

SECTION 15732 - PACKAGED ROOFTOP AIR-CONDITIONING UNITS

PART 1 - GENERAL

1.1 SECTION REQUIREMENTS

- A. Submittals: Product Data and Shop Drawings.
- B. Comply with ASHRAE 15.
- C. EER: Equal to or greater than prescribed by the energy code adopted by the Authority Having Jurisdiction.
- D. Warranties: Submit a written warranty, signed by the manufacturer, agreeing to the repair or replacement of components that fail within 5 years of Substantial Completion.

PART 2 - PRODUCTS

2.1 PACKAGED UNITS, 5 TO 20 TONS

- A. Factory assembled and tested, consisting of compressors, condensers, evaporator coils, condenser and evaporator fans, refrigeration and temperature controls, filters, and dampers.
 - 1. Refer to Rooftop Heating/Cooling Unit Schedule on drawing M600 for capacities, and manufacturers.
 - 2. Evaporator Fans: Belt or direct driven, forward curved centrifugal.
 - 3. Exhaust/Relief Fans: Direct drive, forward curved centrifugal or propeller.
 - 4. Condenser Fans: Direct drive propeller.
 - 5. Refrigerant Coils: Aluminum fins and copper coil.
 - 6. Compressors: Serviceable hermetic or fully hermetic, with safety controls, hot gas bypass, and timed off controls.
 - 7. Heat Exchangers: Gas fired, with gas controls, electronic ignition, high limit cutout, and forced draft proving switch.
 - 8. Economizer controls (Comparative Enthalpy, 100% capacity).
 - 9. Smoke Detectors: Photoelectric in supply and/or return as called for in schedule on sheet M600.
 - 10. Operating Controls: Two stage heating and two stage cooling on units 7-1/2 tons and over.
 - 11. Roof curb.
 - 12. Control Wiring from T-stat to rooftop unit: Shall be 18ga / 7 conductor, rated for plenum applications.
 - 13. Control Wiring from T-stat to remote sensor: Shall be a separate 18ga / 2 conductor shielded, rated for plenum applications.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Install units level and plumb and firmly anchored.
- B. Connect gas piping to burner with pipe same size as gas train inlet, and provide union with sufficient clearance for burner removal and service.
- C. Install ducts to termination in roof mounting frames. Terminate ducts through roof structure.
- D. Connect units to wiring systems and to ground.

END OF SECTION 15732

SECTION 15810 - DUCTS AND ACCESSORIES

PART 1 - GENERAL

1.1 SECTION REQUIREMENTS

- A. Submittals: Product Data for fire and smoke dampers.
- B. Comply with NFPA 90A for systems serving spaces more than 25,000 cu. ft. in volume or building Types II, IV, and V construction more than 3 stories in height.
- C. Comply with NFPA 90B for systems serving spaces in 1 or 2 family dwellings or serving spaces less than 25,000 cu. ft..
- D. Comply with NFPA 96, "Ventilation Control and Fire Protection of Commercial Cooking Operations," for kitchen hood ducts.
- E. Comply with UL 181 and UL 181A for ducts and closures.
- F. Testing, Adjusting, and Balancing Agency Qualifications: AABC certified (to be furnished by Tenant).

PART 2 - PRODUCTS

2.1 DUCTS

- A. Spiral Duct: Spiral Lock Seam, without insulation, G90 galvanized finish, ASTM A-653/924
 - 1. Basis of Design Manufacturers: Lindab SPIROsafe, alternates to the basis of design must be submitted for review.
 - 2. Fittings: Factory produced standing seam construction with internal sealing. Fittings with a major axis of 36" or smaller shall be 20 gauge. Fittings with a major axis of 37"-48" shall be 18 gauge.
- B. Galvanized Steel Sheet: Forming steel, ASTM A 653/653M, G90 coating designation.
- C. Duct Liner: ASTM C 1071, Type II, with an airstream surface coated with a temperature resistant coating. Thickness: 1-1/2 inch. R-value : 8.
 - 1. Adhesive: ASTM C 916, Type I.
 - 2. Mechanical Fasteners: Galvanized steel pin, length as required to penetrate liner plus a 1/8 inch projection maximum into the airstream.
- D. Joint and Seam Tape: Comply with UL 181A.
- E. Joint and Seam Sealant: Comply with UL 181A.
- F. Rectangular Metal Duct Fabrication: Comply with SMACNA's "HVAC Duct Construction Standard" for metal thickness, reinforcing types and intervals, tie rod applications, and joint types and intervals.

2.2 ACCESSORIES

- A. Volume-Control Dampers: Factory fabricated volume control dampers, complete with required hardware and accessories. Single blade and multiple opposed blade, standard leakage rating, and suitable for horizontal or vertical applications.
- B. Fire Dampers: Factory-fabricated fire dampers, complete with required hardware and accessories. UL labeled according to UL 555, "Fire Dampers".
- C. Flexible Connectors: Flame retardant or noncombustible fabrics, coatings, and adhesives complying with UL 181, Class 1.
- D. Flexible Ducts: Factory fabricated, insulated, round duct, with an outer jacket enclosing 2 inch thick, glass fiber insulation, R-value: 6.0, around a continuous inner liner.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Duct System Pressure Class: Construct and install each duct system with 2 inch positive and negative duct pressure classifications.
- B. Conceal ducts from view in finished and occupied spaces. Except where noted as exposed.
- C. Avoid passing through electrical equipment spaces and enclosures.
- D. Support and connect metal ducts according to SMACNA's "HVAC Duct Construction Standard".
- E. Install duct accessories according to applicable portions of details of construction as shown in SMACNA standards.
- F. Install liner and/or insulation on ductwork per the material schedule on sheet M010.
- G. Install volume control dampers in lined duct with methods to avoid damage to liner and to avoid erosion of duct liner.
- H. Install fire and smoke dampers according to manufacturer's UL approved written instructions.
- I. Install fusible links in fire dampers.
- J. Provide saddle taps at tees for exposed ductwork.

3.2 TESTING, ADJUSTING, AND BALANCING

- A. The Tenant will supply an independent balance agent to to balance and adjust the HVAC installation. The balance agent will be responsible for any pulley or belt changes required.
- B. The GC is to have trained staffed available during the balancing to correct issues noted by the balance agent.
- C. The balance agent is to balance airflow within distribution systems, including submains, branches, and terminals to indicated quantities +/- 10%. The hood exhaust system shall be balanced to a tolerance of -0+10% and the make-up air system to a tolerance of -10+0%.
- D. The balance agent is to supply a copy of the balance report to the Tenant, engineer and general contractor for review.

END OF SECTION 15810

SECTION 15855 - DIFFUSERS, REGISTERS, AND GRILLES

PART 1 - GENERAL

1.1 SECTION REQUIREMENTS

- A. Submittals: None.

PART 2 - PRODUCTS

2.1 OUTLETS AND INLETS

- A. All air terminal devices:
 - 1. Refer to Grills, Registers, and Diffusers Schedule for equipment schedule
 - 2. Manufacturer: As scheduled (NO SUBSTITUTIONS)
 - 3. Material: As scheduled.
 - 4. Finish: As scheduled.
 - 5. Mounting: As scheduled.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Coordinate location and installation with duct installation and installation of other ceiling and wall mounted items.
- B. Locate ceiling diffusers, registers, and grilles, as indicated on the architectural "reflected ceiling plans." Unless otherwise indicated, locate units in center of acoustical ceiling panels.

