

PROJECT:

# SWEETGREEN

**NEWPORT BEACH (FASHION ISLAND)**

ADDRESS:

**853 Newport Center Drive  
Newport Beach, CA 92660**

**NEBB Certified TAB Report**

# sweetgreen

By:

Zaretsky Engineering Solutions Inc.  
1650 Harbor Boulevard, Suite #F  
Fountain Valley, CA 92708

**7/8/2024**

**CERTIFIED**  
**TEST, ADJUST & BALANCE REPORT**

**DATE**

07/08/2024

**PROJECT**

PO-F1137 - SWEETGREEN - NEWPORT BEACH (FASHION ISLAND)  
853 NEWPORT CENTER DRIVE  
NEWPORT BEACH, CA 92660

**ARCHITECT**

N/A

**DESIGN ENGINEER**

Henderson Engineers

**HVAC CONTRACTOR**

National TAB

**TAB FIRM**

Zaretsky Engineering Solutions  
16520 Harbor Boulevard #F  
Fountain Valley, CA 92708  
(714) 640-3530

# CERTIFICATION PAGE

PROJECT NAME: PO-F1137 - SWEETGREEN - NEWPORT BEACH (FASHION ISLAND)  
 ADDRESS: 853 NEWPORT CENTER DRIVE  
NEWPORT BEACH, CA 92660

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 Zaretsky Engineering Solutions  
 REG NO. 3001 CERTIFIED BY Roman Zaretsky DATE 7/8/2024

SUBMITTED & CERTIFIED BY:

NEBB TAB FIRM Zaretsky Engineering Solutions  
 TAB PROFESSIONAL Roman Zaretsky  
 REG NO. 3001  
 CERTIFICATION EXPIRATION DATE 12/31/2024



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## ABBREVIATIONS LIST

<b>ABBREVIATIONS</b>	
AHU	AIR HANDLING UNIT
AMP	AMPERAGE
AFMS	AIR FLOW MONITORING STATION
BD	BALANCING DAMPER
BHP	BRAKE HORSE POWER
BTU	BRITISH THERMAL UNIT
BTUh	BTU PER HOUR
BV	BALANCING VALVE
CF	CORRECTION FACTOR (Ak)
CFLA	CORRECTED FULL LOAD AMPS
CFM	CUBIC FEET PER MINUTE
CV	CONSTANT VOLUME
DB	DRY BULB
DFC	DAMPER FULLY CLOSED
DWO	DAMPER WIDE OPEN
EF	EXHAUST FAN
EG	EXHAUST GRILLE
ER	EXHAUST REGISTER
ESP	EXTERNAL STATIC PRESSURE
EA	EXHAUST AIR
F	FAN
FD	FIRE DAMPER
FLA	FULL LOAD AMPS
FPM	FEET PER MINUTE
GPM	GALLONS PER MINUTE
LS	LINEAR SLOT
MBH	1000 BTU PER HOUR
MVD	MANUAL VOLUME DAMPER
N/A	NOT APPLICABLE
N/ACC	NO REASONABLE ACCESS
NDI	NO DAMPER INSTALLED
N.G.	NOT GIVEN
NF	NO FLOW
NS	NOT SPECIFIED
NM	NOT MEASURED
NPSH	NET POSITIVE SUCTION HEAD
NPSHA	NPSH AVAILABLE
NPSHR	NPSH REQUIRED
OA	OUTSIDE AIR
OSA	OUTSIDE AIR
OBD	OPPOSED BLADE DAMPER
OED	OPEN ENDED DUCT
P	PUMP
PD	PRESSURE DROP
PH	PHASE
PSI	POUNDS PER SQUARE INCH
PSIA	PSI ABSOLUTE
PSIG	PSI GAUGE
RA	RETURN AIR
RAF	RETURN AIR FAN
RG	RETURN GRILLE
RPM	ROTATIONS PER MINUTE
RR	RETURN REGISTER
SA	SUPPLY AIR
SD	SPLITTER DAMPER
SG	SUPPLY GRILLE
SP	STATIC PRESSURE
SR	SUPPLY REGISTER
TB	TERMINAL BOX
TD	TEMPERATURE DIFFERENTIAL
TDH	TOTAL DYNAMIC HEAD
TP	THERMALLY PROTECTED
TSP	TOTAL STATIC PRESSURE
WB	WET BULB
VAV	VARIABLE AIR VOLUME
VD	VOLUME DAMPER
VEL	VELOCITY
-	CELL NOT USED


## TAB SUMMARY

PROJECT NAME:	SWEETGREEN - NEWPORT BEACH (FASHION ISLAND)
PROJECT LOCATION:	853 Newport Center Drive, Newport Beach, CA 92660
SYSTEM:	General Notes


Item #	System	Note
1.	-	UNLESS OTHERWISE NOTED, INDICATED CFM IS AT STANDARD CONDITIONS.
2.	-	DESIGN CFM OBTAINED FROM LATEST DESIGN DOCUMENTS PROVIDED TO ZES.
3.	-	AREA CORRECTION FACTOR (AK) APPLIED TO ALL MEASURED VELOCITIES TO CALCULATE CFM. WHEN A DIGITAL FLOW HOOD IS USED THE AK IS 1.0 UNLESS OTHERWISE NOTED.
4.	INLETS / OUTLETS	NO BALANCE DAMPERS COULD BE ACCESSED OR IDENTIFIED ON THE SYSTEM INLETS AND OUTLETS. BEST AVAILABLE AIRFLOW REPORTED.
5.	KEF-1	SINGLE SPEED MOTOR, BEST AVAILABLE AIRFLOW REPORTED.
6.	RTUs	UV LIGHTS INSIDE OF FAN CHAMBER DO NOT HAVE SWITCHES AND MUST BE UNPLUGGED WHEN SERVICED, NO SIGNAGE ON THE UNIT EXTERIOR.
7.	RTU-1	POWER EXHAUST IS NOT FUNCTIONAL, NO POWER TO EQUIPMENT.
8.	EFs	BACKDRAFT DAMPERS ARE NO INSTALLED CORRECTLY IN THE DUCTWORK, ELECTRICAL SUPPLY TO THE FANS IS IN THE WAY OF THE EQUIPMENT.
9.		
10.		
11.		
12.		
13.		
14.		
15.		


# OBSERVATION WITH PICTURES

PROJECT NAME:	SWEETGREEN - NEWPORT BEACH (FASHION ISLAND)
PROJECT LOCATION:	853 Newport Center Drive, Newport Beach, CA 92660
SYSTEM:	SITE PICTURES

System:	STORE FRONT
ID:	1
	
Comments:	


System:	RTU-853.1
ID:	2
	
Comments:	


System:	RTU-853.2
ID:	3
	
Comments:	

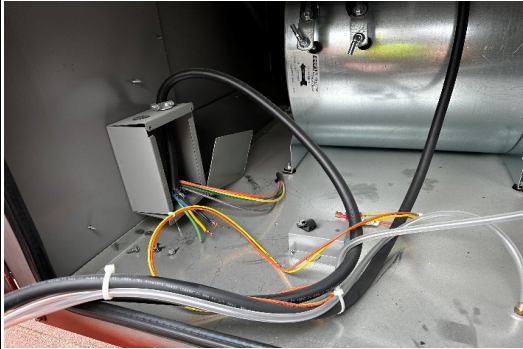
System:	EF-1
ID:	4
	
Comments:	


# OBSERVATION WITH PICTURES

PROJECT NAME:	SWEETGREEN - NEWPORT BEACH (FASHION ISLAND)
PROJECT LOCATION:	853 Newport Center Drive, Newport Beach, CA 92660
SYSTEM:	SITE PICTURES

System:	KEF-1
ID:	5
	
Comments:	

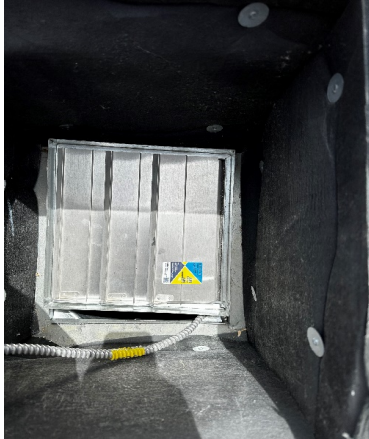
System:	RTU-1 POWER EXHAUST -1
ID:	6
	
Comments:	

System:	RTU-1 POWER EXHAUST -2
ID:	7
	
Comments:	

System:	EF-1 BACKDRAFT DAMPER
ID:	8
	
Comments:	

# OBSERVATION WITH PICTURES

PROJECT NAME:	SWEETGREEN - NEWPORT BEACH (FASHION ISLAND)
PROJECT LOCATION:	853 Newport Center Drive, Newport Beach, CA 92660
SYSTEM:	SITE PICTURES

System:	KEF-1 BACKDRAFT DAMPER
ID:	9
	
Comments:	

System:	-
ID:	-
-	
Comments:	

Technician:                     Cory Compte                    

Date:                     7/3/2024

# TAB Checklist

PROJECT NAME:	SWEETGREEN - NEWPORT BEACH (FASHION ISLAND)
PROJECT LOCATION:	853 Newport Center Drive, Newport Beach, CA 92660
SYSTEM:	STEP 1: INITIAL WALKTHROUGH

Technician: Cory Compte

Date: 7/3/2024

ITEM #	ITEM DESCRIPTION	COMMENTS
1	Review Plan Review Checklist, has it been signed off and meets our standards to start balancing? If not contact processor to ensure job is ready.	N/A
2	All diffusers and grilles are installed and match design?	YES
3	All hood filters installed and accounted for?	N/A
4	Hoods are wired and have power?	N/A
5	Hood is free of alarms?	N/A
6	Thermostats have power?	YES
7	Have trades/ general contractor been notified about any issues and are they created on reported herein?	YES

# TAB Checklist

PROJECT NAME:	SWEETGREEN - NEWPORT BEACH (FASHION ISLAND)
PROJECT LOCATION:	853 Newport Center Drive, Newport Beach, CA 92660
SYSTEM:	STEP 2: UNIT DATA AND EVAL

Technician: Cory Compte

Date: 7/3/2024

ITEM #	ITEM DESCRIPTION	COMMENTS	
<b>RTU'S / AHU'S</b>		<b>RTU-853.1</b>	<b>RTU-853.2</b>
<b>1</b>	Economizers are assembled and functional?	YES	YES
<b>2</b>	DCV Max damper opening position is set to minimum?	YES	YES
<b>3</b>	Free cooling enthalpy set point set for lowest setting (typically "D")	N/A	N/A
<b>4</b>	Motors are all operating below the FLA rating?	YES	YES
<b>5</b>	Are belts tight?	YES	N/A
<b>6</b>	If direct drive unit is the speed controller working.	N/A	YES
<b>7</b>	Is gas piping installed and valves turned on?	N/A	N/A
<b>8</b>	Unit free of noticable noise and vibrations?	YES	YES
<b>EF's</b>		<b>EF-1</b>	<b>EF-2</b>
<b>9</b>	Rotation is correct?	YES	YES
<b>11</b>	Belts are tight?	N/A	N/A
<b>12</b>	Grease cup installed on hood fan?	NO	NO
<b>13</b>	Hinge kit installed on hood fan?	NO	NO
<b>14</b>	Lean fan back, is grease duct installation adequate and is duct ran all the way to the base of the fan?	YES	YES
<b>15</b>	Flex conduit is long enough so that fan can be completely tilted back?	N/A	N/A
<b>16</b>	There is no major leakage around base of fan?	NO LEAKAGE	NO LEAKAGE
<b>17</b>	Is the motor operating below the motor FLA rating?	YES	YES
<b>18</b>	For restroom fan(s) is the back draft damper installed and can it fully open?	YES	YES
<b>19</b>	Unit free of noticable noise and vibration?	YES	YES
<b>MUA</b>			
<b>20</b>	Rotation is correct?	N/A	

# TAB Checklist

PROJECT NAME:	SWEETGREEN - NEWPORT BEACH (FASHION ISLAND)
PROJECT LOCATION:	853 Newport Center Drive, Newport Beach, CA 92660
SYSTEM:	STEP 2: UNIT DATA AND EVAL

Technician: Cory Compte

Date: 7/3/2024

ITEM #	ITEM DESCRIPTION	COMMENTS
21	Gas piping is installed and valves are in position?	N/A
22	Heater tested and is functional?	N/A
23	Internal motorized damper is fully opening?	N/A
24	Motors are all operating below the FLA rating?	N/A
25	Unit free of noticeable noise and vibration?	N/A
<b>HOODS</b>		
26	Kitchen equipment installed in proper places?	N/A
27	Can kitchen equipment be turned on for final smoke test?	N/A
<b>DOCUMENTATION</b>		
28	Have trades/general contractor been notified about any issues and are they created on FacilBuild?	NO
29	AIR PURIFICATION INSPECTION	NO
30	PHI Air purifiers are installed?	NO
31	Are they installed after the evaporator coil or in the supply duct?	NO
32	Are they powered?	NO
33	If PKG installed so that the air flow arrow is pointing the right direction?	NO
34	Is a UV warning sticker installed?	NO
35	Take picture of each air purifiers and include in the report	NO

# TAB Checklist

PROJECT NAME:	SWEETGREEN - NEWPORT BEACH (FASHION ISLAND)
PROJECT LOCATION:	853 Newport Center Drive, Newport Beach, CA 92660
SYSTEM:	STEP 3: TEST, ADJUST, AND BALANCE

Technician: Cory Compte

Date: 7/3/2024

ITEM #	ITEM DESCRIPTION	COMMENT
1	Is space free of drafting?	YES
2	Is space comfortable in all areas?	YES
3	Is the space free of ventilation noise?	YES
4	If deviations from design were necessary to resolve 1-3 what were they? Otherwise put "NA".	NA

# TAB Checklist

PROJECT NAME:	SWEETGREEN - NEWPORT BEACH (FASHION ISLAND)
PROJECT LOCATION:	853 Newport Center Drive, Newport Beach, CA 92660
SYSTEM:	STEP 4: Final Tests

Technician: Cory Compte

Date: 7/3/2024

ITEM #	ITEM DESCRIPTION	HOOD CAPTURE TESTS
1	List equipment turned on for testing	N/A
2	List smoke candle type used.	N/A
3	Smoke test capture - Perimeter of hood	N/A
4	Smoke test capture - Top of cooking surface	N/A
ITEM #	ITEM DESCRIPTION	WITNESS
5	Date test was completed	7/3/2024
6	TAB tech name / Firm	Cory Compte / ZES
7	Site super name / Firm	Antonio
8	Owner representative name / Firm (if Applicable)	-
9	Building pressure at front & back doors (All Systems On)	FRONT = -0.0056 BACK = -0.0123
ITEM #	ITEM DESCRIPTION	ADDITIONAL
10	Do actual net building airflow, design net building airflow, and pressure coincide? If not why? (All three should either be positive or negative)	NO, BUILDING IS SETUP FOR POSITIVE OFFSET BUT PRESSURE IS INFLUENCED BY SERVICE COORIDOR AT BACK OF STORE DRAWING NEGATIVE PRESSURE. WHEN SERVICE COORIDOR IS OPEN TO ATMOSPHERE THE STORE PRESSURE IS POSITIVE.
11	Thermostats are programmed?	UNCONFIRMED

# TAB Checklist

PROJECT NAME:	SWEETGREEN - NEWPORT BEACH (FASHION ISLAND)
PROJECT LOCATION:	853 Newport Center Drive, Newport Beach, CA 92660
SYSTEM:	STEP 4B: HOOD AND OVEN EVALUATION

Technician: Cory Compte

Date: 7/3/2024

ITEM #	ITEM DESCRIPTION	HOOD AND OVEN EVALUATION
1	Is the oven covered by a hood?	N/A
2	What is the hood overhang over the front of the hood?	N/A
3	What is the hood overhang over the left and right sides of the oven?	N/A
4	If vertical end panels are specified, are they installed?	N/A
5	Smoke test at hood.	N/A
6	If oven is capable of turning on, it is required to be turned on for smoke test. Was oven on for smoke test?	N/A
7	smoke test at the flue on the top of the hood - Capture %?	N/A
8	Smoke test the oven at perimeter of the oven - capture%?	N/A
9	Smoke test the oven at perimeter of the hood - capture%?	N/A
<b>IF NO HOOD IS INSTALLED ABOVE THE OVEN</b>		
11	If no hood is installed above the oven, and it is only a grille, smoke test at the top of the oven at the flue and note the capture %. If smoke capture is very poor, hold the candle up by the grille after a few seconds so that the smoke alarms don't get set off.	N/A
<b>SMOKE TEST AT OVEN</b>		
12	Confirm that the internal fan turns on as you open the oven door?	N/A
13	Smoke test at the oven doors as you are opening the door - capture%?	N/A
14	Smoke test at the oven doors when the doors are shut - capture%?	N/A

# TAB Checklist

<b>PROJECT NAME:</b>	SWEETGREEN - NEWPORT BEACH (FASHION ISLAND)
<b>PROJECT LOCATION:</b>	853 Newport Center Drive, Newport Beach, CA 92660
<b>SYSTEM:</b>	STEP 4B: HOOD AND OVEN EVALUATION

Technician:           Cory Compte                                Date:           7/3/2024          

