TAB Managed and Performed By:
National TAB
1126 Swift St
N Kansas City, MO 64116

TAB Performed by:
Double T Balancing
5910 S University Blvd
C-18, #354
Greenwood Village, CO 80121

COVER PAGE

Function: Test, Adjust, & Balance

Date: 8/8/2024

PROJECT

01-15-24 KING SOOPERS #620-147 - PEYTON, CO (FALCON MRKT PLC)

7530 FALCON MARKET PLACE

PEYTON, CO 80831

Client

Kroger / King Soopers Division 620

65 Tejon St.

Denver, CO 80223

01-15-24 KING SOOPERS #620-147 - PEYTON, CO (FALCON MRKT PLC)

CERTIFIED TEST, ADJUST, AND BALANCE REPORT

Owner/Client:	Kroger / King Soopers Division 620 65 Tejon St. Denver, CO, 80223
Architect/Engineer/Consultant:	CR Architects and Design 600 Vine Street, Suite 2210 Cincinnati, OH, 45202
General Contractor:	Mark Young Construction, INC. 7200 Miller Place Frederick, CO, 80504
NEBB Certified TAB Firm:	National TAB 1126 SWIFT STREET KANSAS CITY, MO, 64116 REGISTRATION NO: 3768

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CERTIFICATION

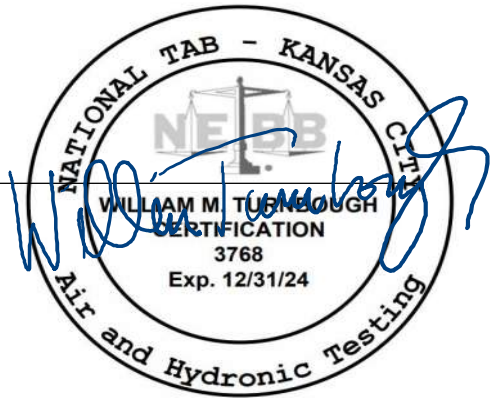
PROJECT: King Soopers 620-147 - Peyton, CO

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:	8/8/2024

Submitted and Certified by:

NEBB TAB FIRM:	National TAB - Kansas City
TAB PROFESSIONAL:	Will Turnbough
REGISTRATION NO:	CP-24289
CERTIFICATION EXP:	12/31/2024



Project Summary

The summary below provides a quick understanding of our scope of work and general testing procedures. Enclosed in the report is further detail 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.

DOAS Units

The DOAS units were measured by traversing the inlet of the unit with a velocity grid and multiplying by the free area of the opening. The fan speed was then adjusted to bring the total flow within design tolerance.

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.

Bakery Exhaust Fans

The bakery exhaust fans were measured by traversing the B-vent ductwork. The average velocity of these readings was multiplied by the cross-sectional area of the duct to calculate airflow. Adjustments were made to the fan speed so that the airflow is within tolerance.

National TAB

Project: 01-15-24 KING SOOPERS #620-147 - PEYTON, CO
(FALCON MRKT PLC)

System/Unit: AHU/RTU

Asset: DOAS1 AREA:SALES

Unit Data		
	Design	**Actual**
MFG	NA	CAPTIVE-AIRE
Serial Num	-	5990290
Model Num	NA	CASRTU3-I.500-22-12.5T
Type	-	DOAS
Configuration	-	VERTICAL
Num OA Filters 1	-	4
OA Filter Size 1	-	16X25X2
Num Final Filter 1	-	8
Final Filter Size 1	-	20X25X2

Motor Data		
	Design	**Actual**
Motor MFG	-	EBM-PAPST
Frame	-	IP55
Horsepower	-	NL
Motor Rpm	-	NL
Phase	-	3
Rated Voltage	-	200
Rated Amperage	-	6.6

Drive Data	
	Actual
Motor Sheave Size	DD
Motor Bore Size	DD
Motor Sheave SetPt	55%
Fan Sheave Size	DD
Fan Sheave Bore	DD
Belt CL Distance	DD
Num of Belts	DD
Belt Size	DD
Belt Alignment	DD

Test Data		
	Design	**Actual**
SF CFM	4515	4633
SF RPM	-	NA
RA CFM	-	0
OA CFM	-	4633
SF Rotation	-	CW
RA Damper Position	-	0%
Min OA Damper Position	-	100%
Min OA Damper Type	-	ECONOMIZER

General	
	Actual
Fan Rotation Correct	YES
Unit Filters Clean	YES
Condensate Drain Installed	YES

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National TAB

Project: 01-15-24 KING SOOPERS #620-147 - PEYTON, CO (FALCON MRKT PLC)

System/Unit: FAN - Exhaust

Asset: EF-K1 AREA:HOODS

Unit Data		
	Design	**Actual**
MFG	CAPTIVEAIRE	CAPTIVEAIRE
Model Num	DU180HFA	DU180HFA
Serial Num	-	4050672
Type	UPBLAST	UPBLAST
Configuration	VERTICAL	VERTICAL

Motor Data		
	Design	**Actual**
Motor MFG	-	TECO-WESTINGHOUSE
Frame	-	184T
Horsepower	-	2.0
Motor Rpm	-	1165
Phase	3	3
Voltage (rated)	208	230
Amperage (rated)	-	7.51
Service Factor	-	1.15

Test Data		
	Design	**Actual**
CFM	2800	2847
Fan RPM	1426	1172
Fan Rotation	-	CCW
Motor RPM	-	1172
System SetPt	-	60.4Hz
RL Amperage	-	6.8/6.8/6.9
Total ESP	1.500"	0.68"
Fan Inlet SP	-	-0.68"
Fan Discharge SP	-	ATM

Completed By: Dylan Crisman on 01/18/2024

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National TAB

Project: 01-15-24 KING SOOPERS #620-147 - PEYTON, CO (FALCON MRKT PLC)

System/Unit: Kitchen Hood Type I

Asset: HD1 AREA:

Unit Data		
	Design	**Actual**
MFG	CAPTIVEAIRE	CAPTIVEAIRE
Model Num	6024 ND-2	6024 ND-2
Job / Serial Num	-	4050672
Type	TYPE I	TYPE I
Hood length	96"	24
Hood Width	24"	24"

Test Data Exhaust		
	Design	**Actual**
Filter Type	BAFFLE	BAFFLE
Filter Size 1	16X16	16X16
Filter Qty 1	5	5
Filter AK factor size 1	1.62	1.62
Filter Total AK Area	8.1	8.1
Filter1 FPM	-	181
Filter2 FPM	-	165
Filter3 FPM	-	199
Filter4 FPM	-	180
Filter5 FPM	-	175
Filter Ave FPM(corr)	-	180
CFM	1400	1458

Cooking Equipment	
	Actual
Item 1	FRYER
Item 2	ROTISSERIE

Completed By: Dylan Crisman on 01/18/2024

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National TAB

Project: 01-15-24 KING SOOPERS #620-147 - PEYTON, CO (FALCON MRKT PLC)

System/Unit: Kitchen Hood Type I

Asset: HD2 AREA:

Unit Data		
	Design	**Actual**
MFG	CAPTIVEAIRE	CAPTIVEAIRE
Model Num	6024 ND-2	6024 ND-2
Job / Serial Num	-	4050672
Type	TYPE I	TYPE I
Hood length	96"	96"
Hood Width	24"	24"

Test Data Exhaust		
	Design	**Actual**
Filter Type	BAFFLE	BAFFLE
Filter Size 1	16X16	16X16
Filter Qty 1	5	5
Filter AK factor size 1	1.62	1.62
Filter Total AK Area	8.1	8.1
Filter1 FPM	-	168
Filter2 FPM	-	171
Filter3 FPM	-	168
Filter4 FPM	-	162
Filter5 FPM	-	189
Filter Ave FPM(corr)	-	172
CFM	1400	1389

Cooking Equipment	
	Actual
Item 1	OVEN
Item 2	OVEN

Completed By: Dylan Crisman on 01/18/2024

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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
CO2 = 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

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	TSI EBT731 EBT732117009	9/7/2023	9/7/2024
	AIR VELOCITY INSTRUMENT	50 fpm to 3900 fpm	+/- 5 % +/- 7 fpm	TSI EBT731 EBT732117009	9/7/2023	9/7/2024
	DIRECT HOOD READING	100 cfm to 2000 cfm	+/- 5 % +/- 7 cfm	TSI EBT731 EBT732117009	9/7/2023	9/7/2024
TEMPERATURE	AIR METER	-20 F to 240 F	+/- .5 % 2 F	Cooper SRH77A S/N 100516003	9/29/2023	9/29/2024
	AIR PROBE	-20 F to 240 F	+/- .5 % 2 F	Cooper SRH77A S/N 100516003	9/29/2023	9/29/2024
	IMMERSION METER	-20 F to 240 F	+/- .5 % 2 F	Cooper SRH77A S/N 100516003	9/29/2023	9/29/2024
	IMMERSION PROBE	-20 F to 240 F	+/- .5 % 2 F	Cooper SRH77A S/N 100516003	9/29/2023	9/29/2024
	CONTACT METER	-20 F to 240 F	+/- .5 % 2 F	Cooper SRH77A S/N 100516003	9/29/2023	9/29/2024
	CONTACT PROBE	-20 F to 240 F	+/- .5 % 2 F	Cooper SRH77A S/N 100516003	9/29/2023	9/29/2024
HUMIDITY	HUMIDITY PROBE	10 % RH to 90 % RH	3% of reading	Cooper SRH77A S/N 100516003	9/29/2023	9/29/2024
ELECTRICAL	VOLTAGE MEASUREMENT	0 VAC to 600 VAC	2 % reading +/- 5 digits	Klein Tools CL800 S/N 1220C-C1	9/29/2023	9/29/2024
	AMPERAGE MEASUREMENT	0 Amperers to 100 Amperes	2 % reading +/- 5 digits	Klein Tools CL800 S/N 1220C-C1	9/29/2023	9/29/2024
ROTATION	ROTATION MEASUREMENT	60 rpm to 5000 rpm	2 % reading 2 rpm	Shimpo DT 207Lp S/N D1690029R	9/29/2023	9/29/2024

