

PLAN NORTH  
**MECHANICAL PLAN**  
 1/4" = 1'-0"  
 0 2' 4' 8'

**NOTE**  
 AIR CURTAINS WITH INTEGRAL HEATING INCLUDE AUTOMATIC CONTROLS THAT SHUT OFF THE HEATING SYSTEM WHEN OUTDOOR AIR TEMPERATURES > 45F. VESTIBULE HEATING AND COOLING SYSTEMS CONTROLLED BY A THERMOSTAT IN THE VESTIBULE WITH HEATING SETPOINT <= 60F AND COOLING SETPOINT >= 80F.

**ROOFTOP/DOAS UNITS:**

1. THERMOSTATS SHALL CONTROL OCCUPIED/UNOCCUPIED MODE OF OPERATION FOR THE ENTIRE SYSTEM IN ACCORDANCE WITH PROGRAMMED TIMES AND SET POINTS.
2. ON A CALL FOR COOLING FROM THE THERMOSTAT, SYSTEM SHALL ENERGIZE (MECHANICAL COOLING) IN STAGES. WHEN OUTDOOR ENTHALPY, AS SENSED BY UNIT MOUNTED CONTROLS, IS BELOW ITS SETTING, AND FREE COOLING IS AVAILABLE, UNIT MOUNTED ECONOMIZER SHALL BE ENABLED AND MODULATE DAMPERS BEYOND THEIR MIN. POSITION SET-POINTS TO SATISFY THE SETTING OF (55°F ADJUSTABLE). DURING THIS CYCLE, THE MECHANICAL COOLING SHALL BE DISABLED. ECONOMIZER CONTROLLER SHALL RESET THE OUTSIDE AIR DAMPERS TO THE MINIMUM POSITION AND ENERGIZE THE MECHANICAL COOLING WHEN THE SET-POINT IS EXCEEDED.
3. ON A CALL FOR HEATING, ELECTRIC HEAT SHALL BE ENERGIZED AND SHALL RUN UNTIL SET-POINT IS SATISFIED.
4. DURING NIGHT SETBACK PERIOD AS PROGRAMMED ON ASSOCIATED ROOFTOP/DOAS UNIT THERMOSTAT, BLOWER FAN SHALL BE OFF AND OUTSIDE AIR DAMPERS SHUT. ON A CALL FOR HEATING OR COOLING, THE OUTSIDE AIR DAMPERS SHALL REMAIN CLOSED AND THE ELECTRIC HEAT OR COMPRESSOR CYCLE SHALL RUN UNTIL SPACE SET-POINT IS SATISFIED.
5. OVERRIDE TIMER SWITCH (MOUNTED ON THERMOSTAT) SHALL BYPASS THE PROGRAMMABLE THERMOSTAT (OCCUPIED SETTING) AND SHALL ENERGIZE THE SYSTEM INTO THE OCCUPIED MODE FOR A MINIMUM OF A 3 HOUR PERIOD.
6. REMOTE TEMPERATURE SENSORS SHALL BE USED SO THAT THERMOSTATS CAN BE IN PREP ROOM AREA, AWAY FROM THE PUBLIC.

**EXHAUST FANS:**

1. TOILET ROOM EXHAUST FANS SHALL BE INTERLOCKED WITH THE DOAS-1. THERMOSTATS. DURING THE OCCUPIED MODE, THE EXHAUST FAN SHALL RUN CONTINUOUSLY. DURING UNOCCUPIED HOURS, EXHAUST FANS SHALL BE TURNED OFF.

**DUCT SMOKE DETECTORS:**

1. ROOFTOP/DOAS UNIT SUPPLY FAN SHALL BE DE-ENERGIZED UPON DETECTION OF SMOKE IN DUCT SMOKE DETECTOR.

**MECHANICAL SYMBOLS LEGEND**

(T)	THERMOSTAT
(S)	TEMPERATURE SENSOR
(H)	HUMIDITY SENSOR
(SD)	SMOKE DETECTOR
---w---	FLEXIBLE DUCT
---	VOLUME DAMPER
FD	FIRE DAMPER
⊗	CEILING SUPPLY AIR DIFFUSER
⊙	CEILING RETURN AIR GRILLE
---	SIDEWALL AIR DIFFUSER OR GRILLE
---	NEW DUCTWORK
---	EXISTING DUCTWORK
D	CONDENSATE DRAIN
G	GAS PIPING
---	PIPE TURNING DOWN
---	PIPE TURNING UP
⊘	BALL VALVE
⊕	GATE VALVE
⊖	CONNECTION OF NEW TO EXISTING
⊗	CHECK VALVE
⊕	GAS COCK
⊖	UNION
⊕	PRESSURE GAUGE
⊖	STRAINER
AFF	ABOVE FINISHED FLOOR
S1	AIR DEVICE #
100	CFM
S	S - SUPPLY
R	R - RETURN
E	E - EXHAUST

**MECHANICAL KEYED NOTES**

1. INSTALL ROOM TEMPERATURE SENSOR (PROVIDED BY OTHERS) FOR KITCHEN HOOD. VERIFY EXACT MOUNTING HEIGHT IN FIELD.
2. EXISTING AND NEW, REMOTE TEMPERATURE AND HUMIDITY SENSOR MOUNTED ON WALL AT 60" AFF. REMOTE SENSORS TO COMMUNICATE WITH REMOTE HMI INTERFACE AT MANAGER'S STATION. VERIFY HMI INTERFACE LOCATIONS WITH OWNER. CONTRACTOR SHALL PROVIDE ALL WIRING FOR A COMPLETE SYSTEM.
3. EXISTING AND NEW THERMOSTATS TO BE LOCATED AT MANAGER'S STATION. NEW THERMOSTAT(S) TO BE CAPTIVEAIRE HMI CONTROLLER. MOUNT AT 48" AFF. VERIFY EXACT THERMOSTAT LOCATIONS WITH OWNER.
4. PROVIDE AIR CURTAIN, (AC-1), MARS MODEL LPV272-1EEI-OB, (208V/30), 13 KW ELECTRIC HEAT, ABOVE ENTRY DOORS. THIS CONTRACTOR SHALL PROVIDE ALL LABOR AND MATERIALS FOR A COMPLETE FUNCTIONING SYSTEM, INCLUDING BUT NOT LIMITED TO: WALL MOUNTING BRACKET, ADJUSTABLE DISCHARGE VANES, AND DOOR MICRO SWITCHES WITH MAGNETIC MOTOR CONTROLLERS. COLOR TO BE OBSIDIAN BLACK.
5. MAINTAIN CODE REQUIRED CLEAR SPACE ABOVE ELECTRICAL PANELS.
6. 10"x8" EXHAUST DUCT UP TO EF-3 ON ROOF.
7. 4" PVC/CPVC INTAKE AND 4" PVC/CPVC EXHAUST FROM GAS WATER HEATER UP TO ROOF. COMBINE RIGHT BEFORE ROOF PENETRATION WITH CONCENTRIC VENT KIT. WATER HEATER PROVIDED AND INSTALLED BY OTHERS.
8. 14"Ø GREASE EXHAUST DUCT UP TO EXHAUST FAN ON ROOF. SEE ROOF PLAN FOR ADDITIONAL DETAILS. TRANSITION DUCTWORK AS NECESSARY TO AVOID OBSTRUCTIONS.
9. PROVIDE DUCT SMOKE DETECTOR IN RETURN AIR DUCT WITH ALL ELECTRICAL CONNECTIONS IF NOT EXISTING. UPON DETECTION OF SMOKE, ALL HVAC UNITS SHALL BE DE-ENERGIZED. PROVIDE WITH ANNUNCIATOR BELOW HVAC UNIT AND REMOTE TEST STATION LOCATED AT MANAGER'S DESK. VERIFY EXACT CONDITION IN FIELD.
10. ANSUL MANUAL PULL STATION. SEE ARCHITECTURAL DRAWINGS FOR EXACT LOCATION.
11. PROVIDE 16"x8" SUPPLY DUCT RUN OUT TO SUPPLY PLENUM AT KITCHEN HOOD. PROVIDE WITH VOLUME DAMPER AS SHOWN AND BALANCE TO 290 CFM. SEE CAPTIVEAIRE DRAWINGS FOR ADDITIONAL INFORMATION. TYPICAL OF 4.
12. BALANCE DAMPER WITHIN DIFFUSER. TYPICAL OF ALL "S2" DIFFUSERS.
13. 15" TRANSFER AIR DUCT ABOVE CEILING CONNECTED TO RETURN GRILLE AS SHOWN.
14. CEILING MOUNTED EXHAUST FAN FOR CO2 TANK ROOM.
15. SPIRAL DUCT TO DROP DOWN THROUGH CEILING GRID ABOVE DINING, TOP OF DUCT 6" BELOW THE ACT CEILING. CEILING TO BE CUT AND SEALED AROUND SPIRAL DUCT WITH TRIM RING, PAINTED BLACK, TO GIVE CLEAN LOOK.
16. PROVIDE AIR CURTAINS, (AC-2), MARS MODEL LPV242-1EEI-OB, (208V/30), 10 KW ELECTRIC HEAT, ABOVE ENTRY DOORS. THIS CONTRACTOR SHALL PROVIDE ALL LABOR AND MATERIALS FOR A COMPLETE FUNCTIONING SYSTEM, INCLUDING BUT NOT LIMITED TO: WALL MOUNTING BRACKET, ADJUSTABLE DISCHARGE VANES, AND DOOR MICRO SWITCHES WITH MAGNETIC MOTOR CONTROLLERS. COLOR TO BE OBSIDIAN BLACK.

