

Report By:

National TAB
1329 E. KEMPER ROAD
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Report: TAB Report
Function: Test, Adjust, & Balance
Date: 12/06/2024
Completed By: National TAB

PROJECT

Dave's Hot Chicken (Oxnard, CA)

341 Esplanade Dr

Oxnard, CA 93036

Client

KMS Resource Group Inc.
8502 E CHAPMAN AVE
SUITE 274
ORANGE, CA 92869

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Project: Dave's Hot Chicken (Oxnard, CA)

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CERTIFICATION



PROJECT: _____

The data presented in this report is a record of system measurements and final adjustments that have been obtained in accordance with the current edition of the NEBB Procedural Standard for Testing, Adjusting and Balancing of Environmental Systems. The measurements shown, and the information given, in this report are certified to be accurate and complete, at the time and date information was gathered. Any variances from design quantities, which exceed NEBB tolerances, are noted in the TAB report project summary.

NEBB TAB FIRM: National TAB - Kansas City

REGISTRATION NO: 3768

CERTIFIED BY: Will Turnbough

DATE: _____

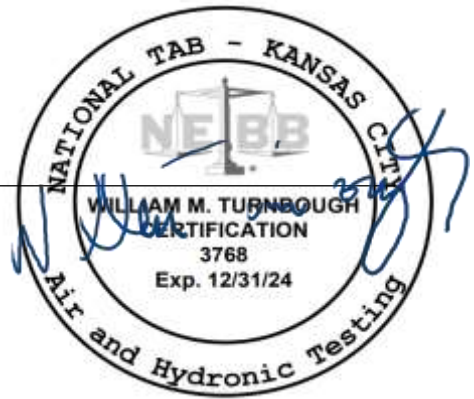
Submitted and Certified by:

NEBB TAB FIRM: National TAB - Kansas City

TAB PROFESSIONAL: Will Turnbough

REGISTRATION NO: CP-24289

CERTIFICATION EXP: 12/31/2024





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Project Summary

The summary below provides a quick understanding of our scope of work and general testing procedures. Enclosed in the report are further details about your building performance including recommendations, asset data, and pictures. Our focus is to work with the trades to remedy any issues or deficiencies during the actual field balancing and not after the balancing has occurred to achieve a positive environment and outcome. The level of success is determined by the availability of the trades, possible parts needed, or time constraints.

RTU's (Roof Top Units) w/ Diffusers

Each of the RTU's were measured at their terminal devices or via traverse to establish a total flow for that unit. Each RTU was adjusted to within tolerance of the engineer's design flow. Each outlet was then adjusted to within tolerance of the design flow. Outside air was measured by reading the intake air opening with a velocity grid and multiplying by the free area. The outside air damper was adjusted until the airflow was within the design requirements. Any equipment that fell outside of that tolerance is noted throughout the report.

Kitchen Exhaust Hood & Associated Fans

Each kitchen exhaust fan was measured at the hood filter bay utilizing a velocity matrix and a manufacturer's correction factor. Each filter velocity is multiplied by the manufacturer's corrected area. The sum of these readings equals the total flow of the exhaust fans. The total flow of the exhaust was then adjusted to within tolerance of the design flow. Any EF's that fell outside of this tolerance is noted throughout the report.

MUA (Make Up Air Unit) w/ PSP

Total flow for the MAU (Make-up Air Unit) unit was measured by readings taken at the discharge of the hood's perforated supply plenum. Readings taken with a velocity matrix were averaged and multiplied by a manufacturer's corrected area. Adjustments to the fan speed were made in order to bring the unit to within design tolerance. Any MUA's that fell outside of this tolerance is noted throughout the report.

Ceiling Exhaust Fans The ceiling exhaust fans were measured using a flow hood. If speed adjustment was provided, the fan speed was adjusted to within design tolerance. Any equipment that fell outside of this tolerance is noted throughout the report.

Final Building Tests

After completing the test and balance the final building pressure was measured. It was confirmed that the building pressure fell within acceptable tolerances of $-0.02''$ wc to $+0.02''$ wc and that the pressure measurement coincides with the actual and design net airflow. Any deviations from these standards are noted throughout the report.

The hood capture was tested at the perimeter of the hood and the cook top level with the equipment heat on to ensure satisfactory hood capture and containment.

AIR BALANCE SCHEDULE

UNIT	AREA SERVED	HVAC SUPPLY		HVAC RETURN		HVAC OUTDOOR		OA %		HOOD MAKE-UP		HOOD EXHAUST		GENERAL EXH.	
		DESIGN	ACTUAL	DESIGN	ACTUAL	DESIGN	ACTUAL	DESIGN	ACTUAL	DESIGN	ACTUAL	DESIGN	ACTUAL	DESIGN	ACTUAL
RTU-1		3200	3286	2600	2680	600	606	18.8%	18.4%						
RTU-2		3200	3282	2680	2702	520	580	16.3%	17.7%						
MUA-1										2720	2678				
EF-1												3400	3363		
EF-2														70	65
EF-3														70	67
TOTALS		6400	6568	5280	5382	1120	1186			2720	2678	3400	3363	140	132

NET BUILDING AIRFLOW CALCULATION

TOTALS	DESIGN	ACTUAL
TOTAL OA	3840	3864
TOTAL EXHAUST	3540	3495
NET AIRFLOW	300	369

DOOR TESTED	BUILDING PRESSURE MEASUREMENTS (IN. H2O)
FRONT	0.0025
SIDE	0.0041
REAR	0.0017
AVERAGE	0.0029

FINAL CHECKS

- ACTUAL NET AIRFLOW COINCIDES WITH DESIGN: ✓

- MEASURED PRESSURES COINCIDES WITH ACTUAL NET AIRFLOW: ✓

- PRESSURE FALLS WITHIN IMC TOLERANCE OF +/-0.02" W.C. ✓

NOTES:

National TAB

Project: Dave's Hot Chicken (Oxnard, CA)
System/Unit: AHU/RTU



Asset: RTU-1

AREA: DINING

Unit Data		
	Design	Actual
MFG	NA	CARRIER
Serial Num	-	50FCQM08A2A6A
Model Num	NA	5023P79470
Configuration	VERTICAL	VERTICAL
Num OA Filters 1	-	1
OA Filter Size 1	-	35.5X17.65
Num PreFilter 1	-	4
PreFilter Size 1	-	20X20X2

Test Data		
	Design	Actual
SF CFM	3200	3286
RA CFM	2600	2680
OA CFM	600	606
RL Voltage	460	484/484/480
RL Amperage	-	0.81/0.88/1.03
OA Damper Position	-	21%
Brake Horse Power	-	NA

Motor Data		
	Design	Actual
Motor MFG	-	NL
Frame	-	NL
Horsepower	1.28	NL
Motor Rpm	-	NL
Phase	3	3
Rated Voltage	460	460
Rated Amperage	-	3.0
Service Factor	-	NL

Performance Data		
	Design	Actual
MA Plenum SP	-	-0.27"
Fan Suction SP	-	-0.44"
Fan Discharge SP	-	0.24"
Total ESP	1.00	0.51"
Fan Total SP	-	0.68"

Completed By: David Nicolas Sanchez on 12/06/2024

Notes:

Lowered design CFM for diffusers 1-1 & 1-2 to stay between 10% overall CFM design. GRD and Airbalance schedule CFM do not match.