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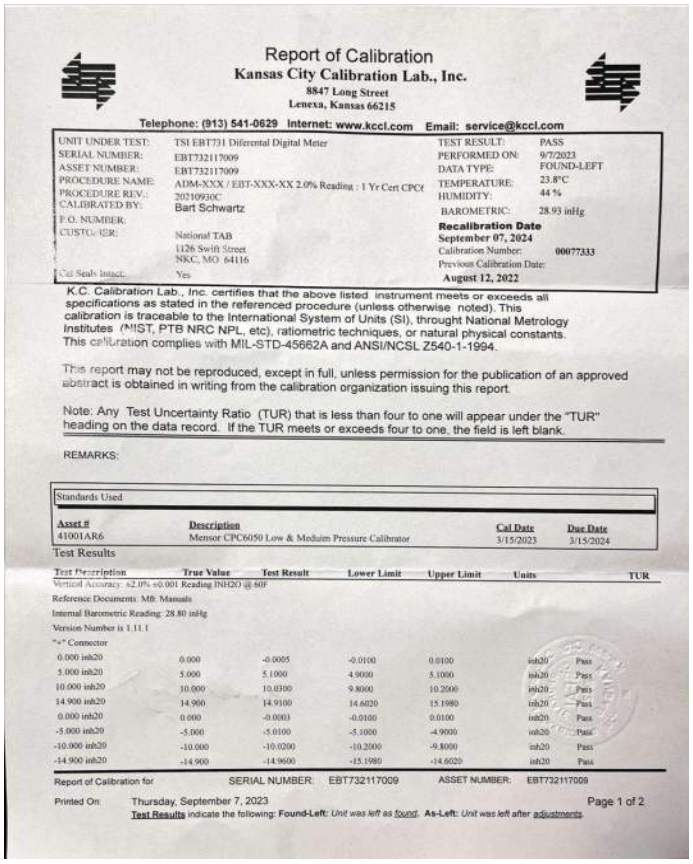

Report of Calibration
Kansas City Calibration Lab., Inc.
8847 Long Street
Lenexa, Kansas 66215
Telephone: (913) 541-0629 Internet: www.kccl.com Email: service@kccl.com

UNIT UNDER TEST:	TSI EBT731 Diferental Digital Meter	TEST RESULT:	PASS
SERIAL NUMBER:	EBT732117009	PERFORMED ON:	9/7/2023
ASSET NUMBER:	EBT732117009	DATA TYPE:	FOUND-LEFT
PROCEDURE NAME:	ADM-XXX / EBT-XXX-XX 2.0% Reading : 1 Yr Cert CPC(	TEMPERATURE:	23.8°C
PROCEDURE REV.:	20210930C	HUMIDITY:	44 %
CALIBRATED BY:	Bart Schwartz	BAROMETRIC:	28.93 inHg
P.O. NUMBER:		Recalibration Date	September 07, 2024
CUSTOMER:	National TAB 1126 Swift Street NKC, MO 64116	Calibration Number:	00077333
		Previous Calibration Date:	August 12, 2022
Cal Seals Intact:	Yes		

K.C. Calibration Lab., Inc. certifies that the above listed instrument meets or exceeds all specifications as stated in the referenced procedure (unless otherwise noted). This calibration is traceable to the International System of Units (SI), throught National Metrology Institutes (NIST, PTB NRC NPL, etc), ratiometric techniques, or natural physical constants. This calibration complies with MIL-STD-45662A and ANSI/NCSL Z540-1-1994.

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Note: Any Test Uncertainty Ratio (TUR) that is less than four to one will appear under the "TUR" heading on the data record. If the TUR meets or exceeds four to one, the field is left blank.

REMARKS:

Standards Used

Asset #	Description	Cal Date	Due Date
41001AR6	Mensor CPC6050 Low & Medium Pressure Calibrator	3/15/2023	3/15/2024

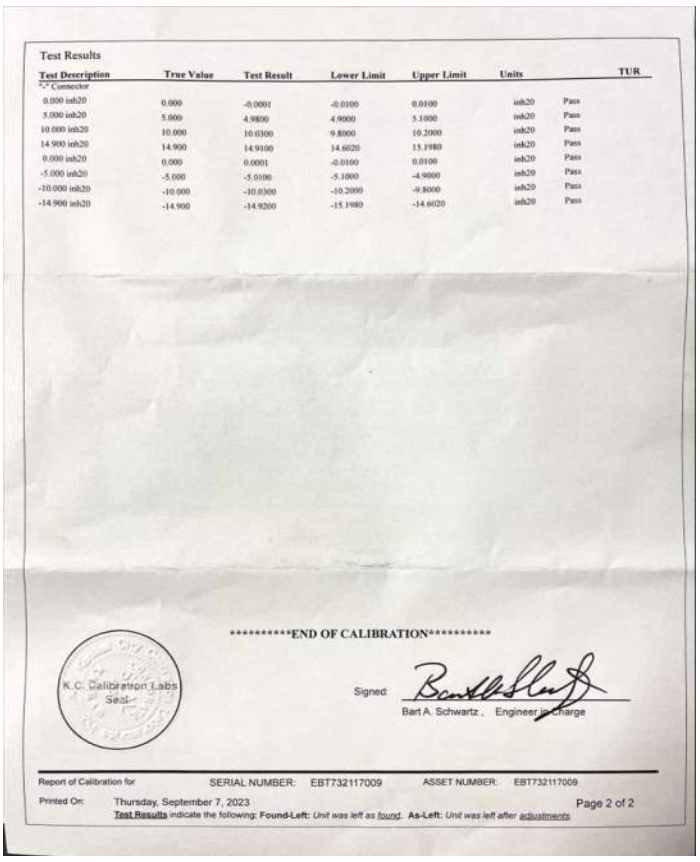
Test Results

Test Description	True Value	Test Result	Lower Limit	Upper Limit	Units	TUR
Vertical Accuracy: ±2.0% ±0.001 Reading INH20 @ 60F						
Reference Documents: MB: Manuals						
Internal Barometric Reading: 28.80 inHg						
Version Number is 1.11.1						
"+" Connector						
0.000 inh20	0.000	-0.0005	-0.0100	0.0100	inh20	Pass
5.000 inh20	5.000	5.1000	4.9000	5.1000	inh20	Pass
10.000 inh20	10.000	10.0300	9.8000	10.2000	inh20	Pass
14.900 inh20	14.900	14.9100	14.6020	15.1980	inh20	Pass
0.000 inh20	0.000	-0.0003	-0.0100	0.0100	inh20	Pass
-5.000 inh20	-5.000	-5.0100	-5.1000	-4.9000	inh20	Pass
-10.000 inh20	-10.000	-10.0200	-10.2000	-9.8000	inh20	Pass
-14.900 inh20	-14.900	-14.9600	-15.1980	-14.6020	inh20	Pass

Report of Calibration for SERIAL NUMBER: EBT732117009 ASSET NUMBER: EBT732117009

Printed On: Thursday, September 7, 2023 Page 1 of 2

Test Results indicate the following: Found-Left: Unit was left as found. As-Left: Unit was left after adjustments.



Test Results

Test Description	True Value	Test Result	Lower Limit	Upper Limit	Units	TUR
"+" Connector						
0.000 inh20	0.000	-0.0001	-0.0100	0.0100	inh20	Pass
5.000 inh20	5.000	4.9800	4.9000	5.1000	inh20	Pass
10.000 inh20	10.000	10.0300	9.8000	10.2000	inh20	Pass
14.900 inh20	14.900	14.9100	14.6020	15.1980	inh20	Pass
0.000 inh20	0.000	0.0001	-0.0100	0.0100	inh20	Pass
-5.000 inh20	-5.000	-5.0100	-5.1000	-4.9000	inh20	Pass
-10.000 inh20	-10.000	-10.0300	-10.2000	-9.8000	inh20	Pass
-14.900 inh20	-14.900	-14.9200	-15.1980	-14.6020	inh20	Pass

**********END OF CALIBRATION**********

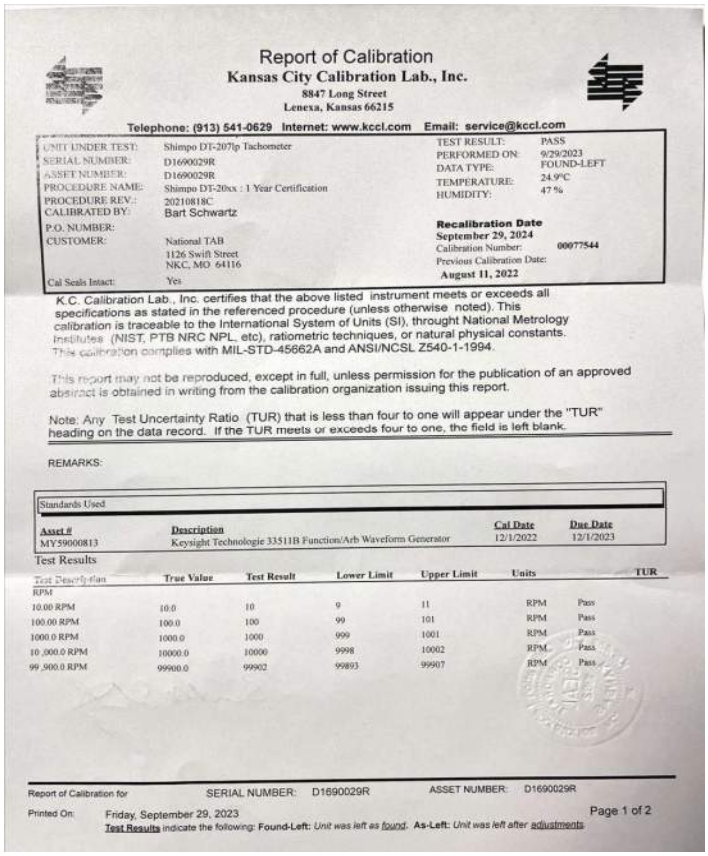
K.C. Calibration Labs Seal

Signed: Bart A. Schwartz , Engineer in Charge

Report of Calibration for SERIAL NUMBER: EBT732117009 ASSET NUMBER: EBT732117009

Printed On: Thursday, September 7, 2023 Page 2 of 2

Test Results indicate the following: Found-Left: Unit was left as found. As-Left: Unit was left after adjustments.



