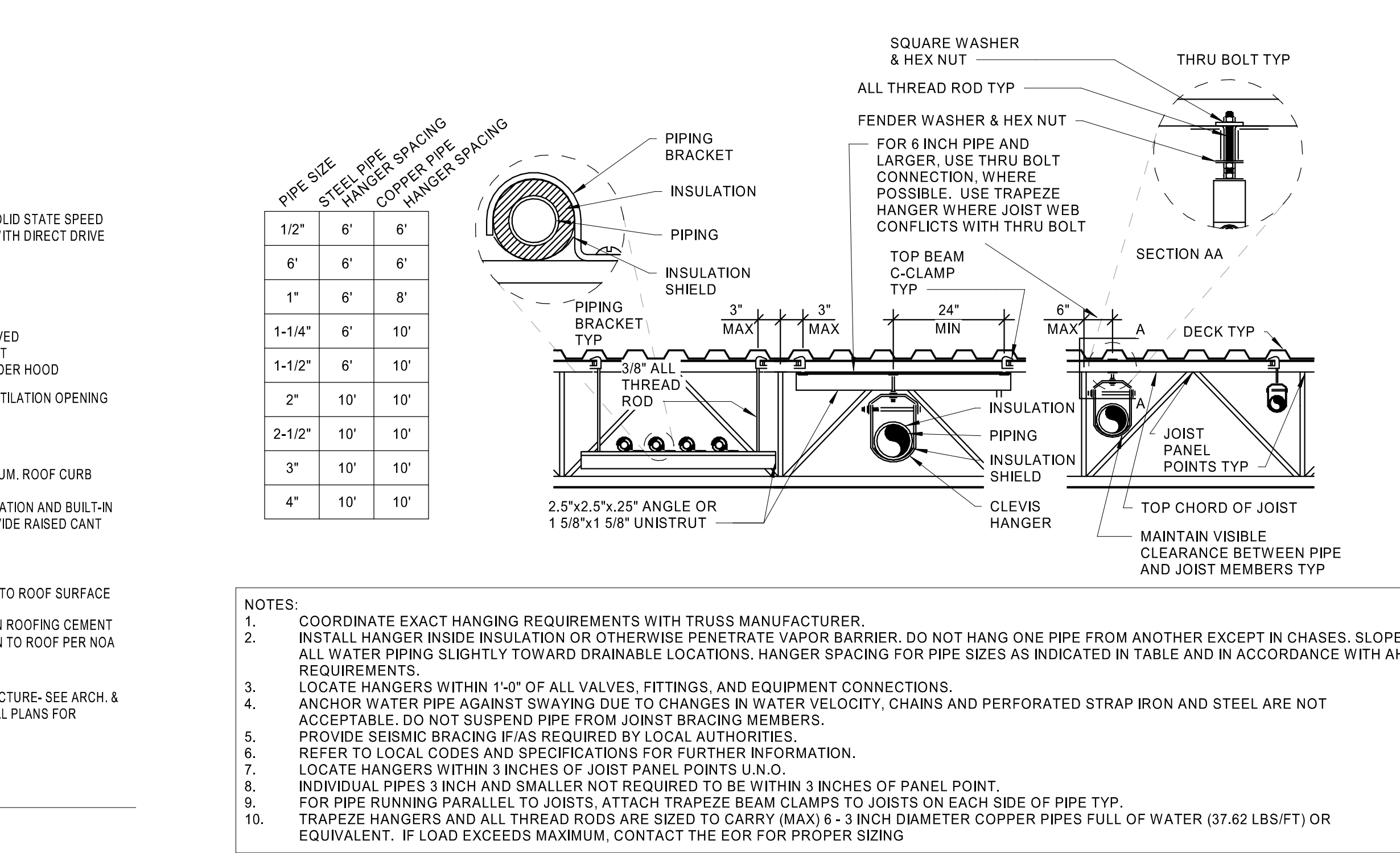
6 CO2 ALARM SYSTEM DETAIL  
M4.0 NTS



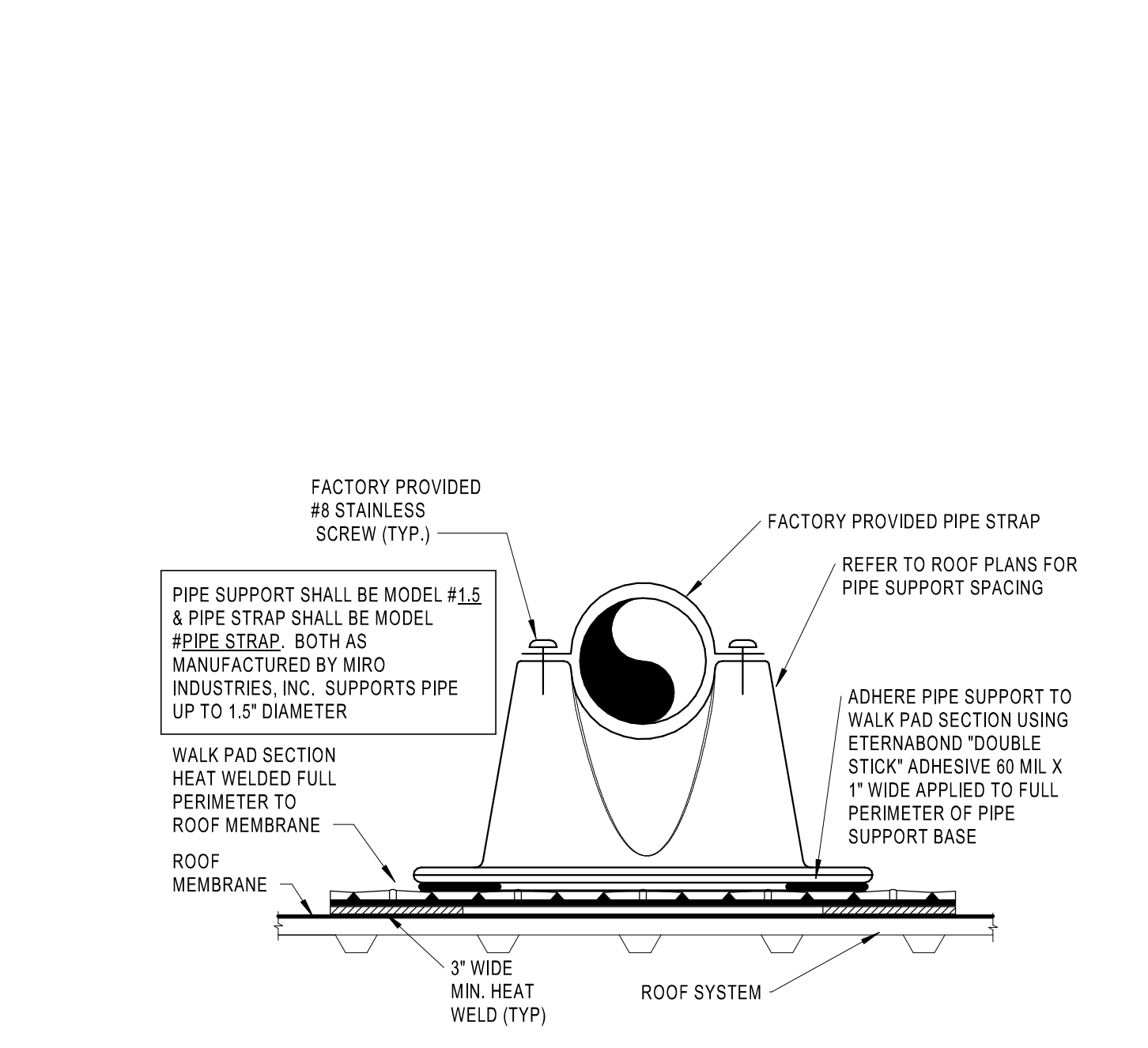
7 CEILING EXHAUST FAN DETAIL  
M4.0 NTS



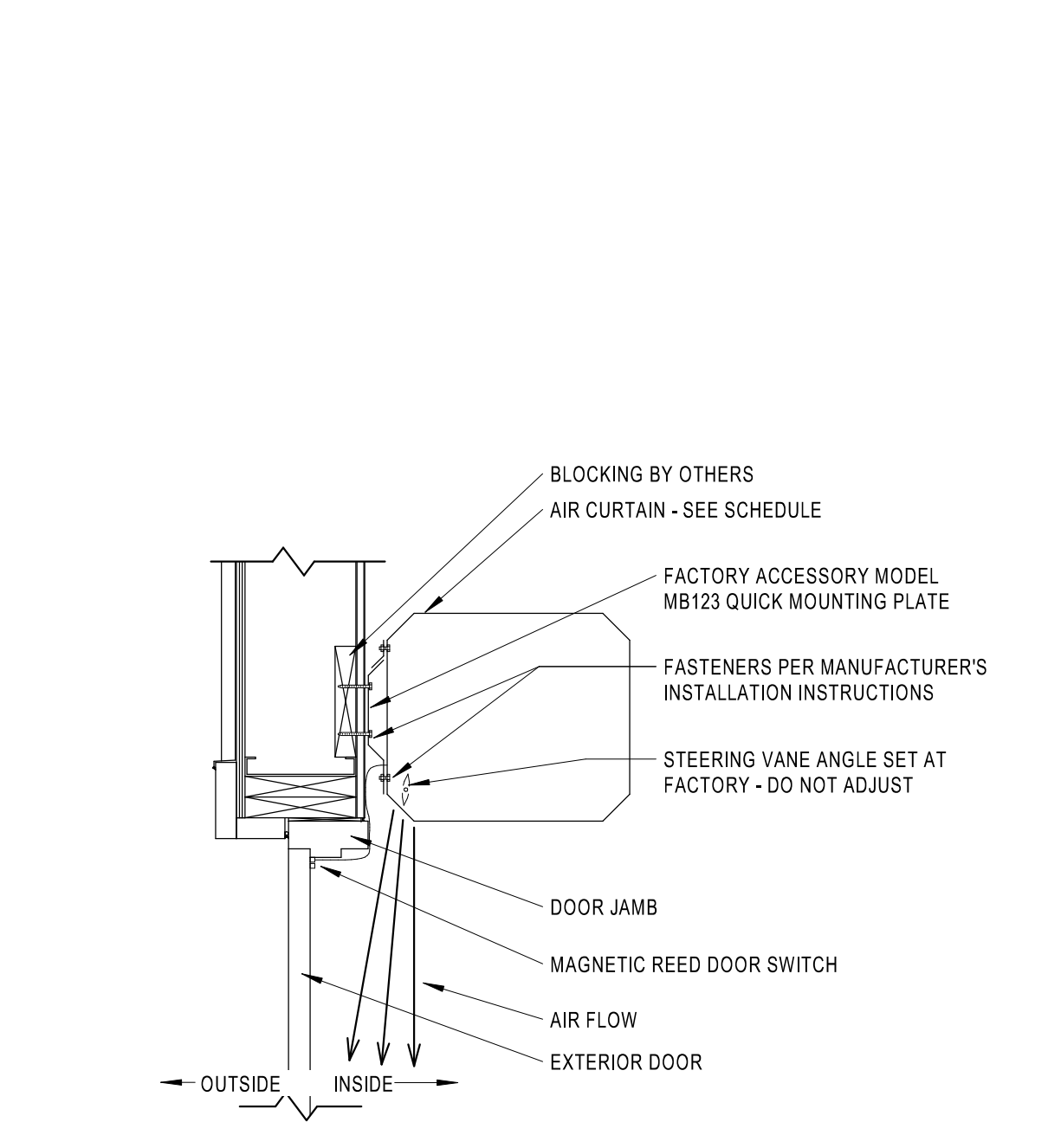