ITEM #	ITEM DESCRIPTION	HOOD AND OVEN EVALUATION
<b>EXHAUST DISCHARGE AND OA INTAKES</b>		
<b>15</b>	Identify where the exhaust air is discharged and take pictures	SEE #4 AND #5 ON PICTURES PAGE
<b>16</b>	Are there any outside air intakes nearby that would be able to re-entrain the exhaust smoke? Take pictures>	SEE #4 AND #5 ON PICTURES PAGE
<b>17</b>	Are there and building entrances or windows near the exhaust discharge where smoke that will cause smoke to enter unwanted spaces?	NO

# TAB Checklist

PROJECT NAME:	SWEETGREEN - NEWPORT BEACH (FASHION ISLAND)
PROJECT LOCATION:	853 Newport Center Drive, Newport Beach, CA 92660
SYSTEM:	STEP 5: FINAL DOCUMENTATION

Technician:           Cory Compte                                Date:           7/3/2024          

ITEM #	ITEM DESCRIPTION	Comment
<b>FINAL DOCUMENTATION</b>		
<b>1</b>	Marked Data capture complete for all assets?	N/A
<b>2</b>	Picture file sent to processing team or uploaded?	N/A
<b>3</b>	Balance schedule complete and uploaded?	YES
<b>4</b>	Prelim report generated and reviewed?	YES
<b>5</b>	Video of smoke test uploaded to SharePoint or send to bri?	N/A





















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3101 W. EXPOSITION BLVD.  
LOS ANGELES, CALIFORNIA 90018

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**HENDERSON ENGINEERS**  
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LENEXA, KS 66214  
TEL 913.742.5000 FAX 913.742.5001  
WWW.HENDERSONENGINEERS.COM  
2350001642

STAMP:  
  
02/26/2024

PROJECT INFORMATION:  
**FASHION ISLAND**  
**853 NEWPORT CENTER DRIVE**  
**NEWPORT BEACH, CA 92660**

DRAWN BY: MS.BL.CG  
CHECKED BY: GH.BS  
PROJECT MANAGER: XX  
SG DESIGN MANAGER: XX  
SG CONSTR. MANAGER: XX  
PROJECT NO: 50139179  
TEMPLATE VERSION: 06.01.2020

REV.	DATE	DESCRIPTION
A	11.07.2023	PERMIT COMMENT RESPONSE
B	12.21.2023	HEALTH COMMENT RESPONSE
C	02.12.2024	HEALTH RESPONSE
D	02.26.2024	ISSUE FOR CONSTRUCTION

**HVAC FLOOR PLAN**

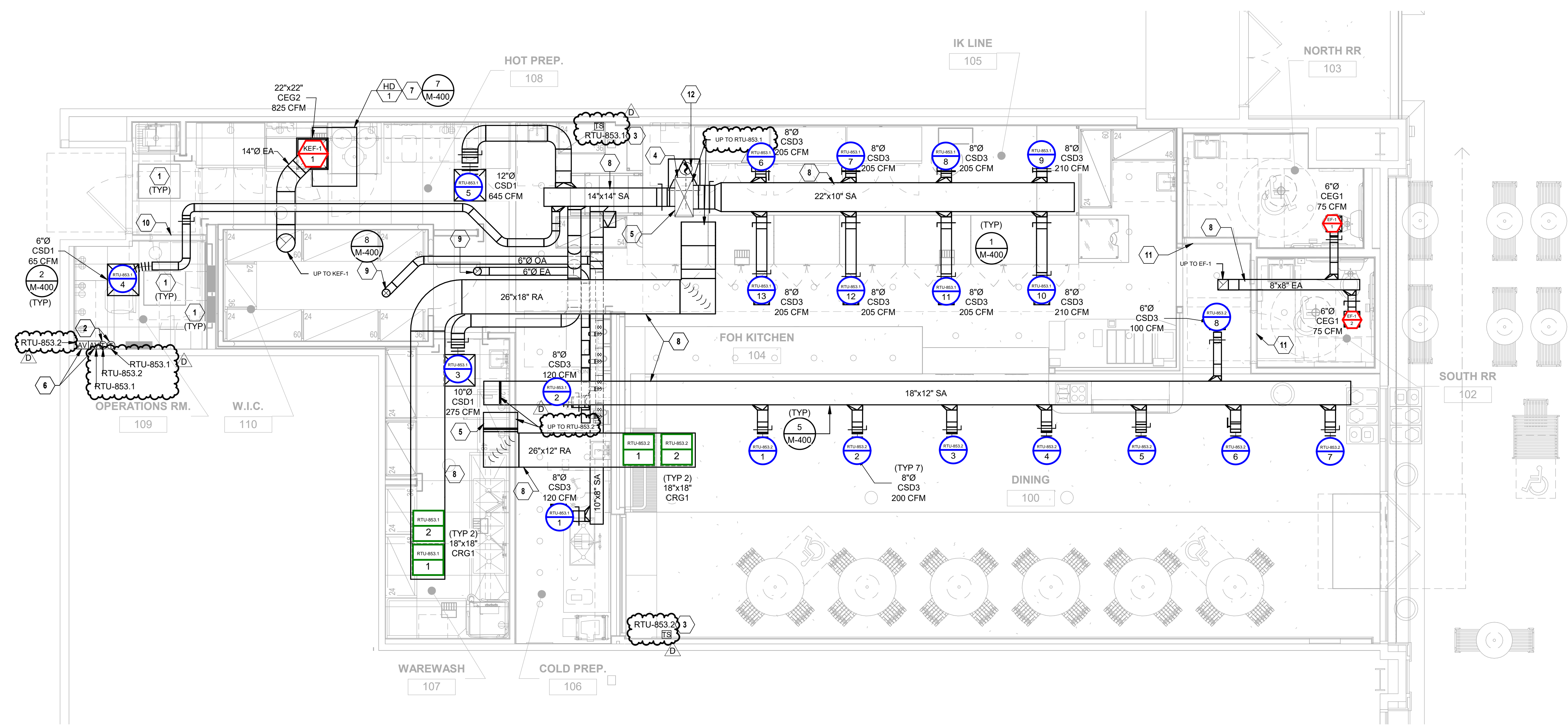
**M-100**

**LANDLORD GENERAL NOTES:**  
1. DURING THE COURSE OF TENANT IMPROVEMENT CONSTRUCTION THERE ARE NO PENETRATIONS OF TENANT PLUMBING OR ELECTRICAL LINES AT THE EXTERIOR WALLS OF THE TENANT PREMISES. EXTERIOR WALL PENETRATIONS RELATING TO TENANT IMPROVEMENT WORK IS PROHIBITED. THE TENANT IS REQUIRED TO COMPLY WITH THIS REQUIREMENT DURING THE COURSE OF TENANT IMPROVEMENT CONSTRUCTION AT THE PREMISES.

HEATING, VENTILATING, AND AIR-CONDITIONING SYSTEMS SHALL BE BALANCED BY A LICENSED T&B CONTRACTOR IN ACCORDANCE WITH ONE OF THE FOLLOWING METHODS (CMC 314.1)  
• AABC NATIONAL STANDARDS FOR TOTAL SYSTEM BALANCE  
• ACCA MANUAL B  
• ASHRAE 111  
• NEBB PROCEDURAL STANDARDS FOR TESTING ADJUSTING BALANCE OF ENVIROMENTAL SYSTEMS  
• SMACNA HVAC SYSTEMS TESTING, ADJUSTING AND BALANCING

TYPE I HOOD REQUIRES AIR BALANCE REPORT FOR FINAL INSPECTION.

- MECHANICAL PLAN NOTES:**
- DO NOT ROUTE DUCTS OVER ELECTRICAL EQUIPMENT.
  - PROVIDE HONEYWELL TH8321R1001 THERMOSTATS WITH LOCKABLE COVERS (HONEYWELL CG511A1000 OR EQUAL) FOR THE MECHANICAL EQUIPMENT AT THIS LOCATION AT 48" AFF. COORDINATE WITH ELECTRICAL SWITCHING IN THE AREA AND EXTEND WIRING TO REMOTE TEMPERATURE SENSOR AND UNITS. LABEL EACH THERMOSTAT ACCORDINGLY. COORDINATE THERMOSTAT LOCATION WITH WALL-MOUNTED EQUIPMENT SO THAT THE THERMOSTATS ARE NOT BLOCKED BY SHELVING, COAT RACKS OR DOORS.
  - INSTALL REMOTE TEMPERATURE SENSOR FOR ASSOCIATED RTU AT THIS LOCATION AT 5'-0" AFF. COORDINATE LOCATION WITH EQUIPMENT AND WALL MOUNTED EQUIPMENT.
  - THE GENERAL CONTRACTOR SHALL FURNISH A REME HALO AIR PURIFICATION SYSTEM AND REQUIRED TRANSFORMER, PURCHASED THROUGH SWEETGREEN'S VENDOR (NATIONAL TAB) AND INSTALL SYSTEM IN THE SUPPLY AIR DUCTWORK AS SHOWN. ADJUST AS REQUIRED FOR THE SUPPLY AIRFLOW. INSTALL PER THE MANUFACTURER'S INSTALLATION INSTRUCTIONS.
  - ROUTE SUPPLY AND/OR RETURN DUCTWORK UP TO RTU ON ROOF. TRANSITION AS REQUIRED FOR UNIT CONNECTION.
  - 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.
  - INSTALL EQUIPMENT PER MANUFACTURER'S INSTALLATION INSTRUCTIONS.
  - ROUTE DUCT TIGHT TO STRUCTURE.
  - PROVIDE COMBUSTION AIR AND FLUE PIPES PER DETAIL 7/P500 AND PER MANUFACTURER'S INSTALLATION REQUIREMENTS. TERMINATE COMBUSTION AIR INTAKE AND FLUE PIPES ON ROOF ABOVE WITH MANUFACTURER'S RECOMMENDED TERMINATION ACCESSORIES.
  - CONTRACTOR TO COORDINATE 1" UNDERCUT ON DOOR FOR RETURN AIR PATH.
  - CONTRACTOR TO COORDINATE 1" UNDERCUT ON DOOR FOR EXHAUST AIR PATH.
  - THE GENERAL CONTRACTOR SHALL PROVIDE A DUCT-MOUNTED SMOKE DETECTOR IN THE SUPPLY AIR STREAM. UPON DETECTION OF SMOKE, THE SUPPLY AIR FAN SHALL DE-ENERGIZE. COORDINATE ALL REQUIREMENTS WITH THE LANDLORD AND ALARM PROVIDER.



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



**sweetgreen**  
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LOS ANGELES, CALIFORNIA 90018

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STAMP:  
  
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TEMPLATE VERSION: 06.01.2020

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B	12.21.2023	HEALTH COMMENT RESPONSE
C	02.12.2024	HEALTH RESPONSE 3
D	02.26.2024	ISSUE FOR CONSTRUCTION

**HVAC ROOF PLAN**

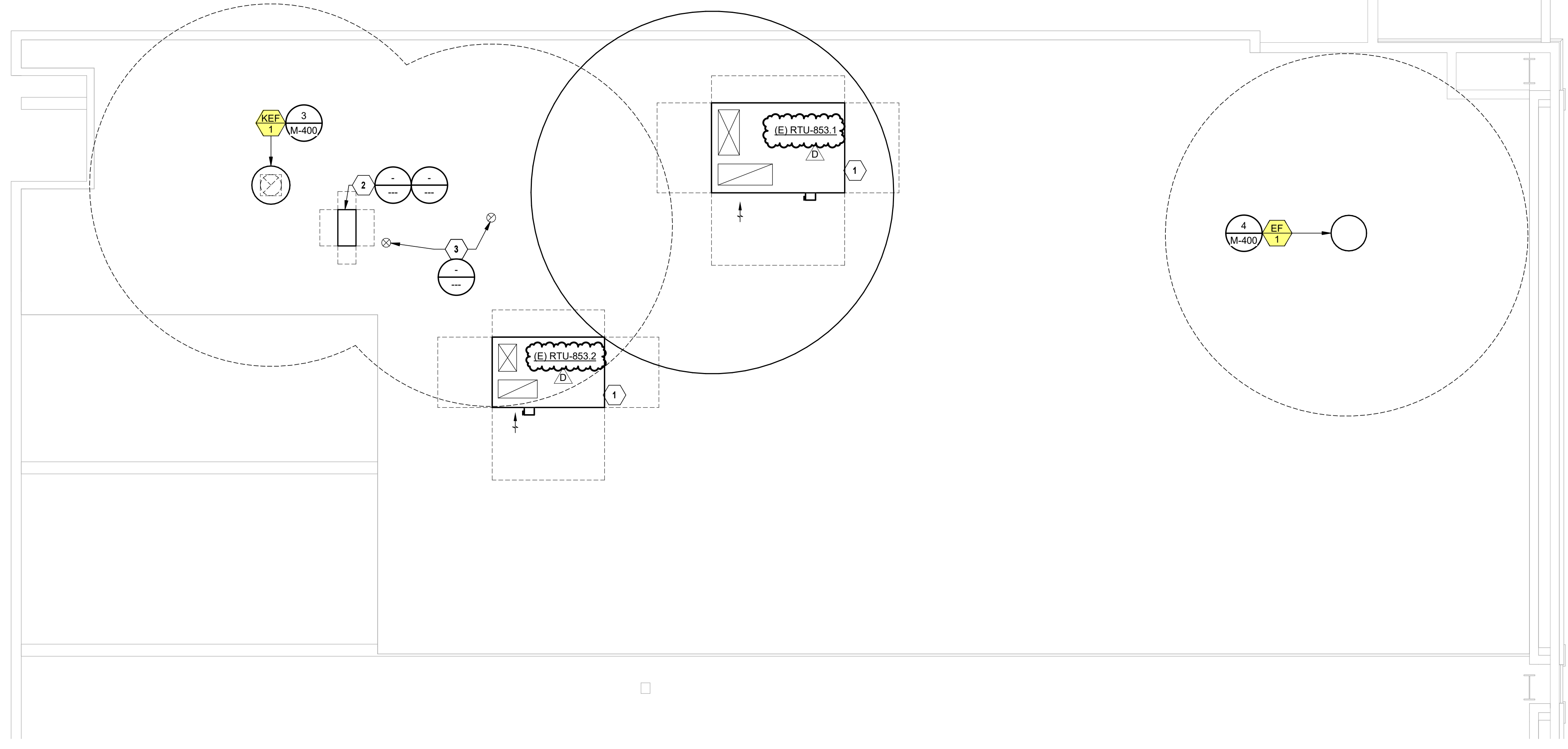
**M-200**

**LANDLORD GENERAL NOTES:**

- ANY TENANT EQUIPMENT TO BE INSTALLED ON THE LANDLORD'S ROOF MUST BE INSTALLED AS PER THE REQUIRED DETAILS THAT HAVE BEEN PROVIDED BY THE LANDLORD. THE REQUIRED DETAIL PLAN SHEET MUST BE INSERTED INTO THE TENANT IMPROVEMENT PLANS. THE TENANT IS REQUIRED TO COMPLY WITH THIS REQUIREMENT DURING THE COURSE OF TENANT IMPROVEMENT CONSTRUCTION AT THE PREMISES. LANDLORD'S PROPRIETARY ROOF VENDORS WILL BE REQUIRED (ROOFING AND CONSULTANT). PLEASE REFER TO LANDLORD'S CONTROL SHEET FOR DETAILS.
- EQUIPMENT, EXHAUST FANS, AND UTILITY VENTS CANNOT BE HIGHER THAN THE PARAPET WALL IN THE ROOF WELL AREA.
- ALL ROOF EQUIPMENT, VENTS, AND ASSOCIATED CONDUIT LINES INSTALLED DURING THE TENANT IMPROVEMENT CONSTRUCTION ON THE ROOF MUST BE PAINTED TO MATCH THE EXISTING ROOF COLOR. PAINT COLOR (NOT PAINT) TO BE PROVIDED DURING CONSTRUCTION.
- EQUIPMENT AND VENTS CAN ONLY BE INSTALLED INSIDE THE ROOF WELL AREA. NO EQUIPMENT AND VENTS TO BE PLACED AT MANSARD (TILE) ROOF AREA.
- ELECTRICAL CONDUIT AND CONDENSATE DRAIN LINES MUST IMMEDIATELY PENETRATE ROOF AND RUN ALONG THE UNDERSIDE OF THE ROOF STRUCTURE. ALL CONDENSATE DRAINS MUST RUN INSIDE TENANT'S PREMISES AND DRAIN TO EITHER A FLOOR SINK OR MOP SINK INSIDE THE TENANT'S PREMISES.

**MECHANICAL PLAN NOTES:**

- ROOFTOP UNITS SHALL MAINTAIN MANUFACTURER'S RECOMMENDED CLEARANCE.
- GC TO COORDINATE, PROVIDE, AND INSTALL MOUNTING SUPPORT FOR WALK-IN COOLER CONDENSING UNIT, CU-1 WITH THE KITCHEN EQUIPMENT SUPPLIER PRIOR TO ROUGH-IN. EQUIPMENT SUPPORT SHALL BE PRE-ENGINEERED WITH MINIMUM HEIGHT REQUIRED TO MAINTAIN BOTTOM OF EQUIPMENT A MINIMUM OF 16 INCHES ABOVE FINISHED ROOF SURFACE. COORDINATE AND PROVIDE ALL BUILDING PENETRATIONS AS REQUIRED TO ACCOMMODATE THE LINESSET INSTALLATION. KITCHEN EQUIPMENT SUPPLIER SHALL PROVIDE LINESSET, SPECIALTIES AND MAKE ALL FINAL CONNECTIONS BETWEEN THE CONDENSING UNIT AND EVAPORATOR COIL. GC TO LIFT, PLACE AND INSTALL CU-1 ON ROOF AND COORDINATE TIMING WITH KES.
- PROVIDE COMBUSTION AIR AND FLUE PIPES PER DETAIL 7/P500 AND PER MANUFACTURER'S INSTALLATION REQUIREMENTS. TERMINATE COMBUSTION AIR INTAKE AND FLUE PIPES ON ROOF ABOVE WITH MANUFACTURER'S RECOMMENDED TERMINATION ACCESSORIES.