Report of Calibration
Kansas City Calibration Lab., Inc.
8847 Long Street
Lenexa, Kansas 66215
Telephone: (913) 541-0629 Internet: www.kccl.com Email: service@kccl.com

UNIT UNDER TEST:	Shimpo DT-207lp Tachometer	TEST RESULT:	PASS
SERIAL NUMBER:	D1690029R	PERFORMED ON:	9/29/2023
ASSET NUMBER:	D1690029R	DATA TYPE:	FOUND-LEFT
PROCEDURE NAME:	Shimpo DT-20xx : 1 Year Certification	TEMPERATURE:	24.9°C
PROCEDURE REV.:	20210818C	HUMIDITY:	47 %
CALIBRATED BY:	Bart Schwartz		
P.O. NUMBER:		Recalibration Date	September 29, 2024
CUSTOMER:	National TAB 1126 Swift Street NKC, MO 64116	Calibration Number:	00077544
		Previous Calibration Date:	August 11, 2022
Cal Seals Intact:	Yes		

K.C. Calibration Lab., Inc. certifies that the above listed instrument meets or exceeds all specifications as stated in the referenced procedure (unless otherwise noted). This calibration is traceable to the International System of Units (SI), throught National Metrology Institutes (NIST, PTB NRC NPL, etc), ratiometric techniques, or natural physical constants. This calibration complies with MIL-STD-45662A and ANSI/NCSL Z540-1-1994.

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Note: Any Test Uncertainty Ratio (TUR) that is less than four to one will appear under the "TUR" heading on the data record. If the TUR meets or exceeds four to one, the field is left blank.

REMARKS:

Standards Used

Asset #	Description	Cal Date	Due Date
MY59000813	Keysight Technologie 33511B Function/Arb Waveform Generator	12/1/2022	12/1/2023

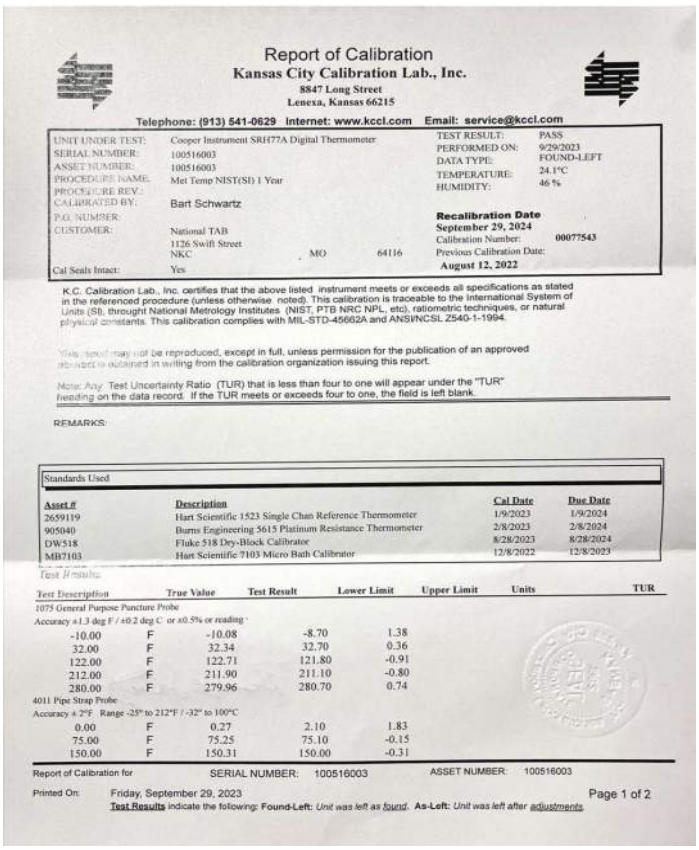
Test Results

Test Description	True Value	Test Result	Lower Limit	Upper Limit	Units	TUR
RPM						
10.00 RPM	10.0	10	9	11	RPM	Pass
100.00 RPM	100.0	100	99	101	RPM	Pass
1000.0 RPM	1000.0	1000	999	1001	RPM	Pass
10 ,000.0 RPM	10000.0	10000	9998	10002	RPM	Pass
99 ,900.0 RPM	99900.0	99902	99893	99907	RPM	Pass

Report of Calibration for SERIAL NUMBER: D1690029R ASSET NUMBER: D1690029R

Printed On: Friday, September 29, 2023 Page 1 of 2

Test Results indicate the following: Found-Left: Unit was left as found. As-Left: Unit was left after adjustments.



Report of Calibration
Kansas City Calibration Lab., Inc.
8847 Long Street
Lenexa, Kansas 66215
Telephone: (913) 541-0629 Internet: www.kccl.com Email: service@kccl.com

UNIT UNDER TEST:	Cooper Instrument SRH77A Digital Thermometer	TEST RESULT:	PASS
SERIAL NUMBER:	100516003	PERFORMED ON:	9/29/2023
ASSET NUMBER:	100516003	DATA TYPE:	FOUND-LEFT
PROCEDURE NAME:	Met Temp NIST(SI) 1 Year	TEMPERATURE:	24.1°C
PROCEDURE REV.:		HUMIDITY:	46 %
CALIBRATED BY:	Bart Schwartz		
P.O. NUMBER:		Recalibration Date	September 29, 2024
CUSTOMER:	National TAB 1126 Swift Street NKC , MO 64116	Calibration Number:	00077543
		Previous Calibration Date:	August 12, 2022
Cal Seals Intact:	Yes		

K.C. Calibration Lab., Inc. certifies that the above listed instrument meets or exceeds all specifications as stated in the referenced procedure (unless otherwise noted). This calibration is traceable to the International System of Units (SI), throught National Metrology Institutes (NIST, PTB NRC NPL, etc), ratiometric techniques, or natural physical constants. This calibration complies with MIL-STD-45662A and ANSI/NCSL Z540-1-1994.

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REMARKS:

Standards Used

Asset #	Description	Cal Date	Due Date
2659119	Hart Scientific 1523 Single Chan Reference Thermometer	1/9/2023	1/9/2024
905040	Burns Engineering 5615 Platinum Resistance Thermometer	2/8/2023	2/8/2024
DW518	Fluke 518 Dry-Block Calibrator	8/28/2023	8/28/2024
MB7103	Hart Scientific 7103 Micro Bath Calibrator	12/8/2022	12/8/2023

Test Results

Test Description	True Value	Test Result	Lower Limit	Upper Limit	Units	TUR
1075 General Purpose Puncture Probe						
Accuracy ±1.3 deg F / ±0.2 deg C or ±0.5% or reading						
-10.00	F	-10.08	-8.70	1.38		
32.00	F	32.34	32.70	0.36		
122.00	F	122.71	121.80	-0.91		
212.00	F	211.90	211.10	-0.80		
280.00	F	279.96	280.70	0.74		
4011 Pipe Strap Probe						
Accuracy ± 2°F Range -25° to 212°F / -32° to 100°C						
0.00	F	0.27	2.10	1.83		
75.00	F	75.25	75.10	-0.15		
150.00	F	150.31	150.00	-0.31		

Report of Calibration for SERIAL NUMBER: 100516003 ASSET NUMBER: 100516003

Printed On: Friday, September 29, 2023 Page 1 of 2

Test Results indicate the following: Found-Left: Unit was left as found. As-Left: Unit was left after adjustments.

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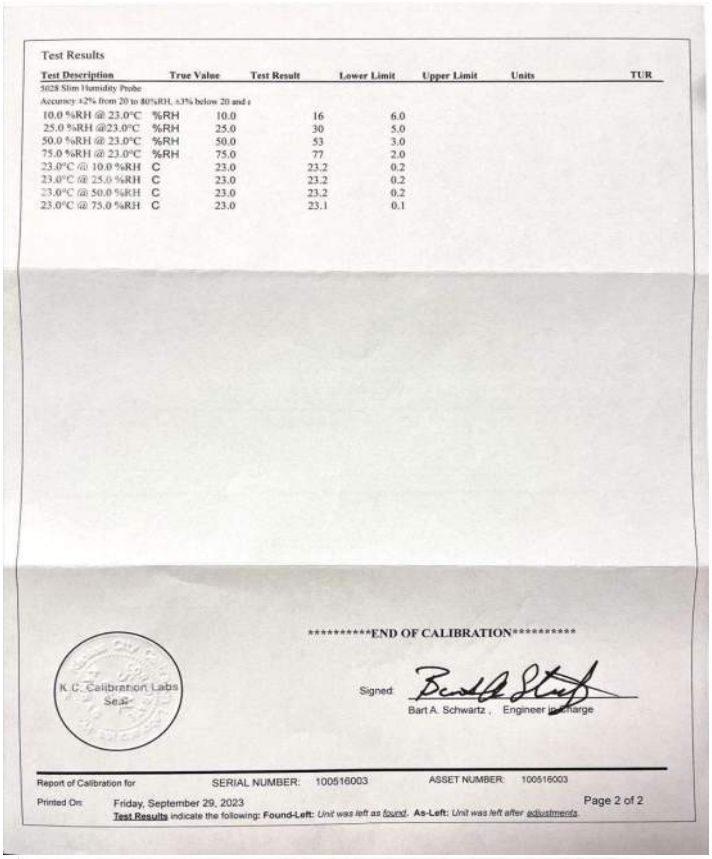


Test Results

Test Description	True Value	Test Result	Lower Limit	Upper Limit	Units	TUR
5028 Slim Humidity Probe						
Accuracy ±2% from 20 to 80%RH, ±3% below 20 and a						
10.0 %RH @ 23.0°C	%RH	10.0	16	6.0		
25.0 %RH @23.0°C	%RH	25.0	30	5.0		
50.0 %RH @ 23.0°C	%RH	50.0	53	3.0		
75.0 %RH @ 23.0°C	%RH	75.0	77	2.0		
23.0°C @ 10.0 %RH	C	23.0	23.2	0.2		
23.0°C @ 25.0 %RH	C	23.0	23.2	0.2		
23.0°C @ 50.0 %RH	C	23.0	23.2	0.2		
23.0°C @ 75.0 %RH	C	23.0	23.1	0.1		