END OF SECTION 15855

HVAC MATERIAL SCHEDULE		
CATEGORY	APPLICATION	ALLOWABLE MATERIAL
DUCT	EXPOSED SUPPLY	RECT. LINED OR ROUND AS SHOWN, NO EXPOSED DUCT-SEALING MASTIC
	EXPOSED RETURN	RECTANGULAR, NO EXPOSED DUCT-SEALING MASTIC
	EXPOSED GEN. EXHAUST	RECTANGULAR OR ROUND AS SHOWN, NO EXPOSED DUCT-SEALING MASTIC
	CONCEALED, SUPPLY	RECT. OR ROUND AS SHOWN, LINED OR INSULATED
	CONCEALED, RETURN	RECT. OR ROUND AS SHOWN, LINED OR INSULATED
	CONCEALED, GEN. EXHAUST	RECT. OR ROUND AS SHOWN
	CONCEALED, TYPE I HOOD EXHAUST	RECTANGULAR 16 GA. BLACK IRON W/ WRAP OR UL 1978 FACTORY-MANUFACTURED DUCT W/ WRAP (SUBMIT SHOP DRAWINGS FOR FACTORY-MANUFACTURED DUCT PRIOR TO ORDERING FOR APPROVAL)

HVAC GENERAL NOTES

- A. GENERAL NOTES APPLY TO HVAC SHEETS.
- B. WORK SHALL COMPLY WITH STATE AND LOCAL CODE REQUIREMENTS AS APPROVED AND AMENDED BY THE AUTHORITY HAVING JURISDICTION, INCLUDING APPLICABLE SECTIONS OF NFPA, THE MECHANICAL CODE, AND ANY INTERIM AMENDMENTS AT THE TIME OF THE PROPOSAL. PURCHASE PERMITS ASSOCIATED WITH THE WORK. OBTAIN INSPECTIONS REQUIRED BY CODE. SEE ARCHITECTURAL SHEETS FOR THE PREVAILING CODES.
- C. CONTRACTOR AND SUBCONTRACTORS SHALL REVIEW A COMPLETE SET OF THE CONSTRUCTION DOCUMENTS.
- D. COORDINATE WORK WITH THE WORK OF OTHER TRADES, EQUIPMENT FURNISHED BY OTHERS, REQUIREMENTS OF THE OWNER, AND OF THE EXISTING CONDITIONS AT THE PROJECT SITE.
- E. DRAWINGS FOR THE MECHANICAL WORK ARE DIAGRAMMATIC, SHOWING THE GENERAL LOCATION, TYPE, LAYOUT, AND EQUIPMENT REQUIRED. THE DRAWING SHALL NOT BE SCALED FOR EXACT MEASUREMENTS, REFER TO ARCHITECTURAL DRAWINGS FOR DIMENSIONS. REFER TO MANUFACTURER'S STANDARD INSTALLATION DRAWINGS FOR EQUIPMENT CONNECTIONS AND INSTALLATION REQUIREMENTS. PROVIDE DUCTWORK, CONNECTIONS, OFFSETS, ACCESSORIES, AND MATERIALS NECESSARY FOR A COMPLETE SYSTEM.
- F. DUCT DIMENSIONS ON PLANS INDICATE DIMENSIONS OF INTERNAL FREE AREA.
- G. PERFORATED CEILING DIFFUSERS SHALL BE 4-WAY UNLESS NOTED OTHERWISE.
- H. COORDINATE ROOF WORK WITH THE OWNER'S CONSTRUCTION MANAGER PRIOR TO CONSTRUCTION.
- I. UNLESS NOTED OTHERWISE RECTANGULAR DUCT ELBOWS GREATER THAN 45° SHALL BE MITERED ELBOWS WITH DOUBLE-THICKNESS TURNING VANES AND RECTANGULAR DUCT ELBOWS 45° OR LESS SHALL BE RADIUS ELBOWS WITH AN INSIDE RADIUS OF AT LEAST 1/2 THE WIDTH OF THE DUCT.
- J. REPLACE AIR FILTERS WITH NEW, CLEAN MERV 8 AIR FILTERS AT TURNOVER.
- K. THE TERM "FURNISH" MEANS SUPPLY AND DELIVER TO THE PROJECT SITE, READY FOR UNLOADING, UNPACKING, ASSEMBLY, INSTALLATION, AND SIMILAR OPERATIONS. THE TERM "INSTALL" DESCRIBES THE OPERATIONS AT THE PROJECT SITE INCLUDING THE ACTUAL UNLOADING, UNPACKING, ASSEMBLY, ERECTING, PLACING, ANCHORING, APPLYING, WORKING TO DIMENSION, FINISHING, CURING, PROTECTING, CLEANING, AND SIMILAR OPERATIONS. THE TERM "PROVIDE" MEANS TO FURNISH AND INSTALL, COMPLETE AND READY FOR THE INTENDED USE.
- L. INSTALL LABELING CALLED FOR IN THE MECHANICAL DRAWINGS USING ENGRAVED PHENOLIC PLATES (WHITE WITH BLACK LETTERING).
- M. PROVIDE P3000 12 GA. UNISTRUT WITH PG FINISH FOR DUCT SUPPORTS AND OTHER UNISTRUT IN AREAS EXPOSED TO VIEW. SLOTTED UNISTRUT AND OTHER UNISTRUT WITH HOLES IS NOT ACCEPTABLE.
- N. CONTRACTOR MUST COORDINATE WITH THE BUILDING INSPECTOR FOR GREASE DUCT INSPECTIONS PRIOR TO INSTALLATION.
- O. TAB SHALL CONDUCT A PERFORMANCE TEST UPON COMPLETION AND BEFORE FINAL APPROVAL OF THE INSTALLATION OF VENTILATION SYSTEM SERVING COOKING APPLIANCES. TAB SHALL VERIFY CAPTURE AND CONTAINMENT PERFORMANCE OF THE EXHAUST SYSTEM. CAPTURE AND CONTAINMENT SHALL BE VERIFIED VISUALLY BY OBSERVING SMOKE OR STEAM PRODUCED BY ACTUAL OR SIMULATED COOKING.



HVAC ABBREVIATIONS

- AFF ABOVE FINISHED FLOOR
- AFG ABOVE FINISHED GRADE
- CD CEILING DIFFUSER
- CU CONDENSING UNIT
- (E) EXISTING
- EF EXHAUST FAN
- ER EXHAUST SEALING
- EXTG EXISTING
- HD HOOD
- MUA MAKEUP AIR UNIT
- OBD BLADE DAMPER
- RG RETURN GRILLE
- RTU ROOFTOP UNIT
- SR SUPPLY REGISTER
- VSC VARIABLE SPEED CONTROL
- COZAS TENANT'S CO2 ALARM SUPPLIER
- GC GENERAL CONTRACTOR
- HES TENANT'S HVAC EQUIPMENT SUPPLIER
- HS TENANT'S HOOD SUPPLIER
- KES TENANT'S KITCHEN EQUIPMENT SUPPLIER
- TAB TENANT'S TEST AND BALANCE VENDOR
- TCC TENANT'S CABLING CONTRACTOR
- TDC TENANT'S DUCT CLEANER
- TEMS TENANT'S ENERGY MANAGEMENT SYSTEM SUPPLIER
- TLS TENANT'S LIGHT/LAMP SUPPLIER
- TMB TENANT'S MENU BOARD SUPPLIER
- TMS TENANT'S MILLWORK SUPPLIER
- TP TENANT'S PHONE SUPPLIER
- TPS TENANT'S PANELBOARD SUPPLIER
- TRS TENANT'S RAILING SUPPLIER
- TSV TENANT'S SIGN VENDOR
- TUV TENANT'S UV SANITIZER SUPPLIER
- WCS TENANT'S WALK-IN COOLER SUPPLIER
- WHS TENANT'S WATER HEATER SUPPLIER

HVAC SYMBOLS

- CEILING DIFFUSER
- CEILING-MOUNTED RETURN OR EXHAUST REGISTER
- SUPPLY REGISTER
- RETURN GRILLE
- FLEXIBLE DUCT
- MITERED CORNER WITH TURNING VANES
- DUCTWORK INTERNAL FREE DIMENSIONS (WIDTH/HEIGHT) RECTANGULAR TO ROUND DUCT TRANSITION
- DUCT-MOUNTED SMOKE DETECTOR
- MOTOR-OPERATED DAMPER
- MANUAL VOLUME DAMPER
- GREASE DUCT CLEANOUT
- MITERED CORNER WITHOUT TURNING VANES
- GRIDPOINT THERMOSTAT
- GRIDPOINT ZONE SENSOR MODULE
- GRIDPOINT SUPPLY PROBE
- PLAN NOTE: SEE PLAN NOTES LISTED ON THE SAME SHEET FOR NOTE MEANING
- CONNECT TO EXISTING
- EQUIPMENT TAG: SEE EQUIPMENT SCHEDULE ON SHEET M600 FOR EQUIPMENT INFORMATION
- AUDIO/VISUAL REMOTE SMOKE DETECTOR ANNUNCIATOR WITH REMOTE KEY OPERATED RESET
- GRILL, REGISTER, OR DIFFUSER TAG: TAG NECK SIZE AIRFLOW [CFM]