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

## HEAT PUMP ROOFTOP UNIT SCHEDULE (LANDLORD PROVIDED)

EQUIPMENT IN SCHEDULE FOR REFERENCE ONLY, PROVIDED BY LANDLORD																													
MARK	MANUFACTURER	MODEL	UNIT TYPE	SUPPLY FAN				COOLING COIL				HEAT PUMP HEATING COIL				ELECTRICAL				NOTES									
				CFM	ESP (IN)	BHP (Y/N)	VFD	TH (MBH)	SH (MBH)	EAT (°F DB)	LAT (°F WB)	REFR TYPE	MIN EFF (SEER)	MIN EFF (EER)	MIN NO STAGES	MIN OUT (MBH)	AMBIENT (DB)	EAT (°F DB)	LAT (°F WB)		MIN EFF (COP)	MIN OA (CFM)	VPH	MCA	MCCP	DISC TYPE	WEIGHT (LBS)		
RTU-853.2	CARRIER	50HCQD09-6	RTU	2875	0.50	1.15	Yes	64.8	58.6	77.7	64.6	59.1	57.4	R410A	0	12	2	67.8	39.0	63	85.0	3.4	635	480 V / 3PH	22	25	DIV 26	1414	A-S
RTU-853.1	CARRIER	50GCQM06A2A6-0A0A0	RTU	1500	1.00	0.90	Yes	47.0	37.0	78.9	65.3	56.4	55.0	R410A	16.2	12.2	2	40.5	39.0	60	85.0	3.9	485	480 V / 3PH	17	25	DIV 26	596	A-S

MODEL NUMBERS AND NOMINAL TONS LISTED SHALL NOT BE CONSIDERED COMPLETE AND MATERIAL SHALL NOT BE ORDERED BY MANUFACTURER, MODEL NUMBERS, OR NOMINAL TONS ONLY. REVIEW THE COMPLETE DESCRIPTION, NOTES AND SPECIFICATIONS TO DETERMINE THE EXACT MATERIAL AND ACCESSORIES TO BE ORDERED. THE MANUFACTURERS LISTED ARE THE BASIS FOR THE DESIGN.

- NOTES:
- MECHANICAL CONTRACTOR SHALL INSTALL EQUIPMENT FURNISHED BY OWNER.
  - REFER TO ROOFTOP UNIT CONTROL MATRIX FOR ADDITIONAL UNIT FEATURES, COMPONENTS, MODULES, ACCESSORIES, AND CONTROLS THAT SHALL BE PROVIDED WITH THE EQUIPMENT.
  - EQUIPMENT SIZED FOR 95 °F AMBIENT TEMPERATURE.
  - PROVIDE 2" MERV 13, EFFICIENT PLEATED THROWAWAY AIR FILTERS.
  - PROVIDE FACTORY MOUNTED DISCONNECT INSTALLED ON SERVICE SIDE OF UNIT.
  - PROVIDE FACTORY MOUNTED VARIABLE FREQUENCY DRIVE TO FACILITATE MODULATING FAN SPEED CONTROL.
  - PROVIDE SINGLE POINT POWER CONNECTION.
  - COORDINATE SIZE OF CONDUCTOR TERMINATION LUGS WITH CONDUCTOR SIZES SHOWN ON ELECTRICAL DRAWINGS.
  - PROVIDE 125 VAC, 20 AMP DUPLEX CONVENIENCE RECEPTACLE MOUNTED TO UNIT READY FOR FIELD WIRING WITH A COVER UL LISTED FOR WET AND DAMPER LOCATIONS WHEN IN USE.
  - SPECIFIED FAN ESP ACCOUNTS FOR DUCT LOSSES EXTERNAL TO UNIT.
  - PROVIDE MOTOR HORSEPOWER TO OVERCOME INTERNAL UNIT STATIC PRESSURE DROP PLUS SPECIFIED EXTERNAL STATIC PRESSURE DROP. NOMINAL MOTOR HP SHALL BE NO LARGER THAN THE FIRST AVAILABLE NOMINAL MOTOR SIZE GREATER THAN THE REQUIRED BHP.
  - PROVIDE ADAPTER CURB AND MAINTAIN THE MINIMUM HEIGHT OF EQUIPMENT AT 16 INCHES ABOVE FINISHED ROOF SURFACE.
  - SCHEDULED WEIGHT IS THE MAXIMUM ALLOWABLE OPERATING WEIGHT OF THE EQUIPMENT.
  - COOLING COIL LAT IS LEAVING AIR TEMPERATURE OF THE UNIT.
  - PROVIDE GUARDS TO PROTECT CONDENSER COIL FROM HAIL OR OTHER DAMAGE.
  - PROVIDE HEATER TO MEET OR EXCEED SCHEDULED MINIMUM MBH OUTPUT. NOMINAL INPUT KW IS BASED ON LISTED MANUFACTURER'S STANDARD PRODUCT. COORDINATE EQUIPMENT POWER SUPPLY WITH ELECTRICAL CONTRACTOR IF DIFFERENT FROM THAT SCHEDULED.
  - SELECT EQUIPMENT FOR ELEVATION OF 54 FEET ABOVE SEA LEVEL.
  - EQUIPMENT TO BE PROVIDED AND INSTALLED BY LANDLORD.
  - COOLING COIL VALUES DO NOT INCLUDE FAN HEAT.

### FAN SCHEDULE

MARK	SERVICE DESCRIPTION	MANUFACTURER	MOUNTING	MODEL	CFM	ESP (IN)	NOM HP	FAN RPM	DRIVE (BELT/DIRECT)	VFD (Y/N)	ELECTRICAL V/PH	WEIGHT (LBS)	NOTES
EF 1	RESTROOMS	GREENHECK	ROOF	G-097-A	150	0.5	0.25	1725	DIRECT	No	120/1	50	A, B, C, E, F
KEF 1	KITCHEN	GREENHECK	ROOF	CUE-100-A	825	0.5	0.33	1725	DIRECT	No	120/1	75	A-F

MODEL NUMBERS SHALL NOT BE CONSIDERED COMPLETE AND MATERIAL SHALL NOT BE ORDERED BY MANUFACTURER AND MODEL NUMBERS ONLY. REVIEW THE COMPLETE DESCRIPTION, NOTES AND SPECIFICATIONS TO DETERMINE THE EXACT MATERIAL AND ACCESSORIES TO BE ORDERED. THE MANUFACTURERS LISTED ARE THE BASIS FOR THE DESIGN.

- NOTES:
- PROVIDE INSULATED ROOF CURB WITH MINIMUM HEIGHT REQUIRED TO MAINTAIN BOTTOM OF EQUIPMENT A MINIMUM OF 16 INCHES ABOVE FINISHED ROOF SURFACE. PROVIDE SLOPED CURB IF NEEDED TO MATCH ROOF SLOPE. COORDINATE WITH ROOF INSULATION THICKNESS AND ROOF TAPER AT INSTALLED LOCATION. COORDINATE CURB TYPE WITH DRAWINGS.
  - PROVIDE BIRDSCREEN AND GRAVITY BACKDRAFT DAMPER.
  - PROVIDE FACTORY MOUNTED DISCONNECT SWITCH.
  - FAN SHALL BE SELECTED FOR STABLE OPERATION AT ELEVATED TEMPERATURE OF 300 F.
  - PROVIDE WITH MANUFACTURER'S ELECTRONICALLY COMMUTATED (EC) MOTOR.
  - NOMINAL MOTOR HP SHALL BE NO LARGER THAN THE FIRST AVAILABLE NOMINAL MOTOR SIZE GREATER THAN THE BHP.

### GRILLE, REGISTER AND DIFFUSER SCHEDULE

MARK	MANUFACTURER	MODEL	CONSTRUCTION TYPE	FACE TYPE	MOUNTING LOCATION	FACE SIZE (IN)	MAX NO	MAX PRESS DROP (IN W.C.)	NOTES
CEG1	TITUS	PAR	ALUMINUM	PERFORATED	CEILING	12"x12"	30	0.05	B,C,D,F,G,K
CEG2	TITUS	PAR	ALUMINUM	PERFORATED	CEILING	24"x24"	30	0.05	B,C,D,F,G,K
CRG1	TITUS	PAR	ALUMINUM	PERFORATED	CEILING	24"x24"	30	0.05	B,C,D,F
CSD1	TITUS	PAR	ALUMINUM	PERFORATED	CEILING	24"x24"	30	0.08	B,C,D,F,G,K
CSD3	TITUS	OMNI	ALUMINUM	PLAQUE	CEILING	12"x12"	30	0.08	A,B,C,F,K

MODEL NUMBERS SHALL NOT BE CONSIDERED COMPLETE AND MATERIAL SHALL NOT BE ORDERED BY MANUFACTURER AND MODEL NUMBERS ONLY. REVIEW THE COMPLETE DESCRIPTION, NOTES AND SPECIFICATIONS TO DETERMINE THE EXACT MATERIAL AND ACCESSORIES TO BE ORDERED. THE MANUFACTURERS LISTED ARE THE BASIS FOR THE DESIGN.

- NOTES:
- 4-WAY THROW PATTERN UNLESS OTHERWISE INDICATED BY FLOW ARROWS ON DRAWINGS.
  - NECK SIZE SHOWN ON DRAWINGS. PROVIDE BRANCH DUCT TO MATCH NECK SIZE UNLESS OTHERWISE SHOWN ON DRAWINGS.
  - BAKED ENAMEL FINISH, WHITE TO MATCH CEILING COLOR.
  - FRAME TYPE TO MATCH CEILING/WALL CONSTRUCTION, COORDINATE WITH ARCHITECTURAL REFLECTED CEILING/WALL PLAN EG.
  - PROVIDE OPPOSED BLADE DAMPER ADJUSTABLE FROM FACE OF DEVICE.
  - PROVIDE DIFFUSERS, LINEAR SLOTS, AND GRILLES WITH NO EXPOSED MOUNTING SCREWS.
  - PROVIDE WITH RAPID MOUNT FRAMING OPTION FOR LAY-IN TYPE DIFFUSERS INSTALLED IN A HARD CEILING.
  - SUPPLY PLENUM MAY BE FIELD FABRICATED BASED ON PROVIDED DETAILS (RE: M400.06), OR PURCHASED FROM THE SLOT DIFFUSER MANUFACTURER. PROVIDE 1/4" CLOSED CELL INSULATION ON THE INTERIOR OF THE SUPPLY PLENUM.
  - FRONT BLADES PARALLEL TO LONG DIMENSION.
  - CONTRACTOR SHALL PROVIDE REMOTE CABLE-OPERATED VOLUME DAMPER BY METROPOLITAN AIR TECHNOLOGIES MODEL RT-250 WITH EXTERNAL WORM GEAR OPERATOR OR EQUIVALENT YOUNG RECTANGULAR BUTTERFLY DAMPER WITH 270-275 CONTROLLER. OPERATOR SHALL HAVE A SQUARE DRIVE FOR 1/4" NUT DRIVER. DAMPER ASSEMBLY SHALL INCLUDE GALVANIZED STEEL DUCT WITH ROLLED BEAD STIFFENERS, REINFORCED BLADE, SELF LUBRICATING BEARING AND WORK GEAR MOUNTING PLATE. DAMPER SHALL BE INSTALLED IN BRANCH DUCT NOT INLET OF PLENUM DIFFUSER.

### OUTSIDE AIR REQUIREMENTS, 2022 CEC

SYSTEM DESIGNATION	SYSTEM TYPE:	SINGLE-ZONE SYSTEMS ONLY		FLOOR AREA SERVED BY SYSTEM [As] (SF)	SYSTEM AVERAGED AREA-BASED OUTDOOR AIR RATE (CFM/SF)	SYSTEM POPULATION [Ps] (PEOPLE)	SYSTEM AVERAGED PEOPLE-BASED OUTDOOR AIR RATE (CFMP)	RATE THAT SETS MAXIMUM AIRFLOW	REQUIRED OA INTAKE FLOW [Vol] (CFM)	DESIGN OA INTAKE FLOW [Vol] (CFM)	REQUIRED DCV OA INTAKE FLOW [Vol] (CFM)	NOTES
		VENTILATION ZONE ASSOCIATED WITH SYSTEM	VENTILATION ZONE ASSOCIATED WITH SYSTEM									
RTU-853.2	MULTIZONE (RTU-853.2)	-	-	876	0.50	58	7.5	EVALUATED AT ZONE LEVEL	438	485	122	1,2,3
RTU-853.1	MULTIZONE (RTU-853.1)	-	-	1,177	0.15	6	30.4	EVALUATED AT ZONE LEVEL	179	635	0	1,2,3
		x	x			x			617	1,120	122	

- GENERAL NOTES:
- VENTILATION CALCULATIONS BASED ON 2022 CALIFORNIA ENERGY CODE.
  - SYSTEM POPULATIONS BASED ON MAX SEATING AND/OR CODE MAXIMUM VALUES.
  - SINGLE ZONE SYSTEMS (Vol = Voz). SYSTEM VENTILATION EFFICIENCY CALCULATION IS NOT REQUIRED FOR SINGLE ZONE SYSTEMS. CALCULATION TAKES MAXIMUM OUTSIDE AIRFLOW REQUIRED BY THE CEC FOR THAT ZONE.