**********END OF CALIBRATION**********

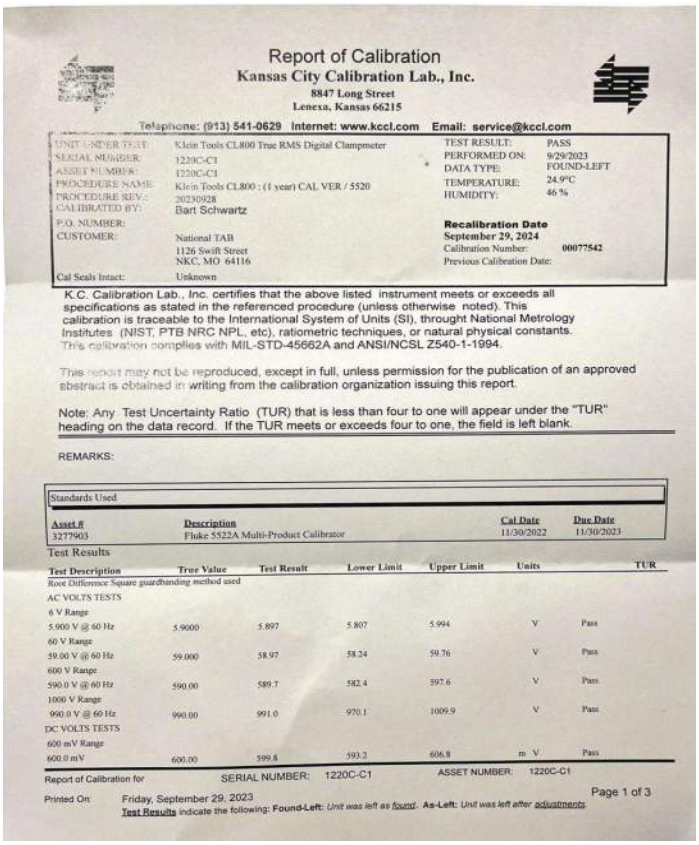
K.C. Calibration Labs Seal

Signed: Bart A. Schwartz , Engineer in Charge

Report of Calibration for SERIAL NUMBER: 100516003 ASSET NUMBER: 100516003

Printed On: Friday, September 29, 2023 Page 2 of 2

Test Results indicate the following: Found-Left: Unit was left as found. As-Left: Unit was left after adjustments.



Report of Calibration
Kansas City Calibration Lab., Inc.
8847 Long Street
Lenexa, Kansas 66215
Telephone: (913) 541-0629 Internet: www.kccl.com Email: service@kccl.com

UNIT UNDER TEST:	Klein Tools CL800 True RMS Digital Clampmeter	TEST RESULT:	PASS
SERIAL NUMBER:	1220C-C1	PERFORMED ON:	9/29/2023
ASSET NUMBER:	1220C-C1	DATA TYPE:	FOUND-LEFT
PROCEDURE NAME:	Klein Tools CL800 : (1 year) CAL VER / 5520	TEMPERATURE:	24.9°C
PROCEDURE REV.:	20230928	HUMIDITY:	46 %
CALIBRATED BY:	Bart Schwartz		
P.O. NUMBER:		**Recalibration Date**	
CUSTOMER:	National TAB 1126 Swift Street NKC, MO 64116	**September 29, 2024**	
		Calibration Number:	00077542
		Previous Calibration Date:	
Cal Seals Intact:	Unknown		

K.C. Calibration Lab., Inc. certifies that the above listed instrument meets or exceeds all specifications as stated in the referenced procedure (unless otherwise noted). This calibration is traceable to the International System of Units (SI), throught National Metrology Institutes (NIST, PTB NRC NPL, etc), ratiometric techniques, or natural physical constants. This calibration complies with MIL-STD-45662A and ANSI/NCSL Z540-1-1994.

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Note: Any Test Uncertainty Ratio (TUR) that is less than four to one will appear under the "TUR" heading on the data record. If the TUR meets or exceeds four to one, the field is left blank.

REMARKS:

Standards Used

Asset #	Description	Cal Date	Due Date
3277903	Fluke 5522A Multi-Product Calibrator	11/30/2022	11/30/2023

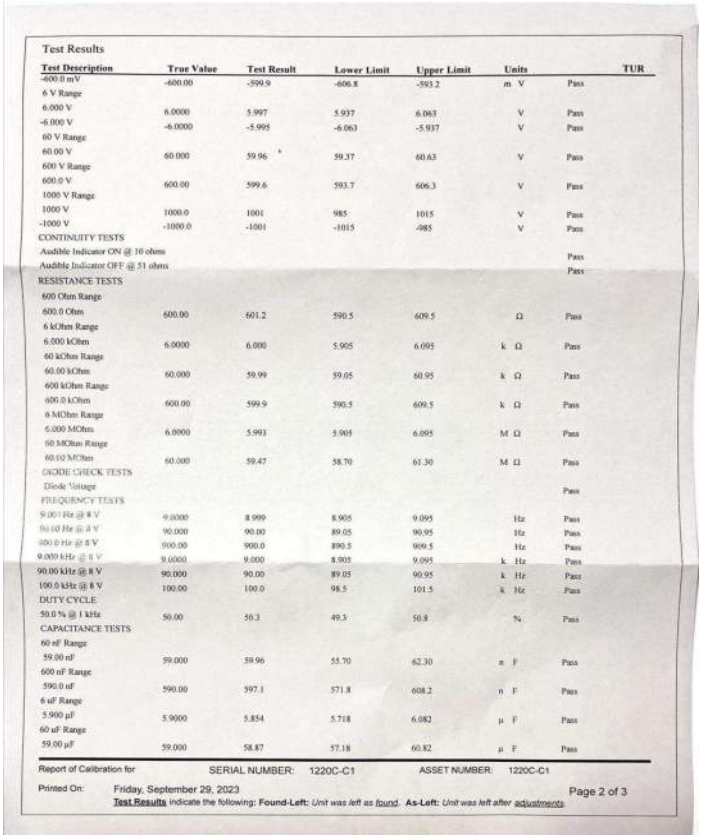
Test Results

Test Description	True Value	Test Result	Lower Limit	Upper Limit	Units	TUR
Root Difference Square guardbanding method used						
AC VOLTS TESTS						
6 V Range						
5.900 V @ 60 Hz	5.9000	5.897	5.807	5.994	V	Pass
60 V Range						
59.00 V @ 60 Hz	59.000	58.97	58.24	59.76	V	Pass
600 V Range						
590.0 V @ 60 Hz	590.00	589.7	582.4	597.6	V	Pass
1000 V Range						
990.0 V @ 60 Hz	990.00	991.0	970.1	1009.9	V	Pass
DC VOLTS TESTS						
600 mV Range						
600.0 mV	600.00	599.8	593.2	606.8	m V	Pass

Report of Calibration for SERIAL NUMBER: 1220C-C1 ASSET NUMBER: 1220C-C1

Printed On: Friday, September 29, 2023 Page 1 of 3

Test Results indicate the following: Found-Left: Unit was left as found. As-Left: Unit was left after adjustments.



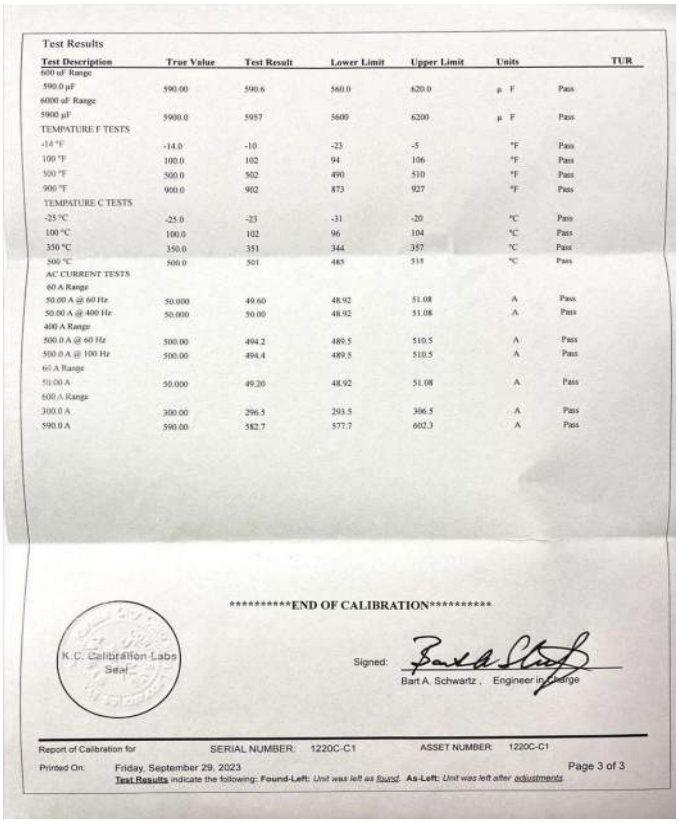
Test Results

Test Description	True Value	Test Result	Lower Limit	Upper Limit	Units	TUR
-600.0 mV	-600.00	-599.9	-606.8	-593.2	m V	Pass
6 V Range						
6.000 V	6.0000	5.997	5.937	6.063	V	Pass
-6.000 V	-6.0000	-5.995	-6.063	-5.937	V	Pass
60 V Range						
60.00 V	60.000	59.96	59.37	60.63	V	Pass
600 V Range						
600.0 V	600.00	599.6	593.7	606.3	V	Pass
1000 V Range						
1000 V	1000.0	1001	985	1015	V	Pass
-1000 V	-1000.0	-1001	-1015	-985	V	Pass
CONTINUITY TESTS						
Audible Indicator ON @ 10 ohms						Pass
Audible Indicator OFF @ 51 ohms						Pass
RESISTANCE TESTS						
600 Ohm Range						
600.0 Ohm	600.00	601.2	590.5	609.5	Ω	Pass
6 kOhm Range						
6.000 kOhm	6.0000	6.000	5.905	6.095	k Ω	Pass
60 kOhm Range						
60.00 kOhm	60.000	59.99	59.05	60.95	k Ω	Pass
600 kOhm Range						
600.0 kOhm	600.00	599.9	590.5	609.5	k Ω	Pass
6 MOhm Range						
6.000 MOhm	6.0000	5.993	5.905	6.095	M Ω	Pass
60 MOhm Range						
60.00 MOhm	60.000	59.47	58.70	61.30	M Ω	Pass
DIODE CHECK TESTS						
Diode Voltage						Pass
FREQUENCY TESTS						
9.000 Hz @ 8 V	9.0000	8.999	8.905	9.095	Hz	Pass
90.00 Hz @ 8 V	90.000	90.00	89.05	90.95	Hz	Pass
900.0 Hz @ 8 V	900.00	900.0	890.5	909.5	Hz	Pass
9.000 kHz @ 8 V	9.0000	9.000	8.905	9.095	k Hz	Pass
90.00 kHz @ 8 V	90.000	90.00	89.05	90.95	k Hz	Pass
100.0 kHz @ 8 V	100.00	100.0	98.5	101.5	k Hz	Pass
DUTY CYCLE						
50.0 % @ 1 kHz	50.00	50.3	49.3	50.8	%	Pass
CAPACITANCE TESTS						
60 nF Range						
59.00 nF	59.000	59.96	55.70	62.30	n F	Pass
600 nF Range						
590.0 nF	590.00	597.1	571.8	608.2	n F	Pass
6 uF Range						
5.900 µF	5.9000	5.854	5.718	6.082	µ F	Pass
60 uF Range						
59.00 µF	59.000	58.87	57.18	60.82	µ F	Pass