MUNICIPAL APPROVAL STAMPS

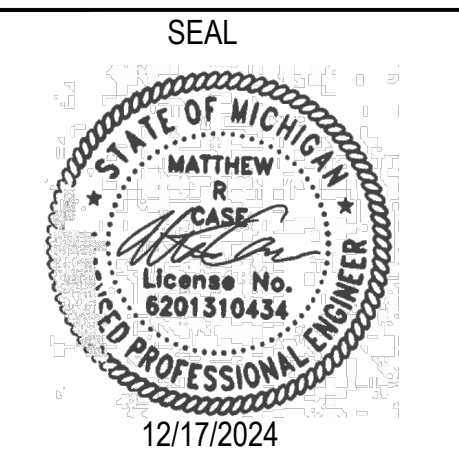
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 FGO PROJECT NUMBER: 24-578

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SHEET TITLE  
**FLOOR PLAN**  
 HVAC  
 SHEET NUMBER  
**M2.0**

**MECHANICAL KEYED NOTES**

- 1 CO2 TANK. TANK SHALL BE IN ACCORDANCE WITH MANUFACTURERS REQUIREMENTS. TANK MUST COMPLY WITH CHAPTER 50 AND 53 OF THE CFC. PROVIDE EMERGENCY SHUTOFF VALVE TAG ON SUPPLY LINE AND REQUIRED SIGNAGE PER NFPA REQUIREMENTS. VENT RELIEF PIPING A MINIMUM OF 10' FROM OPENINGS INTO BUILDING.
- 2 EMERGENCY PROCEDURES LOCATION.
- 3 SUPPLY PIPING, FLEX-TECH PEB FDA/NSF-51 POLYETHYLENE BEVERAGE HOSE. LABEL PIPING A MINIMUM OF EVERY 20' WITH PRODUCT DESCRIPTION AND FLOW DIRECTION. PROVIDE SLEEVE FOR OUTSIDE INSTALLATION. PIPING MUST COMPLY WITH LOCAL FIRE CODES AND ASME A13.1.
- 4 INSTALL REMOTE READOUT MONITOR FOR CO2 SENSOR & AV ALARM, VERIFY EXACT MOUNTING HEIGHT IN FIELD.
- 5 CO2 DETECTOR/SENSOR KIT, COMPLETE WITH NECESSARY CONTACTS FOR COMMUNICATION FIRE ALARM SYSTEM (AS APPLICABLE). CONTRACTOR TO INSURE COMPLIANCE. INSTALL UNIT IN ACCORDANCE WITH MANUFACTURERS REQUIREMENTS WITHIN 12" AFF. EQUIPMENT SHALL BE INSTALLED BY CO2 VENDOR OR ELECTRICAL CONTRACTOR, VERIFY WITH GC.
- 6 AUDIBLE/VISUAL ALARM LOCATION. MOUNT ON WALL BETWEEN 80" AND 96" AFF IN A VISIBLE LOCATION.
- 7 PROVIDE WARNING SIGN IN ACCORDANCE WITH NFPA55, SECTION 13.2.3.1 STATING "CAUTION-CARBON DIOXIDE GAS. VENTILATE THE AREA BEFORE ENTERING. A HIGH CARBON DIOXIDE (CO2) GAS CONCENTRATION IN THIS AREA CAN CAUSE SUFFOCATION." SIGN MUST BE AT LEAST 8"x6".

**SEQUENCE OF OPERATIONS**

CO2 SENSOR SHALL BE CAPABLE OF TWO TIER DETECTION (5,000 PPM AND 30,000 PPM).

AT THE LOWER LEVEL, THE SYSTEM SHALL PROVIDE A LOCAL WARNING/SUPERVISORY SIGNAL WITH VISIBLE AND AUDIBLE INDICATION.

AT THE HIGHER LEVEL, CO2 SENSOR DETECTS CO2 WHICH PROVIDES AN EVACUATION SIGNAL WITH VISIBLE AND AUDIBLE INDICATION.

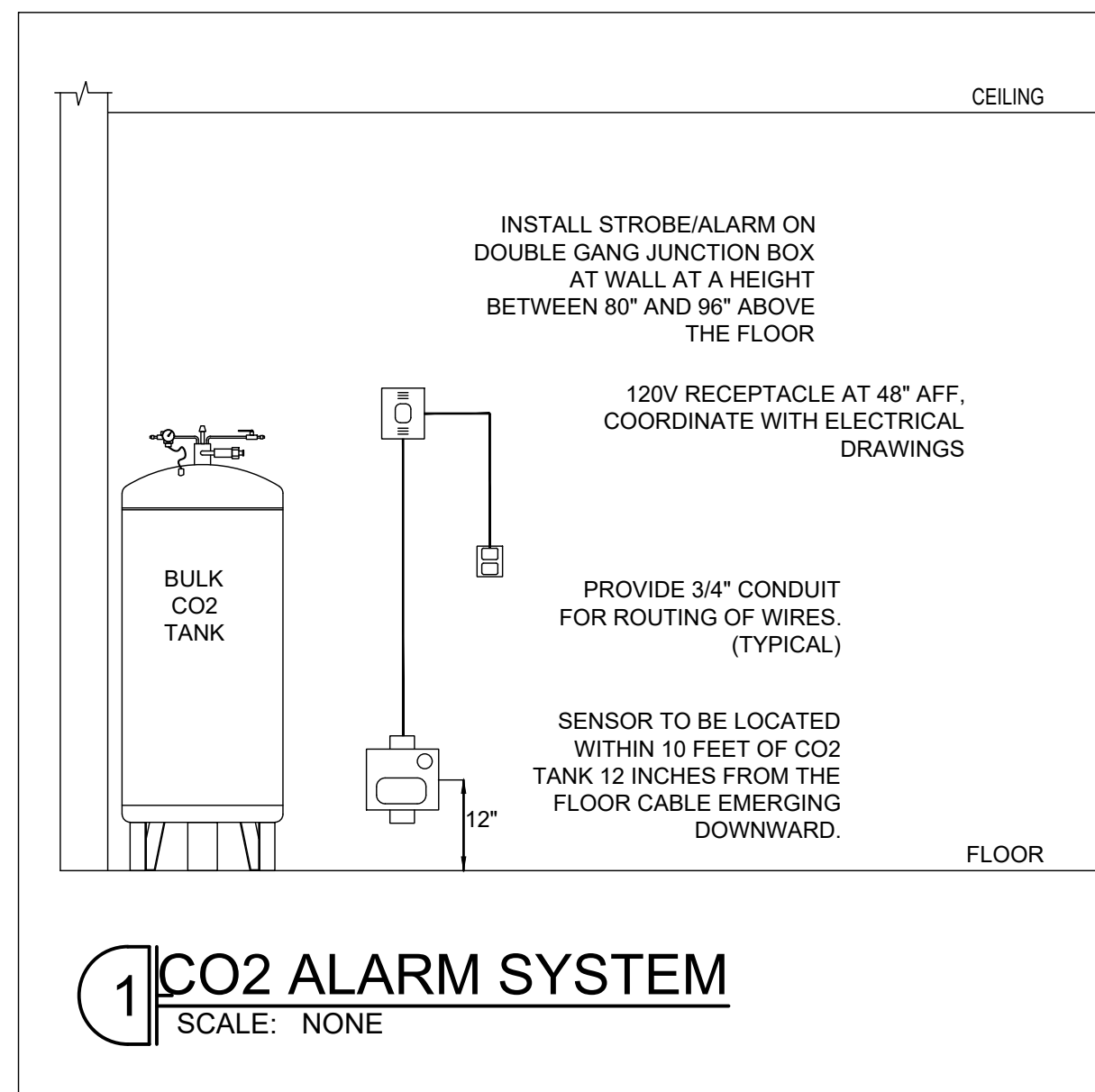
IF THERE IS A FIRE ALARM SYSTEM, CONNECT IN ACCORDANCE WITH FIRE ALARM MANAGER. EMERGENCY PLAN WILL BE INITIATED BY STAFF.

**REQUIRED TESTING**

INSTALLING CONTRACTOR SHALL TEST THE DETECTOR IN ACCORDANCE WITH THE MANUFACTURERS TESTING REQUIREMENTS TO VERIFY DETECTOR AND ALARMS ARE IN PROPER OPERATING ORDER.

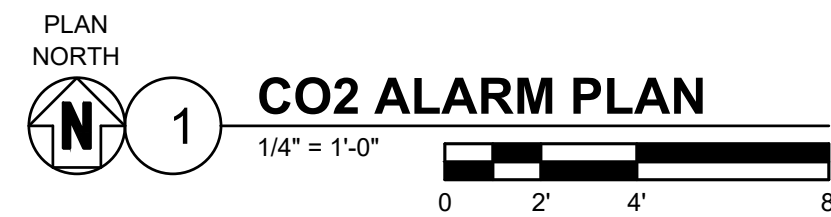
**GENERAL NOTES**

- 1. INSTALLATION SHALL BE IN COMPLIANCE WITH NFPA 55 CHAPTER 13 AND INTERNATIONAL FIRE CODE, CHAPTERS 50 AND 53.
- 2. PIPING AND FITTINGS TO BE LOCATED AND SUPPORTED TO PROTECT AGAINST DAMAGE.
- 3. THE GAS DETECTION AND ALARM SYSTEMS SHALL BE INSTALLED, INSPECTED, TESTED, CALIBRATED AND MAINTAINED PER THE MANUFACTURER'S INSTRUCTIONS OR AT A MINIMUM ANNUALLY.
- 4. PROVIDE EMERGENCY POWER BACK UP FOR CO2 DETECTOR TO AVOID NUISANCE TRIPS DUE TO POWER OUTAGES OR AUTOMATIC RESTART OF SYSTEMS WHEN REQUIRED BY LOCAL AHJ.