## ROOFTOP UNIT CONTROL MATRIX

CONTROL FEATURE	UNITS	RTU-853.2		RTU-853.1		NOTES
		SETPOINT OR Y/N	OR Y/N	SETPOINT OR Y/N	OR Y/N	
<b>SETPOINTS</b>						
COOLING - OCCUPIED SETPOINT		°F	75	75		
COOLING - UNOCCUPIED SETPOINT		°F	85	85		
DEAD BAND - MINIMUM HEATING AND COOLING TEMPERATURE SETPOINT DIFFERENCE		°F	5	5		
HEATING - OCCUPIED SETPOINT		°F	70	70		
HEATING - UNOCCUPIED SETPOINT		°F	55	55		
<b>PROGRAMMED CONTROL FEATURES</b>						
HVAC SYSTEM OCCUPIED/UNOCCUPIED MODE - PROGRAMMABLE THERMOSTAT			Y	Y		B
REMOTE TEMPERATURE SENSOR			Y	Y		B
<b>EQUIPMENT ACCESSORIES AND CONTROL MODULES</b>						
OUTSIDE AIR DAMPER - MOTOR OPERATED (MODULATING)			Y	Y		L
INTEGRATED ECONOMIZER - DIFFERENTIAL ENTHALPY ENABLE (OA ENTHALPY < RA ENTHALPY)	BTU/LB		Y	Y		E
ECONOMIZER FAULT DETECTION AND DIAGNOSTICS (FDD) SYSTEM			Y	Y		F, G
RELIEF - BAROMETRIC DAMPER			Y	N		
RELIEF - VARIABLE VOLUME POWERED EXHAUST FAN	IN. W.C.		N	0.1		H
COOLING COIL (DX - STAGED)			Y	Y		M
HEAT PUMP COIL WITH REVERSING VALVE			Y	Y		M
<b>SUPPLY FAN CONTROL METHODS</b>						
ON DURING OCCUPIED HOURS			Y	Y		
CYCLE WITH LOADS DURING UNOCCUPIED HOURS			Y	Y		
OPTIMUM START SEQUENCE			Y	Y		T
VARIABLE VOLUME - STAGED FAN CONTROL IN RESPONSE TO ACTIVE COOLING COIL STAGES			Y	Y		M, Q
<b>SAFETIES, INTERLOCKS, AND ALARMS</b>						
SUPPLY AIR SMOKE DETECTOR - SAFETY SHUTDOWN			Y	Y		B
RETURN AIR SMOKE DETECTOR - SAFETY SHUTDOWN			Y	Y		B
<p>DIV. 23 CONTRACTOR SHALL PROVIDE CONTROL PANEL(S), WIRING, THERMOSTAT(S), TEMPERATURE SENSOR(S), HUMIDISTAT(S), AND/OR CO2 SENSOR(S) WHERE SHOWN ON THE DRAWINGS AND AS REQUIRED TO FACILITATE THE SCHEDULED CONTROL MODULES AND SEQUENCES OF OPERATION. EACH UNIT SHALL CONTROL BASED ON ITS OWN INTERNAL SAFETIES, TIME DELAYS, AND SEQUENCES UNLESS NOTED OTHERWISE. COORDINATE WITH OWNER FINAL BUILDING AND EQUIPMENT SCHEDULES DURING STARTUP. REFERENCE DIVISION SPECIFICATIONS FOR INDIVIDUAL DEVICE REQUIREMENTS.</p> <p>NOTES:</p> <ol style="list-style-type: none"> <li>DIVISION 23 CONTRACTOR SHALL PROVIDE DEVICE.</li> <li>IF SETPOINT VALUE IS LISTED, IT INDICATES ECONOMIZER HIGH-LIMIT SHUTOFF. UNIT SHALL BE IN ECONOMIZER IF CONDITIONS ARE LESS THAN SETPOINT. THE FOLLOWING SENSORS SHALL DETERMINE ECONOMIZER ON POINT.                     <ul style="list-style-type: none"> <li>OUTSIDE AIR TEMPERATURE; DIVISION 23 PROVIDED AS PART OF ECONOMIZER CONTROL MODULE.</li> <li>RETURN AIR TEMPERATURE; DIVISION 23 PROVIDED AS PART OF ECONOMIZER CONTROL MODULE.</li> <li>OUTSIDE AIR HUMIDITY; DIVISION 23 PROVIDED AS PART OF ECONOMIZER CONTROL MODULE.</li> <li>RETURN AIR HUMIDITY; DIVISION 23 PROVIDED AS PART OF ECONOMIZER CONTROL MODULE.</li> </ul> </li> <li>DEVICE SHALL BE FACTORY MOUNTED AND PRE-WIRED FOR OPERATION SUBJECT TO THE ONBOARD CONTROLLER.</li> <li>PROVIDE UNIT WITH AN FDD SYSTEM CONSISTING OF PERMANENTLY INSTALLED OUTSIDE AIR, SUPPLY AIR, AND RETURN AIR TEMPERATURE SENSORS. THE UNIT CONTROLLER SHALL AT A MINIMUM BE CAPABLE OF PROVIDING SYSTEM STATUS OF ECONOMIZER, COMPRESSOR, HEATING, MIXED AIR LOW LIMIT ALARM, AND SENSOR VALUES. EACH OPERATING MODE SHALL BE CAPABLE OF INDEPENDENTLY OPERATING FOR TESTING. THE SYSTEM SHALL REPORT FAILURES TO AN APPLICATION ACCESSIBLE BY SERVICE PERSONNEL. THE FOLLOWING FAILURES SHALL BE DETECTED: AIR TEMPERATURE SENSOR FAILURE, ECONOMIZER ENABLE/DISABLED WHEN ECONOMIZER SHOULD BE OFF/ON, RESPECTIVELY, DAMPER NOT MODULATING, AND EXCESS OUTSIDE AIR.</li> <li>POWERED EXHAUST FAN SHALL STAGE ON AND OFF ACCORDING TO DAMPER POSITION.</li> <li>EQUIPMENT MANUFACTURER SHALL PROVIDE MODULATING DAMPER AND CONTROLS CAPABLE OF ADJUSTING THE DAMPER POSITION TO MAINTAIN THE SCHEDULED OUTSIDE AIR ON THE DRAWINGS ACROSS ALL FAN SPEEDS. DIV. 23 CONTRACTOR SHALL PROGRAM MULTIPLE DAMPER POSITION SETPOINTS IN THE FIELD DURING TESTING AND BALANCING TO MAINTAIN MINIMUM VENTILATION WHEN NOT IN ECONOMIZER. DAMPER SHALL BE CLOSED DURING UNOCCUPIED HOURS.</li> <li>UNITARY CONTROLLER SHALL MODULATE AND/OR CYCLE SUPPLY FAN SPEED SETTING AND COIL CAPACITY STAGES SUBJECT TO THE INTERNAL SAFETIES AND SEQUENCES TO MAINTAIN SCHEDULED SETPOINTS.</li> <li>PROVIDE STAGED FAN CONTROL WITH MINIMUM 2 FAN SPEEDS. LOW SPEED SHALL NOT EXCEED 66% OF FULL SPEED AND SHALL DRAW NO MORE THAN 40% OF FAN POWER AT FULL SPEED.</li> <li>DURING OPTIMUM START SEQUENCE, THE UNIT SHALL SUPPLY THE LESSER OF THE MINIMUM RATE OF OUTDOOR AIR OR SUPPLY 3 COMPLETE AIR CHANGES DURING THE 1-HOUR PERIOD BEFORE NORMAL OCCUPIED MODE.</li> </ol>						

### RECIRCULATING HOOD SCHEDULE

MARK	MANUFACTURER	MODEL	CFM	WATTS	V/PH	NOTES
HD 1	RATIONAL	60.76.177	415 CFM	170	120/1/60	A,B,C

- NOTES:
- HOOD SHALL BE FURNISHED AND INSTALLED BY FOOD SERVICE EQUIPMENT CONTRACTOR.
  - MOUNT BOTTOM OF HOOD AT 6'-6" ABOVE FINISHED FLOOR.
  - KITCHEN HOOD IS A VENTLESS CANOPY RECIRCULATING HOOD. EQUIPMENT VENTS TO SPACE.

### RESTAURANT AIR BALANCE SCHEDULE

KITCHEN					DINING				
OUTDOOR AIR	AREA/EQUIPMENT SERVED	SUPPLY AIR (CFM)	DESIGN OA (CFM)	PERCENT OA/SA	OUTDOOR AIR	AREA/EQUIPMENT SERVED	SUPPLY AIR (CFM)	DESIGN OA (CFM)	PERCENT OA/SA
RTU-853.1	KITCHEN	2875	635	22.1%	RTU-853.2	DINING	1500	485	32.3%
TOTAL EXHAUST		2,875	635	22.1%	TOTAL EXHAUST		1,500	485	32.3%
EXHAUST EQUIPMENT SERVED	AREA DESCRIPTION	EXHAUST (CFM)	EXHAUST EQUIPMENT	AREA DESCRIPTION	EXHAUST (CFM)				
KEF-1	ROOF	825	EF-1	ROOF	150				
TOTAL EXHAUST		825	TOTAL EXHAUST		150				
TOTAL KITCHEN POSITIVE/NEGATIVE AIR FLOW			-190	TOTAL DINING POSITIVE/NEGATIVE AIR FLOW				335	
PERCENT POSITIVE/NEGATIVE AIR FLOW			-29.9%	PERCENT POSITIVE/NEGATIVE AIR FLOW				69.1%	
TOTAL BUILDING POSITIVE AIR FLOW				TOTAL BUILDING POSITIVE AIR FLOW				145	
PERCENT BUILDING POSITIVE AIR FLOW				PERCENT BUILDING POSITIVE AIR FLOW				12.9%	
<p>NOTES:</p> <ol style="list-style-type: none"> <li>OUTSIDE AIRFLOW VALUES TAKEN FROM APPLICABLE CODE STANDARDS.</li> <li>UNIT SHUTS DOWN WHEN PATIO WINDOWS ARE OPEN.</li> </ol>									



**sweetgreen**  
3101 W. EXPOSITION BLVD.  
LOS ANGELES, CALIFORNIA 90018

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**HENDERSON ENGINEERS**  
8345 LEXENA DRIVE, SUITE 300  
LENEXA, KS 66214  
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WWW.HENDERSONENGINEERS.COM  
2350001642

STAMP:  
  
02/26/2024

PROJECT INFORMATION:  
**FASHION ISLAND**  
**853 NEWPORT CENTER DRIVE**  
**NEWPORT BEACH, CA 92660**

DRAWN BY: MS,BL,CG  
 CHECKED BY: GH,BS  
 PROJECT MANAGER: XX  
 SG DESIGN MANAGER: XX  
 SG CONSTR. MANAGER: XX  
 PROJECT NO: 50199179  
 TEMPLATE VERSION: 06.01.2020

REVISIONS

REV.	DATE	DESCRIPTION
A	11.07.2023	PERMIT COMMENT RESPONSE
B	12.21.2023	HEALTH COMMENT RESPONSE
C	02.12.2024	HEALTH RESPONSE
D	02.26.2024	ISSUE FOR CONSTRUCTION

### HVAC SCHEDULES

M-300

**LANDLORD GENERAL NOTES:**

- PLEASE INCORPORATE AND UTILIZE LANDLORD ROOFING DETAILS. ANY DETAILS THAT DEVIATE FROM LANDLORD REQUIRED SPECIFICATIONS WILL BE AT TENANT'S SOLE COST TO REMOVE, REPLACE AND/OR MODIFY WHERE NEEDED.



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STAMP:  
  
 02/26/2024

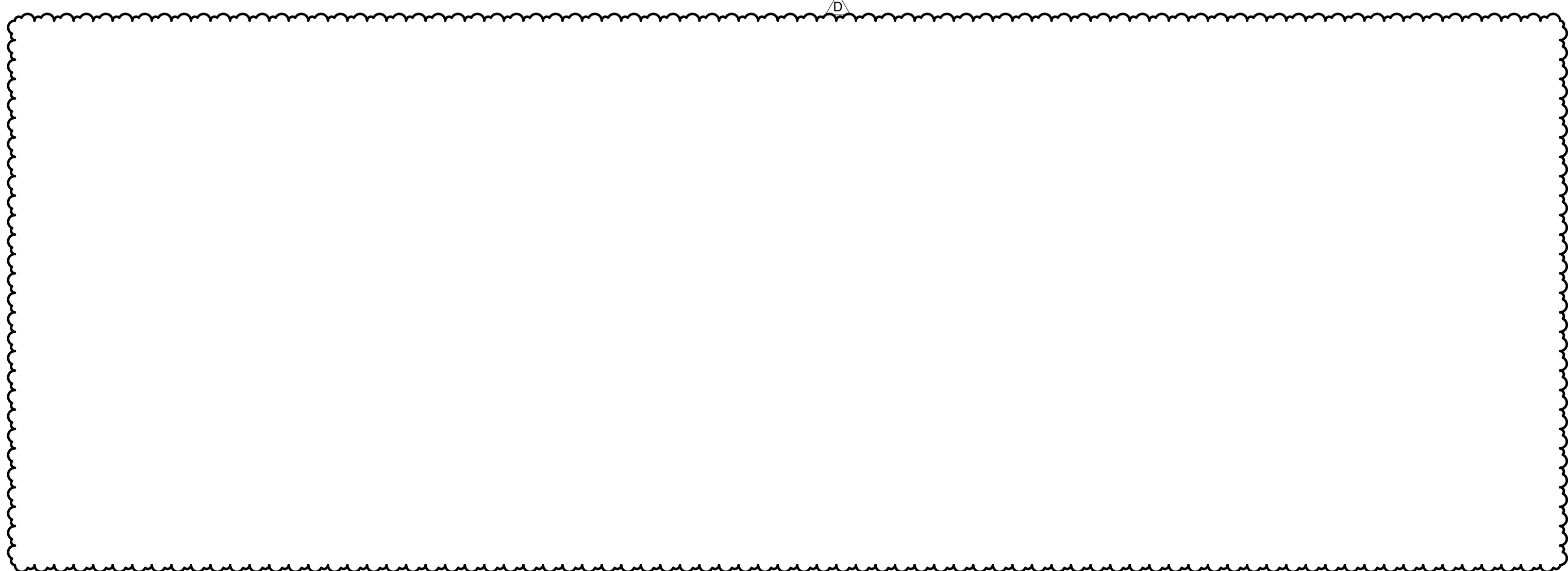
PROJECT INFORMATION:  
**FASHION ISLAND**  
**853 NEWPORT CENTER DRIVE**  
**NEWPORT BEACH, CA 92660**

DRAWN BY: MS,BL,CG  
 CHECKED BY: GH,BS  
 PROJECT MANAGER: XX  
 SG DESIGN MANAGER: XX  
 SG CONSTR. MANAGER: XX  
 PROJECT NO: 50139179  
 TEMPLATE VERSION: 06.01.2020

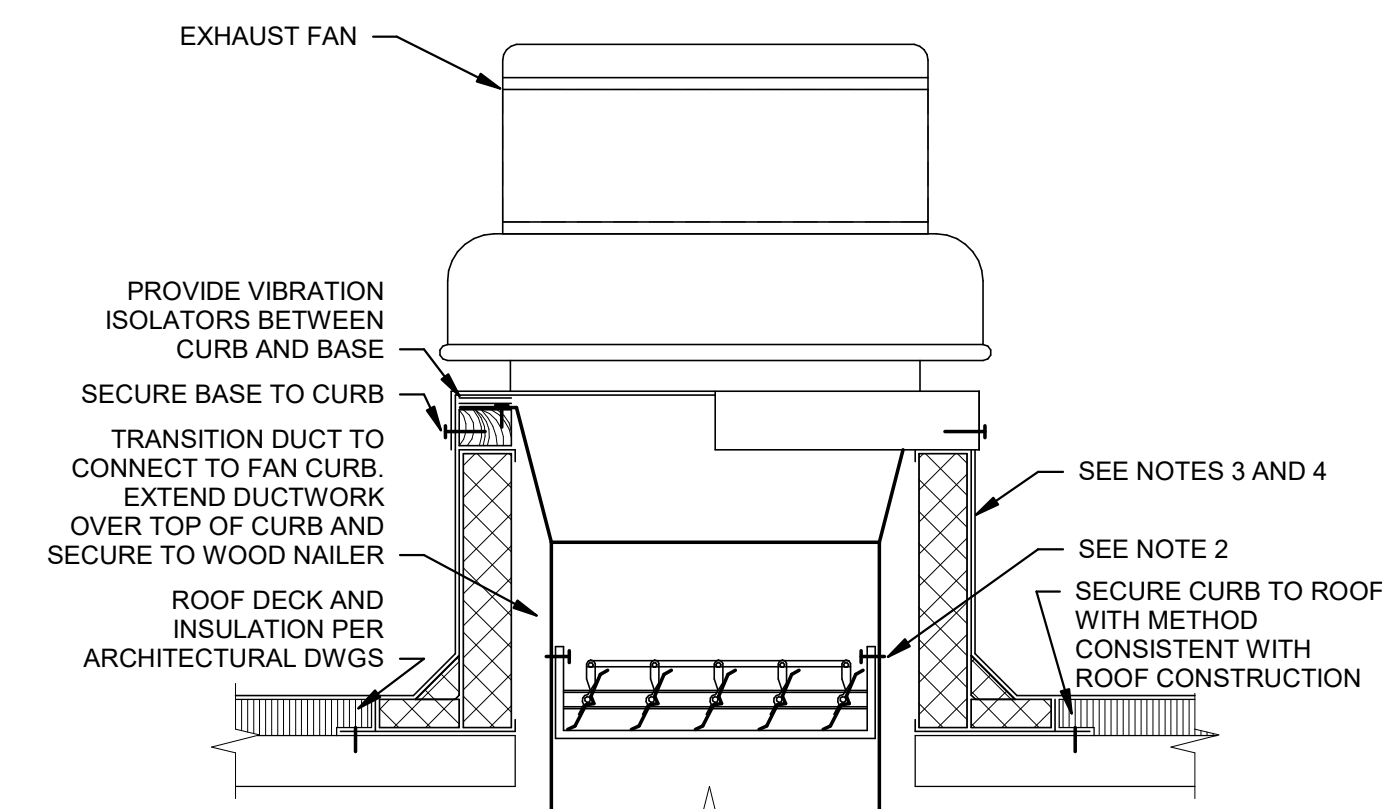
REV.	DATE	DESCRIPTION
A	11.07.2023	PERMIT COMMENT RESPONSE
B	12.21.2023	HEALTH COMMENT RESPONSE
C	02.12.2024	HEALTH RESPONSE 3
D	02.26.2024	ISSUE FOR CONSTRUCTION