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Contents:

HVAC
SPECIFICATIONS

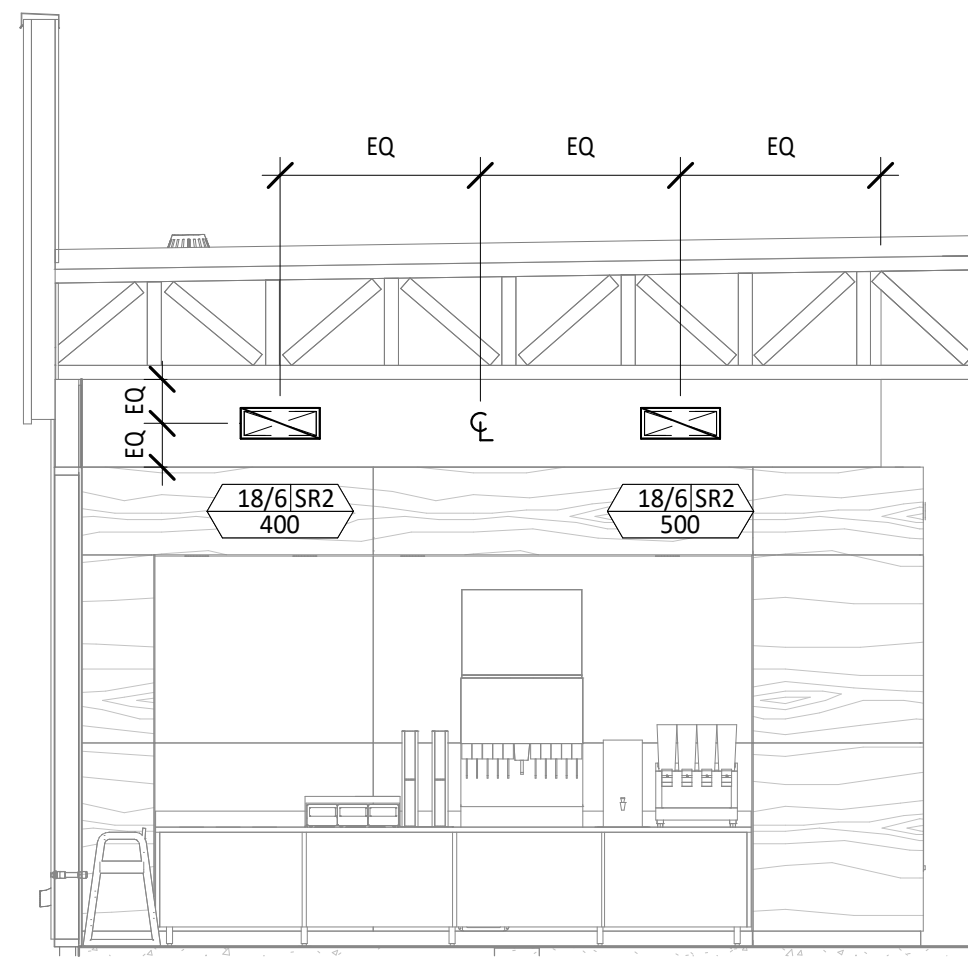
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HVAC PLAN NOTES

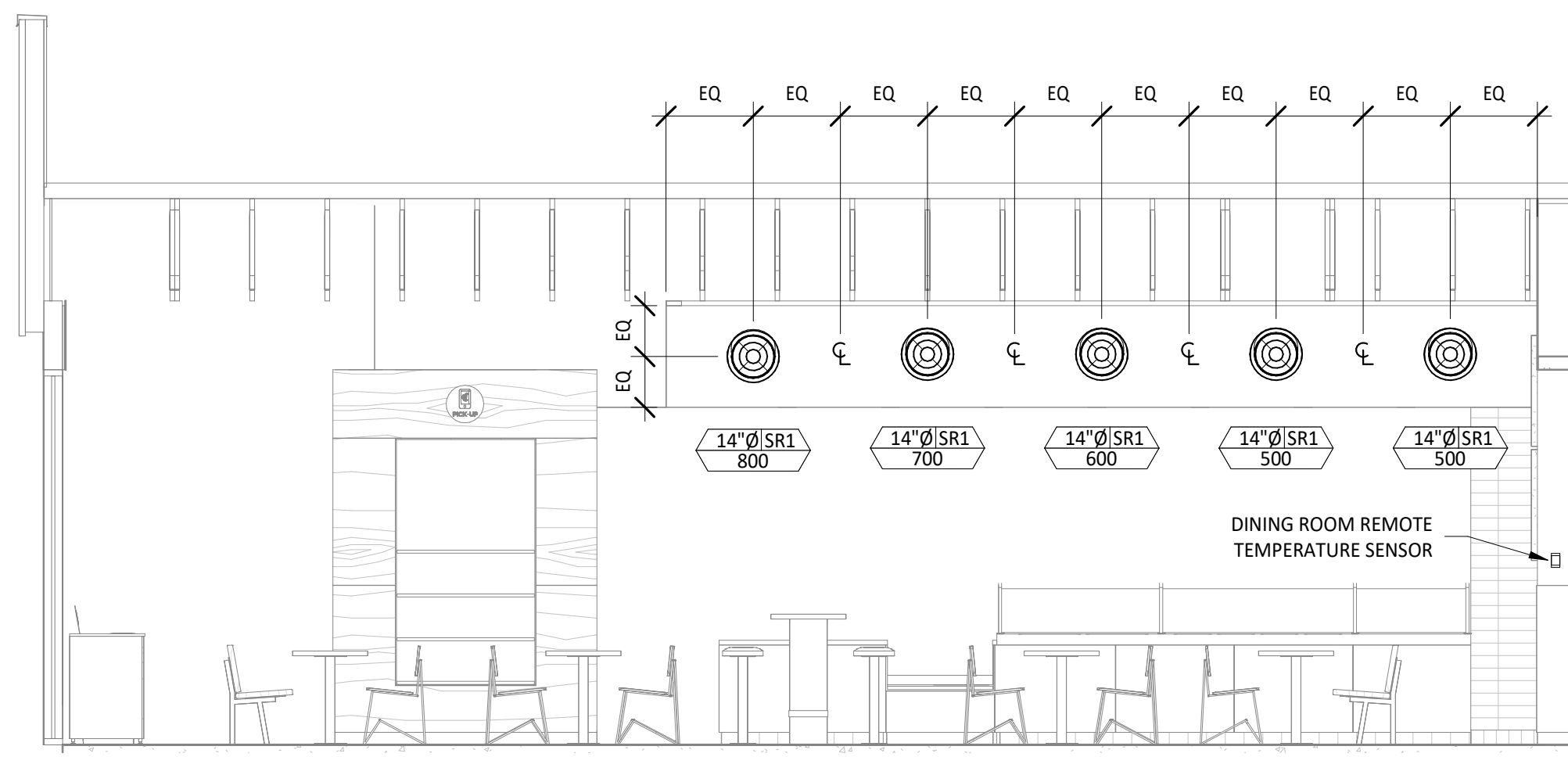
- 1 SEE ARCHITECTURAL REFLECTED CEILING PLAN FOR CEILING MOUNTED EQUIPMENT LOCATION. TYPICAL.
- 2 PAINT DUCTWORK VISIBLE THROUGH DINING ROOM SUPPLY REGISTERS AND RETURN GRILL BLACK. TYPICAL.
- 3 PENETRATIONS THROUGH SHEAR WALL SHALL BE LIMITED TO 10" DIAMETER (OR A GROUP OF PENETRATIONS ALL CONTAINED WITHIN 10" DIAMETER). IF LARGER PENETRATIONS OR GROUPS OF PENETRATIONS ARE REQUIRED COORDINATE WITH STRUCTURAL ENGINEER FOR APPROPRIATE BRACING. SEE ARCHITECTURAL DRAWINGS FOR SHEAR WALL LOCATION.
- 4 30/14 DUCT UP FOR TRANSITION TO RTU-1 RETURN CONNECTION IN ROOF CURB. RTU-1 SHALL HAVE AN INTEGRAL SMOKE DETECTOR MOUNTED IN THE RETURN AIR STREAM. INTERLOCK SMOKE DETECTOR TO RTU-1 OPERATION.
- 5 30/14 DUCT UP FOR TRANSITION TO RTU-2 RETURN CONNECTION IN ROOF CURB. RTU-2 SHALL HAVE AN INTEGRAL SMOKE DETECTOR MOUNTED IN THE RETURN AIR STREAM. INTERLOCK SMOKE DETECTOR TO RTU-2 OPERATION.
- 6 20/22 DUCT UP FROM BUILDING SUPPLY THROUGH ROOF. TRANSITION TO RTU-1 SUPPLY CONNECTION IN ROOF CURB.
- 7 26/20 DUCT UP FROM BUILDING SUPPLY TO RTU-2 SUPPLY CONNECTION. TRANSITION IN ROOF CURB.
- 8 14/14 DUCT UP THROUGH ROOF. TRANSITION TO MAU-1 SUPPLY CONNECTION IN ROOF CURB.
- 9 16/16 DUCT UP FROM HOOD THROUGH ROOF TO EF-1 COMPLIANT WITH NFPA 96. PROVIDE RADIUS ELBOWS WITH AN INSIDE RADIUS OF 0.5W AT ELBOWS IN GREASE DUCT.
- 10 8/6 DUCT UP THROUGH ROOF TO EF-2.
- 11 28/6 DUCT DOWN TO MAKEUP AIR PDP DUCT CONNECTION. TRANSITION TO SUPPLY PLENUM OPENING SIZE. TYPICAL FOR 3.
- 12 8" DIA. DUCT DOWN TO AC PDP DUCT CONNECTION. TRANSITION TO SUPPLY PLENUM OPENING SIZE. TYPICAL. CAP UNUSED DUCT CONNECTIONS.
- 13 INSTALL SINGLE GANGE VERTICAL J-BOX GRIDPOINT THERMOSTATS FURNISHED BY TEMS FOR RTU-1 AND RTU-2 AT THIS LOCATION AT 48" AFF. COORDINATE WITH ELECTRICAL SWITCHING IN THIS AREA. PROVIDE WIRING AS SHOWN IN DETAIL 8/E710.
- 14 INSTALL GRIDPOINT ZONE SENSOR MODULE FURNISHED BY TEMS FOR RTU-1 AT THIS LOCATION 72" AFF DIRECTLY TO WALL (NO JUNCTION BOX). COORDINATE LOCATION WITH EQUIPMENT. PROVIDE WIRING AS SHOWN IN DETAIL 8/E710.
- 15 INSTALL GRIDPOINT ZONE SENSOR MODULE FURNISHED BY TEMS FOR RTU-2 AT THIS LOCATION 66" AFF DIRECTLY TO WALL (NO JUNCTION BOX). COORDINATE LOCATION WITH EQUIPMENT. PROVIDE WIRING AS SHOWN IN DETAIL 8/E710.
- 16 INSTALL GRIDPOINT SUPPLY PROBE FURNISHED BY TEMS FOR RTU-1 IN THE SUPPLY DUCTWORK UPSTREAM FROM THE FIRST BRANCH CONNECTION. PROVIDE WIRING AS SHOWN IN DETAIL 8/E710.
- 17 INSTALL GRIDPOINT SUPPLY PROBE FURNISHED BY TEMS FOR RTU-2 IN THE SUPPLY DUCTWORK UPSTREAM FROM THE FIRST BRANCH CONNECTION. PROVIDE WIRING AS SHOWN IN DETAIL 8/E710.
- 18 INSTALL REMOTE TEMPERATURE SENSOR FOR HOOD HD-1 AT THIS LOCATION 72" AFF. COORDINATE LOCATION WITH EQUIPMENT. PROVIDE (2) #18 G. THERMISTOR CABLE FROM TEMPERATURE SENSOR TO HOOD CONTROL PANEL.