Written By: David Nicolas Sanchez on 12/09/2024

Unit Data - PHOTO LOG



12/09/2024

National TAB

Project: Dave's Hot Chicken (Oxnard, CA)

AHU/RTU



Diffuser Supply (GRD)

RTU-1/DINING

Asset							
Asset Name	Location	Type	Size	DESIGN CFM	CFM(1)	FINAL CFM	% to design
SGRD1	DINING	METAL AIRE 4000	16X8	350	334	382	109.1
SGRD2	DINING	METAL AIRE 4000	16X8	350	328	385	110.0
SGRD3	DINING	METAL AIRE 4000	16X8	400	272	379	94.8
SGRD4	DINING	METAL AIRE 4000	16X8	400	277	375	93.8
SGRD5	DINING	METAL AIRE 4000	16X8	200	248	211	105.5
SGRD6	DINING	METAL AIRE 4000	16X8	300	294	315	105.0
SGRD7	DINING	METAL AIRE 4000	16X8	200	241	213	106.5
SGRD8	DINING	METAL AIRE 4000	16X8	300	245	297	99.0
SGRD9	DINING	METAL AIRE 4000	16X8	200	67	218	109.0
SGRD10	DINING	METAL AIRE 4000	16X8	400	252	406	101.5
SGRD11	HALLWAY 110	METAL AIRE 9000	6	100	98	105	105.0
Total				3200	2656	3286	102.69%

Diffuser Ret/Exh (GRD)

RTU-1/DINING

Asset								
Asset Name	Type	Size	DESIGN CFM	AK	CFM(1)	CFM(2)	FINAL CFM	% to design
EGRD1	RH	36X24	3200	5.65	2414	2680	2680	83.8
Total			3200		2414	2680	2680	83.75%

Completed By: David Nicolas Sanchez on 12/06/2024

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Project: Dave's Hot Chicken (Oxnard, CA)
System/Unit: AHU/RTU



Asset: RTU-2

AREA: KITCHEN

Unit Data		
	Design	Actual
MFG	NA	CARRIER
Serial Num	-	4923P78664
Model Num	NA	50FCQM08A2A6A
Configuration	VERTICAL	VERTICAL
Num OA Filters 1	-	1
OA Filter Size 1	-	35.5X17.65
Num PreFilter 1	-	4
PreFilter Size 1	-	20X20X2

Test Data		
	Design	Actual
SF CFM	3200	3282
RA CFM	2680	2702
OA CFM	520	580
RL Voltage	460	484/484/477
RL Amperage	-	2.18/2.68/2.45
OA Damper Position	-	21%
Brake Horse Power	-	NA

Motor Data		
	Design	Actual
Motor MFG	-	NL
Frame	-	NL
Horsepower	1.28	NL
Motor Rpm	-	NL
Phase	3	3
Rated Voltage	460	460
Rated Amperage	-	3.0
Service Factor	-	NL

Performance Data		
	Design	Actual
MA Plenum SP	-	-0.47"
Fan Suction SP	-	-0.72"
Fan Discharge SP	-	0.89"
Total ESP	1.00	1.36"
Fan Total SP	-	1.61"

Completed By: David Nicolas Sanchez on 12/06/2024

Notes:

Lowered design CFM for diffusers 2-3 & 2-4 to stay between 10% overall CFM design. GRD and Airbalance schedule CFM do not match.

Written By: David Nicolas Sanchez on 12/06/2024

Unit Data - PHOTO LOG



12/09/2024

National TAB

Project: Dave's Hot Chicken (Oxnard, CA)

AHU/RTU



Diffuser Supply (GRD)

RTU-2/KITCHEN

Asset							
Asset Name	Location	Type	Size	DESIGN CFM	CFM(1)	FINAL CFM	% to design
SGRD1	106	METAL AIRE 9000	8	150	329	157	104.7
SGRD2	104	METAL AIRE 9000	8	200	298	205	102.5
SGRD3	103	METAL AIRE 7300	16	800	854	858	107.3
SGRD4	103	METAL AIRE 7300	16	900	854	849	94.3
SGRD5	102	METAL AIRE 9000	12	500	569	529	105.8
SGRD6	4102	METAL AIRE 9000	12	500	583	532	106.4
SGRD7	105	METAL AIRE 9000	8	150	391	152	101.3
Total				3200	3878	3282	102.56%

Diffuser Ret/Exh (GRD)

RTU-2/KITCHEN

Asset								
Asset Name	Type	Size	DESIGN CFM	AK	CFM(1)	CFM(2)	FINAL CFM	% to design
EGRD1	RH	22X22	1500	1	1500	1351	1351	90.1
EGRD2	RH	22X22	1500	1	1500	1351	1351	90.1
Total			3000		3000	2702	2702	90.07%

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Project: Dave's Hot Chicken (Oxnard, CA)
System/Unit: FAN - Exhaust



Asset: EF-1

AREA:HOOD 1

Unit Data		
	Design	Actual
MFG	NA	CAPTIVE AIRE
Model Num	NA	DU180HFA
Serial Num	-	6587465
Type	CRE UPBLAST	CRE UPBLAST

Test Data		
	Design	Actual
CFM	3400	3363
RL Voltage	-	347@VFD
RL Amperage	-	3.5@VFD
Total ESP	1.50	0.89"

Motor Data		
	Design	Actual
Motor MFG	-	NEMA
Frame	-	182T
Horsepower	3.0	3.0
Motor Rpm	-	1755
Phase	3	3
Voltage (rated)	460	460
Amperage (rated)	-	4.30
Service Factor	-	1.15

Completed By: David Nicolas Sanchez on 12/05/2024

Unit Data - PHOTO LOG



12/09/2024

National TAB

Project: Dave's Hot Chicken (Oxnard, CA)
System/Unit: FAN - Exhaust



Asset: EF-2

AREA:

Unit Data		
	Design	Actual
MFG	NA	PANASONIC
Model Num	NA	FV-11VQ5
Serial Num	-	204
Type	CEILING	CEILING