Report of Calibration for SERIAL NUMBER: 1220C-C1 ASSET NUMBER: 1220C-C1

Printed On: Friday, September 29, 2023 Page 2 of 3

Test Results indicate the following: Found-Left: Unit was left as found. As-Left: Unit was left after adjustments.



Test Results

Test Description	True Value	Test Result	Lower Limit	Upper Limit	Units	TUR
600 nF Range						
590.0 µF	590.00	590.6	560.0	620.0	µ F	Pass
6000 uF Range						
5900 µF	5900.0	5957	5600	6200	µ F	Pass
TEMPATURE F TESTS						
-14 °F	-14.0	-10	-23	-5	°F	Pass
100 °F	100.0	102	94	106	°F	Pass
500 °F	500.0	502	490	510	°F	Pass
900 °F	900.0	902	873	927	°F	Pass
TEMPATURE C TESTS						
-25 °C	-25.0	-23	-31	-20	°C	Pass
100 °C	100.0	102	96	104	°C	Pass
350 °C	350.0	351	344	357	°C	Pass
500 °C	500.0	501	485	515	°C	Pass
AC CURRENT TESTS						
60 A Range						
50.00 A @ 60 Hz	50.000	49.60	48.92	51.08	A	Pass
50.00 A @ 400 Hz	50.000	50.00	48.92	51.08	A	Pass
400 A Range						
500.0 A @ 60 Hz	500.00	494.2	489.5	510.5	A	Pass
500.0 A @ 100 Hz	500.00	494.4	489.5	510.5	A	Pass
60 A Range						
50.00 A	50.000	49.20	48.92	51.08	A	Pass
600 A Range						
300.0 A	300.00	296.5	293.5	306.5	A	Pass
590.0 A	590.00	582.7	577.7	602.3	A	Pass

**********END OF CALIBRATION**********

K.C. Calibration Labs Seal

Signed: Bart A. Schwartz , Engineer in Charge

Report of Calibration for SERIAL NUMBER: 1220C-C1 ASSET NUMBER: 1220C-C1

Printed On: Friday, September 29, 2023 Page 3 of 3

Test Results indicate the following: Found-Left: Unit was left as found. As-Left: Unit was left after adjustments.

Double T Balancing Company, LLC
5910 S. University Blvd.
C-18, #354
Greenwood Village, CO 80121
303-660-0620
NEBB Certified Testing & Balancing

TEST, ADJUST & BALANCE REPORT

DATE
1/11/2024

PROJECT
1330 - King Soopers 147
Meridian & Woodmen
Falcon, CO 80831

ARCHITECT

DESIGN ENGINEER

CONTRACTED BY
National Tab
1329 E. Kemper Rd, STE4210
Cincinnati, OH 45246

TAB FIRM
Double T Balancing Company
5910 S. University Blvd.
Greenwood Village, CO 80121
(303) 660-0620

DOUBLE T BALANCING COMPANY, LLC
5910 S. University Blvd.
C-18, #354
Greenwood Village, CO 80121
Phone: 303-660-0620

NEBB CERTIFIED TESTING & BALANCING

CERTIFICATION PAGE

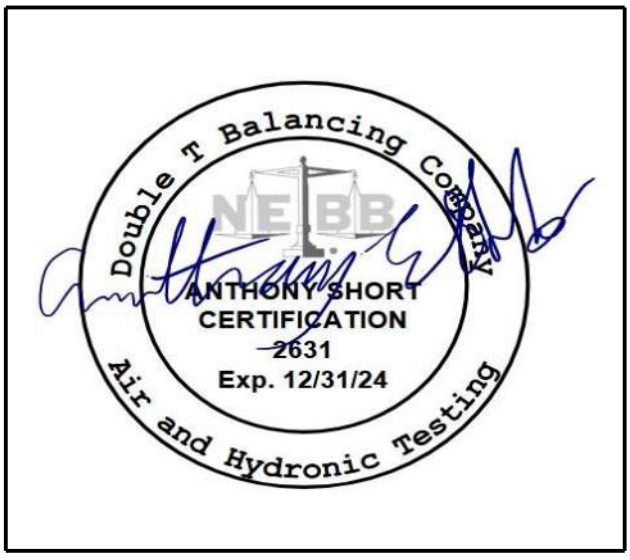
PROJECT NAME: 1330 - King Soopers 147
ADDRESS: Meridian & Woodmen
Falcon, CO 80831

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 Double T Balancing Company
REG NO. 2631 CERTIFIED BY Tony Short DATE 1/22/2024

SUBMITTED & CERTIFIED BY:

NEBB TAB FIRM Double T Balancing Company
TAB PROFESSIONAL Owner
REG NO. 2631
CERTIFICATION EXPIRATION DATE 12/31/2024



DOUBLE T BALANCING COMPANY, LLC
5910 S. University Blvd.
C-18, #354
Greenwood Village, CO 80121
Phone: 303-660-0620

NEBB CERTIFIED TESTING & BALANCING

INSTRUMENT CALIBRATION LIST

INSTRUMENT	MANUFACTURER	MODEL / SERIAL #	CALIBRATION DATE	CALIBRATION DUE DATE
Flowhood Meter	Shortridge Instruments	ADM-860 / M97246	7/26/2023	7/26/2024
True RMS Meter	Fluke	325 / 44160325WS	7/26/2023	7/26/2024

Certificate of Accredited and Traceable Calibration

LAERIE Calibration & Metrology Services	Laerie, Inc. Issues this Certificate of Calibration to:	**Certificate Number: 123483.4408**
	Double T Balancing	Customer Purchase Order:
	609 W Littelton Blvd #212 Littleton, CO 80120	Calibration Type: **CAL-2 NEBB**

For Asset: **M05784**

This calibration is traceable to the international system of units(SI), through National Institute of Standards and Technology (NIST).
Hutchinson's method is used including Guard Banding and TUR Strategy, False-Accept Risk normal distribution and 95% confidence level typical with coverage factor of 2.
Double T Balancing : accepts and understands measurement uncertainties and risk assessment in all measurements involved in calibration.

Manufacturer	Model	Serial Number	Description	Calibrated	Int. MTh's	Re-Cal
Shortridge Instruments, Inc.	ADM-860C	M05784	Airdata Multimeter	25-Jul-2023	12	**25-Jul-2024**

C-Procedure	Environmental	As-Received Physical Condition(s)
LAP : NEBB 2023	73.4°F ±9°F, 40 to 65%RH	1) AS-Received Annual maintenance performed, nominal exterior cosmetic wear, exterior cleaned where possible, initial inspection PASS.
Calibration Event:		

2FL: NEBB Compliant Calibration performed published data no adjustments required or performed.

Primary References Traceability Number Used in Calibration

REF	Projected Re-Cal.	Description	REF	Projected Re-Cal.	Description
T10014	6/2024	Temp Scanner Module			
5338	9/2024	PRT Probe			
10014	9/2024	Pressure Calibrator			

Comments:

www.laerie.com

Laboratory Altitude: 5,063.25 Ft.

56 Gateway Circle Berthoud, Colorado 80513
877-532-7990 970-532-7990

Veridical Review By:
L. E. Armfield CEO/President

Procedure Executed by:
JRN

TCC 2021-18C

CALIBRATION LOCATION: Laerie Inc. Laboratory

LAERIE
Calibration & Metrology Services

Environmental:73.4 °F±(9°F) RH(40 to 65)%

UUC Manufacturer:	Shortridge Instruments	Calibration Event:	**FOUND-LEFT**		Calibration Performance Report for:
Model:	ADM-860C	Description:	Temperature/Pressure Meter/Probe		
S/N:	M05784	ID:	**M05784/M12386-TP**	Eng. / Metrologist:	
CAL-DATE:	**7/25/2023**	CAL-DUE:	***7/25/2024***		

Calibration Performed:	% of range	REF inH_2O	Min inH_2O	UUC Ind inH_2O	Max inH_2O	Compilation			
Pressure Accuracy ±2% R ± .001 inH_20	**0.00**	**0.000**	**-0.001**	0.0000	**0.001**	**Calibrated**			
	20.00	**10.000**	**9.799**	10.009	**10.201**	**Calibrated**			
	50.00	**25.000**	**24.499**	25.003	**25.501**	**Calibrated**			
	80.00	**40.000**	**39.199**	40.004	**40.801**	**Calibrated**			

Calibration Performed:	% of range	REF	MIN	UUC	MAX	Compilation			
Temperature Accuracy 0 to 200 °F ±.5 % R + 2F	**20.00**	**40.0104 °F**	**37.81 °F**	39.7 °F	**42.21 °F**	**Calibrated**			
	50.00	**99.9486 °F**	**97.45 °F**	99.5 °F	**102.45 °F**	**Calibrated**			
	80.00	**159.9606 °F**	**157.16 °F**	159.5 °F	**162.76 °F**	**Calibrated**			

Calibration Performed:		REF	MIN	UUC	MAX	Compilation			
Absolute Pressure ±2% R ± .1 inHg		**25.030 inHg**	**24.429 inHg**	25.100 inHg	**25.631 inHg**	**Calibrated**			
	Absolute pressure is not specified by NEBB. This information is for information only								

LAERIE
Calibration & Metrology Services
56 Gateway Circle
Berthoud, Colorado 80513
Office: 970-532-7990
TF: 1-877-532-7990 Fax: 970-532-7992
www.laerie.com

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LAERIE
Calibration & Metrology Services

Environmental:73.4 °F±(9°F) RH(40 to 65)%

Certificate of Accredited and Traceable Calibration

LAERIE Calibration & Metrology Services	Laerie, Inc. Issues this Certificate of Calibration to:	**Certificate Number: 44610.6157**
	Double T Balancing	Customer Purchase Order:
	609 W Littelton Blvd #212 Littleton, CO 80120	Calibration Type: **CAL-2 NEBB**

For Asset: **44160325WS**

This calibration is traceable to the international system of units(SI), through National Institute of Standards and Technology (NIST).
Hutchinson's method is used including Guard Banding and TUR Strategy, False-Accept Risk normal distribution and 95% confidence level typical with coverage factor of 2.