**CO2 ALARM SYSTEM SYMBOLS LEGEND**

	CO2 SENSOR @ 12" AFF.
	AUDIO & VISUAL ALARM LOCATION (75 db, 100 CANDELA AND NOT LABELED AS "FIRE")
	SIGN PER NFPA 704 & 55 SECTION 13.2, IFC 50&53.
	CO2 PIPING



MUNICIPAL APPROVAL STAMPS

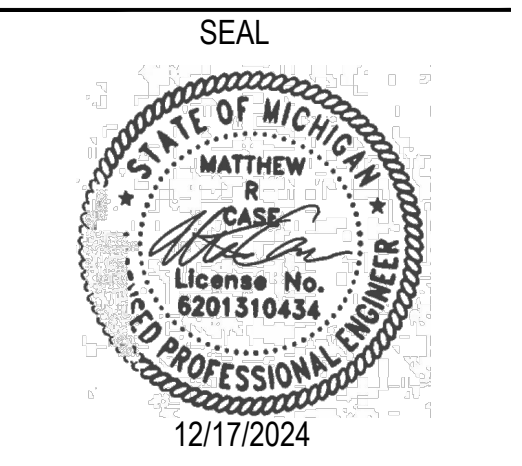
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SHEET TITLE  
**CO2 ALARM PLAN**

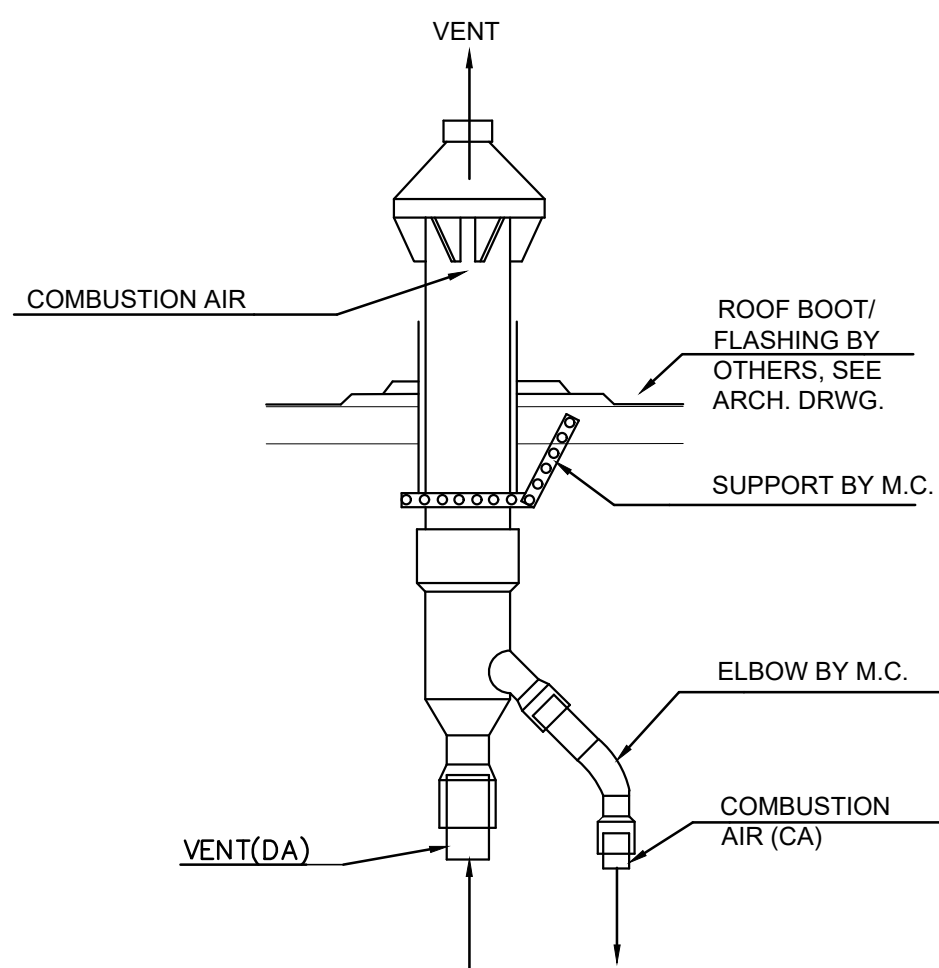
SHEET NUMBER  
**M2.1**

**GENERAL NOTES**

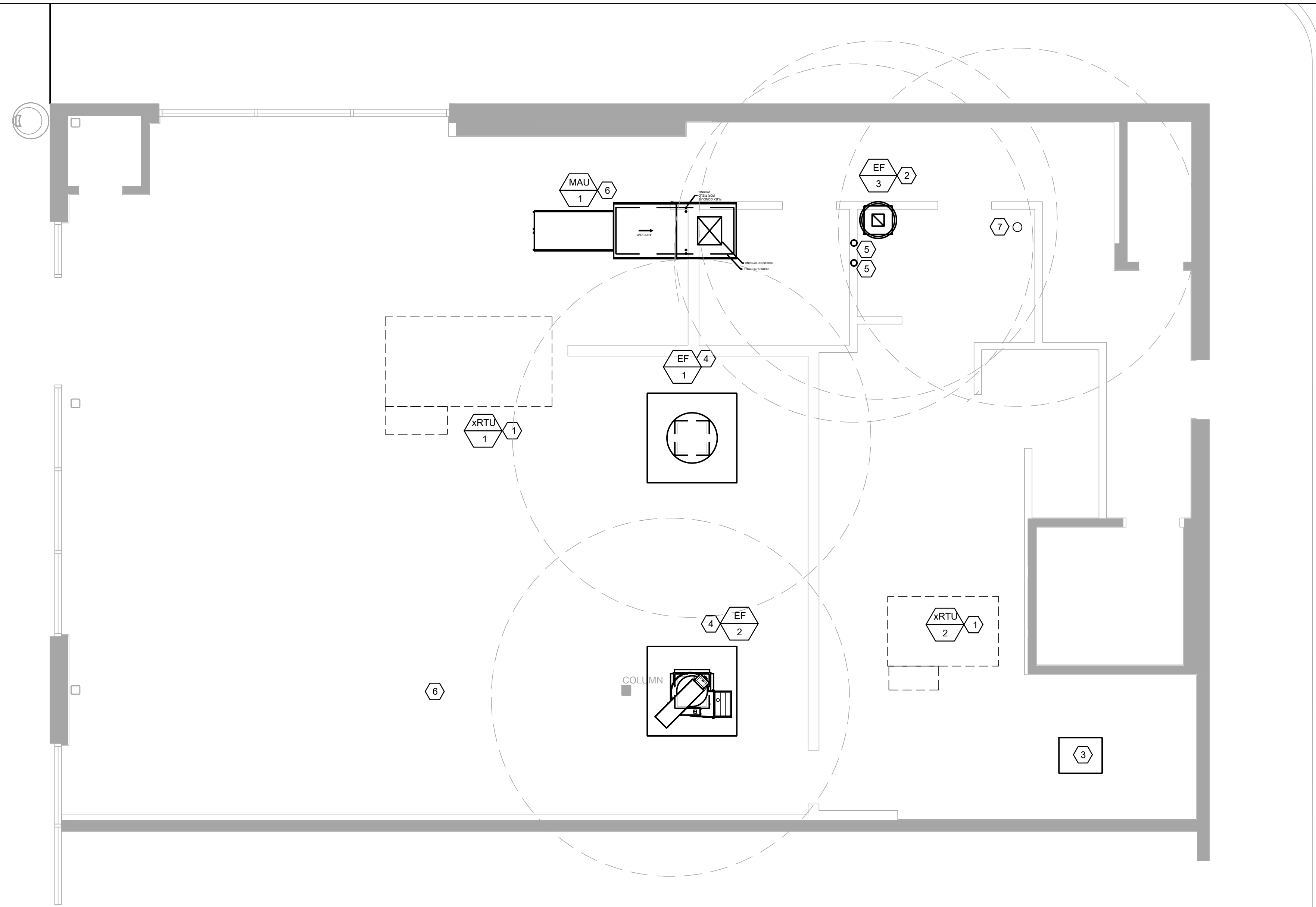
- DUCT/PIPING LAYOUT IS SCHEMATIC, EXACT LOCATION OF DUCT/PIPING AND EQUIPMENT SHALL BE COORDINATED WITH THE BUILDING STRUCTURE, EQUIPMENT, EXISTING CONDITIONS, ARCHITECTURAL DRAWINGS, AND ALL OTHER TRADES PRIOR TO INSTALLATION. ANY CONTRACTOR INSTALLING WORK PRIOR TO COORDINATION SHALL RELOCATE HIS WORK AT HIS EXPENSE TO ALLOW PROPER INSTALLATION OF ANY AND ALL OTHER TRADES' WORK. CONTRACTOR TO VERIFY THAT DUCTWORK SIZES, ELEVATIONS, EQUIPMENT WILL FIT ABOVE CEILING SYSTEM.
- ALL WORK SHALL COMPLY WITH LOCAL MECHANICAL CODE AND ALL OTHER APPLICABLE CODES.
- DUCT SIZES SHOWN ARE NET INSIDE CLEAR DIMENSIONS.
- ALL SUPPLY DUCTWORK ABOVE CEILING SPACES SHALL BE EXTERNALLY INSULATED WITH 1-1/2" THICK FIBERGLASS INSULATION.
- FLEXIBLE RUNOUTS TO AIR DEVICES SHALL BE NO MORE THAN 5'-0" IN LENGTH AND SHALL BE INSULATED.
- MANUAL DAMPERS SHALL BE PROVIDED AT ALL BRANCH TAPS FOR BALANCING. WHERE BRANCH TAPS ARE LOCATED ABOVE HARD LID CEILING OR OTHER INACCESSIBLE AREAS, PROVIDE MANUAL VOLUME DAMPER AT NECK OF AIR DEVICE AS WELL.
- ALL MECHANICAL WORK SHALL BE IN STRICT COMPLIANCE WITH THE LOCAL MECHANICAL CODES AND APPLICABLE PROVISION OF THE LOCAL FUEL GAS CODES. ALL WORK IS SUBJECT TO ON-SITE APPROVAL BY THE LOCAL AUTHORITY.
- THE MECHANICAL CONTRACTOR SHALL PROVIDE A COMPLETE SYSTEM BALANCE REPORT, HEAT GAIN, HEAT LOSS, AND COOLING CALCULATIONS TO LANDLORD'S REPRESENTATIVE TO VERIFY THAT THE REQUIRED VENTILATION AIR TO BE PROVIDED TO EACH SPACE HAS BEEN OBTAINED.
- REFER TO SHEET M2-01 FOR MECHANICAL LEGEND.
- SEE ARCHITECTURAL DRAWING A9-01 FOR FINISH SPECIFICATIONS.
- ALL KITCHEN HOOD EXHAUST WORK SHALL BE 14 GAUGE BLACK IRON OR 18 GAUGE 303 STAINLESS STEEL WITH CONTINUOUS WELDED SEAMS, OR CAPTIVEAIRE NON-WELDED FACTORY GREASE DUCT SYSTEM WHICH IS ETL LISTED TO STANDARD UL-1978 AND CANULC-S662 WHEN INSTALLED IN ACCORDANCE WITH MANUFACTURER'S INSTALLATION INSTRUCTIONS AND NFPA STANDARD 96. ACCESS DOORS SHALL BE PROVIDED EVERY 20'-0" AND AT ANY CHANGE IN DIRECTION. ALL SEAMS, JOINTS, AND PENETRATIONS SHALL BE LIQUID TIGHT AND CONTINUOUS.
- PROVIDE AND INSTALL ALL ADDITIONAL STEEL FOR ROOF STRUCTURE SUPPORT OF ALL EQUIPMENT ON ROOF. ALL ROOF WORK BY LANDLORD'S CONTRACTOR AT TENANT'S EXPENSE. ALL EQUIPMENT ON ROOF SHALL BE CURB OR RAIL MOUNTED AND FLASHED TO ROOF MEMBRANE.
- THE TOP OF ALL DIFFUSERS SHALL BE INSULATED TO PREVENT CONDENSATION AND RUST TO FORM.