Test Data		
	Design	Actual
CFM	70	65
RL Voltage	-	NA
RL Amperage	-	NA
Total ESP	-	0.23"

Motor Data		
	Design	Actual
Motor MFG	-	PANASONIC
Frame	-	NL
Horsepower	-	NL
Motor Rpm	-	NL
Phase	1	1
Voltage (rated)	115	120
Amperage (rated)	-	0.19
Service Factor	-	NL

Completed By: David Nicolas Sanchez on 12/06/2024

Unit Data - PHOTO LOG



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Project: Dave's Hot Chicken (Oxnard, CA)
System/Unit: FAN - Exhaust



Asset: EF-3

AREA:

Unit Data		
	Design	Actual
MFG	NA	PANASONIC
Model Num	NA	FV-11VQ5
Serial Num	-	110
Type	CEILING	CEILING

Test Data		
	Design	Actual
CFM	70	67
RL Voltage	-	NA
RL Amperage	-	NA
Total ESP	-	0.22"

Motor Data		
	Design	Actual
Motor MFG	-	PANASONIC
Frame	-	NL
Horsepower	-	NL
Motor Rpm	-	NL
Phase	1	1
Voltage (rated)	115	120
Amperage (rated)	-	0.19
Service Factor	-	NL

Completed By: David Nicolas Sanchez on 12/06/2024

Unit Data - PHOTO LOG



12/09/2024

National TAB

Project: Dave's Hot Chicken (Oxnard, CA)

System/Unit: FAN - Supply



Asset: MAU-1

AREA:HOOD 1

Unit Data		
	Design	Actual
MFG	NA	CAPTIVE AIRE
Model Num	NA	A2-20D-MPU
Serial Num	-	6587465
Type	-	MUA
Configuration	VERTICAL	VERTICAL

Motor Data		
	Design	Actual
Motor MFG	-	NEMA
Frame	-	145T
Horsepower	1.0	0.75
Motor Rpm	-	1150
Phase	3	3
Voltage (rated)	460	460
Amperage (rated)	-	1.72
Service Factor	-	1.15

Gas Heat		
	Design	Actual
Heater Operates (y/n)	-	N/A
Flame Status (pass/fail)	-	N/A
Inlet Air Temp SetPt	-	55
Discharge Air Temp SetPt	-	60
Air Flow Switch SP Actual	-	N/A

Test Data		
	Design	Actual
CFM	2720	2678
SF RPM	-	851
Motor RPM	-	851
SF System SetPt	-	48.1HZ
RL Voltage	-	271@VFD
RL Amperage	-	1.2@VFD
Total ESP	-	NA
Fan Discharge SP	-	NA

General	
	Actual
Fan Rotation Correct	YES

Completed By: David Nicolas Sanchez on 12/05/2024

Unit Data - PHOTO LOG



12/09/2024

National TAB

Project: Dave's Hot Chicken (Oxnard, CA)

System/Unit: Kitchen Hood Type I



Asset: HOOD 1

AREA:103

Unit Data		
	Design	Actual
MFG	NA	CAPTIVE AIRE
Model Num	NA	5424 ND-2
Job / Serial Num	-	6587465
Type	TYPE I CANOPY	TYPE I CANOPY
Hood length	180	180"
Hood Width	54	54"
Supply Plenum Type	-	PSP
Supply Plenum Width	16	16"
Supply Plenum Length	192	192"

Test Data Exhaust		
	Design	Actual
Filter Type	CAPTRATE SOLO	CAPTRATE SOLO
Filter Size 1	20X16	20X16
Filter Qty 1	11	11
Filter AK factor size 1	2.08	2.08
Filter Total AK Area	22.88	22.88
Filter1 FPM	-	142
Filter2 FPM	-	173
Filter3 FPM	-	170
Filter4 FPM	-	161
Filter5 FPM	-	133
Filter6 FPM	-	136
Filter7 FPM	-	147
Filter8 FPM	-	145
Filter9 FPM	-	140
Filter10 FPM	-	142
Filter11 FPM	-	131
Filter Ave FPM(corr)	-	147
CFM	3400	3363

Cooking Equipment	
	Actual
Item 1	FRYER
Item 2	FRYER
Item 3	FRYER

Test Data Supply		
	Design	Actual
Total Area	21.33	21.33
Kv factor (Vel)	0.91	0.91
Num of Readings	-	12
Reading1 FPM	-	168
Reading2 FPM	-	138
Reading3 FPM	-	135
Reading4 FPM	-	157
Reading5 FPM	-	139
Reading6 FPM	-	109
Reading7 FPM	-	133
Reading8 FPM	-	133
Reading9 FPM	-	115
Reading10 FPM	-	130
Reading11 FPM	-	139
Reading12 FPM	-	171
Ave FPM(corr)	-	138
CFM	2720	2678

Completed By: David Nicolas Sanchez on 12/05/2024

Unit Data - PHOTO LOG



12/09/2024



National TAB

Testing, Adjusting, and Balancing Equipment



Function		Range	Minimum Accuracy	Instrument Information	Calibration Date	Date Due
AIR	AIR PRESSURE	0 in wg to 10 in wg	2% +/- 0.001 in wg	Evergreen S-PVF-1 24D-00509	6/17/2024	6/17/2025
	AIR VELOCITY INSTRUMENT	50 fpm to 3900 fpm	+/- 5 % +/- 7 fpm	Evergreen S-PVF-1 24D-00509	6/17/2024	6/17/2025
	DIRECT HOOD READING	100 cfm to 2000 cfm	+/- 5 % +/- 7 cfm	Evergreen S-PVF-1 24D-00509	6/17/2024	6/17/2025
TEMPERATURE	AIR METER	-20 F to 240 F	+/- .5 % 2 F	Cooper SRH77A S/N 100516003	9/18/2024	9/18/2025
	AIR PROBE	-20 F to 240 F	+/- .5 % 2 F	Cooper SRH77A S/N 100516003	9/18/2024	9/18/2025
	IMMERSION METER	-20 F to 240 F	+/- .5 % 2 F	Cooper SRH77A S/N 100516003	9/18/2024	9/18/2025
	IMMERSION PROBE	-20 F to 240 F	+/- .5 % 2 F	Cooper SRH77A S/N 100516003	9/18/2024	9/18/2025
	CONTACT METER	-20 F to 240 F	+/- .5 % 2 F	Cooper SRH77A S/N 100516003	9/18/2024	9/18/2025
	CONTACT PROBE	-20 F to 240 F	+/- .5 % 2 F	Cooper SRH77A S/N 100516003	9/18/2024	9/18/2025
HUMIDITY	HUMIDITY PROBE	10 % RH to 90 % RH	3% of reading	Cooper SRH77A S/N 100516003	9/18/2024	9/18/2025
ELECTRICAL	VOLTAGE MEASUREMENT	0 VAC to 600 VAC	2 % reading +/- 5 digits	Klein Tools CL800 S/N 1220C-C1	9/18/2024	9/18/2025
	AMPERAGE MEASUREMENT	0 Amperers to 100 Amperes	2 % reading +/- 5 digits	Klein Tools CL800 S/N 1220C-C1	9/18/2024	9/18/2025
ROTATION	ROTATION MEASUREMENT	60 rpm to 5000 rpm	2 % reading 2 rpm	Shimpo DT 207Lp S/N D1690029R	9/18/2024	9/18/2025