Double T Balancing : accepts and understands measurement uncertainties and risk assessment in all measurements involved in calibration.

Manufacturer	Model	Serial Number	Description	Calibrated	Int. MTh's	Re-Cal
Fluke	325	44160325WS	True RMS Clamp Meter	26-Jul-2023	12	**26-Jul-2024**

C-Procedure	Environmental	As-Received Physical Condition(s)
MPS/LAP	73.4°F ±9°F, 40 to 65%RH	1) AS-Received Annual maintenance performed, nominal exterior cosmetic wear, exterior cleaned where possible, initial inspection PASS.
Calibration Event:		

2FL: NEBB Compliant Calibration performed published data no adjustments required or performed.

Primary References Traceability Number Used in Calibration

REF	Projected Re-Cal.	Description	REF	Projected Re-Cal.	Description
9707	9/2023	50 Current Loop			
T0C22	4/2024	Calibrator			

Comments:

www.laerie.com

Laboratory Altitude: 5,063.25 Ft.

56 Gateway Circle Berthoud, Colorado 80513
877-532-7990 970-532-7990

Veridical Review By:
L. E. Armfield CEO/President

TCC 2021-18C

Procedure Executed by:
JRN

CALIBRATION LOCATION: Laerie Inc. Laboratory

LAERIE
Calibration & Metrology Services

Environmental:73.4 °F±(9°F) RH(40 to 65)%

UUC Manufacturer: Southwire		Calibration Event:	**FOUND-LEFT**		Calibration Performance Report for:
Model: 21550T		Description: DMM - Clamp meter			**Double T Balancing**
S/N: 44160325WS	ID:	**44160325WS**		Eng. / Metrologist:	
CAL-DATE: **7/26/2023**	CAL-DUE:	***7/26/2024***		**JRN**	

Calibration Performed:		Range	REF	Min	UUC Ind	Max	Compilation	
AS-FOUND AC Volts Accuracy 60 Hz RANGE 0-600 VAC		**20.0 %**	**120 VAC**	**117.1 VAC**	119.9 VAC	**122.9 VAC**	**Calibrated**	
		50.0 %	**300 VAC**	**293.5 VAC**	299.8 VAC	**306.5 VAC**	**Calibrated**	
		80.0 %	**480 VAC**	**469.9 VAC**	479.9 VAC	**490.1 VAC**	**Calibrated**	

Calibration Performed:		Range	REF AAC	Min AAC	UUC Ind AAC	Max AAC	Compilation	Calibrator Setting for 50 Turn Coil
AS-FOUND AC Current Accuracy 60 Hz RANGE 0-100 AMPS		**20.0 %**	**20.000 AAC**	**19.6 AAC**	20.09 AAC	**20.5 AAC**	**Calibrated**	**0.4000 AAC**
		50.0 %	**50.000 AAC**	**48.5 AAC**	50.2 AAC	**51.5 AAC**	**Calibrated**	**1.0000 AAC**
		80.0 %	**80.000 AAC**	**77.9 AAC**	80.4 AAC	**82.1 AAC**	**Calibrated**	**1.6000 AAC**

LAERIE
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Greenwood Village, CO 80121
Phone: 303-660-0620

NEBB CERTIFIED TESTING & BALANCING

ABBREVIATIONS LIST

ABBREVIATIONS	
AHU	AIR HANDLING UNIT
AMP	AMPERAGE
AFMS	AIR FLOW MONITORING STATION
ATM	ATMOSPHERE
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
D.D.	DIRECT DRIVE
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
NPSH	NET POSITIVE SUCTION HEAD
NPSHA	NPSH AVAILABLE
NPSHR	NPSH REQUIRED
OA	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

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NEBB CERTIFIED TESTING & BALANCING

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NEBB CERTIFIED TESTING & BALANCING

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NEBB CERTIFIED TESTING & BALANCING

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Phone: 303-660-0620

NEBB CERTIFIED TESTING & BALANCING

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NEBB CERTIFIED TESTING & BALANCING

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EF-G2	100
EF-G2 TRA	101
King Soopers 147 - Revision	102-130

DOUBLE T BALANCING COMPANY, LLC
5910 S. University Blvd.
C-18, #354
Greenwood Village, CO 80121
Phone: 303-660-0620

NEBB CERTIFIED TESTING & BALANCING

Project Summary

Project: King Soopers 147

Item No.	Device	Description	Page Number
		RTU-1 thru RTU-11 were read at the return grille.	
	RTU-1 thru RTU-10, RTU-20	*Initially running at 132% of design. After adjusting motor speed controller the system was set for design airflow.*	
	RTU-11	*Initially running at 183% of design. After adjusting motor speed contoller the system was set for design airflow.*	
	RTU-13	*Initially running at 107% of design. After adjusting motor speed contoller and manual dampers the system was set for design airflow.*	
	RTU-14	*Initially running at 93% of design. After adjusting motor speed contoller and manual dampers the system was set for design airflow.*	
	RTU-15	*Initially running at 119% of design. After adjusting motor speed contoller and manual dampers the system was set for design airflow.*	
	RTU-16, RTU-17, RTU-21	*Initially running at 181% of design. After adjusting motor speed contoller the system was set for design airflow.*	
	RTU-18	*Initially running at 117% of design. After adjusting motor speed contoller and manual dampers the system was set for design airflow.*	
	RTU-19	*Initially running at 85% of design. After adjusting motor speed contoller and manual dampers the system has been proportionally balanced with available airflow..*	

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NEBB CERTIFIED TESTING & BALANCING

AIR APPARATUS TEST REPORT

PROJECT NAME:	1330 - King Soopers 147					
EQUIPMENT / SYSTEM:	RTU-1					
UNIT INFORMATION						
		DESIGN		***ACTUAL***		
MANUFACTURER		Lennox		Lennox		
MODEL #		LGM150U4E		LGM150U4EH1G		
SERIAL #				5622K06412		
LOCATION / SERVICE				Sales		
FAN INFORMATION						
		DESIGN		***ACTUAL***		
Total Airflow (CFM)		5,000		5,129		
Total of Terminals (CFM)		5,000		5,129		
Return Airflow (CFM)		5,000		5,129		
Outside Airflow (CFM)						
Total Static Pressure (in. w.g.)				0.82		
External Static Pressure (in. w.g.)		0.15		0.46		
Fan Speed (RPM / Setpoint)				D.D.		
VFD Speed (Hz)				n/a		
OA Damper Postion (% Open)				n/a		
MOTOR INFORMATION						
		DESIGN / NAMEPLATE		***ACTUAL***		
Manufacturer / Frame - Nameplate				ebmpapst / n/g		
Horse Power (HP)		3.75		n/g		
Brake Horse Power (BHP)				1.20		
Volts	Phase	480	3	491	492	493
Full Load Amps		4.30		1.58	1.46	1.34
Corrected Nameplate Amps		-		4.20		
Motor Speed (RPM / Setting)				D.D.		
Service Factor		-		n/g		
Current Overload Size/Setting		-		77% Speed		
FILTER INFORMATION						
DESIGN (MERV Rating)		***BANK #1 Style/Size(Qty)***		***BANK #2 Style/Size(Qty)***		
Merv 8		(4) 20x25x2				

Technician(s): Curtis Tunink Date: 1/16/2024

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NEBB CERTIFIED TESTING & BALANCING

RECTANGLE DUCT TRAVERSE TEST REPORT

PROJECT NAME:	1330 - King Soopers 147											
EQUIPMENT / SYSTEM:	RTU-1 - Total Air											
DUCT TRAVERSE INFORMATION												
Duct Zone:	RTU-1				Required CFM:	5000			Required FPM:	1152		
Duct Size:	25	X	25	WxH"	Area:	4.34			Static Pressure:	-0.12 in.w.g.		
Instrument:	Velgrid		Corr Factor	1	Altitude:	5280 FT			Temperature:	n/a		
DUCT TRAVERSE MEASUREMENTS												
Velocity Total (FPM):	4,727				Velocity Average (FPM):	1,182			Actual Airflow (CFM):	**5,129**		

POS	1	2	3	4	5	6	7	8	9	10	11	Distance Height
1	1345	1289										6.3
2	1132	961										18.8
3												31.3
4												43.8
5												56.3
6												68.8
7												81.3
8												93.8
9												106.3
10												118.8
11												131.3
Distance Width	6.3	18.8	31.3	43.8	56.3	68.8	81.3	93.8	106.3	118.8	131.3	Inches
Totals	2477	2250	0	0	0	0	0	0	0	0	0	