**MECHANICAL KEYED NOTES**

- 1 EXISTING ROOFTOP UNIT AND ALL ASSOCIATED DUCTWORK, WIRING, CONTROLS, PIPING, ETC. TO REMAIN UNLESS OTHERWISE SHOWN ON PLAN. VERIFY EXACT LOCATION IN FIELD. PROVIDE NEW ACCESS PANEL IN CEILING WHERE REQUIRED DUE TO NEW CEILING LAYOUT. VERIFY IN FIELD. EXTEND NEW 1" CONDENSATE PIPING (MIN. 1" INSULATION) TO DRAIN TO TAILPIECE OF SERVICE SINK.
- 2 NEW EXHAUST FAN FOR RESTROOMS.
- 3 REMOTE WALK-IN CONDENSER ON ROOF.
- 4 NEW EXHAUST FANS PROVIDED BY CAPTIVEAIRE FOR THE KITCHEN HOOD. GENERAL CONTRACTOR TO COORDINATE GREASE GUARD SYSTEM INSTALLATION. REFER TO SHEET A2-15 FOR MORE INFO.
- 5 4"Ø CONCENTRIC KIT FOR WATER HEATER. MAINTAIN 12" MIN. CLEARANCE ABOVE HIGHEST ANTICIPATED SNOW LEVEL. MAXIMUM OF 24" ABOVE ROOF.
- 6 REMOVE ANY UNUSED EQUIPMENT AND CAP OFF ANY UNUSED OPENING.
- 7 EXHAUST DUCT OPENING. PROVIDE RAIN CAP WITH INTEGRAL BIRD SCREEN, BACKDRAFT DAMPER, AND ACCESSORIES AS REQUIRED INCLUDING SPEED CONTROLLER CONCEALED AND ACCESSIBLE. EXHAUST TERMINATION SHALL MAINTAIN 10' MINIMUM CLEARANCE FROM ANY OUTSIDE AIR INTAKE.



**2 CONCENTRIC VENT KIT DETAIL**  
SCALE: NONE



PLAN NORTH  
**1 MECHANICAL ROOF PLAN**  
1/4" = 1'-0"  
0 2' 4' 8'

**EXISTING HVAC EQUIPMENT REMAINING IN USE**

- EXISTING HVAC EQUIPMENT BEING REUSED SHALL BE INSPECTED AND TESTED AS RECOMMENDED BY THE EQUIPMENT MANUFACTURERS' IOM. INSPECTION AND TESTING SHALL BE IN THIS CONTRACTOR'S BASE BID, INCLUDING BUT NOT LIMITED TO:
  - INSPECT UNIT CABINET, VENTS, AND REFRIGERANT LINES AND INSULATION.
  - GAS HEATING UNITS: INSPECT GAS TRAIN FOR LEAKS, INSPECT GAS HEAT EXCHANGER, AND GAS IGNITION SYSTEM.
  - TEST ALL COMPONENTS FOR EXCESS VIBRATION.
  - INSPECT FAN MOTORS, BLOWERS, AND BLADES. ENSURE CORRECT FAN ROTATION.
  - LUBRICATE MOVING PARTS.
  - TEST UNIT CONTROLS, INCLUDING BUT NOT LIMITED TO: HEATING AND COOLING CONTROL AND UNIT RESPONSE, RETURN, AND OUTSIDE AIR.
  - CLEAN AIR-SIDE OF EVAPORATOR COIL(S), FLUSH CONDENSING COIL(S) CLEAN WITH WATER. COMB BENT EVAPORATOR AND CONDENSER COIL FINS.
  - TEST FAN BELT(S) TENSION. REPLACE WORN BELT(S) AND PULLEYS.
  - INSPECT AND TEST REFRIGERANT SYSTEM: RUN COMPRESSOR, TEST SYSTEM PRESSURE, AND CHECK FOR LEAKS.
  - CLEAN AND FLUSH CONDENSATE DRAIN PAN AND CONDENSATE DRAIN PIPING.
- AFTER INSPECTION AND TESTING, THIS CONTRACTOR SHALL PROVIDE OWNER WITH AN ITEMIZED LIST OF EQUIPMENT REPAIRS AND REPAIR COSTS NOT INCLUDED IN BASE BID MAINTENANCE.

**MECHANICAL UNIT SUPPORT**

RELATED TO STRUCTURAL SUPPORT:  
ALL NEW, REPLACEMENT, AND/OR RELOCATED MECHANICAL UNIT(S), KITCHEN EXHAUST HOOD(S), MAKE-UP AIR UNIT(S), ELECTRICAL TRANSFORMER(S), WATER HEATER(S), INCLUDING ANY CURB(S) AND/OR CURB ADAPTOR(S)/TRANSITION CURB(S) (WHERE APPLICABLE), ARE SHOWN FOR "REFERENCE-ONLY".  
ADEQUACY OF THE STRUCTURE'S ABILITY TO SUPPORT ANY OR ALL OF THESE SYSTEMS OR COMPONENT WEIGHTS, INCLUDING THE EFFECTS OF DEFLECTION, POTENTIAL FOR PONDING, SNOW DRIFTING (AS APPLICABLE), WIND LOADING AND SEISMIC LOADING HAS NOT BEEN EVALUATED BY CASE ENGINEERING, INC. CONTRACTOR SHALL BE RESPONSIBLE FOR ADEQUACY AND CODE COMPLIANCE OF EXISTING STRUCTURE TO SUPPORT PROPOSED NEW EQUIPMENT.