HVAC PLAN NOTES

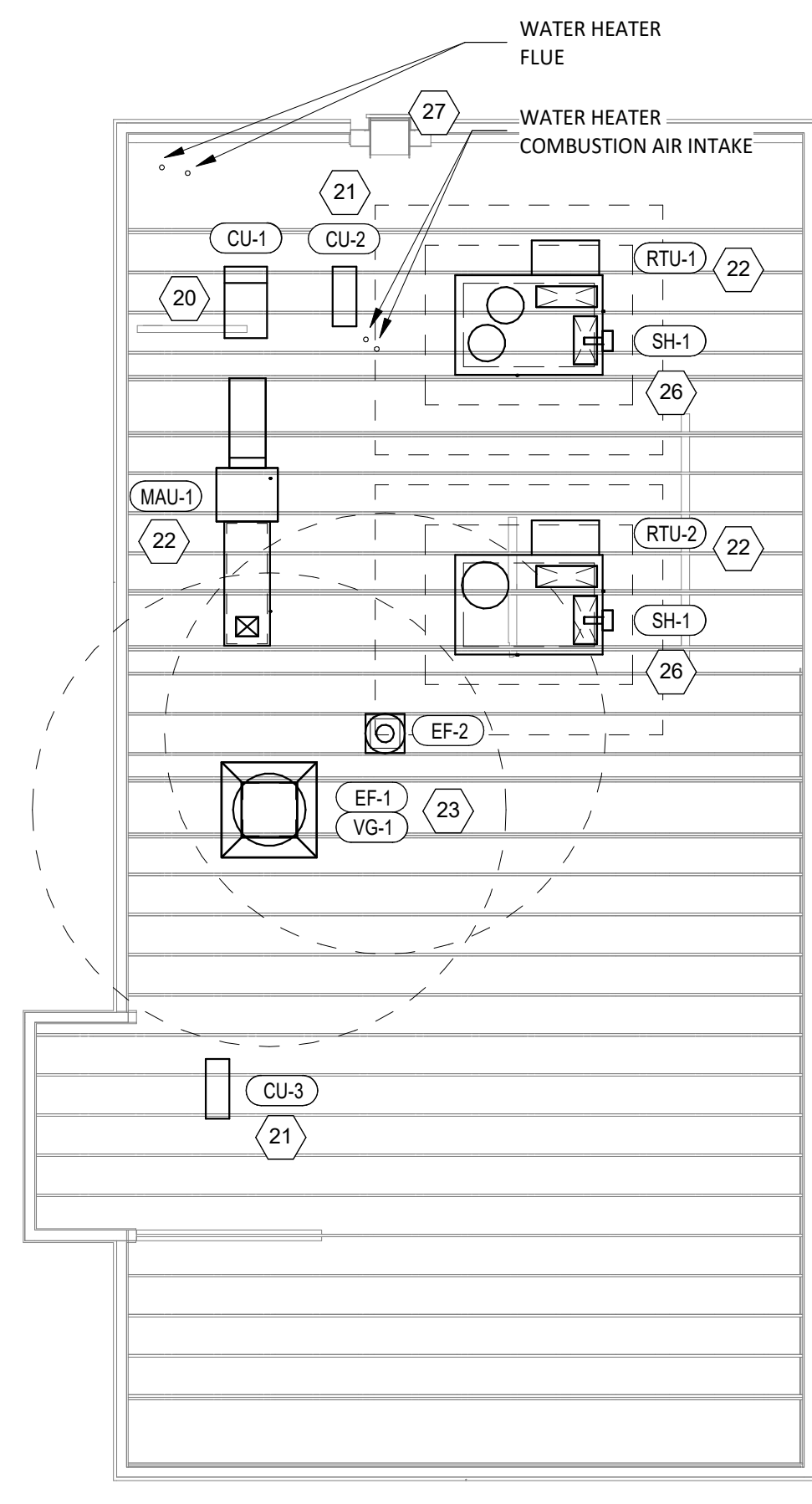
- 19 INSTALL KITCHEN HOOD, HD-1. SUPPORT HOOD PER MANUFACTURER'S INSTALLATION INSTRUCTIONS AND AS DETAILED IN THE ARCHITECTURAL AND STRUCTURAL DRAWINGS. INSTALL HOOD ACCORDING TO THE REQUIREMENTS OF ITS LISTING, IN COMPLIANCE WITH NFPA 96, THE BUILDING CODE, AND AUTHORITIES HAVING JURISDICTION. HOOD SHALL HAVE AN INTEGRAL DUCT COLLAR TEMPERATURE SENSOR TO AUTOMATICALLY ENERGIZE THE EXHAUST AND MAKEUP AIR FANS IF COOKING TEMPERATURES ARE DETECTED. EXHAUST DUCT SYSTEM TO BE WELDED OR FACTORY-MANUFACTURED WATER AND AIR TIGHT. INSTALL CLEANOUTS PER CODE AND AS SHOWN. INSTALL HOOD PER DETAILS 2, 4, AND 9/M700. CHIPOTLE WILL PROVIDE AN INDEPENDENT TESTING AGENCY FOR TESTING THE INTEGRITY OF THE GREASE DUCT SYSTEM.
- 20 INSTALL REMOTE CONDENSING UNIT FOR WALK-IN COOLER ON ROOF AS DETAILED IN THE ARCHITECTURAL AND STRUCTURAL DRAWINGS. INSTALL REFRIGERANT LINE SET, THERMOSTATIC EXPANSION VALVE, SOLENOID VALVE, TEMPERATURE CONTROL, SIGHT GLASS, FILTER DRIER, PRESSURE CONTROL, LOW AMBIENT CONTROLS, AND WEATHERPROOF HOUSING. TRAP AND SLOPE REFRIGERANT LINES PER MANUFACTURER'S RECOMMENDATIONS. INSTALLATION SHALL COMPLY WITH ASHRAE/ANSI STANDARD 15. INSTALL THE REFRIGERANT LINE SET UNDER THE ROOF DECK TO WITHIN 3' OF THE CONDENSING UNIT. CUT 2-1/2" HOLE IN WALK-IN COOLER ROOF FOR REFRIGERANT LINE SET AND SEAL PER THE COOLER MANUFACTURER'S INSTALLATION INSTRUCTIONS AFTER LINE SET IS INSTALLED.
- 21 INSTALL REMOTE CONDENSER FOR ICE MACHINE ON ROOF AS DETAILED IN THE ARCHITECTURAL AND STRUCTURAL DRAWINGS. INSTALL REFRIGERANT LINE SET, THERMOSTATIC EXPANSION VALVE, SOLENOID VALVE, TEMPERATURE CONTROL, SIGHT GLASS, FILTER DRIER, PRESSURE CONTROL, LOW AMBIENT CONTROLS, AND WEATHERPROOF HOUSING. TRAP