8 TYPICAL EXHAUST FAN DETAIL  
M4.0 NTS



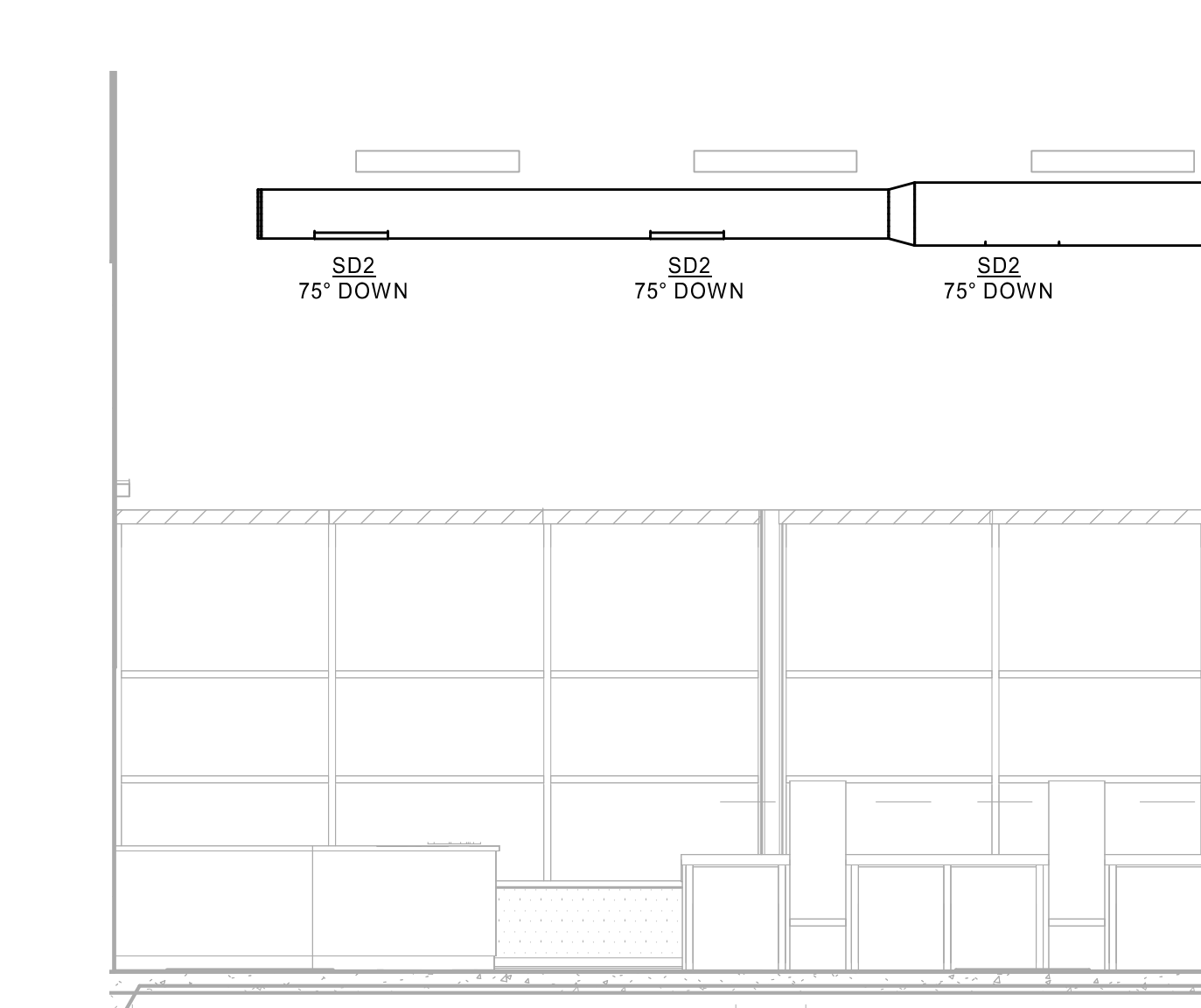
9 PIPE HANGER FOR STEEL JOIST DETAIL  
M4.0 NOT TO SCALE



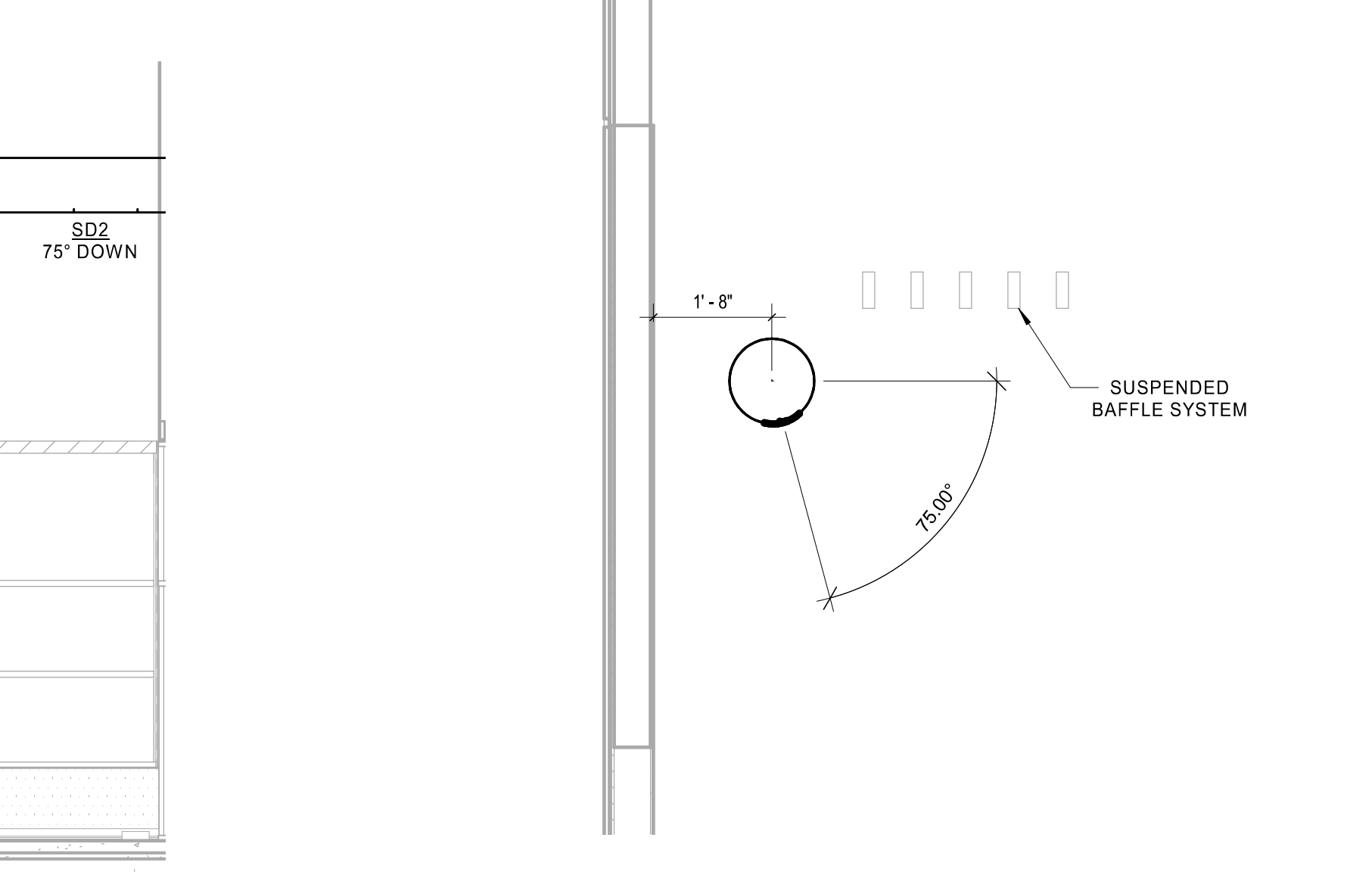