**HVAC DETAILS**

**M-400**

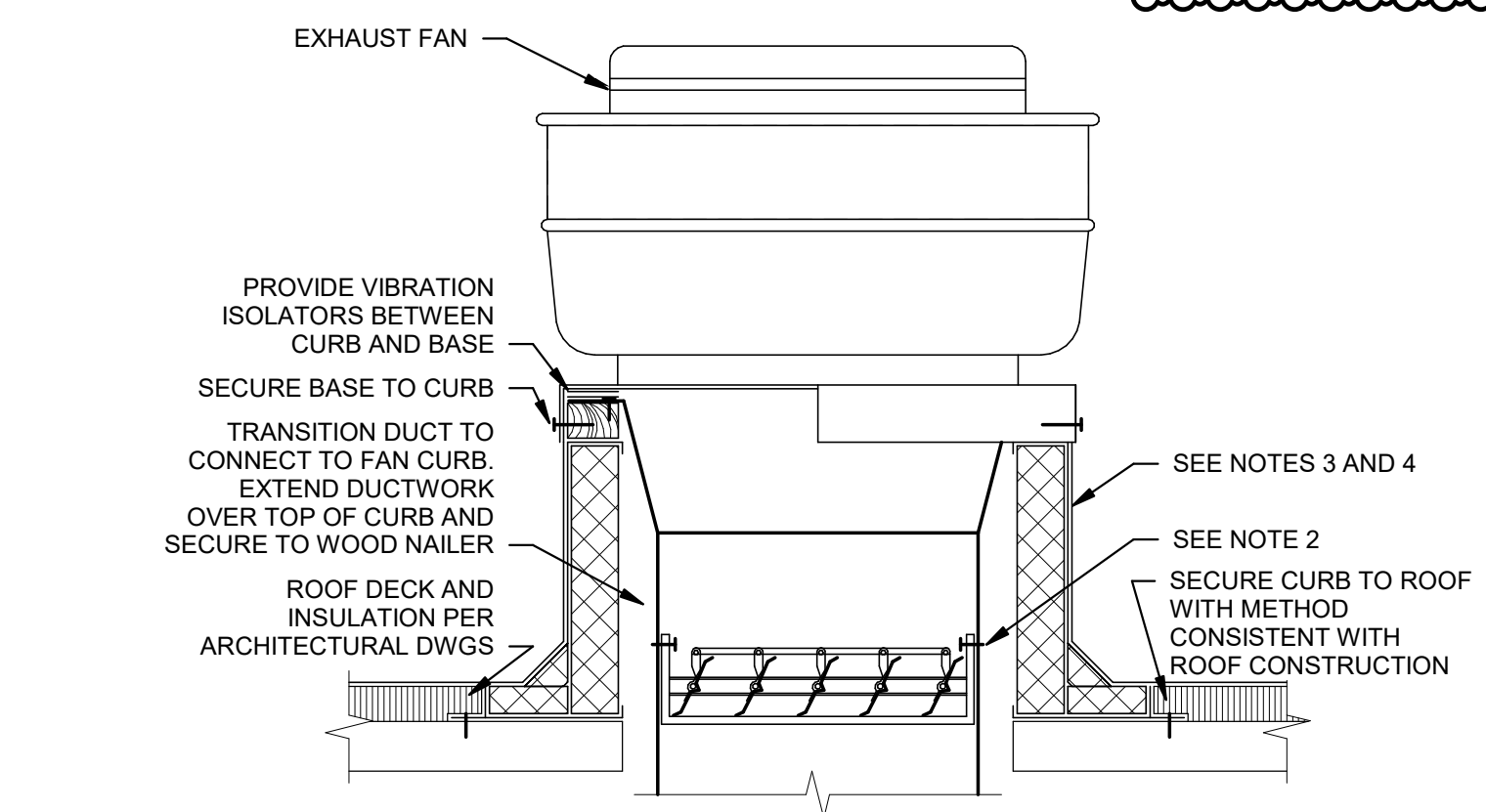


**7 HOOD ELEVATIONS**  
NTS



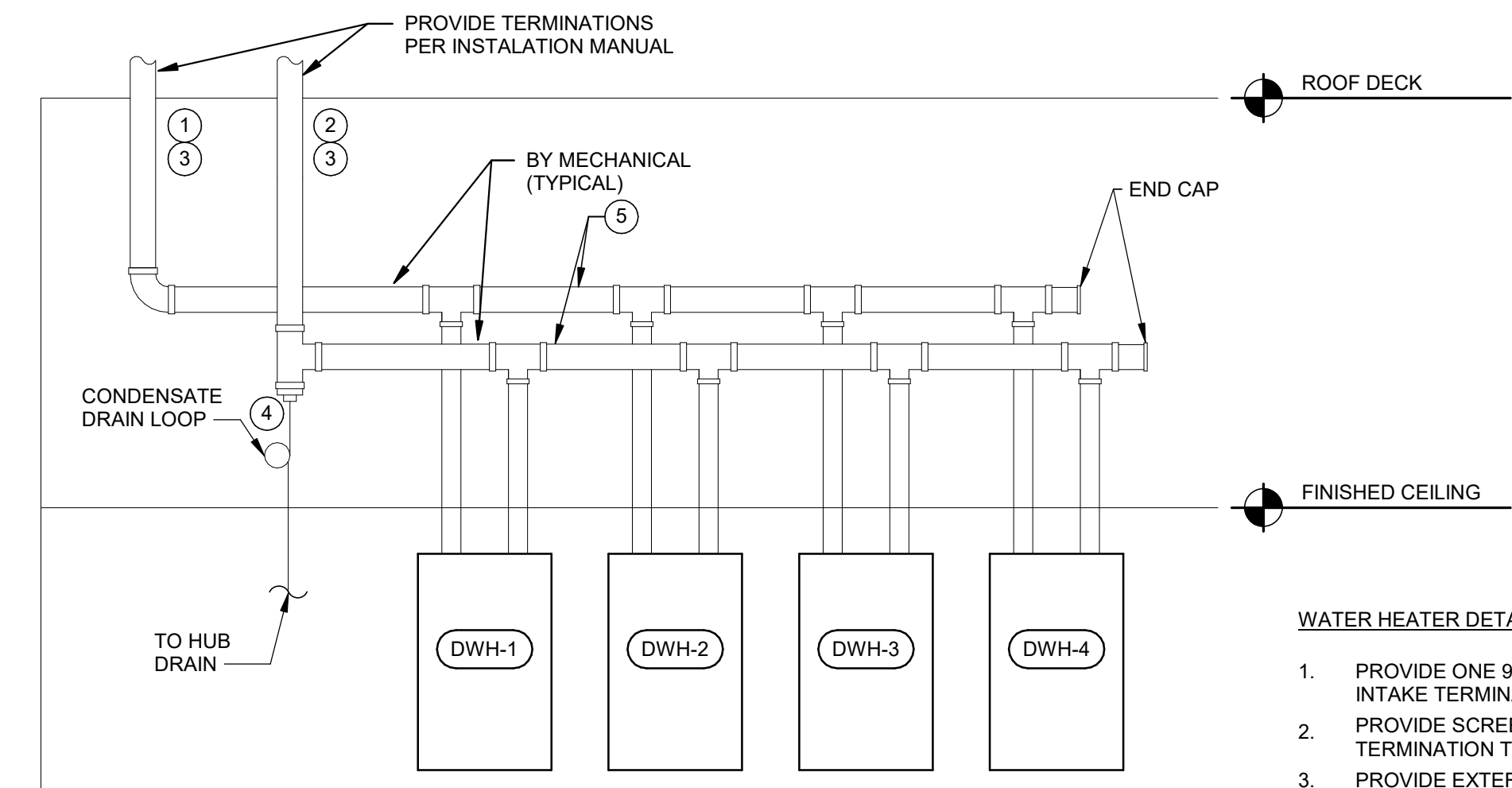
- NOTES:
- ARRANGEMENT SHOWN IS SCHEMATIC. ADJUST TO SUIT FIELD CONDITIONS AND MEET LOCAL CODE.
  - IF DAMPER IS SPECIFIED IN EQUIPMENT SCHEDULE, INSTALL DAMPER AT BASE OF CURB AND SECURE FROM ABOVE TO ALLOW SERVICE THROUGH TOP OF CURB.
  - PREFABRICATED INSULATED ROOF CURB WITH TREATED WOOD NAILER, CANT, AND STEP AS REQUIRED TO ACCOMMODATE ROOF INSULATION. FRAME AND SECURE CURB TO ROOF WITH METHOD CONSISTENT WITH ROOF CONSTRUCTION. ROOF CURB SHALL BEAR ON ROOF STRUCTURE. REFER TO ARCHITECTURAL DRAWINGS AND CURB MANUFACTURER'S DETAILS FOR MORE INFORMATION.
  - FOR SLOPED ROOFS, PROVIDE CURB WITH DIMENSIONS CAPABLE OF COMPENSATING ROOF SLOPE TO ENSURE FAN IS INSTALLED LEVEL.
- HIGH WIND STRAPPING: PROVIDE STAINLESS STEEL STRAPS OF LENGTH, WIDTH, THICKNESS, AND SPACING SUFFICIENT TO SECURE FAN TO CURB TO WITHSTAND WIND SPEED REQUIREMENTS PER LOCAL CODE. WRAP STRAPS OVER FAN AND SECURELY ATTACH TO OPPOSITE SIDE OF THE CURB.

**4 ROOF MOUNTED DOWNBLAST FAN DETAIL**  
NTS



- NOTES:
- ARRANGEMENT SHOWN IS SCHEMATIC. ADJUST TO SUIT FIELD CONDITIONS AND MEET LOCAL CODE.
  - IF DAMPER IS SPECIFIED IN EQUIPMENT SCHEDULE, INSTALL DAMPER AT BASE OF CURB AND SECURE FROM ABOVE TO ALLOW SERVICE THROUGH TOP OF CURB.
  - PREFABRICATED INSULATED ROOF CURB WITH TREATED WOOD NAILER, CANT, AND STEP AS REQUIRED TO ACCOMMODATE ROOF INSULATION. FRAME AND SECURE CURB TO ROOF WITH METHOD CONSISTENT WITH ROOF CONSTRUCTION. ROOF CURB SHALL BEAR ON ROOF STRUCTURE. REFER TO ARCHITECTURAL DRAWINGS AND CURB MANUFACTURER'S DETAILS FOR MORE INFORMATION.
  - FOR SLOPED ROOFS, PROVIDE CURB WITH DIMENSIONS CAPABLE OF COMPENSATING ROOF SLOPE TO ENSURE FAN IS INSTALLED LEVEL.
- HIGH WIND STRAPPING: PROVIDE STAINLESS STEEL STRAPS OF LENGTH, WIDTH, THICKNESS, AND SPACING SUFFICIENT TO SECURE FAN TO CURB TO WITHSTAND WIND SPEED REQUIREMENTS PER LOCAL CODE. WRAP STRAPS OVER FAN AND SECURELY ATTACH TO OPPOSITE SIDE OF THE CURB.

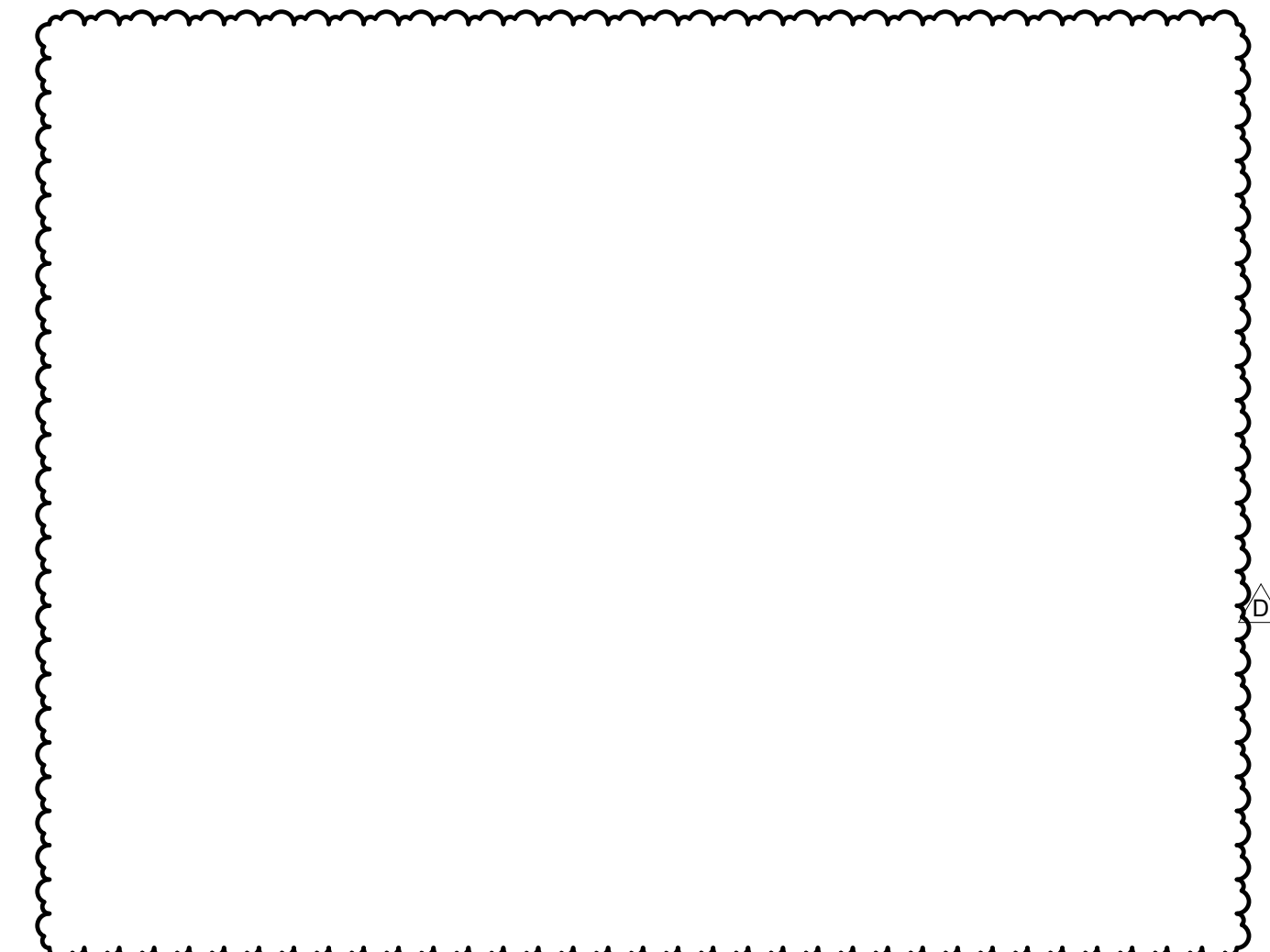
**3 ROOF MOUNTED UPBLAST FAN DETAIL**  
NTS



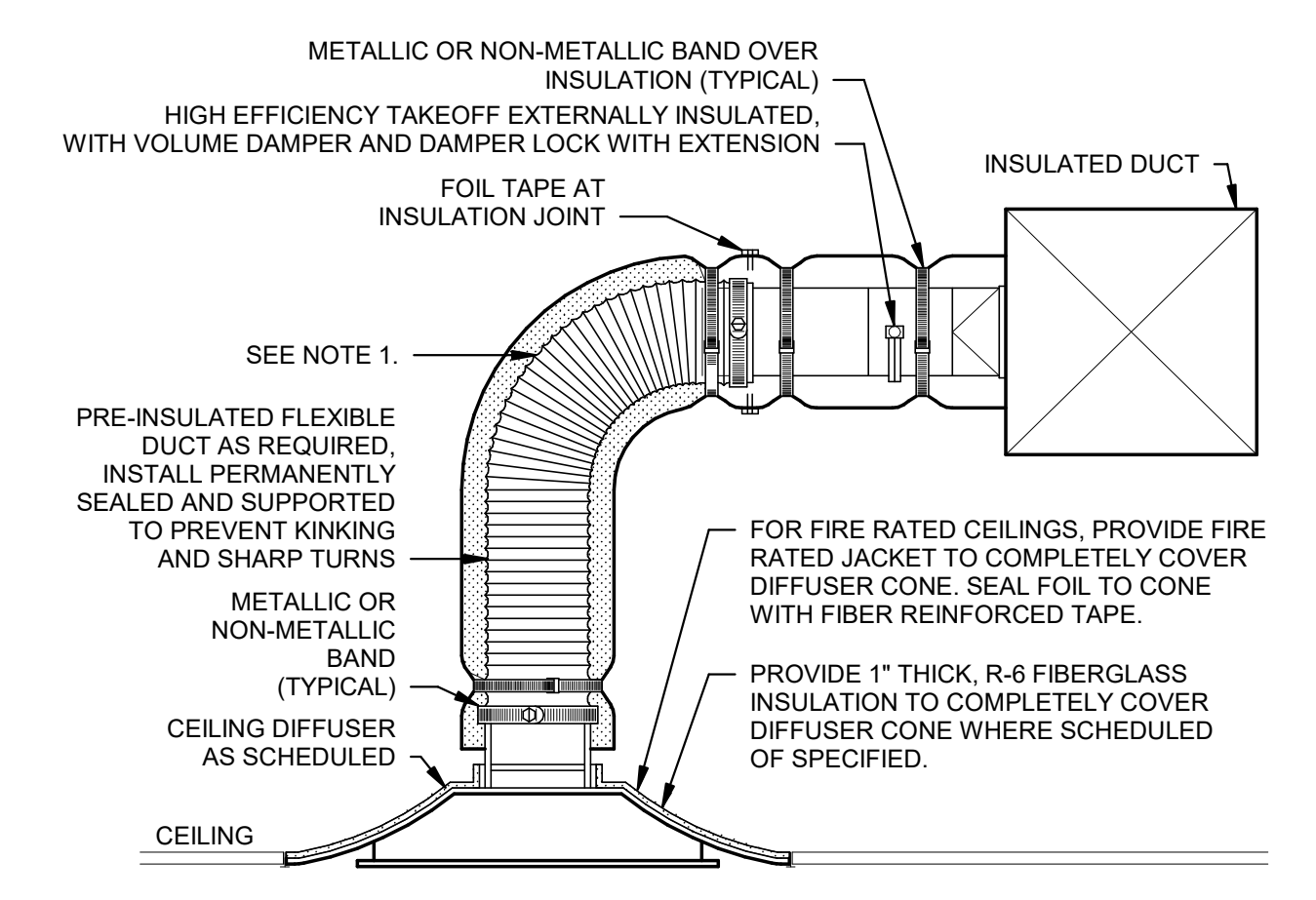
- WATER HEATER INSTALLATION NOTES**
- A. MAXIMUM DEVELOPED LENGTH FOR 6" COMMON VENT SYSTEM IS 96'-0". EVERY 90° ELBOW IS EQUIVALENT TO 8 LINEAR FEET. THE GENERAL CONTRACTOR SHALL FIELD-VERIFY THE DEVELOPED LENGTH PRIOR TO ROUGH-IN. IF THE DEVELOPED LENGTH EXCEEDS 96'-0", THE CONTRACTOR SHALL PROVIDE A 8" COMMON VENT SYSTEM.