AND SLOPE REFRIGERANT LINES PER MANUFACTURER'S RECOMMENDATIONS. SEAL PIPING PENETRATIONS THROUGH ROOF. INSTALLATION SHALL COMPLY WITH ASHRAE/ANSI STANDARD 15. INSTALL THE REFRIGERANT LINE SET UNDER THE ROOF DECK TO WITHIN 3' OF THE REMOTE CONDENSER. IF REFRIGERANT PIPING TO ICE MAKER IS EXPOSED TO PUBLIC VIEW CONCEAL WITHIN A STAINLESS STEEL SHROUD AS SHOWN IN THE ARCHITECTURAL DRAWINGS.
- 22 INSTALL ROOFTOP EQUIPMENT PER MANUFACTURER'S INSTALLATION INSTRUCTIONS AND AS DETAILED IN THE ARCHITECTURAL AND STRUCTURAL DRAWINGS.
- 23 INSTALL EXHAUST FAN EF-1 PER DETAIL 5/M700 AND AS DETAILED IN THE ARCHITECTURAL AND STRUCTURAL DRAWINGS. INSTALL GREASE VIROGUARD SYSTEM FURNISHED BY CHIPOTLE ON EXHAUST FAN, EF-1.
- 24 PROVIDE SUPPLY DIFFUSER CONNECTION TO SUPPLY SYSTEM PER DETAIL 1/M700. TYPICAL.
- 25 PROVIDE AUDIO/VISUAL REMOTE SMOKE DETECTOR ANNUNCIATOR WITH REMOTE KEY OPERATED RESET. WIRE A UNIT BACK TO EACH SMOKE DETECTOR. MOUNT UNIT 60" AFF. TYPICAL.
- 26 INSTALL REME HALO AIR PURIFIER FURNISHED BY TUV IN RTU PER DETAIL 6/M700. SEE ELECTRICAL DRAWINGS FOR POWER CONNECTION INFORMATION. INSTALL UV WARNING STICKERS ON FACE OF ENCLOSURE PER DETAIL AND ON ANY RTU ACCESS DOOR(S) THROUGH WHICH THE REME HALO WOULD BE VISIBLE IF OPENED.
- 27 MAINTAIN 10' CLEARANCE BETWEEN WATER HEATER FLUE TERMINATION AND OUTSIDE AIR INTAKES. MAINTAIN 10' CLEARANCE BETWEEN WATER HEATER COMBUSTION AIR INTAKE AND EXHAUST FAN EF-1 DISCHARGE. SEE PLUMBING DRAWINGS FOR MORE INFORMATION ON WATER HEATER FLUE AND COMBUSTION AIR TERMINATIONS.
- 28 ADJUST SUPPLY REGISTERS SO THAT SUPPLY AIR HITS WALL ON OPPOSITE SIDE OF ROOM AT APPROXIMATELY 7' AFF WITH NO DRAFTS FELT IN THE DINING ROOM.



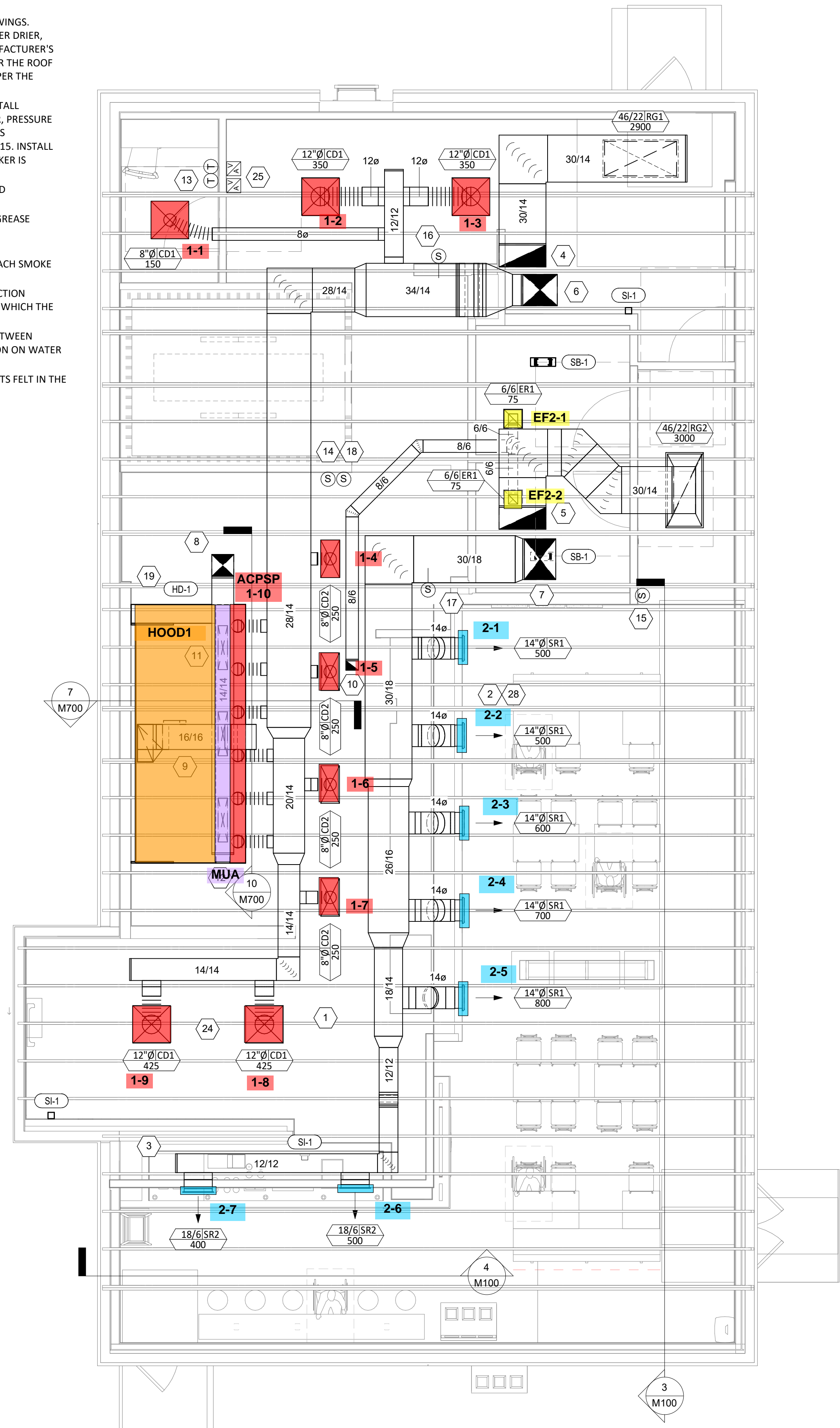
4 HVAC DINING ROOM SECTION
1/4" = 1'-0"