Abbreviation List

A = Area (ft ²)	S.F. = Service Factor
AHU = Air Handling Unit	SF = Supply Fan
A _k = Effective Area	SP = Static Pressure
BHP = Brake Horsepower (IP) HP	SR = Supply Register
Btu = British Thermal Unit	T = Temperature
Btu/h = Btuh = BTUH = BTU/Hour	T _{ma} = Mixed Air Temperature
CL = Center Distance (used in belt formula)	T _{oa} = Outside Air Temperature
CD = Ceiling Diffuser	T _{ra} = Return Air Temperature
CF = Correction Factor	H = Head (in wc, ft wc, psi)
CFM = Volumetric Flow: Cubic Feet Per Minute	h = Enthalpy
CO ₂ = Carbon Dioxide	HP = Horsepower
CO = Carbon Monoxide	hr = Hour
C _v = Flow Constant	K _v = Flow constant (SI)
d = Diameter (in.) IP	kW = Kilowatt = 1000 Watts
Δ = Difference or Change (Final - Initial)	LAT = Leaving Air Temperature
DB = Dry Bulb	lb = Pounds
EA = Exhaust Air	LWT = Leaving Water Temperature
EAT = Entering Air Temperature	ma = Mixed Air
EF = Exhaust Fan	MIN = Minimum
Eff = Efficiency	MAX = Maximum
EG = Exhaust Grille	N/A = Not Applicable
ESP = External Static Pressure	NA = No Access
EWT = Entering Water Temperature	NL = Not Listed
°F = Degrees Fahrenheit, °F	NPSHA = Net Positive Suction Head Available
FPB = Fan Powered Box	NS = Not Specified
FLA = Full Load Amps	OA = Outside Air
fpm = Feet per Minute (fpm)	OAT = Outside Air Temperature
ft = Foot	PD = Sheave Pitch Diameter
gal = Gallons	P.D. = Pressure Drop
GPM = Gallons Per Minute (GPM)	PF = Power Factor
h = Enthalpy (BTU/lb dry air)	SG = Supply Grille
P = Pressure	SR = Supply Register
ppm = parts per million	TP = Total Pressure
psi = Pounds Per Square Inch	T _{ra} = Return Air Temperature
psid = PSI Differential	TS = Tip Speed (fpm) IP, (m/s) SI
r = Radius (in)	TSP = Total Static Pressure
% _{ra} = % of Return Air	V = Velocity
RA = Return Air	VAV = Variable Air Volume
RAT = Return Air Temperature	VD = Volume Damper
RF = Return Fan	VFD = Variable Frequency Drive
RG = Return Grille	W = Watt
RH = Relative Humidity	WB = Wet Bulb
RPM = Revolutions Per Minute	wg = wc = water gauge = water column
RTU = Roof Top Unit	WHP = Water Horsepower (IP)
SA = Supply Air	ω = Humidity Ratio

MECHANICAL PLAN NOTES:

- COORDINATE DECK PENETRATIONS WITH THE LANDLORD (IF REQUIRED). PROVIDE AND PAY FOR ANY REQUIRED REPAIR/PATCH WORK BY LANDLORD'S CONTRACTOR.
- CONTRACTOR IS RESPONSIBLE FOR ANY DAMAGE TO THE BUILDING STRUCTURE OR BUILDING UTILITIES CAUSED AS RESULT OF THE CONTRACTOR'S WORK UNDER THIS CONTRACT. IT IS RECOMMENDED THAT MASONRY/CONCRETE FLOORS/WALLS BE X-RAYED PRIOR TO ANY PENETRATIONS.
- PRIOR TO CONSTRUCTION THE CONTRACTOR SHALL VERIFY THE LOCATION OF ALL EXISTING MECHANICAL EQUIPMENT THAT SERVING THIS AND NEARBY ADJACENT SPACES AND IS TO REMAIN. CONTRACTOR SHALL VERIFY THE PROPOSED LOCATIONS OF NEW MECHANICAL EQUIPMENT AND DETERMINE IF ANY CONFLICTS (CLEARANCES, ETC.) EXIST BETWEEN EXISTING EQUIPMENT AND NEWLY INSTALLED EQUIPMENT. CONTRACTOR SHALL NOTIFY THE ENGINEER IF EQUIPMENT CANNOT BE SUBSTANTIALLY INSTALLED AND LOCATED AS INDICATED BY THESE DRAWINGS.
- REFER TO ARCHITECTURAL PLANS AND KITCHEN VENDOR DRAWINGS FOR DIMENSIONAL INFORMATION.
- A FINAL REPORT FOR THE TESTING AND ADJUSTING OF ALL NEW SYSTEMS SHALL BE COMPLETED PRIOR TO FINAL APPROVAL BY THE FIELD INSPECTOR. THIS REPORT SHALL BE SIGNED BY THE INDIVIDUAL RESPONSIBLE FOR PERFORMING THESE SERVICES.
- AN OPERATION & SYSTEMS MANUAL SHALL BE PROVIDED TO THE OWNER OR REPRESENTATIVE AND TO THE FIELD INSPECTOR AT THE TIME OF FINAL INSPECTION.
- AN AIR FILTER WITH A MINIMUM EFFICIENCY REPORTING VALUE (MERV) OF 8 OR HIGHER SHALL BE INSTALLED IN THE MECHANICAL SYSTEM FOR OUTSIDE AND RETURN AIR PRIOR TO OCCUPANCY.
- THE HVAC, REFRIGERATION, AND FIRE SUPPRESSION EQUIPMENT SHALL NOT CONTAIN CFC OR HALONS.