- WATER HEATER DETAIL NOTES**
- PROVIDE ONE 90° ELBOW DOWN AND A SCREEN FOR THE INTAKE TERMINATION THROUGH EXTERIOR PENETRATION.
  - PROVIDE SCREEN OVER INLET PIPING FOR THE EXHAUST TERMINATION THROUGH EXTERIOR PENETRATION.
  - PROVIDE EXTERIOR PENETRATIONS FOR THE INTAKE AND EXHAUST PIPING AS SHOWN AND PER THE MANUFACTURER'S INSTALLATION INSTRUCTIONS. COORDINATE WITH SITE CONDITIONS PRIOR TO ROUGH-IN.
  - PROVIDE CONDENSATE DRAIN, DRAIN LOOP AND ALL OTHER SPECIALTIES REQUIRED FOR THE COMMON VENT SYSTEM.
  - PROVIDE A COMMON INTAKE AND EXHAUST SYSTEM. INSTALL PER THE MANUFACTURER'S INSTALLATION INSTRUCTIONS.
  - FOLLOW MANUFACTURER'S INSTALLATION INSTRUCTIONS FOR ALL WATER HEATER VENTING SYSTEMS.

**8 WATER HEATER DETAIL**  
NTS

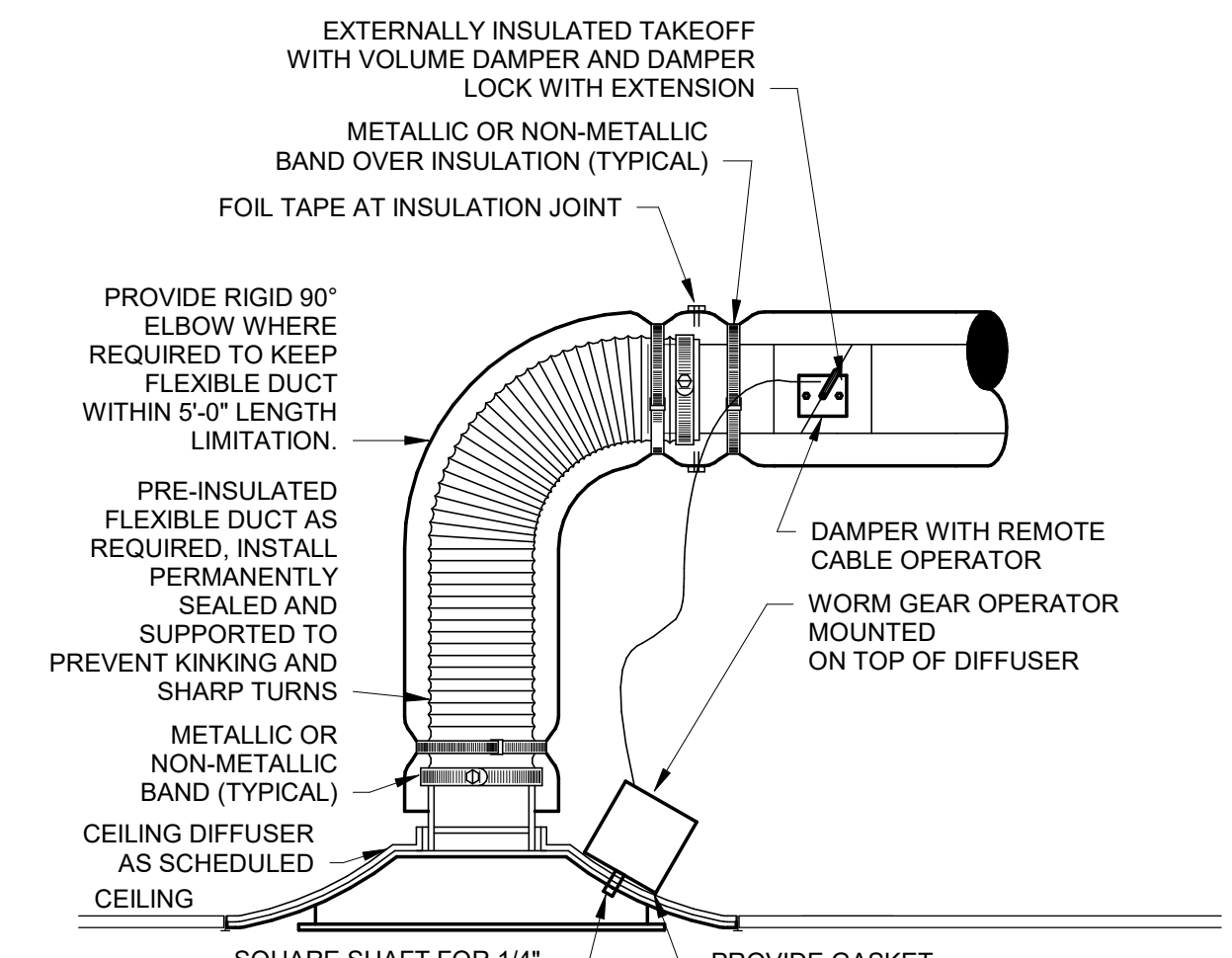


**5 DUCT HANGER LOWER ATTACHMENT DETAILS**  
NTS



- NOTES:
- EXTEND RIGID METAL DUCT SO THAT MAXIMUM FLEXIBLE DUCT LENGTH DOES NOT EXCEED 5'-0". PROVIDE RIGID 90° ELBOW WHERE REQUIRED TO KEEP FLEXIBLE DUCT WITHIN 5'-0" LENGTH LIMITATION.

**2 LAY-IN CEILING DIFFUSER DETAIL**  
NTS



- NOTES:
- FLEXIBLE DUCT LENGTH MAY NOT EXCEED 5'-0". EXTEND RIGID DUCT AS REQUIRED.
  - REFER TO SPECIFICATIONS FOR FLEXIBLE DUCTWORK INSTALLATION REQUIREMENTS.

**1 CEILING DIFFUSER DETAIL**  
NTS

### INSTRUMENT CALIBRATION LIST

INSTRUMENT	MANUFACTURER	MODEL / SERIAL #	CALIBRATION DATE	CALIBRATION DUE DATE
	Ortridge Instruments	ADM-860C / M10775	10/24/2023	10/24/2024
Clamp probe	Fluke	335 / 12150260	8/15/2023	8/15/2024
type thermocouple	Fluke	52II / 14260091	8/15/2023	8/15/2024
strobe tachometer	Monarch	Nova-Pro 100 / 2800134	9/26/2023	9/26/2024

# AIRDATA MULTIMETER CERTIFICATE OF RECALIBRATION

Customer ID: 020970

S/N: M10775

Customer: ZARETSKY ENGINEERING SOLUTIONS, INC

City: FOUNTAIN VALLEY

State: CA

As-Received Model #: ADM-860C

Converted to Model #:

Order #: R232377

PO #:

Customer Eqpt ID#:

Calibration Due Date: \_\_\_\_\_

This instrument has been calibrated using Calibration Standards which are traceable to NIST (National Institute of Standards and Technology). Test accuracy ratio is 4:1 for pressures and temperature. Quality Assurance Program and calibration procedures meet the requirements for ANSI/NCSL Z540-1, ISO 17025, MIL-STD 45662A and manufacturer's specifications. Calibration accuracy is certified when meters are used with properly functioning accessories only. All Uncertainties are expressed in expanded terms (twice the calculated uncertainty). This report shall not be reproduced, except in full, without the written approval of Shortridge Instruments, Inc. Results relate only to the item calibrated. For limitations on use, see Shortridge Instruments, Inc. Instruction Manual for the use of AirData Multimeters. Procedure used: Procedure for Differential Pressure, Absolute Pressure and Temperature Recalibration of AirData Multimeters SIP-CP02 Revision: 30 Dated: 04/04/16

Calibration Technician(s): m. Romue m. LaBarb Calibration Date: 10/24/2023

Calibration Approved by: D. Babb Title: Cal Super. Date: 10/25/2023

As-Received By m. Romue  
 Date 10/09/2023 Rh 33 %  
 Ambient Temperature 76 °F  
 Barometric Pressure 28.11 in Hg  
 All within spec YES NO NA

FINAL Test By m. LaBarb  
 Date 10/24/2023 Rh 39 %  
 Ambient Temperature 74 °F  
 Barometric Pressure 28.27 in Hg  
 All within spec YES NO

Test By \_\_\_\_\_  
 Date \_\_\_\_\_ Rh \_\_\_\_\_ %  
 Ambient Temperature N/A °F  
 Barometric Pressure \_\_\_\_\_ in Hg  
 All within spec YES NO

### ABSOLUTE PRESSURE TEST (in Hg)

TEST METER TOLERANCE = ± 2.0 % ± .1 in Hg AS-RECEIVED TEST WITHIN SPEC YES NO N/A See Notes

Pressure Standard	Heise #	S/N	As-Rcvd	Test 2	Test 3	Pressure Standard	Heise #	S/N	As-Rcvd	Test 2	Test 3
Pressure Standard: Heise #02-R	S/N: 41741/42451	As-Rcvd	Test 2	Test 3	Pressure Standard: Heise #12A-R	S/N: 45605/48491	As-Rcvd	Test 2	Test 3		
Pressure Standard: Heise #04-R	S/N: 41743/42453	As-Rcvd	Test 2	Test 3	Pressure Standard: Heise #14-R	S/N: 43412/45043-2	As-Rcvd	Test 2	Test 3		
Pressure Standard: Heise #06-R	S/N: 41742/42452-1	As-Rcvd	Test 2	Test 3	Pressure Standard: Heise #16-R	S/N: 43413/45044	As-Rcvd	Test 2	Test 3		
Pressure Standard: Heise #08-R	S/N: 42186/43328	As-Rcvd	Test 2	Test 3	Pressure Standard: Heise #18-R	S/N: 44581/46845-1	As-Rcvd	Test 2	Test 3		
Pressure Standard: Heise #10-R	S/N: 42203/43352	As-Rcvd	Test 2	Test 3	Pressure Standard: Heise #20-R	S/N: 44582/46847	As-Rcvd	Test 2	Test 3		

Approx Set Pt	Standard	Test Meter	% Diff	Standard	Test Meter	% Diff	Standard	Test Meter	% Diff
14.0	14.16	14.2	.28	14.06	14.0	-.43			
28.4	28.11	28.2	.32	28.27	28.3	.11			N/A
40.0	40.23	40.3	.17	40.06	40.0	-.15			

### DIFFERENTIAL PRESSURE TEST (in wc)

TEST METER TOLERANCE = ± 2.0 % ± 0.001 in wc AS-RECEIVED TEST WITHIN SPEC YES NO N/A See Notes

Pressure Standard	Heise #	S/N	As-Rcvd	Test 2	Test 3	Pressure Standard	Heise #	S/N	As-Rcvd	Test 2	Test 3
Pressure Standard: Heise #01-L	S/N: 41739/42449	As-Rcvd	Test 2	Test 3	Pressure Standard: Heise #11-L	S/N: 43165/44551-1	As-Rcvd	Test 2	Test 3		
Pressure Standard: Heise #01-R	S/N: 41739/42446	As-Rcvd	Test 2	Test 3	Pressure Standard: Heise #11-R	S/N: 43165/44730	As-Rcvd	Test 2	Test 3		
Pressure Standard: Heise #02-L	S/N: 41741/42454	As-Rcvd	Test 2	Test 3	Pressure Standard: Heise #12A-L	S/N: 45605/48490-1	As-Rcvd	Test 2	Test 3		
Pressure Standard: Heise #03A-L	S/N: 45570/48461	As-Rcvd	Test 2	Test 3	Pressure Standard: Heise #13-L	S/N: 43415/45041	As-Rcvd	Test 2	Test 3		
Pressure Standard: Heise #03A-R	S/N: 45570/48460	As-Rcvd	Test 2	Test 3	Pressure Standard: Heise #13-R	S/N: 43415/45039	As-Rcvd	Test 2	Test 3		
Pressure Standard: Heise #04-L	S/N: 41743/42456	As-Rcvd	Test 2	Test 3	Pressure Standard: Heise #14-L	S/N: 43412/45045	As-Rcvd	Test 2	Test 3		
Pressure Standard: Heise #05-L	S/N: 41740/42450	As-Rcvd	Test 2	Test 3	Pressure Standard: Heise #15-L	S/N: 43416/45042	As-Rcvd	Test 2	Test 3		
Pressure Standard: Heise #05-R	S/N: 41740/42447	As-Rcvd	Test 2	Test 3	Pressure Standard: Heise #15-R	S/N: 43416/45040-1	As-Rcvd	Test 2	Test 3		
Pressure Standard: Heise #06-L	S/N: 41742/42455	As-Rcvd	Test 2	Test 3	Pressure Standard: Heise #16-L	S/N: 44579/46842	As-Rcvd	Test 2	Test 3		
Pressure Standard: Heise #07-L	S/N: 42185/42186	As-Rcvd	Test 2	Test 3	Pressure Standard: Heise #17-L	S/N: 44579/46842	As-Rcvd	Test 2	Test 3		
Pressure Standard: Heise #07-R	S/N: 42185/43326	As-Rcvd	Test 2	Test 3	Pressure Standard: Heise #17-R	S/N: 44579/46841	As-Rcvd	Test 2	Test 3		
Pressure Standard: Heise #08-L	S/N: 42186/43329	As-Rcvd	Test 2	Test 3	Pressure Standard: Heise #18-L	S/N: 44581/46846	As-Rcvd	Test 2	Test 3		
Pressure Standard: Heise #09-L	S/N: 42202/43351	As-Rcvd	Test 2	Test 3	Pressure Standard: Heise #19-L	S/N: 44580/46844	As-Rcvd	Test 2	Test 3		
Pressure Standard: Heise #09-R	S/N: 42202/43350	As-Rcvd	Test 2	Test 3	Pressure Standard: Heise #19-R	S/N: 44580/46843	As-Rcvd	Test 2	Test 3		
Pressure Standard: Heise #10-L	S/N: 42203/43353	As-Rcvd	Test 2	Test 3	Pressure Standard: Heise #20-L	S/N: 44582/46848	As-Rcvd	Test 2	Test 3		

Approx Set Pt	Standard	Test Meter	% Diff	Standard	Test Meter	% Diff	Standard	Test Meter	% Diff
0.0500	.0500	.0501	.20	.0504	.0503	-.20			
0.1250	.1257	.1257	.00	.1251	.1250	-.08			
0.2250	.2252	.2257	.22	.2254	.2251	-.13			
1.000	1.016	1.010	-.59	1.017	1.015	-.20			
2.000	2.039	2.043	.20	2.010	2.004	-.30			N/A
3.600	3.617	3.617	.00	3.627	3.620	-.19			
4.400	4.428	4.433	.11	4.415	4.411	-.09			
27.00	27.14	27.15	.04	27.18	27.14	-.15			
50.00	50.39	50.48	.18	50.21	50.01	-.40			
Overrange	NA	✓	NA	NA	✓	NA	NA		NA

Shortridge Instruments, Inc.

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# TEMPROBE RECALIBRATION TEST REPORT

Customer ID: 020970 Multimeter Serial Number: M10775  
 Customer: Zaretsky Engineering Solutions, Inc city: Fountain Valley State: CA Order #: R232371  
 As-Received Test By: M. Ramirez Date: 10/09/2023 Final Test By: N/A Date: N/A  
 As-Received: Rh: 42 % Ambient Temperature: 75 ° F Barometric Pressure 28.11 in Hg  
 Final: Rh: N/A % Ambient Temperature: N/A ° F Barometric Pressure N/A in Hg

TEMPERATURE TEST (° F) TEMPROBE TOLERANCE = ± 0.3° F  
 TEMPROBE MODEL NUMBER: ADT 446 TEMPROBE ID#: N/A

Test(s) with Customer's Meter  Test(s) with In-house Temperature Calibration Standard  All Within Specification Yes  No

TEMPERATURE TEST (° F)  
 TEMPROBE TOLERANCE = ± 0.3° F

Thermometer #1 S/N 8A089 / Thermistor S/N A410660	Set Point: <u>35° F</u> 95° F 155° F
Thermometer #2 S/N 8B104 / Thermistor S/N 871507	Set Point: 35° F 95° F 155° F
Thermometer #5 S/N B11780 / Thermistor S/N B10505	Set Point: 35° F 95° F <u>155° F</u>
Thermometer #6 S/N B11782 / Thermistor S/N B10509	Set Point: 35° F <u>95° F</u> 155° F
Thermometer #7 S/N B49938 / Thermistor S/N B482202	Set Point: 35° F 95° F 155° F
Temperature Standard AirData Multimeter S/N M00136	Set Point: 35° F 95° F 155° F
Temperature Standard AirData Multimeter S/N M96100	Set Point: 35° F 95° F 155° F

Approximate Set Point	Set Point Uncertainty	AS-RECEIVED TEST			FINAL TEST		
		Standard ° F	Test Meter ° F	Offset ° F	Standard ° F	Test Meter ° F	Offset ° F
35 ° F	0.00324	35.0	34.8	-.2	/		
95 ° F	0.00324	95.0	94.6	-.4			N/A
155 ° F	0.00324	155.0	154.4	-.6			

NOTES: \_\_\_\_\_

Procedure used: Procedure for Calibration/Recalibration of MultiTemps and/or TemProbes SIP-CP14 Rev: 03 Dated: 07/31/14. There were no additions to or deviations from the calibration procedure during this calibration process.