MUNICIPAL APPROVAL STAMPS

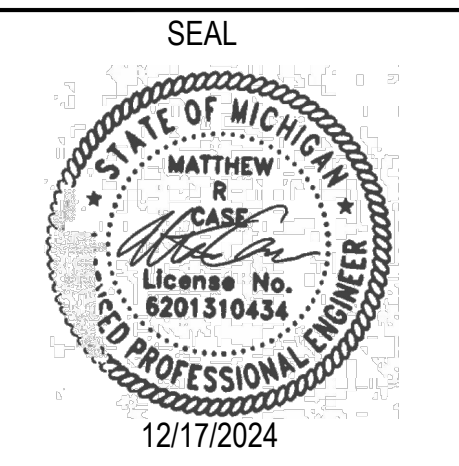
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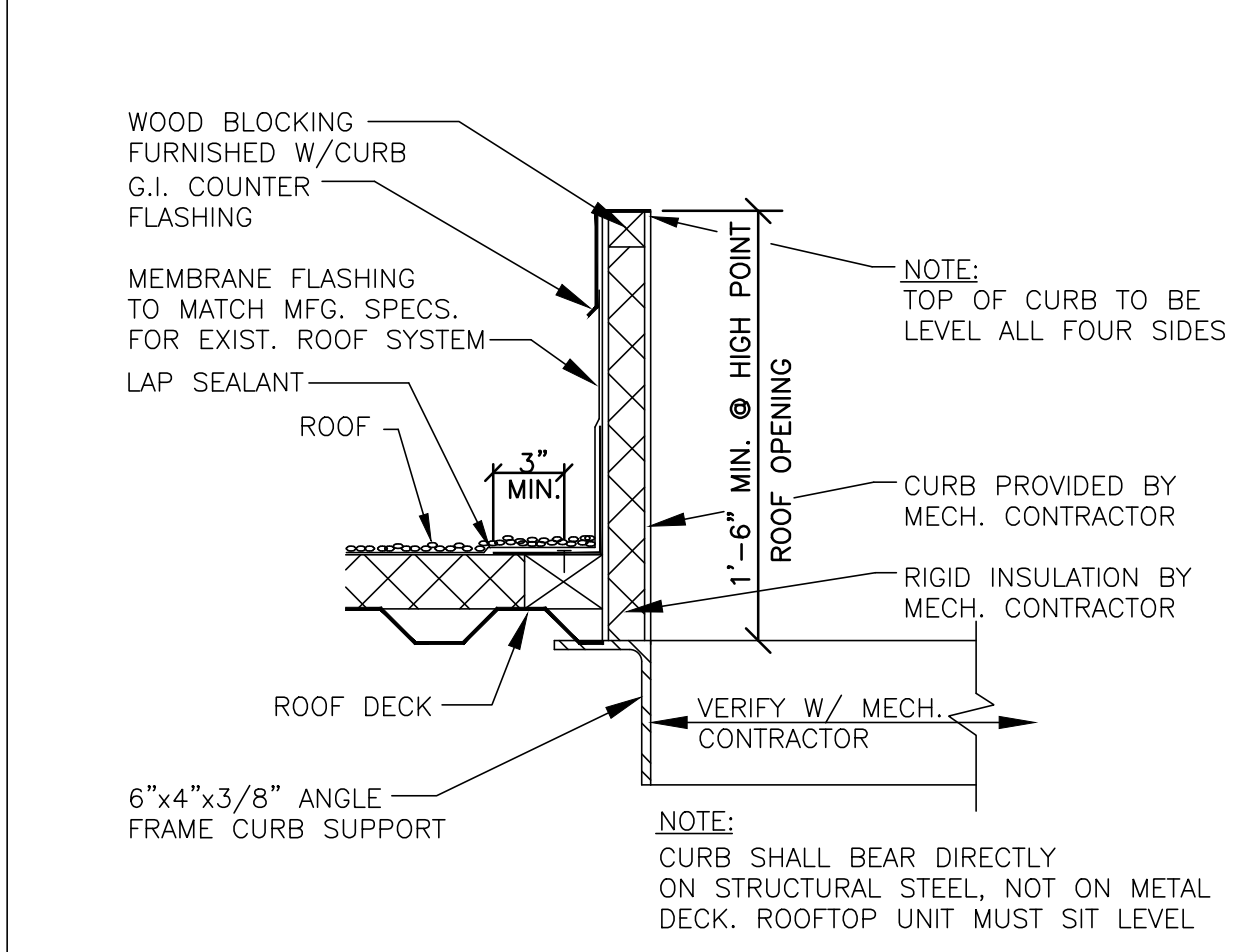
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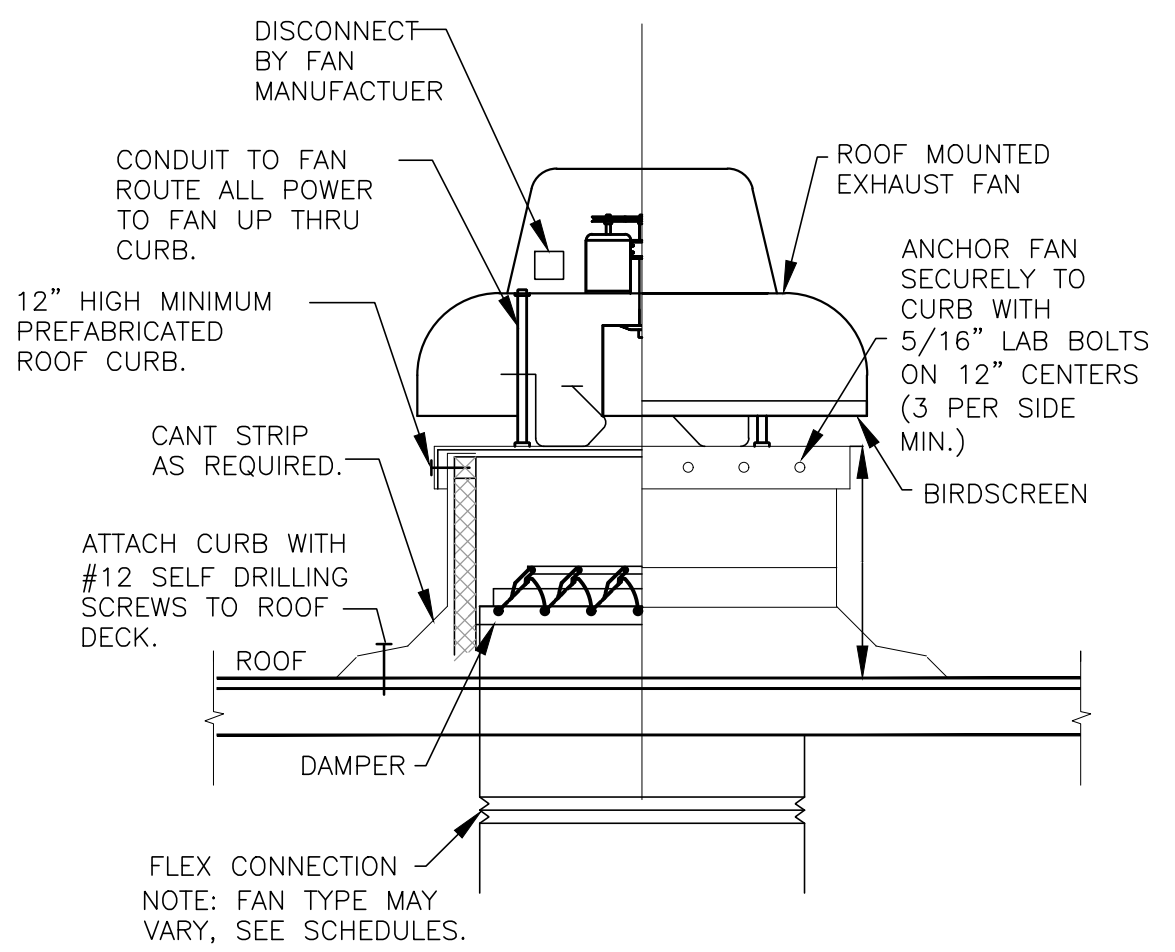
SHEET TITLE

**ROOF PLAN HVAC**

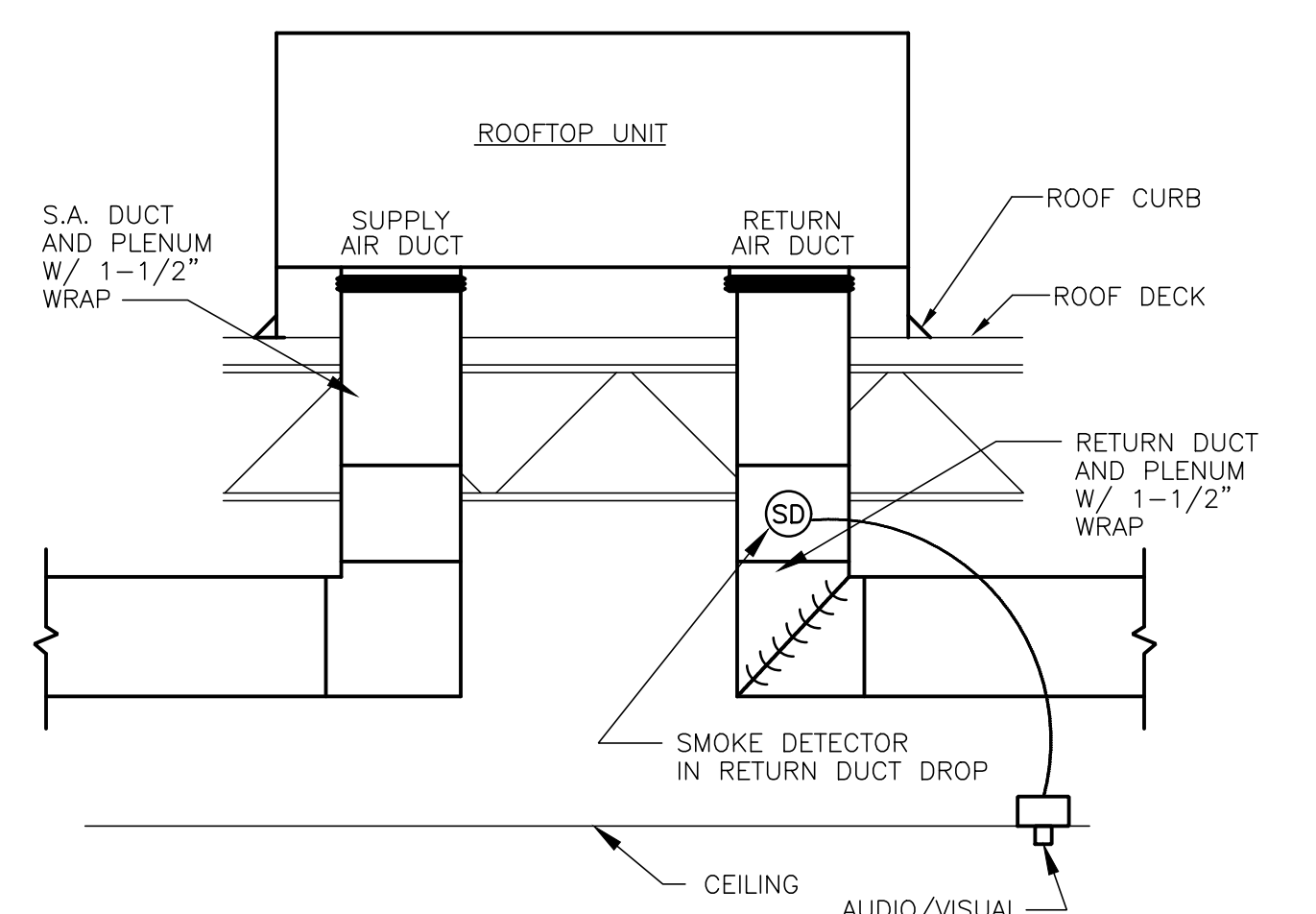
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**M3.0**