DUCTWORK SPECIFICATIONS:

- ALL DUCTWORK SHALL BE CONSTRUCTED IN ACCORDANCE WITH SMACNA-2006 OR UL 181 AND CONFORM TO THE REQUIREMENTS OF THE LOCAL CODE.
- ALL SUPPLY AND RETURN AIR DUCTS IN UNCONDITIONED SPACES SHALL HAVE R-8 INSULATION.
- ALL CONCEALED LOW PRESSURE (<2"WG) COOLING & HEATING DUCT 20" DIA. OR LESS SHALL BE UL 181 CLASS 1 FACTORY MADE FLEXIBLE ALUMINUM DUCT INSULATED WITH R-8 INSULATION AND SHEATHED WITH A VAPOR PROOF POLYETHYLENE SLEEVE.
- ALL ROUND FLEXIBLE SUPPLY TAIL PIECES SHALL BE UL 181 CLASS 1 FACTORY MADE ACoustICAL FLEXIBLE DUCT WITH NYLON LINER AND INSULATED WITH R-8 INSULATION SHEATHED WITH A VAPOR PROOF METALIZED POLYESTER SLEEVE. THE MAXIMUM ALLOWABLE LENGTH OF THE FLEX DUCT SHALL BE 6'-0" AND MAY NOT BE USED AS AN ELBOW.
- ALL EXPOSED LOW PRESSURE (<2"WG) COOLING & HEATING 20" DIA. OR LESS SHALL BE FACTORY MADE GALVANIZED 4-PLY SPIRAL LOCK SEAM DUCT LINED WITH R-8 INSULATION.
- ALL CONCEALED INTERIOR RECTANGULAR COOLING & HEATING DUCT SHALL BE GALVANIZED METAL WRAPPED WITH R-8 INSULATION IN ACCORDANCE WITH LOCAL CODE.
- ALL EXPOSED INTERIOR AND EXTERIOR RECTANGULAR COOLING & HEATING DUCT SHALL BE GALVANIZED METAL LINED WITH R-8 DUCT LINER IN ACCORDANCE WITH LOCAL CODE.
- ALL ROUND ENVIRONMENTAL EXHAUST AIR DUCT AND OUTSIDE AIR DUCT SHALL BE SMOOTH ROUND GALVANIZED PIPE INSTALLED IN ACCORDANCE WITH CHAPTER LOCAL CODE.
- ALL RECTANGULAR DUCTWORK SERVING TYPE I HOODS SHALL BE CONSTRUCTED OF 0.054 IN CARBON STEEL (16 GA.) OR 0.043 STAINLESS STEEL (18 GA.) WELDED FOR A LIQUID TIGHT SEAL IN ACCORDANCE WITH LOCAL CODE.
- DUCTWORK SHALL BE CONSTRUCTED AND SUPPORTED IN ACCORDANCE WITH THE LATEST EDITION OF THE HVAC DUCT CONSTRUCTION STANDARDS METAL AND FLEXIBLE BY THE SHEET METAL AND AIR CONDITIONING CONTRACTORS NATIONAL ASSOCIATION INC. (S.M.A.C.N.A.)
- NO EXPOSED FLEXIBLE DUCTS SHALL BE USED.
- NO RETURN AIR REGISTERS SHALL BE LOCATED 6'-0" OF A SUPPLY AIR DIFFUSER THAT DIRECTS SUPPLY AIR IN THE DIRECTION OF THE RETURN AIR REGISTER.
- ALL DUCT AND OTHER RELATED AIR DISTRIBUTION COMPONENT OPENINGS SHALL BE COVERED WITH TAPE, PLASTIC, OR SHEET METAL UNTIL THE FINAL STARTUP OF THE HEATING, COOLING AND VENTILATING EQUIPMENT.
- GREASE EXHAUST DUCT SYSTEM SHALL HAVE A SLOPE NOT LESS THAN 1/4 INCH PER LINEAR FOOT TOWARD THE HOOD OR TOWARD AN APPROVED GREASE RESERVOIR. WHEN HORIZONTAL DUCTS EXCEED 75 FEET IN LENGTH, THE SLOPE SHALL NOT BE LESS THAN 1 INCH PER LINEAR FOOT.

FIRE SUPPRESSION NOTES:

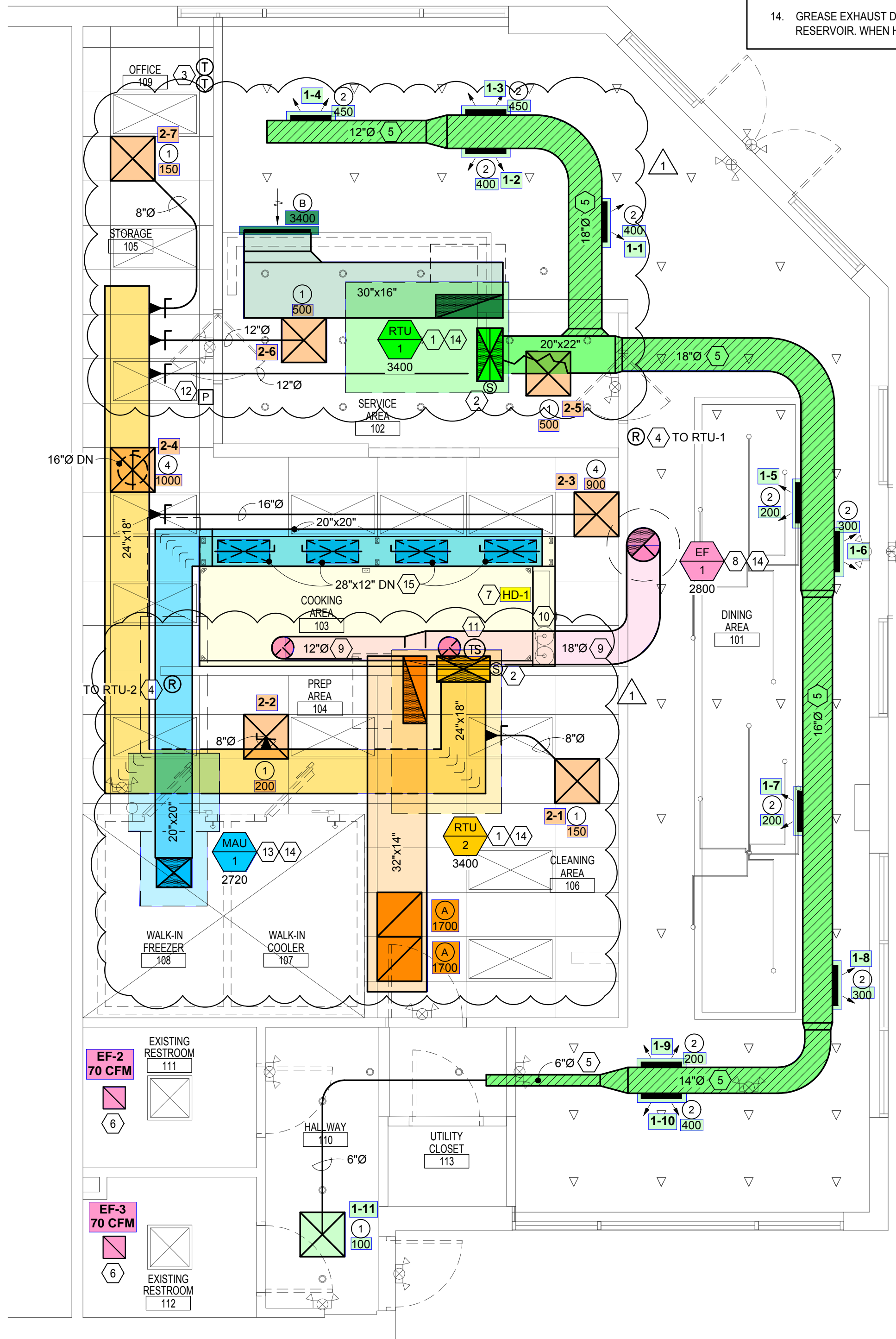
- INSPECTION: HOODS, GREASE REMOVAL DEVICES, FANS AND APPURTENANCES SHALL BE CLEANED AND INSPECTED AT INTERVALS AS LISTED IN LOCAL CODE.
- GREASE FILTERS: GREASE FILTERS SHALL BE CLASS I AS REQUIRED BY THE STATE FIRE MARSHAL AND LOCAL CODE.
- PORTABLE FIRE EXTINGUISHER: PORTABLE FIRE EXTINGUISHING EQUIPMENT SHALL BE PROVIDED AS SECONDARY PROTECTION AS REQUIRED BY LOCAL CODE.
- MANUAL ACTIVATION: MANUAL ACTIVATION DEVICE OF THE PRIMARY FIRE EXTINGUISHING SYSTEM SHALL BE PROVIDED IN COMPLIANCE WITH LOCAL CODE AND WITHIN DISTANCE AND HEIGHT AS INDICATED IN THAT LOCAL CODE.
- FUEL SHUT-OFF: PROVIDE FOR AUTOMATIC SHUT-OFF OF SOURCES OF FUEL AND ELECTRIC POWER TO COOKING EQUIPMENT UPON ACTIVATION OF THE FIRE SUPPRESSION SYSTEM AS REQUIRED BY LOCAL CODE.