Calibration standards used by Shortridge Instruments, Inc. are traceable to NIST (National Institute of Standards and Technology). Calibration is performed in accordance with ANSI/NCSL Z540-1, ISO 17025, MIL-STD 45662A and manufacturer's specifications. Calibration accuracy is certified when meters are used with properly functioning accessories only. This report shall not be reproduced, except in full, without the written approval of Shortridge Instruments, Inc. Results relate only to the item calibrated. Limitations on use: See Shortridge Instruments, Inc. Instruction Manual for the use of AirData Multimeters.

The enclosed ADM or HDM Calibration Standards form(s) is/are an integral part of this calibration and must remain with this Certificate of Calibration. Any calibration due date shown is specified by the customer.

Calibration Approved by: G. Babio Title: Cal. Super. Date: 10/25/2023

**Shortridge Instruments, Inc.**  
 7855 East Redfield Road Scottsdale, Arizona 85260  
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# Shortridge Instruments, Inc. AirData Multimeter Calibration Equipment

Order Number: RZ32377    Serial Number: M10775    Test Type:    Initial    As-Received    Final

## ABSOLUTE PRESSURE STANDARDS

ADM #02-R	S/N: 41741/42451	Heise Model: PPM-2	Mfgd by Dresser Industries	Calibrated by Ashcroft	Calibration Date: 08/16/23	Due Date: 08/2024
ADM #04-R	S/N: 41743/42453	Heise Model: PPM-2	Mfgd by Dresser Industries	Calibrated by Ashcroft	Calibration Date: 03/13/23	Due Date: 03/2024
ADM #06-R	S/N: 41742/42452-1	Heise Model: PPM-2	Mfgd by Dresser Industries	Calibrated by Ashcroft	Calibration Date: 09/01/22	Due Date: 11/2023
ADM #08-R	S/N: 42186/43328	Heise Model: PPM-2	Mfgd by Dresser Industries	Calibrated by Ashcroft	Calibration Date: 07/14/23	Due Date: 07/2024
ADM #10-R	S/N: 42203/43352	Heise Model: PPM-2	Mfgd by Dresser Industries	Calibrated by Ashcroft	Calibration Date: 05/25/23	Due Date: 05/2024
ADM #12A-R	S/N: 45605/48491	Heise Model: PPM-2	Mfgd by Dresser Industries	Calibrated by Ashcroft	Calibration Date: 08/01/22	Due Date: 10/2023
ADM #14-R	S/N: 43412/45043-2	Heise Model: PPM-2	Mfgd by Dresser Industries	Calibrated by Ashcroft	Calibration Date: 09/28/22	Due Date: 12/2023
ADM #16-R	S/N: 43413/45044	Heise Model: PPM-2	Mfgd by Dresser Industries	Calibrated by Ashcroft	Calibration Date: 04/25/23	Due Date: 04/2024
ADM #18-R	S/N: 44581/46845-1	Heise Model: PPM-2	Mfgd & Calibrated by Ashcroft, Inc.		Calibration Date: 02/10/23	Due Date: 02/2024
ADM #20-R	S/N: 44582/46847	Heise Model: PPM-2	Mfgd & Calibrated by Ashcroft, Inc.		Calibration Date: 07/07/22	Due Date: 08/2023
#02-R, 04-R, 06-R, 08-R, 10-R, 12A-R, 14-R, 16-R		Rated Accuracy: 0.05% fs (0.0305 in Hg)	Range: 0-30 psia		Resolution: 0.01	Uncertainty: < 0.0358
#18-R, 20-R		Rated Accuracy: 0.05% fs (0.0305 in Hg)	Range: 0-60 in Hg		Resolution: 0.001	Uncertainty: < 0.0358

## DIFFERENTIAL PRESSURE STANDARDS

ADM #01-L	S/N: 41739/42449	Heise Model: PPM-1	Mfgd by Dresser Industries	Calibrated by Ashcroft	Calibration Date: 08/17/23	Due Date: 08/2024
ADM #01-R	S/N: 41739/42446	Heise Model: PPM-1	Mfgd by Dresser Industries	Calibrated by Ashcroft	Calibration Date: 08/17/23	Due Date: 08/2024
ADM #02-L	S/N: 41741/42454	Heise Model: PPM-1	Mfgd by Dresser Industries	Calibrated by Ashcroft	Calibration Date: 08/16/23	Due Date: 08/2024
ADM #03A-L	S/N: 45570/48461	Heise Model: PPM-1	Mfgd by Dresser Industries	Calibrated by Ashcroft	Calibration Date: 03/17/23	Due Date: 03/2024
ADM #03A-R	S/N: 45570/48460	Heise Model: PPM-1	Mfgd by Dresser Industries	Calibrated by Ashcroft	Calibration Date: 03/20/23	Due Date: 03/2024
ADM #04-L	S/N: 41743/42456	Heise Model: PPM-1	Mfgd by Dresser Industries	Calibrated by Ashcroft	Calibration Date: 03/17/23	Due Date: 03/2024
ADM #05-L	S/N: 41740/42450	Heise Model: PPM-1	Mfgd by Dresser Industries	Calibrated by Ashcroft	Calibration Date: 09/01/22	Due Date: 11/2023
ADM #05-R	S/N: 41740/42447	Heise Model: PPM-1	Mfgd by Dresser Industries	Calibrated by Ashcroft	Calibration Date: 09/01/22	Due Date: 11/2023
ADM #06-L	S/N: 41742/42455	Heise Model: PPM-1	Mfgd by Dresser Industries	Calibrated by Ashcroft	Calibration Date: 09/01/22	Due Date: 11/2023
ADM #07-L	S/N: 42185/42186	Heise Model: PPM-1	Mfgd by Dresser Industries	Calibrated by Ashcroft	Calibration Date: 07/14/23	Due Date: 07/2024
ADM #07-R	S/N: 42185/43326	Heise Model: PPM-1	Mfgd by Dresser Industries	Calibrated by Ashcroft	Calibration Date: 07/14/23	Due Date: 07/2024
ADM #08-L	S/N: 42186/43329	Heise Model: PPM-1	Mfgd by Dresser Industries	Calibrated by Ashcroft	Calibration Date: 07/14/23	Due Date: 07/2024
ADM #09-L	S/N: 42202/43351	Heise Model: PPM-1	Mfgd by Dresser Industries	Calibrated by Ashcroft	Calibration Date: 05/30/23	Due Date: 05/2024
ADM #09-R	S/N: 42202/43350	Heise Model: PPM-1	Mfgd by Dresser Industries	Calibrated by Ashcroft	Calibration Date: 05/30/23	Due Date: 05/2024
ADM #10-L	S/N: 42203/43353	Heise Model: PPM-1	Mfgd by Dresser Industries	Calibrated by Ashcroft	Calibration Date: 05/26/23	Due Date: 05/2024
ADM #11-L	S/N: 43165/44551-1	Heise Model: PPM-1	Mfgd by Dresser Industries	Calibrated by Ashcroft	Calibration Date: 08/04/22	Due Date: 10/2023
ADM #11-R	S/N: 43165/44730	Heise Model: PPM-1	Mfgd by Dresser Industries	Calibrated by Ashcroft	Calibration Date: 08/04/22	Due Date: 10/2023
ADM #12A-L	S/N: 45605/48490-1	Heise Model: PPM-1	Mfgd by Dresser Industries	Calibrated by Ashcroft	Calibration Date: 08/03/22	Due Date: 10/2023
ADM #13-L	S/N: 43415/45041	Heise Model: PPM-1	Mfgd by Dresser Industries	Calibrated by Ashcroft	Calibration Date: 10/11/22	Due Date: 12/2023
ADM #13-R	S/N: 43415/45039	Heise Model: PPM-1	Mfgd by Dresser Industries	Calibrated by Ashcroft	Calibration Date: 10/11/22	Due Date: 12/2023
ADM #14-L	S/N: 43412/45045	Heise Model: PPM-1	Mfgd by Dresser Industries	Calibrated by Ashcroft	Calibration Date: 10/11/22	Due Date: 12/2023
ADM #15-L	S/N: 43416/45042	Heise Model: PPM-1	Mfgd by Dresser Industries	Calibrated by Ashcroft	Calibration Date: 04/26/23	Due Date: 04/2024
ADM #15-R	S/N: 43416/45040-1	Heise Model: PPM-1	Mfgd by Dresser Industries	Calibrated by Ashcroft	Calibration Date: 04/26/23	Due Date: 04/2024
ADM #16-L	S/N: 43413/45046	Heise Model: PPM-1	Mfgd by Dresser Industries	Calibrated by Ashcroft	Calibration Date: 04/25/23	Due Date: 04/2024
ADM #17-L	S/N: 44579/46842	Heise Model: PPM-1	Mfgd & Calibrated by Ashcroft, Inc.		Calibration Date: 02/15/23	Due Date: 02/2024
ADM #17-R	S/N: 44579/46841	Heise Model: PPM-1	Mfgd & Calibrated by Ashcroft, Inc.		Calibration Date: 02/15/23	Due Date: 02/2024
ADM #18-L	S/N: 44581/46846	Heise Model: PPM-1	Mfgd & Calibrated by Ashcroft, Inc.		Calibration Date: 02/15/23	Due Date: 02/2024
ADM #19-L	S/N: 44580/46844	Heise Model: PPM-1	Mfgd & Calibrated by Ashcroft, Inc.		Calibration Date: 07/14/22	Due Date: 08/2023
ADM #19-R	S/N: 44580/46843	Heise Model: PPM-1	Mfgd & Calibrated by Ashcroft, Inc.		Calibration Date: 07/14/22	Due Date: 08/2023
ADM #20-L	S/N: 44582/46848	Heise Model: PPM-1	Mfgd & Calibrated by Ashcroft, Inc.		Calibration Date: 07/14/22	Due Date: 08/2023
#01-L, 03A-L, 05-L, 07-L, 09-L, 11-L, 13-L, 15-L, 17-L, 19-L		Rated Accuracy: > 0.07% fs (0.000175 in wc)	Range: 0.0-0.25 in wc		Res.: 0.00001	Uncertainty: < 0.00035
#01-R, 03A-R, 05-R, 07-R, 09-R, 11-R, 13-R, 15-R, 17-R, 19-R		Rated Accuracy: > 0.06% fs (0.003 in wc)	Range: 0.0-5.0 in wc		Res.: 0.0001	Uncertainty: < 0.00348
#02-L, 04-L, 06-L, 08-L, 10-L, 12A-L, 14-L, 16-L, 18-L, 20-L		Rated Accuracy: > 0.06% fs (0.03 in wc)	Range: 0.0-50.0 in wc		Res.: 0.001	Uncertainty: < 0.0346

## Shortridge Instruments, Inc.

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# TEMPROBE CALIBRATION TEST REPORT

Customer ID: 020970

Multimeter Serial Number: M10775

Customer: Zaretsky Engineering Solutions, Inc City: Fountain Valley State: CA Order #: R232377

Test By: J. LaBarb Date: 10/19/2023

Rh: 36 % Ambient Temperature: 75 °F Barometric Pressure 28.43 in Hg

TEMPERATURE TEST (°F)    TEMPROBE TOLERANCE = ± 0.3° F

TEMPROBE MODEL NUMBER: ADT446    TEMPROBE ID#: TP-M10775

Test with Customer's Meter     Test with In-house Temperature Calibration Standard     Within Specification    Yes  No

## Calibration Standards

Thermometer #1 S/N 8A089 / Thermistor S/N A410660	Set Point: <u>35° F</u> 95° F    155° F
Thermometer #2 S/N 8B104 / Thermistor S/N 871507	Set Point: 35° F    95° F    155° F
Thermometer #5 S/N B11780 / Thermistor S/N B10505	Set Point: 35° F    95° F <u>155° F</u>
Thermometer #6 S/N B11782 / Thermistor S/N B10509	Set Point: 35° F <u>95° F</u> 155° F
Thermometer #7 S/N B49938 / Thermistor S/N B482202	Set Point: 35° F    95° F    155° F
Temperature Standard AirData Multimeter S/N M00136	Set Point: 35° F    95° F    155° F
Temperature Standard AirData Multimeter S/N M96100	Set Point: 35° F    95° F    155° F

Approx Set Point	Uncertainty ° F	Thermometer/Thermistor ° F	TemProbe ° F	Offset ° F
35 ° F	0.00324	<u>35.0</u>	<u>35.1</u>	<u>.1</u>
95 ° F	0.00324	<u>95.0</u>	<u>94.9</u>	<u>-.1</u>
155 ° F	0.00324	<u>155.0</u>	<u>155.1</u>	<u>.1</u>

NOTES: \_\_\_\_\_

Procedure used: Procedure for Calibration/Recalibration of MultiTemps and/or TemProbes SIP-CP14 Rev: 03 Dated: 07/31/14. There were no additions to or deviations from the calibration procedure during this calibration process.

Calibration standards used by Shortridge Instruments, Inc. are traceable to NIST (National Institute of Standards and Technology). Calibration is performed in accordance with ANSI/NCSL Z540-1, ISO 17025, MIL-STD 45662A and manufacturer's specifications. Calibration accuracy is certified when meters are used with properly functioning accessories only. This report shall not be reproduced, except in full, without the written approval of Shortridge Instruments, Inc. Results relate only to the item calibrated. Limitations on use: See Shortridge Instruments, Inc. Instruction Manual for the use of AirData Multimeters.

The enclosed ADM or HDM Calibration Standards form(s) is/are an integral part of this calibration and must remain with this Certificate of Calibration. Any calibration due date shown is specified by the customer.

Calibration Approved by: D. Babb Title: Cal. Super Date: 10/25/2023

**Shortridge Instruments, Inc.**  
 7855 East Redfield Road Scottsdale, Arizona 85260  
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Shortridge Instruments, Inc. AirData Multimeter Calibration Equipment

Order Number: R232377 Serial Number: TP-M10775 Test Type: Initial As-Received Final

**ABSOLUTE PRESSURE STANDARDS**

ADM #02-R	S/N: 41741/42451	Heise Model: PPM-2	Mfgd by Dresser Industries	Calibrated by Ashcroft	Calibration Date: 08/16/23	Due Date: 08/2024
ADM #04-R	S/N: 41743/42453	Heise Model: PPM-2	Mfgd by Dresser Industries	Calibrated by Ashcroft	Calibration Date: 03/13/23	Due Date: 03/2024
ADM #06-R	S/N: 41742/42452-1	Heise Model: PPM-2	Mfgd by Dresser Industries	Calibrated by Ashcroft	Calibration Date: 09/01/22	Due Date: 11/2023
ADM #08-R	S/N: 42186/43328	Heise Model: PPM-2	Mfgd by Dresser Industries	Calibrated by Ashcroft	Calibration Date: 07/14/23	Due Date: 07/2024
ADM #10-R	S/N: 42203/43352	Heise Model: PPM-2	Mfgd by Dresser Industries	Calibrated by Ashcroft	Calibration Date: 05/25/23	Due Date: 05/2024
ADM #12A-R	S/N: 45605/48491	Heise Model: PPM-2	Mfgd by Dresser Industries	Calibrated by Ashcroft	Calibration Date: 08/01/22	Due Date: 10/2023
ADM #14-R	S/N: 43412/45043-2	Heise Model: PPM-2	Mfgd by Dresser Industries	Calibrated by Ashcroft	Calibration Date: 09/28/22	Due Date: 12/2023
ADM #16-R	S/N: 43413/45044	Heise Model: PPM-2	Mfgd by Dresser Industries	Calibrated by Ashcroft	Calibration Date: 04/25/23	Due Date: 04/2024
ADM #18-R	S/N: 44581/46845-1	Heise Model: PPM-2	Mfgd & Calibrated by Ashcroft, Inc.		Calibration Date: 02/10/23	Due Date: 02/2024
ADM #20-R	S/N: 44582/46847	Heise Model: PPM-2	Mfgd & Calibrated by Ashcroft, Inc.		Calibration Date: 07/07/22	Due Date: 08/2023
#02-R, 04-R, 06-R, 08-R, 10-R, 12A-R, 14-R, 16-R	Rated Accuracy: 0.05% fs (0.0305 in Hg)		Range: 0-30 psia		Resolution: 0.01	Uncertainty: < 0.0358
#18-R, 20-R	Rated Accuracy: 0.05% fs (0.0305 in Hg)		Range: 0-60 in Hg		Resolution: 0.001	Uncertainty: < 0.0358