Comments: _____

Technician(s): Curtis Tunink Date: 1/19/2024

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Greenwood Village, CO 80121
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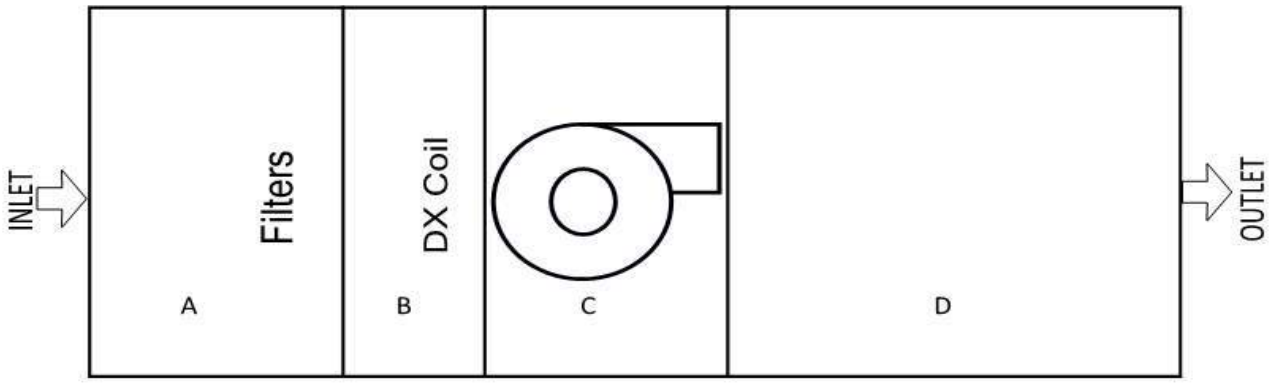
NEBB CERTIFIED TESTING & BALANCING

STATIC PRESSURE PROFILE

PROJECT NAME:	1330 - King Soopers 147
EQUIPMENT / SYSTEM:	RTU-1

SYSTEM INFORMATION	
Static Pressure Profile Setup:	FILTER, COIL, FAN
Design Airflow (CFM)	5000
Measured Airflow (CFM)	5129



	ESP:		**0.46**				**TSP:**		**0.92**		
STATIC PRESSURE READINGS (in. w.g.)											
Location	**A**	**B**	**C**	**D**	**E**	**F**	**G**	**H**	**I**	**J**	**K**
Supply	-0.12	-0.36	-0.58	0.34							

Comments: _____

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Technician(s): Curtis Tunink Date: 1/19/24

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Greenwood Village, CO 80121
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NEBB CERTIFIED TESTING & BALANCING

AIR APPARATUS TEST REPORT

PROJECT NAME:	1330 - King Soopers 147					
EQUIPMENT / SYSTEM:	RTU-2					
UNIT INFORMATION						
		DESIGN		***ACTUAL***		
MANUFACTURER		Lennox		Lennox		
MODEL #		LGM150U4E		LGM150U4EH1G		
SERIAL #				5622L00680		
LOCATION / SERVICE				Sales		
FAN INFORMATION						
		DESIGN		***ACTUAL***		
Total Airflow (CFM)		5,000		5,144		
Total of Terminals (CFM)		5,000		5,144		
Return Airflow (CFM)		5,000		5,144		
Outside Airflow (CFM)						
Total Static Pressure (in. w.g.)				0.94		
External Static Pressure (in. w.g.)		0.15		0.54		
Fan Speed (RPM / Setpoint)				D.D.		
VFD Speed (Hz)				n/a		
OA Damper Postion (% Open)				n/a		
MOTOR INFORMATION						
		DESIGN / NAMEPLATE		***ACTUAL***		
Manufacturer / Frame - Nameplate				ebmpapst / n/g		
Horse Power (HP)		3.75		n/g		
Brake Horse Power (BHP)				1.26		
Volts	Phase	480	3	491	492	493
Full Load Amps		4.30		1.43	1.53	1.62
Corrected Nameplate Amps		-		4.20		
Motor Speed (RPM / Setting)				D.D.		
Service Factor		-		n/g		
Current Overload Size/Setting		-		77% Speed		
FILTER INFORMATION						
DESIGN (MERV Rating)		***BANK #1 Style/Size(Qty)***		***BANK #2 Style/Size(Qty)***		
Merv 8		(4) 20x25x2				

Technician(s): Curtis Tunink Date: 1/11/2024

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Greenwood Village, CO 80121
Phone: 303-660-0620

NEBB CERTIFIED TESTING & BALANCING

RECTANGLE DUCT TRAVERSE TEST REPORT

PROJECT NAME:	1330 - King Soopers 147											
EQUIPMENT / SYSTEM:	RTU-2 - Total Air											
DUCT TRAVERSE INFORMATION												
Duct Zone:	RTU-2				Required CFM:	5000			Required FPM:	1152		
Duct Size:	25	X	25	WxH"	Area:	4.34			Static Pressure:	-0.14 in.w.g.		
Instrument:	Velgrid		Corr Factor	1	Altitude:	5280 FT			Temperature:	n/a		
DUCT TRAVERSE MEASUREMENTS												
Velocity Total (FPM):	4,741		Velocity Average (FPM):	1,185			Actual Airflow (CFM):	**5,144**				

POS	1	2	3	4	5	6	7	8	9	10	11	Distance Height
1	1372	1221										6.3
2	1056	1092										18.8
3												31.3
4												43.8
5												56.3
6												68.8
7												81.3
8												93.8
9												106.3
10												118.8
11												131.3
Distance Width	6.3	18.8	31.3	43.8	56.3	68.8	81.3	93.8	106.3	118.8	131.3	Inches
Totals	2428	2313	0	0	0	0	0	0	0	0	0	

Comments: _____

Technician(s): Curtis Tunink Date: 1/19/2024

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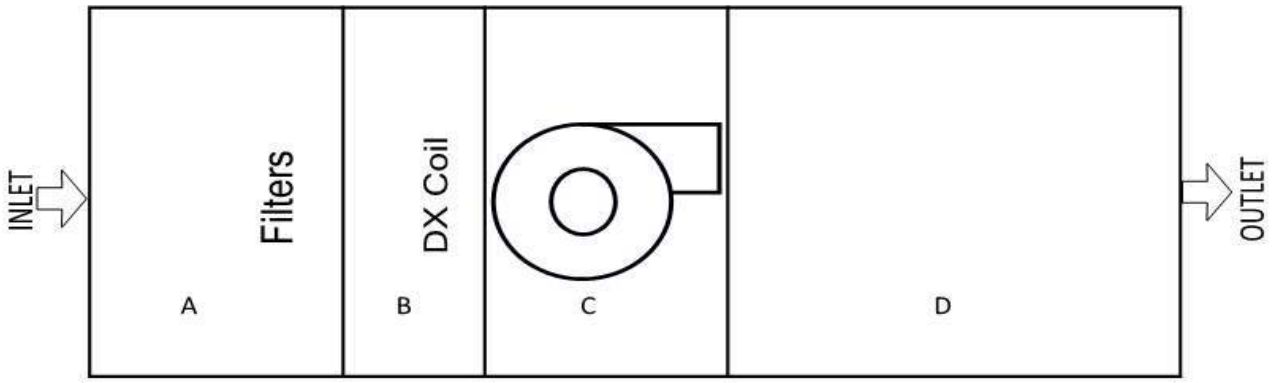
NEBB CERTIFIED TESTING & BALANCING

STATIC PRESSURE PROFILE

PROJECT NAME:	1330 - King Soopers 147
EQUIPMENT / SYSTEM:	RTU-2

SYSTEM INFORMATION	
Static Pressure Profile Setup:	FILTER, COIL, FAN
Design Airflow (CFM)	5000
Measured Airflow (CFM)	5144



	ESP:		**0.54**				**TSP:**		**0.94**		
STATIC PRESSURE READINGS (in. w.g.)											
Location	**A**	**B**	**C**	**D**	**E**	**F**	**G**	**H**	**I**	**J**	**K**
Supply	-0.14	-0.35	-0.54	0.40							

Comments: _____

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Technician(s): Curtis Tunink Date: 1/19/24

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Greenwood Village, CO 80121
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NEBB CERTIFIED TESTING & BALANCING

AIR APPARATUS TEST REPORT

PROJECT NAME:	1330 - King Soopers 147							
EQUIPMENT / SYSTEM:	RTU-3							
UNIT INFORMATION								
		DESIGN			***ACTUAL***			
MANUFACTURER		Lennox			Lennox			
MODEL #		LGM150U4E			LGM150U4EH1G			
SERIAL #					5622L00676			
LOCATION / SERVICE					Sales			
FAN INFORMATION								
		DESIGN			***ACTUAL***			
Total Airflow (CFM)		5,000			5,036			
Total of Terminals (CFM)		5,000			5,036			
Return Airflow (CFM)		5,000			5,036			
Outside Airflow (CFM)								
Total Static Pressure (in. w.g.)					0.87			
External Static Pressure (in. w.g.)		0.15			0.49			
Fan Speed (RPM / Setpoint)					D.D.			
VFD Speed (Hz)					n/a			
OA Damper Postion (% Open)					n/a			
MOTOR INFORMATION								
		DESIGN / NAMEPLATE			***ACTUAL***			
Manufacturer / Frame - Nameplate					ebmpapst / n/g			
Horse Power (HP)		3.75			n/g			
Brake Horse Power (BHP)					1.19			
Volts	Phase	480	3		491	492	493	
Full Load Amps		4.30			1.61	1.30	1.44	
Corrected Nameplate Amps		-			4.20			
Motor Speed (RPM / Setting)					D.D.			
Service Factor		-			n/g			
Current Overload Size/Setting		-			77% Speed			
FILTER INFORMATION								
DESIGN (MERV Rating)		***BANK #1 Style/Size(Qty)***			***BANK #2 Style/Size(Qty)***			
Merv 8		(4) 20x25x2						

Technician(s): Curtis Tunink Date: 1/11/2024

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NEBB CERTIFIED TESTING & BALANCING

RECTANGLE DUCT TRAVERSE TEST REPORT

PROJECT NAME:	1330 - King Soopers 147											
EQUIPMENT / SYSTEM:	RTU-3 - Total Air											
DUCT TRAVERSE INFORMATION												
Duct Zone:	RTU-3				Required CFM:	5000			Required FPM:	1152		
Duct Size:	25	X	25	WxH"	Area:	4.34			Static Pressure:	0.09 in.w.g.		
Instrument:	Velgrid		Corr Factor	1	Altitude:	5280 FT			Temperature:	n/a		
DUCT TRAVERSE MEASUREMENTS												
Velocity Total (FPM):	4,641				Velocity Average (FPM):	1,160			Actual Airflow (CFM):	**5,036**		