HVAC KEYED NOTES:

- A/C UNIT: PROVIDE AND INSTALL NEW ROOFTOP PACKAGE GAS/ELECTRIC A/C UNIT ON FACTORY CURB PER DETAIL B4/M300. SEE EQUIPMENT SCHEDULE ON SHEET M100 FOR ADDITIONAL INFORMATION. PROVIDE DUCTWORK, PLENUMS, AND AIR DISTRIBUTION DEVICES PER PLAN. INSTALL CONTROL WIRE FOR CONTROLS AS REQUIRED. ELECTRICAL CONTRACTOR TO INSTALL CONDUIT FOR CONTROL WIRE. VERIFY AND COORDINATE CONDENSATE AND GAS PIPING WITH PLUMBING CONTRACTOR. VERIFY AND COORDINATE POWER, CONTROL CONDUIT AND DISCONNECT LOCATIONS WITH ELECTRICAL CONTRACTOR. START-UP, TEST, AND BALANCE FOR PROPER OPERATION.
- SMOKE DETECTOR: PROVIDE AND INSTALL DUCT MOUNTED SMOKE DETECTOR IN THE SUPPLY AIR SYSTEM IN ACCORDANCE WITH 2022 CMC, SECTION 809.1. DETECTOR INSTALLATION SHALL COMPLY WITH UL 288A AND NFPA 72. SEE SHEET M210 FOR DETAIL AND ELECTRICAL DRAWINGS FOR MORE INFORMATION. INTERLOCK DETECTOR TO SHUT DOWN ALL AIR DISTRIBUTION EQUIPMENT UPON THE DETECTION OF SMOKE. ELECTRICAL (FIRE ALARM) CONTRACTOR SHALL PROVIDE AND WIRE TO FIRE ALARM SYSTEM AND HVAC CONTRACTOR SHALL INSTALL. FIELD COORDINATE ALL REQUIREMENTS WITH ELECTRICAL (FIRE ALARM) CONTRACTOR PRIOR TO STARTING WORK. MOUNT MANUAL RESET SWITCH NEXT TO SENSOR FOR UNIT AT 4 FT. ABOVE FINISHED FLOOR.
- THERMOSTAT: PROVIDE AND INSTALL 7 DAY PROGRAMMABLE THERMOSTAT, WITH COOLING STAGES AND HEATING STAGES TO MATCH UNIT. AUTO CHANGEOVER, OCCUPIED AND UNOCCUPIED MODES AND TEMPERATURE OVERRIDE WHILE OCCUPIED. PROVIDE WITH REMOTE SENSOR CAPABILITY. MOUNT THERMOSTAT 48" A.F.F. AT MANAGER'S DESK. COORDINATE EXACT LOCATION WITH OWNER.
- REMOTE SENSOR: PROVIDE AND INSTALL REMOTE SENSOR FOR THERMOSTAT IN THIS LOCATION. MOUNT SENSOR AT 60" A.F.F. COORDINATE EXACT LOCATION WITH OWNER.
- EXPOSED DUCT TO BE INTERNALLY INSULATED SPIRAL. FIELD COORDINATE LOCATION WITH LIGHTING. MOUNT AT TIGHT TO BOTTOM OF STRUCTURE ABOVE.
- RESTROOM EXHAUST FAN: EXISTING CEILING MOUNTED RESTROOM EXHAUST FAN TO REMAIN. SEE SCHEDULE ON SHEET M100 FOR MORE INFORMATION. UNIT TO BE CLEANED AND ALL ITEMS REPLACED OR REPAIRED AS REQUIRED TO MAKE UNIT IN LIKE NEW CONDITION. REPLACE WITH LIKE UNIT AS REQUIRED. **ENSURE EXHAUST IS A MINIMUM OF 70 CFM**. FIELD COORDINATE ALL REQUIREMENTS PRIOR TO BID.
- EXHAUST HOOD: HOOD EQUIPMENT SUPPLIER SHALL PROVIDE AND THIS CONTRACTOR SHALL INSTALL A TYPE I EXHAUST HOOD. INSTALL STAINLESS STEEL WRAPPER PANELS AT TOP PERIMETER OF HOOD TO ABOVE T-BAR CEILING. SUPPORT HOOD AND DUCT PER MANUFACTURER'S INSTRUCTIONS. PROVIDE AND INSTALL TRANSITION FROM HOOD CONNECTION TO TYPE I DUCT. SEE SHEETS M500-M505 FOR HOOD MANUFACTURER'S SHOP DRAWINGS.
- GREASE EXHAUST FAN: HOOD EQUIPMENT SUPPLIER SHALL PROVIDE AND THIS CONTRACTOR SHALL INSTALL A NEW ROOFTOP UP-BLAST EXHAUST FAN ON FACTORY CURB. SEE SCHEDULE ON SHEET M100 AND HOOD DRAWINGS M500-M503 FOR ADDITIONAL INFORMATION. ELECTRICAL CONTRACTOR TO INSTALL CONDUIT FOR CONTROL WIRE. VERIFY AND COORDINATE POWER, CONTROL CONDUIT AND DISCONNECT LOCATIONS WITH ELECTRICAL CONTRACTOR. START-UP, TEST, AND BALANCE FOR PROPER OPERATION. FIELD COORDINATE EXACT LOCATION AND REQUIREMENTS PRIOR TO STARTING WORK.