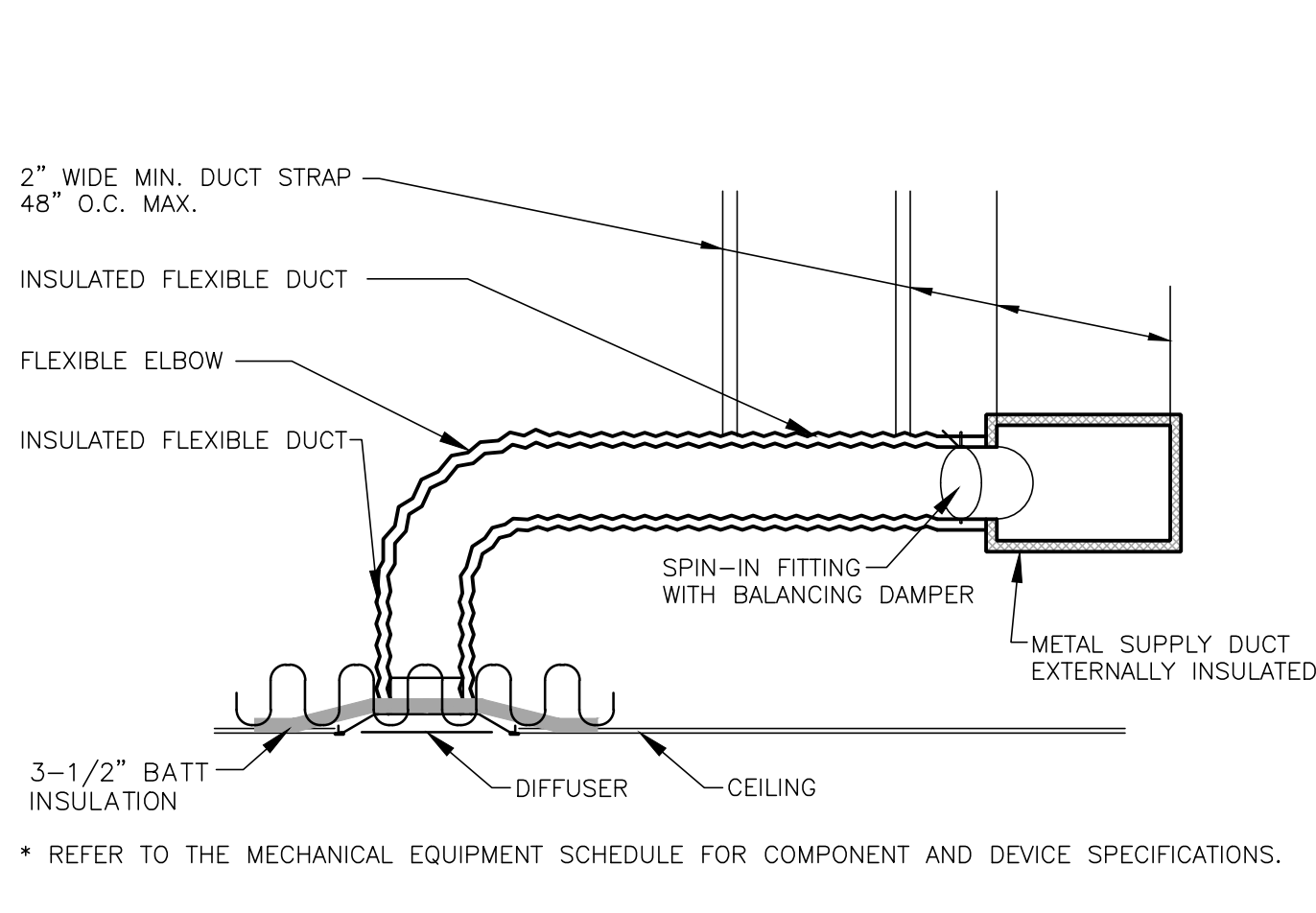
**1 ROOF CURB SECTION**  
SCALE: NONE



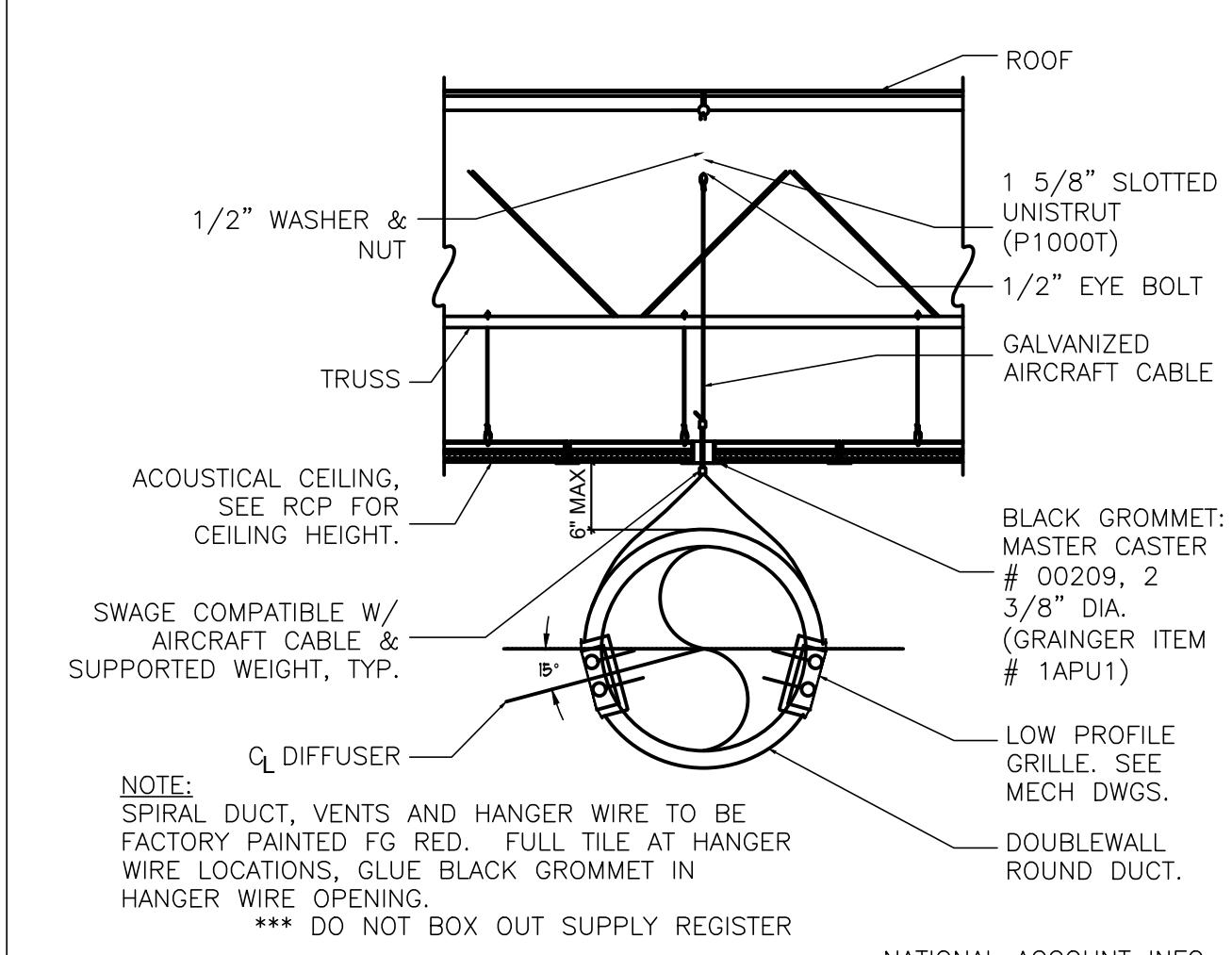
**2 ROOF MOUNTED FAN**  
SCALE: NONE



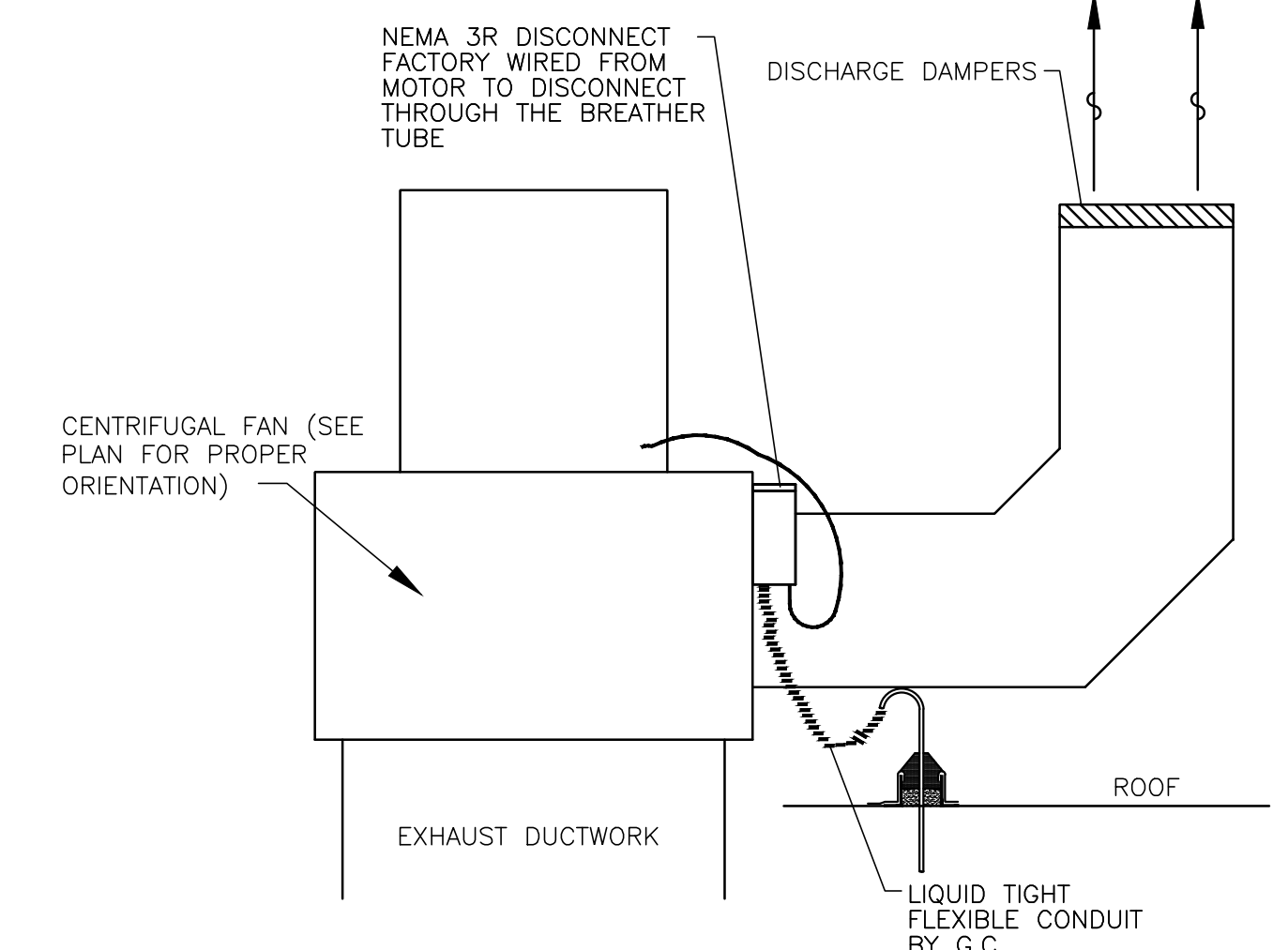
**3 ROOFTOP UNIT MOUNTING DETAIL**  
SCALE: NONE



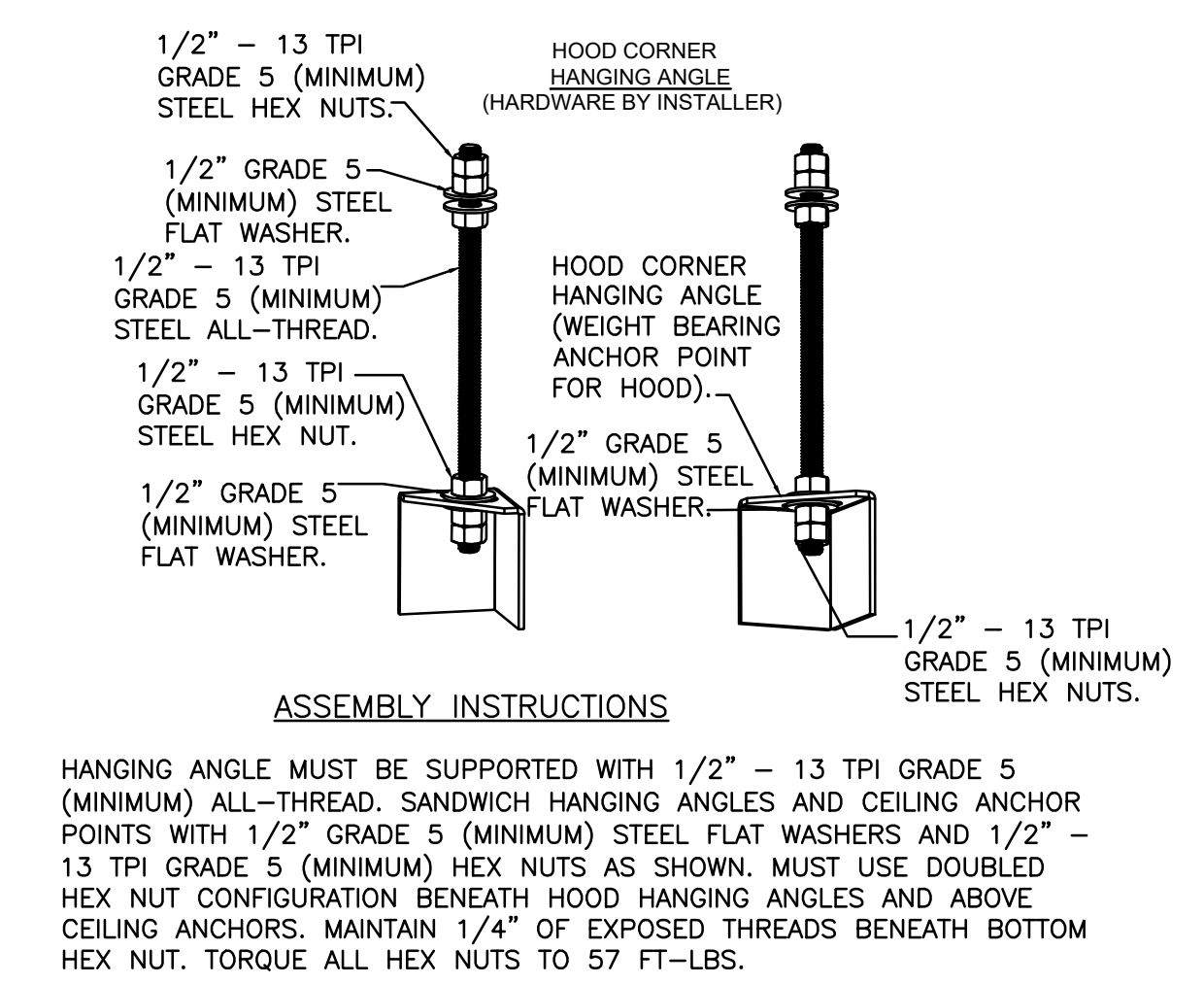
**4 HVAC DUCTWORK DETAIL**  
SCALE: NONE



**5 EXPOSED DUCT DETAIL**  
SCALE: NONE



**6 GRILL HOOD EXHAUST FAN DETAIL**  
SCALE: NONE  
NOTE: PROVIDE SECOND DUCT CLEANOUT AT 6" ABOVE CONNECTION TO HOOD DUCT COLLAR.



**7 HOOD HANGING ANGLE DETAIL**  
SCALE: NONE

AIR BALANCE SCHEDULE						
UNIT MARK	SUPPLY AIR	OUTSIDE AIR	MAKE-UP AIR	EXHAUST AIR	RETURN AIR	NOTES
xRTU-1	6000	1045			4955	
xRTU-2	2000	434			1566	
MAU-1			2821			
EF-1				-1662		
EF-2				-1852		
EF-3				-375		
BLDG. TOTAL	8000	1479	2821	-3889	6521	
			HVAC UNITS			1479
			MAKE-UP			2821
			MAU			2821
			TOTAL			4300
			EXHAUST			-3514
			KITCHEN HOODS			-3514
			GENERAL EXHAUST			-375
			TOTAL			-3889
			MAKE-UP			4300
			EXHAUST			-3889
			BALANCE RESULTS			411
			TOTAL			411

FAN SCHEDULE												
MARK	TYPE	CFM	E.S.P. (IN. W.C.)	DRIVE	MOTOR DATA			SERVES	MFR	MODEL	UNIT WT.	NOTES
					HP	VOLTS	PH					
EF-1	ROOF	1852	1.375	DIRECT	2.0	208	3	FRYER	CAPTIVEAIRE	DU180HFA	183	3,4,5,6,8
EF-2	ROOF	1662	1.375	DIRECT	2.0	208	3	GRILL	CAPTIVEAIRE	CASRE15DD	241	3,4,5,7,8
EF-3	ROOF	375	0.375	DIRECT	0.5	115	1	TOILET/MOP SK	CAPTIVEAIRE	DU12HFA	74	1,2