10 HVAC CONDENSATE PIPE ROOF SUPPORT DETAIL  
M4.0 NTS



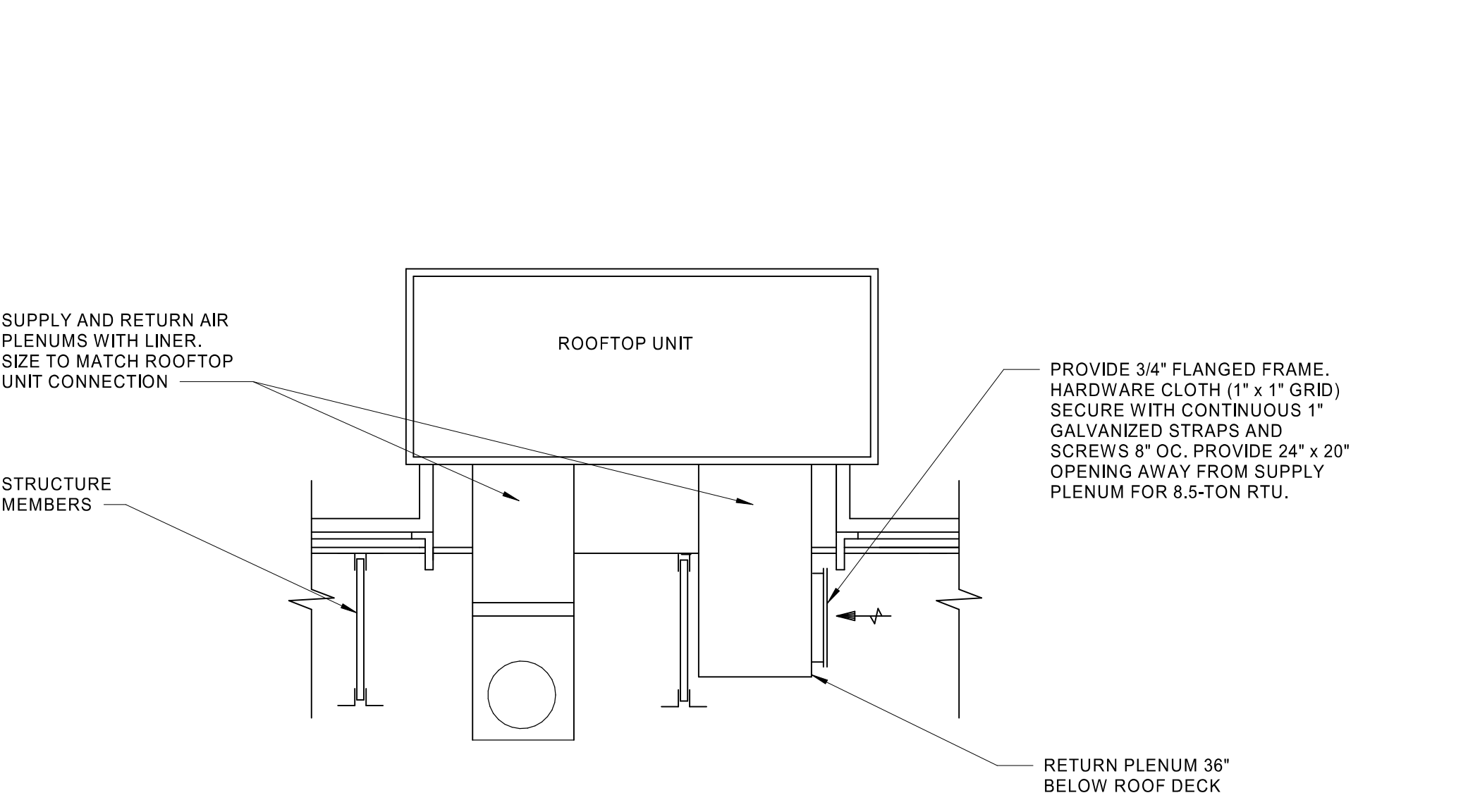
11 HVAC AIR CURTAIN INSTALLATION DETAIL  
M4.0 NTS