- GREASE DUCT: HOOD EQUIPMENT SUPPLIER SHALL PROVIDE AND THIS CONTRACTOR SHALL INSTALL TYPE I, DOUBLE WALL, REDUCED CLEARANCE MANUFACTURED GREASE DUCT IN ACCORDANCE WITH LOCAL CODE FROM HOOD TO EF-1. SIZE DUCT PER PLAN. SLOPE GREASE DUCT AT 1/4" INCH PER FOOT TO THE HOOD OR APPROVED GREASE COLLECTION RESERVOIR IN ACCORDANCE WITH LOCAL CODE. FIELD COORDINATE EXACT RUN OF DUCT WITH ALL SITE CONDITIONS PRIOR TO STARTING WORK. CONTACT AND COORDINATE WITH CAPTIVE AIRE FOR REQUIRED DUCT SECTIONS. SEE SHEET M503-M505 FOR DUCT SPECIFICATIONS.
- FIRE SUPPRESSION SYSTEM: ANSUL R-102 FIRE SUPPRESSION SYSTEM FOR TYPE I KITCHEN HOOD. SYSTEM SHALL BE INCLUDED WITH HOOD FROM HOOD SUPPLIER. SYSTEM TO INCLUDE ANSUL REGULATED RELEASE ASSEMBLY W/ WET CHEMICAL STORAGE TANK WET CHEMICAL AGENT. DISTRIBUTION PIPING, GAS SOLENOID VALVE, AND PULL STATION ASSEMBLY. TYPE I HOOD COMES PRE-PIPED WITH ANSUL DISCHARGE NOZZLES. COORDINATE INSTALLATION WITH ELECTRICAL AND PLUMBING CONTRACTORS. LOCATE GAS SOLENOID VALVE PER GAS PIPING PLANS. VERIFY EXACT LOCATIONS WITH OWNER. SYSTEM SHALL BE U.L. LISTED AND BE U.L. 300 COMPLIANT.
- TEMPERATURE SENSOR PROVIDED BY HOOD SUPPLIER. INSTALL PER HOOD SUPPLIER REQUIREMENTS IN LOCATION SHOWN.
- FIRE SUPPRESSION PULL STATION: PROVIDE AND INSTALL ANSUL R-102 PULL STATION FOR MANUAL ACTIVATION OF HOOD FIRE SUPPRESSION SYSTEM. COORDINATE WITH HOOD EQUIPMENT SUPPLIER. LOCATE IN READILY ACCESSIBLE LOCATION IN PATH OF EGRESS.
- MAKE-UP AIR UNIT: HOOD EQUIPMENT SUPPLIER SHALL PROVIDE AND THIS CONTRACTOR SHALL INSTALL WHERE SHOWN ON PLANS A ROOF MOUNTED MAKE-UP AIR UNIT (MAU-1) WITH SPLIT DX COOLING. SEE SCHEDULE ON SHEET M100 AND HOOD DRAWINGS SHEETS M500-M502 FOR MORE INFORMATION. COORDINATE WITH ELECTRICAL CONTRACTORS FOR CONNECTION REQUIREMENTS.
- INTERLOCK: ELECTRICALLY INTERLOCK SUPPLY FANS OF ROOFTOP UNITS (RTU-1 & 2), MAKE-UP AIR UNIT (MAU-1) AND EXHAUST FAN (EF-1) FOR SIMULTANEOUS OPERATION TO PROVIDE MAKE UP AIR TO HOOD. WHEN EQUIPMENT UNDER HOOD IS INITIALIZED, SUPPLY FANS AND EXHAUST FAN SHALL COME ON AND GO INTO OCCUPIED MODE. COORDINATE INTERLOCK WORK WITH ELECTRICAL CONTRACTOR. LOCATE INTERLOCK ON/OFF SWITCH NEAR HOOD PER OWNER. SUPPLY FANS TO RUN CONTINUOUSLY DURING OCCUPIED HOURS TO MAINTAIN BALANCE. HEATING COOLING SECTION SHALL OPERATE BASED UPON SET POINT OF THERMOSTAT.
- FABRICATE AND INSTALL SUPPLY DUCT ACCORDING TO ASHRAE LOW PRESSURE STANDARDS FROM MAKE-UP AIR TO HOOD SUPPLY PLENUM. FIELD COORDINATE EXACT RUN. TRANSITION DUCT TO FULL SIZE OF EXHAUST HOOD DUCT RISER. COORDINATE WITH HOOD DRAWINGS FOR EXACT DIMENSIONS.

Materials exposed within ducts or plenums shall be noncombustible or shall have a flame spread index <25, and a smoke developed index < 50.

SEE SHEET M100 FOR ALL SCHEDULES



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

Air System Heat Balance Summary for RTU-1
(In Alternative: HVAC Calcs)

Project: 23374 DHC Oxnard, CA
Prepared by: Applied Engineering Group
01/31/2024
12:07 PM

COMPONENT LOADS	DESIGN COOLING - AUGUST 10:00			DESIGN HEATING		
	Details	OA DB / WS 75.5 F / 56.8 F	Latent [BTU/hr]	Details	OA DB / WS 48.6 F / 34.1 F	Latent [BTU/hr]
Zone Conditioning	-	49732	11197	-	15167	0
Plenum Load	0	0	0	0	0	0
Return Fan Load	3007 CFM	-	-	3007 CFM	0	0
Ventilation Load	704 CFM	2773	-6810	704 CFM	22324	0
Supply Fan Load	3007 CFM	4458	-	3007 CFM	-4458	-
Zone Fan Coil Fans Load	0	0	0	0	0	0
>> Total System Loads	-	56963	4387	-	33034	0
Central Cooling Coil	-	52882	4558	-	0	0
Central Heating Coil	-	0	-	-	33197	-
>> Total Conditioning	-	52982	4558	-	33197	0