3 HVAC DINING ROOM SECTION
1/4" = 1'-0"



2 HVAC ROOF PLAN
1/8" = 1'-0"



1 HVAC FLOOR PLAN
1/4" = 1'-0"

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Contents:
 HVAC PLAN

M100

SANITIZING EQUIPMENT SCHEDULE									
TAG	COUNT	DESCRIPTION	FURNISH ED BY	INSTALLE D BY	BASIS FOR DESIGN		REMARKS		
					MANUFACTURER	MODEL			
SB-1	2	BATHROOM AIR PURIFICATION UNIT	TUV	GC	RGF ENVIRONMENTAL GROUP	BRU ASSEMBLY	SEE ELECTRICAL SHEETS FOR CONNECTION INFORMATION		
SH-1	2	HVAC AIR PURIFICATION UNIT	TUV	GC	RGF ENVIRONMENTAL GROUP	REME-HALO	SEE DETAIL 6/M700 FOR INSTALLATION INFORMATION.		
SI-1	3	ICE MACHINE TREATMENT SYSTEM	TUV	GC	RGF ENVIRONMENTAL GROUP	IMS-B-GA	SEE PLUMBING DRAWINGS FOR INSTALLATION INFORMATION.		

VIROGUARD SCHEDULE							
TAG	QUANTITY	DESCRIPTION	DUCT CONNECTION SIZE	FAN	FURNISHED BY	INSTALLED BY	BASIS FOR DESIGN MANUFACTURER
VG-1	1	VIROGUARD HOOD EXHAUST FAN ROOFTOP CONTAINMENT SYSTEM	16" X 16"	CAPTIVE-AIRE DU180HFA	TDC	GC	ENVIROMATIC

GRILLS, REGISTERS, AND DIFFUSERS SCHEDULE											
TAG	DESCRIPTION	FACE SIZE	MATERIAL	FINISH	MOUNTING	FURNISHED BY	INSTALLED BY	BASIS FOR DESIGN		NOTES	
								MANUFACTURER	MODEL		
CD1	PERFORATED CEILING DIFFUSER	24" X 24"	ALUMINUM	WHITE	LAY-IN CEILING	GC	GC	NAILOR	4320A TYPE L	PROVIDE INTEGRAL OBD	
CD2	PERFORATED CEILING DIFFUSER	24" X 12"	ALUMINUM	WHITE	LAY-IN CEILING	GC	GC	NAILOR	4320A TYPE L	PROVIDE INTEGRAL OBD, REMOVE 4-WAY DEFLECTOR	
ER1	PERFORATED CEILING EXHAUST	12" X 12"	ALUMINUM	WHITE	GYP CEILING	GC	GC	NAILOR	4330R TYPE S	PROVIDE INTEGRAL OBD	
RG1	PERFORATED CEILING RETURN	48" X 24"	ALUMINUM	WHITE	LAY-IN CEILING	GC	GC	NAILOR	4330R TYPE L		
RG2	PERFORATED CEILING RETURN	48" X 24"	ALUMINUM	WHITE	GYP CEILING	GC	GC	NAILOR	4330R TYPE S		
SR1	ADJUSTABLE TURBO NOZZLE	SEE NECK SIZE	ALUMINUM	WHITE	WALL	GC	GC	AIR CONCEPTS	ANR-14	PROVIDE FACE-ACCESSIBLE OBD	
SR2	DOUBLE DEFLECTION SUPPLY REGISTER	SEE NECK SIZE	ALUMINUM	WHITE	WALL	GC	GC	NAILOR	51DH	PROVIDE INTEGRAL OBD	

FAN SCHEDULE											
TAG	DRIVE TYPE	EXHAUST FLOW [CFM]	E.S.P. [in. W.C.]	WEIGHT [lbs]	ELECTRICAL		FURNISHED BY	INSTALLED BY	BASIS FOR DESIGN		REMARKS
					MOTOR POWER	V/P/H			MANUFACTURER	MODEL	
EF-1	DIRECT	2550 CFM	1.20 in-wg	400	2	208/3/60	HS	GC	CAPTIVE-AIRE	DU180HFA	FURNISHED WITH DISCONNECT AND VENTED ROOF CURB
EF-2	DIRECT	150 CFM	0.60 in-wg	100	0.18 HP	120/1/60	HS	GC	CAPTIVE-AIRE	DR12HFA	FURNISHED WITH DISCONNECT, VARIABLE SPEED CONTROLLER, BACKDRAFT DAMPER AND ROOF CURB

CONDENSING UNIT SCHEDULE															
TAG	DESCRIPTION	NOMINAL CAPACITY [TONS]	NUMBER OF COMPRESSORS	NUMBER OF CIRCUITS	REFRIGERANT TYPE	REFRIGERANT CHARGE	WEIGHT	ELECTRICAL			FURNISHED BY	INSTALLED BY	BASIS FOR DESIGN		REMARKS
								MOCP	FLA	V/P/H			MANUFACTURER	MODEL	
CU-1	WALK-IN COOLER REMOTE CONDENSING UNIT	--	1	1	R-448A	9.9	200	15 A	7.2 A	208/3/60	WCS	GC	EVERIDGE	RFO130E4SEA	FURNISHED WITH WALK-IN COOLER
CU-2	ICE MAKER - REMOTE CONDENSER	--	0	1	R-404A	11 lbs 7.4 oz	100			208/1/60	KES	GC	SCOTSMAN	ERC311-32	FURNISHED WITH ICE MAKER
CU-3	ICE MAKER - REMOTE CONDENSER	--	0	1	R-404A	11 lbs 7.4 oz	100			120/1/60	KES	GC	SCOTSMAN	ERC111-1	FURNISHED WITH ICE MAKER

MAKEUP AIR UNIT WITH EVAPORATIVE COOLING SCHEDULE																				
TAG	DESCRIPTION	AIRFLOW		HEATING CAPACITY				EVAPORATIVE COOLING CAPACITY				APPROXIMATE WEIGHT [LBS]	ELECTRICAL		FURNISHED BY	INSTALLED BY	BASIS FOR DESIGN		REMARKS	
		TOTAL [CFM]	E.S.P. [in. W.C.]	INPUT [MBH]	OUTPUT [MBH]	MAXIMUM TURNDOWN	EAT [DEG. F]	EAT	LAT	MAKEUP WATER FLOW [GPH]	MOTOR POWER		V/P/H	MANUFACTURER			MODEL			
MAU-1	MAKEUP AIR UNIT	1300	0.8	225	220	12.5:1	16 °F	95 °F	63 °F	74 °F	63 °F	2.5	800	1 HP	208/3/60	HS	GC	CAPTIVE-AIRE	A1-D.250-15D	FURNISHED WITH DISCONNECT, ROOF CURB, AND EVAPORATIVE COOLER INTAKE