**DIFFERENTIAL PRESSURE STANDARDS**

ADM #01-L	S/N: 41739/42449	Heise Model: PPM-1	Mfgd by Dresser Industries	Calibrated by Ashcroft	Calibration Date: 08/17/23	Due Date: 08/2024
ADM #01-R	S/N: 41739/42446	Heise Model: PPM-1	Mfgd by Dresser Industries	Calibrated by Ashcroft	Calibration Date: 08/17/23	Due Date: 08/2024
ADM #02-L	S/N: 41741/42454	Heise Model: PPM-1	Mfgd by Dresser Industries	Calibrated by Ashcroft	Calibration Date: 08/16/23	Due Date: 08/2024
ADM #03A-L	S/N: 45570/48461	Heise Model: PPM-1	Mfgd by Dresser Industries	Calibrated by Ashcroft	Calibration Date: 03/17/23	Due Date: 03/2024
ADM #03A-R	S/N: 45570/48460	Heise Model: PPM-1	Mfgd by Dresser Industries	Calibrated by Ashcroft	Calibration Date: 03/20/23	Due Date: 03/2024
ADM #04-L	S/N: 41743/42456	Heise Model: PPM-1	Mfgd by Dresser Industries	Calibrated by Ashcroft	Calibration Date: 03/17/23	Due Date: 03/2024
ADM #05-L	S/N: 41740/42450	Heise Model: PPM-1	Mfgd by Dresser Industries	Calibrated by Ashcroft	Calibration Date: 09/01/22	Due Date: 11/2023
ADM #05-R	S/N: 41740/42447	Heise Model: PPM-1	Mfgd by Dresser Industries	Calibrated by Ashcroft	Calibration Date: 09/01/22	Due Date: 11/2023
ADM #06-L	S/N: 41742/42455	Heise Model: PPM-1	Mfgd by Dresser Industries	Calibrated by Ashcroft	Calibration Date: 09/01/22	Due Date: 11/2023
ADM #07-L	S/N: 42185/42186	Heise Model: PPM-1	Mfgd by Dresser Industries	Calibrated by Ashcroft	Calibration Date: 07/14/23	Due Date: 07/2024
ADM #07-R	S/N: 42185/43326	Heise Model: PPM-1	Mfgd by Dresser Industries	Calibrated by Ashcroft	Calibration Date: 07/14/23	Due Date: 07/2024
ADM #08-L	S/N: 42186/43329	Heise Model: PPM-1	Mfgd by Dresser Industries	Calibrated by Ashcroft	Calibration Date: 07/14/23	Due Date: 07/2024
ADM #09-L	S/N: 42202/43351	Heise Model: PPM-1	Mfgd by Dresser Industries	Calibrated by Ashcroft	Calibration Date: 05/30/23	Due Date: 05/2024
ADM #09-R	S/N: 42202/43350	Heise Model: PPM-1	Mfgd by Dresser Industries	Calibrated by Ashcroft	Calibration Date: 05/30/23	Due Date: 05/2024
ADM #10-L	S/N: 42203/43353	Heise Model: PPM-1	Mfgd by Dresser Industries	Calibrated by Ashcroft	Calibration Date: 05/26/23	Due Date: 05/2024
ADM #11-L	S/N: 43165/44551-1	Heise Model: PPM-1	Mfgd by Dresser Industries	Calibrated by Ashcroft	Calibration Date: 08/04/22	Due Date: 10/2023
ADM #11-R	S/N: 43165/44730	Heise Model: PPM-1	Mfgd by Dresser Industries	Calibrated by Ashcroft	Calibration Date: 08/04/22	Due Date: 10/2023
ADM #12A-L	S/N: 45605/48490-1	Heise Model: PPM-1	Mfgd by Dresser Industries	Calibrated by Ashcroft	Calibration Date: 08/03/22	Due Date: 10/2023
ADM #13-L	S/N: 43415/45041	Heise Model: PPM-1	Mfgd by Dresser Industries	Calibrated by Ashcroft	Calibration Date: 10/11/22	Due Date: 12/2023
ADM #13-R	S/N: 43415/45039	Heise Model: PPM-1	Mfgd by Dresser Industries	Calibrated by Ashcroft	Calibration Date: 10/11/22	Due Date: 12/2023
ADM #14-L	S/N: 43412/45045	Heise Model: PPM-1	Mfgd by Dresser Industries	Calibrated by Ashcroft	Calibration Date: 10/11/22	Due Date: 12/2023
ADM #15-L	S/N: 43416/45042	Heise Model: PPM-1	Mfgd by Dresser Industries	Calibrated by Ashcroft	Calibration Date: 04/26/23	Due Date: 04/2024
ADM #15-R	S/N: 43416/45040-1	Heise Model: PPM-1	Mfgd by Dresser Industries	Calibrated by Ashcroft	Calibration Date: 04/26/23	Due Date: 04/2024
ADM #16-L	S/N: 43413/45046	Heise Model: PPM-1	Mfgd by Dresser Industries	Calibrated by Ashcroft	Calibration Date: 04/25/23	Due Date: 04/2024
ADM #17-L	S/N: 44579/46842	Heise Model: PPM-1	Mfgd & Calibrated by Ashcroft, Inc.		Calibration Date: 02/15/23	Due Date: 02/2024
ADM #17-R	S/N: 44579/46841	Heise Model: PPM-1	Mfgd & Calibrated by Ashcroft, Inc.		Calibration Date: 02/15/23	Due Date: 02/2024
ADM #18-L	S/N: 44581/46846	Heise Model: PPM-1	Mfgd & Calibrated by Ashcroft, Inc.		Calibration Date: 02/15/23	Due Date: 02/2024
ADM #19-L	S/N: 44580/46844	Heise Model: PPM-1	Mfgd & Calibrated by Ashcroft, Inc.		Calibration Date: 07/14/22	Due Date: 08/2023
ADM #19-R	S/N: 44580/46843	Heise Model: PPM-1	Mfgd & Calibrated by Ashcroft, Inc.		Calibration Date: 07/14/22	Due Date: 08/2023
ADM #20-L	S/N: 44582/46848	Heise Model: PPM-1	Mfgd & Calibrated by Ashcroft, Inc.		Calibration Date: 07/14/22	Due Date: 08/2023
#01-L, 03A-L, 05-L, 07-L, 09-L, 11-L, 13-L, 15-L, 17-L, 19-L	Rated Accuracy: > 0.07% fs (0.000175 in wc)		Range: 0.0-0.25 in wc		Res.: 0.00001	Uncertainty: < 0.00035
#01-R, 03A-R, 05-R, 07-R, 09-R, 11-R, 13-R, 15-R, 17-R, 19-R	Rated Accuracy: > 0.06% fs ( 0.003 in wc)		Range: 0.0-5.0 in wc		Res.: 0.0001	Uncertainty: < 0.00348
#02-L, 04-L, 06-L, 08-L, 10-L, 12A-L, 14-L, 16-L, 18-L, 20-L	Rated Accuracy: > 0.06% fs (0.03 in wc)		Range: 0.0-50.0 in wc		Res.: 0.001	Uncertainty: < 0.0346

Shortridge Instruments, Inc.

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# AIRDATA MULTIMETER CERTIFICATE OF RECALIBRATION - AIR FLOW

Customer ID: 020970 S/N: M10775  
 Customer: ZARETSKY ENGINEERING SOLUTIONS, INC City: FOUNTAIN VALLEY State: CA  
 As-Received Model #: ADM-860C Converted to Model #: \_\_\_\_\_ Order #: R232377  
 PO #: \_\_\_\_\_ Customer Eqpt ID#: \_\_\_\_\_ Calibration Due Date: \_\_\_\_\_

This instrument has been calibrated using Calibration Standards which are traceable to NIST (National Institute of Standards and Technology). Quality Assurance Program and calibration procedures meet the requirements for ANSI/NCSL Z540-1, ISO 17025, MIL-STD 45662A and manufacturers specifications. Test accuracy ratio is 2:1 for air flow calibration. Calibration accuracy is certified when meters are used by a properly trained technician using properly functioning accessories only. If this meter has been calibrated for air flow using Shortridge Instruments, Inc. In-house Calibration Standard FlowHood Assembly S/N: IH1284 with Shortridge Instruments, Inc. In-House FlowHood Grid Assembly S/N IH1284-A, these air flow readings may not be indicative of the readings obtained with a less well maintained Flowhood Assembly. All specified uncertainties are expressed in expanded terms (twice the calculated uncertainty). This report shall not be reproduced, except in full, without the written approval of Shortridge Instruments, Inc. Results relate only to the item calibrated. Limitations on use: See Shortridge Instruments, Inc. Instruction Manuals for the use of AirData Multimeters and FlowMeters.

Procedure used for air flow: Procedure for Recalibration of AirData Multimeters on a FlowHood SIP-CP06 Revision: 14 Dated: 12/10/15. There were no additions to or deviations from the procedure during the calibration process. Any calibration due date shown is specified by the customer.

## AIR FLOW TEST (cfm) TEST METER TOLERANCE: ± 3.0% of reading ± 7 cfm

Calibration Equipment: FlowHood Stand Calibration Transfer Standard AirData Multimeter Model ADM-870, Serial Number M99083 or M98543 and FlowHood Calibration Stand S/N 7401 calibrated as a system. Manufactured by Shortridge Instruments, Inc. System Calibration Date: 05/22-05/23/2023. System Calibration Due Date: 05/2025. FlowHood Stand Calibration Transfer Standard AirData Multimeter Model ADM-870, Serial Number M99420 and M96452 and FlowHood Calibration Stand S/N 7401 calibrated as a system. Manufactured by Shortridge Instruments, Inc. System Calibration Date: 04/25-04/28/2022. System Calibration Due Date: 04/2024.

Rated accuracy of system is ± 1.5% of reading ± 3.5 cfm. Resolution is 0.1 cfm. The uncertainty of the system is as stated at each Set Point. All readings are compensated for the density effects of barometric pressure and temperature.

### AS-RECEIVED TEST CONDITIONS

Transfer Standard: M96452 M98543 M99083 M99420  
 Relative Humidity: 25 %  
 Ambient Temperature: 75 °F  
 Barometric Pressure: 28.32 in Hg  
 Calibrated By: M. Ramirez  
 Calibration Date: 10/06/2023  
 Within Spec: (Yes) No NA

### FINAL TEST CONDITIONS

Transfer Standard: M96452 M98543 M99083 M99420  
 Relative Humidity: 38 %  
 Ambient Temperature: 76 °F  
 Barometric Pressure: 28.35 in Hg  
 Calibrated By: M. Ramirez  
 Calibration Date: 10/25/2023  
 Within Spec: (Yes) No NA

As-Received using: Customer's FlowHood  In House FlowHood  Final using: Customer's FlowHood  In House FlowHood

Calibration Approved by: D. Babb Title: Cal. Super Date: 10/25/2023

Approximate Set Point	Set Point Uncertainty	AS-RECEIVED TEST			FINAL TEST		
		Standard CFM	Test Meter CFM	Difference	Standard CFM	Test Meter CFM	Difference
100	< 5.0 %	106	108	2	105	109	4
500	< 1.5 %	518	517	-1	515	515	0
1000	< 1.5 %	1018	1026	8	1013	1015	2
1500	< 1.25 %	1521	1535	14	1511	1525	14
2000	< 1.25 %	2018	2052	34	2007	2053	46

Notes: \_\_\_\_\_

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## CERTIFICATE OF CALIBRATION

Customer Name:	ZARETSKY ENG. SOLUTIONS	Calibration Date:	08-15-2023
Address:	FOUNTAIN VALLEY, CA	Calibration Due:	08-15-2024
PO Number:	30276	Calibration Fluid:	70F
Instrument Manufacturer:	FLUKE	Standard(s) Used:	A305 DUE 3-2024
Instrument Description:	DIG. CLAMP MULTIMETER	NIST Traceability Per:	1582872706
Model Number:	FLUKE 335	Ambient Conditions:	763 mmHGA 48% RH, 76F
Serial Number:	12150260; ID# 10	Procedure Number:	NAVAIR-17-20AQ-104
Rated Uncertainty:	+/- SEE TABLE	Certificate/File Number:	489703.2023
Uncertainty Given:	AS REC./AS LEFT WITHIN SPECS*		

\*ALL RANGES AND FUNCTIONS WITHIN SPECS.  
REFERENCE CONDITIONS ARE: 760mmHGA 70F.

UUT	DM.STD.	UUT	DM.STD.
DC VOLTAGE +/- 1%	DC VOLTAGE	AC VOLTAGE +/- 1%	AC VOLTAGE
0 TO 600V	0 TO 600V	0 TO 600V	0 TO 600V
5.0	5.018	125.0	125.05
50.0	50.055	220.0	220.25
250.0	250.10	270.0	270.46
AC CURRENT +/- 2%	AC CURRENT	RESISTANCE +/- 1.5%	RESISTANCE
0 TO 400A	0 TO 400A	0 TO 600 OHM	0 TO 600 OHM
5.00	5.006	270.0	270.5
50.0	50.07	330.0	330.7
100.0	100.20	470.0	471.2

All instruments used in the performance of the shown calibration have traceability to the National Institute of Standards and Technology (NIST). The uncertainty ratio between the calibration standards (DM.STD.) used and the unit under test (UUT) is a minimum of 4:1, unless otherwise noted. Calibration has been performed per the shown procedure number, in accordance with ISO 10012:2003, ISO 17025:2005, ANSI/NCSL-Z-540.3, and/or MIL-STD-45662A. Test methods: API2530-92 & ASME MFC-3M-1989.

**Dick Munns Company** • 11130 Winners Circle • Los Alamitos, CA 90720  
Phone (714) 827-1215

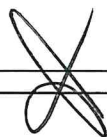
This Calibration Certificate shall not be reproduced except, in full, without approval by DICK MUNNS COMPANY. The data shown applies only to the instrument being calibrated and under the stated conditions of calibration.

Date:

Approved By:

Calibration Technician:

8-15-2023





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## CERTIFICATE OF CALIBRATION

Customer Name:	ZARETSKY ENGINEERING	Calibration Date:	08-15-2023
Address:	FOUNTAIN VALLEY, CA	Calibration Due:	08-15-2024
PO Number:	30276	Calibration Fluid:	AIR
Instrument Manufacturer:	FLUKE	Standard(s) Used:	A312 DUE 3-2024
Instrument Description:	DIG. THERMOMETER	NIST Traceability Per:	1583142077
Model Number:	52 II	Ambient Conditions:	763 mmHGA 48% RH, 76F
Serial Number:	14260091	Procedure Number:	NAVAIR-17-20ST-03
Rated Accuracy:	+/- .05% RD +.5°F	Certificate/File Number:	484695.2023
Uncertainty Given:	+/- .011% RD.; K=2		

AS REC./AS LEFT WITHIN SPECS.

REFERENCE CONDITIONS ARE: 760mmHGA 70F.

\*\* DEC.RULE: PFA NOT USED TO DETERMINE CONFORMITY \*\*

INDICATED UUT	ACTUAL DM.STD.	INDICATED INDICATED	ACTUAL ACTUAL
TYPE J	TYPE J	TYPE E	TYPE E
-346°F TO 2192°F	-346°F TO 2192°F	-238°F TO 1832°F	-238°F TO 1832°F
TYPE K	TYPE K	TYPE N	TYPE N
-328°F TO 2501°F	-328°F TO 2501°F	-328°F TO 2372°F	-328°F TO 2372°F
-20.3	-20.5		
32.0	32.3		
75.8	76.3		
125.1	125.5		
TYPE T	TYPE T	TYPE R,S	TYPE R,S
-418°F TO 752°F	-418°F TO 752°F	32°F TO 3212°F	32°F TO 3212°F

All instruments used in the performance of the shown calibration have traceability to the National Institute of Standards and Technology (NIST). The uncertainty ratio between the calibration standards (DM.STD.) and the Unit Under Test (UUT) is a minimum of 4:1, unless otherwise noted. Calibration has been performed according to the shown procedure. The use of IAS/ILAC logo indicates calibrations are in accordance to ISO/IEC 17025:2017.

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**Phone: 714-827-1215 · www.dickmunns.com**

This Calibration Certificate shall not be reproduced except, in full, without approval by Dick Munns Company. The data shown applies only to the instrument being calibrated and under the stated conditions of calibration.

Issuing Date:

Approved By:

Cal. Technician:

Calibrated at:    Lab

   On-Site (Customer's)

8-15-2023

Page   1   of   1

## CERTIFICATE OF CALIBRATION

Customer Name:	ZARETSKY ENGINEERING	Calibration Date:	09-26-2023
Address:	FOUNTAIN VALLEY, CA	Calibration Due:	09-26-2024
PO Number:	303969	Calibration Fluid:	70F
Instrument Manufacturer:	MONARCH	Standard(s) Used:	A864 DUE 3-2024
Instrument Description:	DIGITAL STROBE	NIST Traceability Per:	1580262707
Model Number:	NOVA-PRO 100	Ambient Conditions:	763 mmHGA 45% RH, 75F
Serial Number:	2800134	Procedure Number:	NAVAIR-17-20AF-114
Rated Accuracy:	+/- 1 COUNT	Certificate/File Number:	489704.2023
Uncertainty Given:	AS REC./AS LEFT WITHIN SPECS. REFERENCE CONDITIONS ARE: 760mmHGA 70F.		

INDICATED UUT RPM	ACTUAL DM.STD. RPM
60	60.0
900	900.0
10000	10000
60 TO 14000	60 TO 14000

All instruments used in the performance of the shown calibration have traceability to the National Institute of Standards and Technology (NIST). The uncertainty ratio between the calibration standards (DM.STD.) used and the unit under test (UUT) is a minimum of 4:1, unless otherwise noted. Calibration has been performed per the shown procedure number. in accordance with ISO 10012:2003, ISO 17025:2005, ANSI/NCSL-Z-540.3, and/or MIL-STD-45662A. Test methods: API2530-92 & ASME MFC-3M-1989.

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 Phone (714) 827-1215

This Calibration Certificate shall not be reproduced except, in full, without approval by DICK MUNNS COMPANY. The data shown applies only to the instrument being calibrated and under the stated conditions of calibration.

Date:

Approved By:

Calibration Technician:

9-26-2023

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