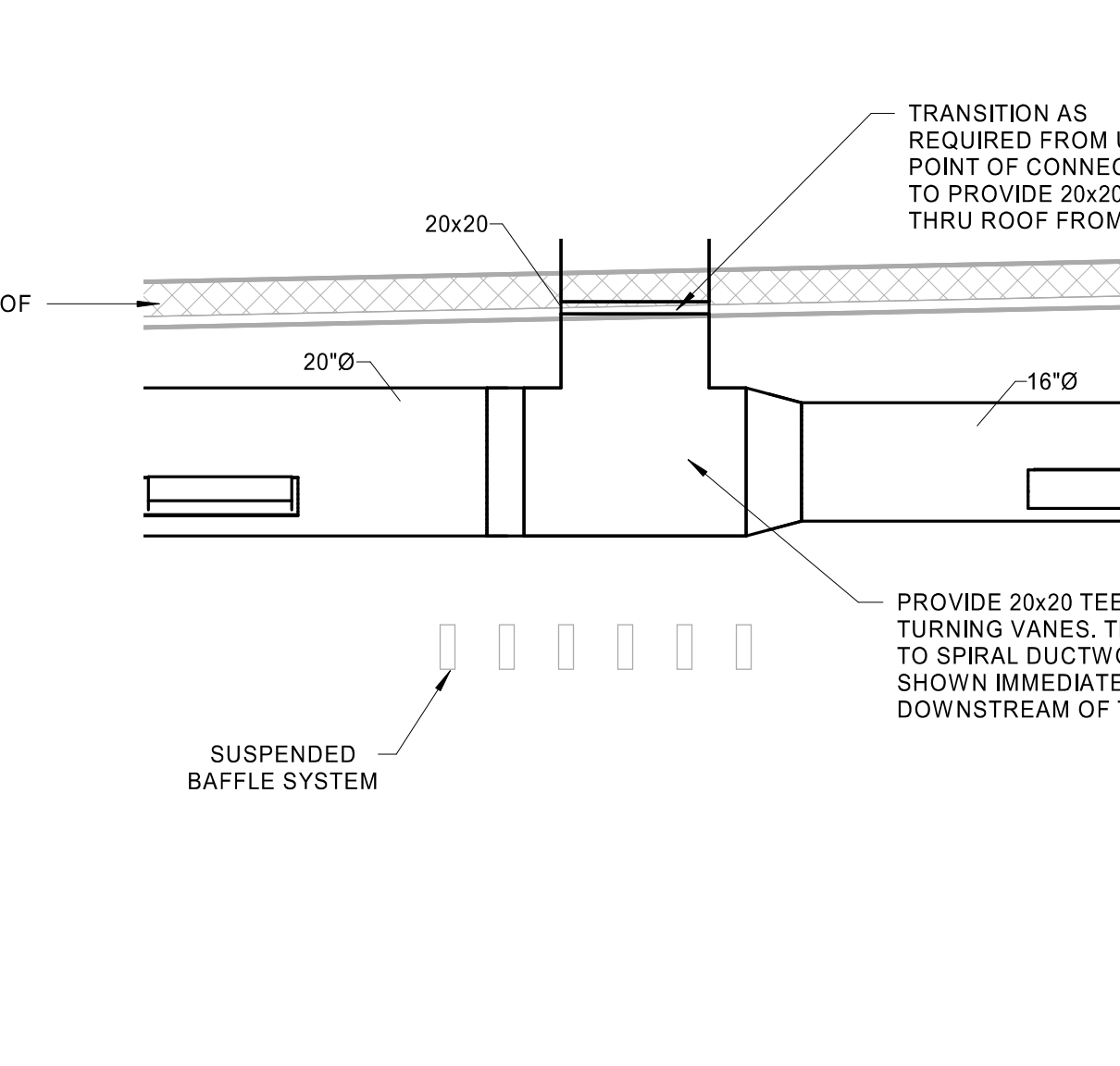
12 FRONT RETAIL DIFFUSER LAYOUT  
M4.0 14\"/>



13 FRONT RETAIL DIFFUSER ANGLE DETAIL  
M4.0 12\"/>



14 RTU DUCTWORK DROP DETAIL  
M4.0 NOT TO SCALE



15 RTU-2 SUPPLY DUCTWORK DROP  
M4.0 12\"/>

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**WAWA**  
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RICHMOND, VA 23234  
JOB NUMBER: 42-24-20015

ISSUE BLOCK

NO.	REV.	DATE
1	REV 1	05/08/24
5	REV 5	12/13/24

CHECKED BY: MJS  
DRAWN BY: SGB  
DOCUMENT DATE: 12/13/24  
PROTO: US9FB-R  
CYCLE: 2023.Q4.V1.G3  
PLAN ISSUE: CNST SET

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PROFESSIONAL ENGINEER  
RYAN R. VAUGHN  
Lic. No. 051120  
Ryan Roger Vaughn  
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