KITCHEN HOOD SCHEDULE																										
TAG	DESCRIPTION	MAX COOKING TEMP.	EXHAUST PLENUM				PERFORATED SUPPLY PLENUMS						NUMBER OF LIGHT FIXTURES	APPROXIMATE WEIGHT [lbs]	FURNISHED BY	INSTALLED BY	BASIS FOR DESIGN		REMARKS							
			AIRFLOW [CFM]	SP [in. W.C.]	NO.	WIDTH	LENGTH	LENGTH	WIDTH	SP [in. W.C.]	SUPPLY PLENUM LENGTH	SUPPLY PLENUM WIDTH					AIRFLOW [CFM]	DUCT COLLARS		AC PLENUM	DUCT COLLARS	MANUFACTURER	MODEL			
HD-1	TYPE I CANOPY HOOD WITH PERFORATED MAU AND AC SUPPLY PLENUMS	600°F	2550	0.97	1	10"	24"	12' - 9"	4' - 3"	0.1	13' - 9"	19"	1300	3	6"	28"	700	6	8"	8	1100	HS	GC	CAPTIVE-AIRE	5424 ND-2-ACPPSP-F	MAT'L: 18 GA. TYPE 430 SS. PROVIDE WITH VERTICAL END PANELS, 16" TALL HE SS FILTERS, INTEGRAL UTILITY CABINET, KITCHEN EXHAUST SUPPRESSION SYSTEM, DUCT COLLAR TEMPERATURE SENSOR, PREWIRE PACKAGE, SPARE FIRE SYSTEM DRY CONTACT, AND 4-POLE 20A CONTACTOR

ROOFTOP UNIT SCHEDULE																											
TAG	DESCRIPTION	NOMINAL CAPACITY [TONS]	EER	AIRFLOW			NET COOLING CAPACITY				HEATING CAPACITY			# OF COMPRESSORS	# OF CIRCUITS	REFRIG. TYPE	REFRIG. CHARGE	APPROX. WEIGHT [lbs]	ELECTRICAL			FURNISHED BY	INSTALLED BY	BASIS FOR DESIGN		REMARKS	
				TOTAL [CFM]	OA [CFM]	ESP [in. W.C.]	TOTAL [MBH]	SENSIBLE [MBH]	EAT [DEG. F]	COND. EAT [DEG. F]	INPUT [MBH]	OUTPUT [MBH]	EAT [DEG. F]						MOCP	FLA	V/P/H			MANUFACTURER	MODEL		
RTU-1	KITCHEN ROOFTOP UNIT	8.5	11.2	3400	500	0.8	82	71	77	62	97	179.2	144.8	60	2	2	R-410A	19.8	1300	50 A	42.0 A	208/3/60	HES	GC	CARRIER	48FC_M09	FURNISHED WITH HINGED ACCESS PANELS, STANDARD ECONOMIZER W/ DUAL ENTHALPY CONTROLS, BAROMETRIC RELIEF, RET. SMOKE DETECTOR W/ REMOTE KEYED ANNUNCIATOR/RESET, MERV-8 FILTERS, CURB, HAIL GUARD, DISCONNECT, & UNIT-MOUNTED NON-POWERED CONVENIENCE RECEPTACLE
RTU-2	DINING ROOM ROOFTOP UNIT	10	11	4000	1000	0.8	101	96	79	60	97	200	164	54	2	2	R-410A	25.6	1500	60 A	54.0 A	208/3/60	HES	GC	CARRIER	48FC_M12	FURNISHED WITH HINGED ACCESS PANELS, STANDARD ECONOMIZER W/ DUAL ENTHALPY CONTROLS, BAROMETRIC RELIEF, RET. SMOKE DETECTOR W/ REMOTE KEYED ANNUNCIATOR/RESET, MERV-8 FILTERS, CURB, HAIL GUARD, DISCONNECT, & UNIT-MOUNTED NON-POWERED CONVENIENCE RECEPTACLE

VENTILATION SCHEDULE												
SPACE	Ez	SQ. FT	NUMBER OF PEOPLE*	CFM/ PERSON	CFM/ SF	PEOPLE CFM REQUIRED	AREA CFM REQUIRED	OSA CFM REQUIRED (Vbz)	OSA CFM PROVIDED	EXHAUST PER FIXTURE	EXHAUST CFM REQUIRED	EXHAUST CFM PROVIDED
DINING ROOM	0.8	818	78	7.5	0.18	585	148	733	1,000	-	-	-
RESTROOM	-	125	-	-	-	-	-	-	-	50	100	150
KITCHEN	0.8	1,105	9	7.5	0.12	68	133	201	477	0.7	774	2550
OFFICE	0.8	46	1	5	0.06	5	3	8	23	-	-	-

*NUMBER OF PEOPLE TAKEN FROM OCCUPANT LOAD CALCULATIONS IN THE ARCHITECTURAL SET

AIR BALANCE SCHEDULE				
Tag	Supply Flow [CFM]	Return Flow [CFM]	Exhaust Flow [CFM]	Subtotal [CFM]
EF-1	0	0	2550	-2550
EF-2	0	0	150	-150
MAU-1	1300	0	0	1300
RTU-1	3400	2900	0	500
RTU-2	4000	3000	0	1000
Net Pressurization [CFM]				100

CONTROL FUNCTIONS
A. THE MAIN COOKING EXHAUST FAN AND MAKE-UP AIR UNIT SHALL BE INTERLOCKED TO OPERATE TOGETHER. THIS CONTROL CIRCUIT IS ACTIVATED BY A SWITCH AND INCLUDES A FIRE PROTECTION OVERRIDE.
B. THE TEMPERATURE IN EACH ZONE IS CONTROLLED BY SPACE TEMPERATURE SENSORS CONNECTED TO THE THERMOSTATS LOCATED IN THE OFFICE. ALL ZONES SHALL OPERATE WITH CONTINUOUS FAN OPERATION DURING OCCUPIED TIMES AND INTERMITTENTLY AS NEEDED TO MAINTAIN SET POINTS DURING UNOCCUPIED TIMES. OUTSIDE AIR DAMPERS SHALL BE OPEN CONTINUOUSLY WHEN EITHER IN OCCUPIED MODE OR WHEN THE HOOD SYSTEM IS ON AND SHALL BE CLOSED DURING UNOCCUPIED PERIODS.
C. THE THERMOSTATS SHALL DETERMINE OCCUPIED/UNOCCUPIED STATUS BASED ON THE SCHEDULE IN THE ENERGY MANAGEMENT SYSTEM.

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 2302012

Contents:
 HVAC SCHEDULES

M600

Air System Sizing Summary for RTU-1
 Project Name: Chipotle - Magna, UT
 Prepared by: NATIONAL ENGINEERING LLC
 10/30/2023
 07:20PM

Air System Information		Number of zones: 1	
Air System Name: RTU-1	Equipment Class: PKG ROOF	Floor Area: 1015.0 ft ²	Location: Salt Lake City, Utah
Sizing Calculation Information		Zone CFM Sizing: Sum of space airflow rates	
Calculation Months: Jan to Dec	Sizing Data: Calculated	Space CFM Sizing: Individual peak space loads	
Central Cooling Coil Sizing Data			
Total coil load: 5.4 Tons	Load occurs at: Jul 1400	OA DB / WB: 95.3 / 61.8 °F	
Sensible coil load: 64.7 MBH	Entering DB / WB: 76.5 / 61.7 °F	Leaving DB / WB: 56.1 / 54.6 °F	
Coil CFM at Jul 1400: 3400 CFM	Coil ADP: 53.8 %	Bypass Factor: 0.100	
Max block CFM: 3400 CFM	Resulting RH: 54 %	Design supply temp: 55.4 °F	
Sum of peak zone CFM: 3400 CFM	Zone T-stat Check: 1 of 1 OK	Max zone temperature deviation: 0.0 °F	
Sensible heat ratio: 0.997			
CFM/Ton: 63.0			
RT/Ton: 188.4			
BTU/hr-ft ² : 63.7			
Water flow @ 10.0 °F rise: N/A			
Central Heating Coil Sizing Data			
Max coil load: 41.7 MBH	Load occurs at: Des Htg	Coil CFM at Des Htg: 41.0	
Coil CFM at Des Htg: 3400 CFM	Ent. DB / Lvg DB: 60.2 / 73.5 °F	Water flow @ 20.0 °F drop: N/A	
Max coil CFM: 3400 CFM			
Water flow @ 20.0 °F drop: N/A			
Supply Fan Sizing Data			
Actual max CFM: 3400 CFM	Fan motor BHP: 0.00 BHP	Standard CFM: 2912 CFM	Fan motor kW: 0.00 kW
Actual max CFM ^{90%} : 3.35 CFM ^{90%}	Fan static: 0.00 in wg		
Outdoor Ventilation Air Data			
Design airflow CFM: 500 CFM	CFM/person: 55.56 CFM/person	CFM ^{90%} : 0.49 CFM ^{90%}	