EF-4	CEILING	75	0.25	-	1/10	120	1	CO2 ROOM	LORENCOOK	GC-146	16	9-11

- NOTES:
- NEW EXHAUST FAN.
  - FAN SHALL BE INTERLOCKED WITH DOAS THERMOSTATS SO THAT EXHAUST FAN RUNS CONTINUOUSLY DURING OCCUPIED MODE.
  - HOOD EXHAUST FAN TO BE CONNECTED TO HOOD CONTROL PANELS AND ANSUL SYSTEM.
  - HOOD EXHAUST FAN TO BE PROVIDED BY KITCHEN EQUIPMENT SUPPLIER.
  - REFER TO MECHANICAL HOOD DRAWINGS FOR MORE INFORMATION.
  - GREASE GUARD TO EXTEND 15" ON ALL SIDES OF EXHAUST FAN, INSTALL BEFORE EXHAUST FAN IS ACTIVATED, CALL BYRON GAYLORD AT 331.301.4171.
  - DRIP GUARD TO BE INSTALLED UNDER FAN, CONTACT CALL BYRON GAYLORD AT 331.301.4171.
  - REFER TO ARCHITECTURAL SHEET A2-15 FOR MORE INFORMATION ON GREASE GUARDS FOR EXHAUST FANS.

RTU SCHEDULE															
MARK	MODEL NO.	CONDITION	CFM	O.A. CFM	TONS	COOLING		HEATING		SUPPLY FAN		ELECTRICAL	WEIGHT LBS.	REMARKS	
						TTL/SENS MBH	I/P/O/P THERM MBH	EFF	BHP	DRIVE	RPM				MAX E.S.P. IN.W.C.
xRTU-1	48TCE16	EXISTING	6000	1045	15.0	174L	240/195	81%	-	-	-	208/3/60	76100	-	1
xRTU-2	48PCF08	EXISTING	2000	434	5.0	58.9L	150/120	80%	-	-	-	208/3/60	3245	-	1

- REMARKS:
- EXISTING UNIT TO REMAIN. CONTRACTOR SHALL VERIFY PROPER OPERATION OF ALL COMPONENTS AS WELL AS COMB ALL CONDENSER FINS, LUBRICATE BEARINGS, REPLACE CONTACTORS, BELTS, AND FILTERS AS NEEDED. NOTIFY OWNER OF ANY MAJOR COMPONENT FAILURES IMMEDIATELY.