Table 2. Zone Heat Balance Loads

Zone Heat Balance Component	DESIGN COOLING - AUGUST 10:00			DESIGN HEATING		
	Details	OA DB / WS 75.5 F / 56.8 F	Latent [BTU/hr]	Details	OA DB / WS 48.6 F / 34.1 F	Latent [BTU/hr]
Exterior Wall Convection	1167 sqft	4677	-	1167 sqft	1808	-
Roof Convection	787 sqft	3628	-	787 sqft	1707	-
Window Convection	624 sqft	4167	-	624 sqft	4325	-
Skylight Convection	0 sqft	0	-	0 sqft	0	-
Door Convection	105 sqft	1483	-	105 sqft	893	-
Floor Convection	1029 sqft	5115	-	1029 sqft	3014	-
Interior Wall Convection	1781 sqft	4389	-	1781 sqft	1428	-
Ceiling Convection	242 sqft	995	-	242 sqft	329	-
Overhead Lighting Convection	0 W	837	-	0 W	0	-
Task Lighting Convection	0 W	0	-	0 W	0	-
Electric Equipment Convection	0 W	0	-	0 W	0	-
People Convection	37	3108	9990	0	0	0
Infiltration	0 CFM	0	0	0 CFM	0	0
Miscellaneous Equipment	19700	1980	-	0	0	0
Air Internal Energy Change	-	0	-	-	0	-
Safety Factor	0% / 0%	0	0	0%	0	0
>> Total Zone Loads	-	48107	11970	-	13594	0

- Note 1:** Surface convection line items show the combined effects of conductive heat gain to the surface and radiative heat gains absorbed at the surface which are then convected to room air.
- Note 2:** Lighting, equipment, and people line items include only the direct convective heat gain from the heat source to the room air. The radiative portion of the heat gain is first absorbed by surfaces in the room and then later convected from the surface to the air. Therefore the effect of the radiative portion of the heat gain is found in the surface convection line items.
- Note 3:** Solar heat gain is absorbed by surfaces in the room, re-radiated to other surfaces, and finally convected from the surfaces to room air. Therefore, the effect of solar heat gain is found in the surface convection line items.

Air System Heat Balance Summary for RTU-2
(In Alternative: HVAC Calcs)

Project: 23374 DHC Oxnard, CA
Prepared by: Applied Engineering Group
01/31/2024
12:07 PM

COMPONENT LOADS	DESIGN COOLING - AUGUST 9:00			DESIGN HEATING		
	Details	OA DB / WS 73.5 F / 56.0 F	Latent [BTU/hr]	Details	OA DB / WS 40.6 F / 34.1 F	Latent [BTU/hr]
Zone Conditioning	-	69266	10792	-	4198	0
Plenum Load	0	0	0	0	0	0
Return Fan Load	4214 CFM	0	-	4214 CFM	0	-
Ventilation Load	228 CFM	412	-2052	228 CFM	7230	0
Supply Fan Load	4214 CFM	6247	-	4214 CFM	-6247	-
Zone Fan Coil Fans Load	0	0	0	0	0	0
>> Total System Loads	-	75925	8740	-	5181	0
Central Cooling Coil	-	70398	9077	-	0	0
Central Heating Coil	-	0	-	-	5234	-
>> Total Conditioning	-	70398	9077	-	5234	0

Table 2. Zone Heat Balance Loads

Zone Heat Balance Component	DESIGN COOLING - AUGUST 9:00			DESIGN HEATING		
	Details	OA DB / WS 73.5 F / 56.0 F	Latent [BTU/hr]	Details	OA DB / WS 40.6 F / 34.1 F	Latent [BTU/hr]
Exterior Wall Convection	43 sqft	139	-	43 sqft	47	-
Roof Convection	179 sqft	873	-	179 sqft	288	-
Window Convection	20 sqft	125	-	20 sqft	139	-
Skylight Convection	0 sqft	0	-	0 sqft	0	-
Door Convection	0 sqft	0	-	0 sqft	0	-
Floor Convection	799 sqft	5035	-	799 sqft	631	-
Interior Wall Convection	2676 sqft	9453	-	2676 sqft	1913	-
Ceiling Convection	620 sqft	4846	-	620 sqft	706	-
Overhead Lighting Convection	429 W	531	-	0 W	0	-
Task Lighting Convection	0 W	0	-	0 W	0	-
Electric Equipment Convection	0 W	0	-	0 W	0	-
People Convection	7	515	1435	0	0	0
Infiltration	0 CFM	0	0	0 CFM	0	0
Miscellaneous Equipment	-	49650	9850	-	0	0
Air Internal Energy Change	-	0	-	-	0	-
Safety Factor	0% / 0%	0	0	0%	0	0
>> Total Zone Loads	-	71163	11295	-	3705	0

- Note 1:** Surface convection line items show the combined effects of conductive heat gain to the surface and radiative heat gains absorbed at the surface which are then convected to room air.
- Note 2:** Lighting, equipment, and people line items include only the direct convective heat gain from the heat source to the room air. The radiative portion of the heat gain is first absorbed by surfaces in the room and then later convected from the surface to the air. Therefore the effect of the radiative portion of the heat gain is found in the surface convection line items.
- Note 3:** Solar heat gain is absorbed by surfaces in the room, re-radiated to other surfaces, and finally convected from the surfaces to room air. Therefore, the effect of solar heat gain is found in the surface convection line items.

LEGEND*

- EXISTING DUCTWORK
- NEW DUCTWORK
- SPIRAL DUCTWORK WITH INTERNAL INSULATION
- HIDDEN ROUND DUCT
- CEILING SUPPLY AIR DIFFUSER
- CEILING RETURN AIR GRILLE
- DUCT MOUNTED SUPPLY AIR DIFFUSER
- CEILING EXHAUST AIR GRILLE
- TURNING VANE
- BRANCH TAKE-OFF WITH BALANCING DAMPER
- SMOKE DETECTOR
- HORN/STROBE
- THERMOSTAT/REMOTE SENSOR
- CARBON DIOXIDE SENSOR
- AIR DEVICE TYPE CFM AMOUNT
- SUPPLY AIRFLOW
- RETURN AIRFLOW
- OUTSIDE AIR
- SUPPLY AIR
- RETURN AIR
- FIRE DAMPER

* ALL SYMBOLS MAY NOT BE USED

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STATE OF CALIFORNIA

PROJECT #: 23374
DRAWN BY: CHECKED BY: DRR

- REVISIONS**
- 01/05/24 - DD SET
 - 02/12/24 - PERMIT SET
 - 07/08/24 - REVISION 1 CITY COMMENTS
 - 07/30/24 - REVISION 2 CITY COMMENTS
 -
 -
 -

DAVE'S HOT CHICKEN

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SHEET TITLE
MECHANICAL PLAN

SHEET NUMBER:
M200