Hourly Analysis Program 5.11 Page 1 of 2

Air System Design Load Summary for RTU-1
 Project Name: Chipotle - Magna, UT
 Prepared by: NATIONAL ENGINEERING LLC
 10/30/2023
 07:20PM

ZONE LOADS	DESIGN COOLING		DESIGN HEATING		
	COOLING OA DB / WB	95.3 °F / 61.8 °F	HEATING OA DB / WB	16.0 °F / 11.0 °F	
	Details	Sensible (BTU/hr)	Latent (BTU/hr)	Sensible (BTU/hr)	Latent (BTU/hr)
Window & Skylight Solar Loads	66 ft ²	1909	-	66 ft ²	-
Wall Transmission	1433 ft ²	3044	-	1433 ft ²	3775
Roof Transmission	1015 ft ²	2566	-	1015 ft ²	1463
Window Transmission	66 ft ²	821	-	66 ft ²	2282
Skylight Transmission	0 ft ²	0	-	0 ft ²	0
Door Loads	0 ft ²	0	-	0 ft ²	0
Floor Transmission	0 ft ²	0	-	0 ft ²	0
Partitions	0 ft ²	0	-	0 ft ²	0
Ceiling	0 ft ²	0	-	0 ft ²	0
Overhead Lighting	1430 W	4131	-	0	0
Task Lighting	0 W	0	-	0	0
Electric Equipment	0 W	0	-	0	0
People	9	1905	2430	0	0
Infiltration	-	4301	-3992	-	9619
Miscellaneous	-	32464	-11750	-	0
Safety Factor	0% / 0%	0	0	0%	0
>> Total Zone Loads		51682	18788	-	17146
Zone Conditioning		54310	10188	-	17676
Plenum Wall Load	0%	0	-	0	0
Plenum Roof Load	0%	0	-	0	0
Plenum Lighting Load	0%	0	-	0	0
Return Fan Load	3400 CFM	0	-	3400 CFM	0
Ventilation Load	500 CFM	10142	-9979	500 CFM	23981
Supply Fan Load	3400 CFM	0	-	3400 CFM	0
Space Fan Coil Fans	0%	0	-	0%	0
Duct Heat Gain / Loss	0%	0	-	0%	0
>> Total System Loads		64451	209	-	41658
Central Cooling Coil		64451	209	-	0
Central Heating Coil		0	-	41658	0
>> Total Conditioning		64451	209	-	41658

Key: Positive values are ckg loads
 Negative values are hkg loads

Hourly Analysis Program 5.11 Page 2 of 2

Air System Sizing Summary for RTU-2
 Project Name: Chipotle - Magna, UT
 Prepared by: NATIONAL ENGINEERING LLC
 10/30/2023
 07:21PM

Air System Information		Number of zones: 1	
Air System Name: RTU-2	Equipment Class: PKG ROOF	Floor Area: 838.0 ft ²	Location: Salt Lake City, Utah
Sizing Calculation Information		Zone CFM Sizing: Sum of space airflow rates	
Calculation Months: Jan to Dec	Sizing Data: Calculated	Space CFM Sizing: Individual peak space loads	
Central Cooling Coil Sizing Data			
Total coil load: 6.6 Tons	Load occurs at: Aug 1400	OA DB / WB: 95.3 / 61.8 °F	
Sensible coil load: 79.5 MBH	Entering DB / WB: 79.4 / 59.4 °F	Leaving DB / WB: 55.1 / 50.7 °F	
Coil CFM at Aug 1400: 3600 CFM	Coil ADP: 52.8 %	Bypass Factor: 0.100	
Max block CFM: 3600 CFM	Resulting RH: 44 %	Design supply temp: 55.5 °F	
Sum of peak zone CFM: 3600 CFM	Zone T-stat Check: 1 of 1 OK	Max zone temperature deviation: 0.0 °F	
Sensible heat ratio: 1.000			
CFM/Ton: 143.2			
RT/Ton: 126.4			
BTU/hr-ft ² : 94.9			
Water flow @ 10.0 °F rise: N/A			
Central Heating Coil Sizing Data			
Max coil load: 80.8 MBH	Load occurs at: Des Htg	Coil CFM at Des Htg: 86.4	
Coil CFM at Des Htg: 3600 CFM	Ent. DB / Lvg DB: 62.8 / 77.0 °F	Water flow @ 20.0 °F drop: N/A	
Max coil CFM: 3600 CFM			
Water flow @ 20.0 °F drop: N/A			
Supply Fan Sizing Data			
Actual max CFM: 3600 CFM	Fan motor BHP: 0.00 BHP	Standard CFM: 3083 CFM	Fan motor kW: 0.00 kW
Actual max CFM ^{90%} : 4.30 CFM ^{90%}	Fan static: 0.00 in wg		
Outdoor Ventilation Air Data			
Design airflow CFM: 1000 CFM	CFM/person: 15.38 CFM/person	CFM ^{90%} : 1.19 CFM ^{90%}	

Hourly Analysis Program 5.11 Page 1 of 2

Air System Design Load Summary for RTU-2
 Project Name: Chipotle - Magna, UT
 Prepared by: NATIONAL ENGINEERING LLC
 10/30/2023
 07:21PM

ZONE LOADS	DESIGN COOLING		DESIGN HEATING		
	COOLING OA DB / WB	95.3 °F / 61.8 °F	HEATING OA DB / WB	16.0 °F / 11.0 °F	
	Details	Sensible (BTU/hr)	Latent (BTU/hr)	Sensible (BTU/hr)	Latent (BTU/hr)
Window & Skylight Solar Loads	705 ft ²	2124	-	705 ft ²	-
Wall Transmission	715 ft ²	1681	-	715 ft ²	1882
Roof Transmission	838 ft ²	1940	-	838 ft ²	1209
Window Transmission	705 ft ²	792	-	705 ft ²	2211
Skylight Transmission	0 ft ²	0	-	0 ft ²	0
Door Loads	0 ft ²	0	-	0 ft ²	0
Floor Transmission	0 ft ²	0	-	0 ft ²	0
Partitions	0 ft ²	0	-	0 ft ²	0
Ceiling	0 ft ²	0	-	0 ft ²	0
Overhead Lighting	744 W	2322	-	0	0
Task Lighting	0 W	0	-	0	0
Electric Equipment	0 W	0	-	0	0
People	65	11565	13325	0	0
Infiltration	-	4301	-2219	-	9619
Miscellaneous	-	3665	0	-	0
Safety Factor	0% / 0%	0	0	0%	0
>> Total Zone Loads		54589	11106	-	34721
Zone Conditioning		59171	11106	-	33724
Plenum Wall Load	0%	0	-	0	0
Plenum Roof Load	0%	0	-	0	0
Plenum Lighting Load	0%	0	-	0	0
Return Fan Load	3600 CFM	0	-	3600 CFM	0
Ventilation Load	1000 CFM	20359	-11089	1000 CFM	47089
Supply Fan Load	3600 CFM	0	-	3600 CFM	0
Space Fan Coil Fans	0%	0	-	0%	0
Duct Heat Gain / Loss	0%	0	-	0%	0
>> Total System Loads		79529	17	-	80813
Central Cooling Coil		79529	0	-	0
Central Heating Coil		0	-	80813	0
>> Total Conditioning		79529	0	-	80813

Key: Positive values are ckg loads
 Negative values are hkg loads

Hourly Analysis Program 5.11 Page 2 of 2

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M710