MECHANICAL OUTSIDE AIR VENTILATION DATA (BASED ON INTERNATIONAL MECHANICAL CODE)														
Unit	Room	Az - Area	Pz - People	Rp - CFM/Person	RA - CFM/Area	Vbz = RpP+RAz	Ez	Voz = Vbz/Ez	Vpz	Zp = Voz/Vpz	D - Diversity	Vou = D * Vbz	Ev	Vot = Vou/Ev
xRTU-2	BOHPREP	400	6	7.5	0.12	93	0.8	116	1550	0.08	1.0	116	1.0	116
	KITCHEN FOH	402	6	7.5	0.12	93	0.8	117	1800	0.08	1.0	117	1.0	117
	HALLWAY	205	0	0.0	0.06	12	0.8	15	300	0.05	1.0	15	1.0	15
xRTU-1	DINING	1105	74	7.5	0.18	751	0.8	939	6000	0.16	1.0	939	0.9	1044
TOTAL VENTILATION NEEDED													1292	
TOTAL VENTILATION PROVIDED													4300	

MAKEUP AIR UNIT SCHEDULE															
MARK	CFM	E.S.P. (IN. W.C.)	MOTOR DATA			HEATING DATA			COOLING DATA			MFR	MODEL	UNIT WT.	NOTES
			HP	VOLTS	PH	TYPE	MBH IN	MBH OUT	TOTAL	SENSIBLE					
MAU-1	2821	0.375	2.0	208	3	GAS	158.0	145.4	-	-	-	ECON-AIR	A1-D.250-20D	654	1

1. REFER TO MECHANICAL HOOD DRAWINGS FOR MORE INFORMATION.

AIR DEVICE RUNOUT SCHEDULE	
DUCT CFM	DUCT SIZE
0 - 100	6" ROUND
101 - 210	8" ROUND
211 - 380	10" ROUND
381 - 620	12" ROUND

- GENERAL NOTES
- AIR DEVICE NECK SIZE SHALL BE THE SAME AS RUNOUT SIZE.
  - RECTANGULAR DUCT SIZES OF EQUIVALENT FREE AREA MAY BE SUBSTITUTED FOR ROUND DUCT.
  - RUNOUTS MAY BE RIGID OR FLEX DUCT PER SPECIFICATIONS.

AIR DEVICE SCHEDULE						
PLAN MARK	MFR	MODEL	FACE SIZE	NECK SIZE	TYPE	NOTES
S1	TITUS	TMS	24"x24"	SCHEDULE	DIFF.	1,2,3,7
S2	LINDAB	RGS-3	33"x6"	32"x6"	DIFF.	1,4,6
S3	TITUS	300RS	10"x4"	SCHEDULE	DIFF.	2,3,5,7
S4	TITUS	TDC	24"x24"	SCHEDULE	DIFF.	2,3,7,8
R1	TITUS	TMS	24"x24"	SCHEDULE	R.G.	2,3,7
E1	TITUS	350FL	12"x12"	SCHEDULE	E.G.	3,5,7
xS	-	-	-	-	-	9

- NOTES:
- 4-WAY THROW UNLESS OTHERWISE NOTED.
  - PROVIDE ADAPTOR BOOTS AS REQUIRED.
  - FINISH SHALL MATCH CEILING FINISH UNLESS OTHERWISE SPECIFIED. VERIFY FINISHES WITH ARCHITECTURAL DRAWINGS PRIOR TO ORDERING.
  - EXTRACTOR DAMPER.
  - PROVIDE SQUARE TO ROUND ADAPTOR AS REQUIRED.
  - SPRAY PAINT RED TO MATCH DUCTWORK.
  - #26 WHITE IN KITCHEN, PREP, VESTIBULE, AND RESTROOMS, #84 FACTORY BLACK IN DINING ROOM AND HALL.
  - 2-WAY OR 3-WAY AIR THROW PATTERN AS SHOWN ON PLAN.
  - EXISTING GRILL TO REMAIN. CLEAN LIKE NEW AND RE-BALANCE TO PROVIDE SCHEDULED AIRFLOW. VERIFY EXISTING LOCATION IN THE FIELD.

MUNICIPAL APPROVAL STAMPS

ARCHITECT OF RECORD  
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 ARCHITECTS  
 412 S. Wells Street - 2nd Floor - Chicago - IL - 60607  
 P: 312 955 0334 • dxuarch.com

CONSULTANT  
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 Engineering Inc.  
 796 Menz Court  
 St. Louis, MO 63026  
 T: 636.349.1600  
 F: 636.349.1730  
 CERTIFICATE OF AUTHORITY NO. 802229007

GRAND RAPIDS, MI  
 3300 ALPINE DRIVE NW  
 SUITE 101,  
 GRAND RAPIDS, MI 49544  
 FGO PROJECT NUMBER: 24-578

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ISSUE DATE		
REV	ISSUE	DATE
1	CLIENT COMMENTS	01-29-2025
	PERMIT / BID / LL REVIEW	12-13-2024

SEAL  
 STATE OF MICHIGAN  
 MATTHEW R. CASE  
 License No. 6201310434  
 PROFESSIONAL ENGINEER  
 12/17/2024

MECHANICAL SCHEDULES  
 SHEET NUMBER  
**M4.0**













ARCHITECT OF RECORD

**DXU**  
**ARCHITECTS**  
 412 S. Wells Street • 2nd Floor • Chicago • IL • 60607  
 P. 312 955 0334 • dxuarch.com

CONSULTANT

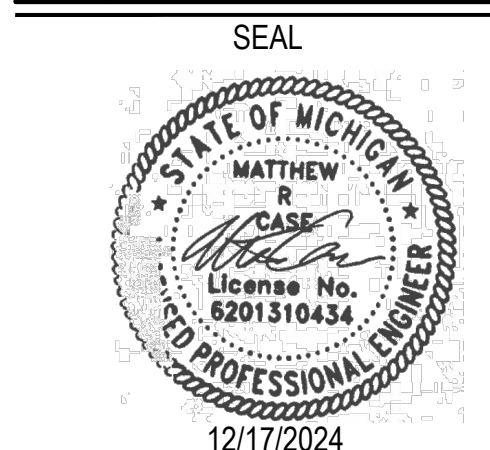
**CASE**  
**Engineering Inc.**

796 Meru Court | T 636.349.1600  
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**SUITE 101,**  
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 FGO PROJECT NUMBER: 24-578

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ISSUE DATE		
REV	ISSUE	DATE
	ISSUED FOR CONSTRUCTION	02-18-2025
1	CLIENT COMMENTS	01-29-2025
	PERMIT / BID / LL REVIEW	12-13-2024



SHEET TITLE  
**CAPTIVEAIRE**  
**DRAWINGS**

SHEET NUMBER  
**MH6.0**

REVISIONS	
DESCRIPTION	DATE

**recon·air**  
 www.reconair.com  
 Maryland Office  
 8120 Woodmont Avenue, Suite 720, Bethesda, MD, 20814  
 PHONE: (800) 988-0881 FAX: 9192275931 EMAIL: reg32@captivewire.com

Five Guys - Grand Rapids, MI (Alpine Ave)\_R1  
 3300 Alpine Avenue Northwest,  
 Grand Rapids, MI, 49544

**DATE:** 12/9/2024  
**DWG.#:** 7211587  
**DRAWN BY:** GG - 32  
**SCALE:** NTS  
**MASTER DRAWING**

**SHEET NO.**  
 6

<b>JOB NO</b>	7211587	<b>MODEL NUMBER</b>	DCV-2111	<b>DRAWN BY</b>	INSTALL	<b>DESCRIPTION OF OPERATION:</b> Fire System #1 TANK FS - 40/40/40.
<b>JOB NAME</b>	Five Guys - Grand Rapids, MI ...	<b>DATE</b>	12/9/2024	<b>DWG NO</b>	ECP #1-3	

**TANK PROTECTION ELECTRICAL DETAIL** 02/10/2021 Rev. 2

ELECTRICIAN:  
 1. WIRE MAIN CONTROL PANEL PER INCLUDED SCHEMATIC  
 2. WIRE ALL FANS PER INCLUDED SCHEMATIC  
 3. WIRE SHUNT TRIP BREAKER (OPTIONAL)  
 4. WIRE UDS APPLIANCE KILL SWITCH, IF EQUIPPED (OPTIONAL)  
 5. WIRE GAS VALVE

FS-1: MASTER

ITEM	CONNECTION IN PANEL	CONNECTION IN DEVICE	VOLTAGE	AMPERAGE	COMMENTS
SHUNT TRIP BREAKER (OPTIONAL)	ST & NI	BREAKER COIL (A1 & A2)	120 VAC	< 4 AMPS	ST TO A1 ON SHUNT BREAKER COIL, AND NEUTRAL TO A2 ON SHUNT TRIP BREAKER COIL
CONTROL PANEL POWER	H1 & NI + GROUND	CIRCUIT BREAKER	120 VAC	15 AMPS	CONTROL PANEL POWER MUST NOT BE RUN THROUGH SHUNT TRIP BREAKER
UDS APPLIANCE KILL SWITCH (OPTIONAL)	KTS & NI	KTS & NI	120 VAC	< 4 AMPS	KILL SWITCH TERMINALS MUST BE IN SERIES WITH OTHER KILL SWITCHES
REMOTE 120VAC ANSUL AUTOMAN (OPTIONAL)	AU1, AU2	SOLENOID	120 VAC	< 6 AMPS	120V TO AU1, AU2 TO ANSUL ELECTRIC AUTOMAN, ANSUL SOLENOID TO NEUTRAL
GAS VALVE	LGV & NID (IF 24 VDC) GAS & NI (IF 120 VAC)	RED/RED/GREEN	24 VDC OR 120 VAC	< 10 AMPS	IF 24 VDC - 2 WIRES & GROUND, NID TO RED, LGV TO RED, AND GREEN TO GROUND IF 120 VAC - 2 WIRES & GROUND GAS TO RED, NI TO RED, AND GREEN TO GROUND

NOTE: SEE INSTALLATION, OPERATION, AND MAINTENANCE MANUAL FOR FURTHER INSTRUCTIONS