POS	1	2	3	4	5	6	7	8	9	10	11	Distance Height
1	1346	1296										6.3
2	1142	857										18.8
3												31.3
4												43.8
5												56.3
6												68.8
7												81.3
8												93.8
9												106.3
10												118.8
11												131.3
Distance Width	6.3	18.8	31.3	43.8	56.3	68.8	81.3	93.8	106.3	118.8	131.3	Inches
Totals	2488	2153	0	0	0	0	0	0	0	0	0	

Comments: _____

Technician(s): Curtis Tunink Date: 1/19/2024

DOUBLE T BALANCING COMPANY, LLC
5910 S. University Blvd.
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Greenwood Village, CO 80121
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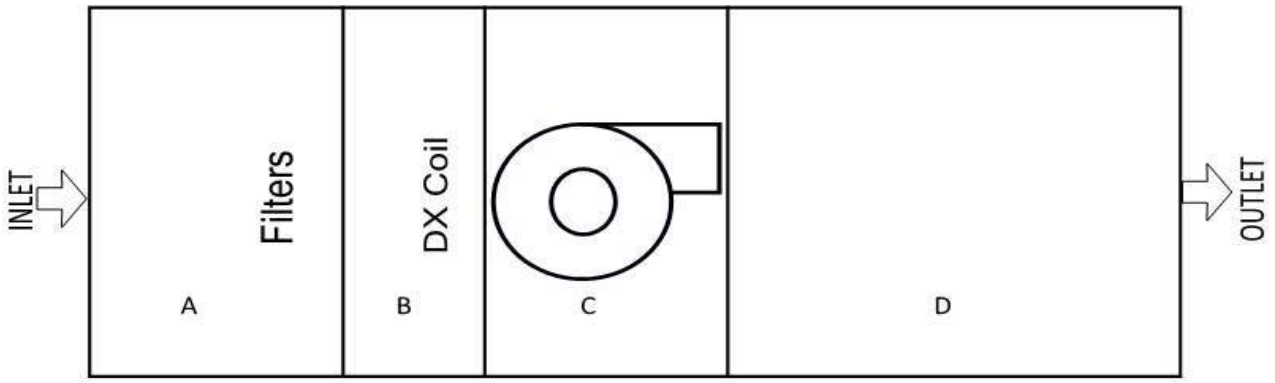
NEBB CERTIFIED TESTING & BALANCING

STATIC PRESSURE PROFILE

PROJECT NAME:	1330 - King Soopers 147
EQUIPMENT / SYSTEM:	RTU-3

SYSTEM INFORMATION	
Static Pressure Profile Setup:	FILTER, COIL, FAN
Design Airflow (CFM)	5000
Measured Airflow (CFM)	5036



	ESP:		**0.49**			**TSP:**		**0.87**		
STATIC PRESSURE READINGS (in. w.g.)										
Location	**A**	**B**	**C**	**D**	**E**	**F**	**G**	**H**	**I**	**J**	**K**
Supply	-0.09	-0.27	-0.47	0.40							

Comments: _____

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Technician(s): Curtis Tunink Date: 1/19/24

DOUBLE T BALANCING COMPANY, LLC
5910 S. University Blvd.
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Greenwood Village, CO 80121
Phone: 303-660-0620

NEBB CERTIFIED TESTING & BALANCING

AIR APPARATUS TEST REPORT

PROJECT NAME:	1330 - King Soopers 147					
EQUIPMENT / SYSTEM:	RTU-4					
UNIT INFORMATION						
		DESIGN		***ACTUAL***		
MANUFACTURER		Lennox		Lennox		
MODEL #		LGM150U4E		LGM150U4EH1G		
SERIAL #				5622L00677		
LOCATION / SERVICE				Sales		
FAN INFORMATION						
		DESIGN		***ACTUAL***		
Total Airflow (CFM)		5,000		5,066		
Total of Terminals (CFM)		5,000		5,066		
Return Airflow (CFM)		5,000		5,066		
Outside Airflow (CFM)						
Total Static Pressure (in. w.g.)				0.97		
External Static Pressure (in. w.g.)		0.15		0.62		
Fan Speed (RPM / Setpoint)				D.D.		
VFD Speed (Hz)				n/a		
OA Damper Postion (% Open)				n/a		
MOTOR INFORMATION						
		DESIGN / NAMEPLATE		***ACTUAL***		
Manufacturer / Frame - Nameplate				ebmpapst / n/g		
Horse Power (HP)		3.75		n/g		
Brake Horse Power (BHP)				1.21		
Volts	Phase	480	3	491	492	493
Full Load Amps		4.30		1.67	1.31	1.42
Corrected Nameplate Amps		-		4.20		
Motor Speed (RPM / Setting)				D.D.		
Service Factor		-		n/g		
Current Overload Size/Setting		-		77% Speed		
FILTER INFORMATION						
DESIGN (MERV Rating)		***BANK #1 Style/Size(Qty)***		***BANK #2 Style/Size(Qty)***		
Merv 8		(4) 20x25x2				

Technician(s): Curtis Tunink Date: 1/11/2024

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5910 S. University Blvd.
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Phone: 303-660-0620

NEBB CERTIFIED TESTING & BALANCING

RECTANGLE DUCT TRAVERSE TEST REPORT

PROJECT NAME:	1330 - King Soopers 147											
EQUIPMENT / SYSTEM:	RTU-4 - Total Air											
DUCT TRAVERSE INFORMATION												
Duct Zone:	RTU-4				Required CFM:	5000			Required FPM:	1152		
Duct Size:	25	X	25	WxH"	Area:	4.34			Static Pressure:	-0.16 in.w.g.		
Instrument:	Velgrid		Corr Factor	1	Altitude:	5280 FT			Temperature:	n/a		
DUCT TRAVERSE MEASUREMENTS												
Velocity Total (FPM):	4,669				Velocity Average (FPM):	1,167			Actual Airflow (CFM):	**5,066**		

POS	1	2	3	4	5	6	7	8	9	10	11	Distance Height
1	1301	1348										6.3
2	1015	1005										18.8
3												31.3
4												43.8
5												56.3
6												68.8
7												81.3
8												93.8
9												106.3
10												118.8
11												131.3
Distance Width	6.3	18.8	31.3	43.8	56.3	68.8	81.3	93.8	106.3	118.8	131.3	Inches
Totals	2316	2353	0	0	0	0	0	0	0	0	0	

Comments: _____

Technician(s): Curtis Tunink Date: 1/18/2024

DOUBLE T BALANCING COMPANY, LLC
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Greenwood Village, CO 80121
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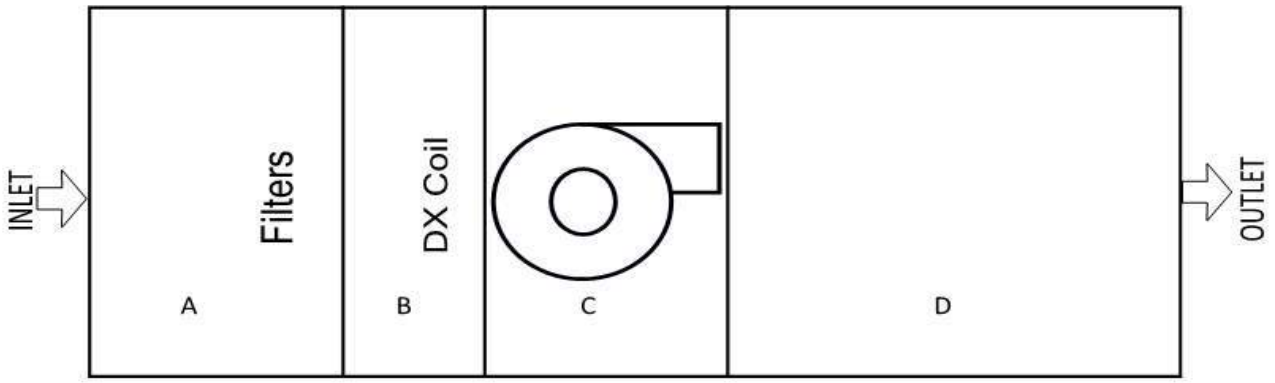
NEBB CERTIFIED TESTING & BALANCING

STATIC PRESSURE PROFILE

PROJECT NAME:	1330 - King Soopers 147
EQUIPMENT / SYSTEM:	RTU-4

SYSTEM INFORMATION	
Static Pressure Profile Setup:	FILTER, COIL, FAN
Design Airflow (CFM)	5000
Measured Airflow (CFM)	5066



	ESP:		**0.62**				**TSP:**		**0.96**		
STATIC PRESSURE READINGS (in. w.g.)											
Location	**A**	**B**	**C**	**D**	**E**	**F**	**G**	**H**	**I**	**J**	**K**
Supply	-0.16	-0.35	-0.51	0.46							

Comments: _____

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Technician(s): Curtis Tunink Date: 1/19/24

DOUBLE T BALANCING COMPANY, LLC
5910 S. University Blvd.
C-18, #354
Greenwood Village, CO 80121
Phone: 303-660-0620

NEBB CERTIFIED TESTING & BALANCING

AIR APPARATUS TEST REPORT

PROJECT NAME:	1330 - King Soopers 147					
EQUIPMENT / SYSTEM:	RTU-5					
UNIT INFORMATION						
		DESIGN		***ACTUAL***		
MANUFACTURER		Lennox		Lennox		
MODEL #		LGM150U4E		LGM150U4EH1G		
SERIAL #				5622K06413		
LOCATION / SERVICE				Sales		
FAN INFORMATION						
		DESIGN		***ACTUAL***		
Total Airflow (CFM)		5,000		5,063		
Total of Terminals (CFM)		5,000		5,063		
Return Airflow (CFM)		5,000		5,063		
Outside Airflow (CFM)						
Total Static Pressure (in. w.g.)				0.83		
External Static Pressure (in. w.g.)		0.15		0.47		
Fan Speed (RPM / Setpoint)				D.D.		
VFD Speed (Hz)				n/a		
OA Damper Postion (% Open)				n/a		
MOTOR INFORMATION						
		DESIGN / NAMEPLATE		***ACTUAL***		
Manufacturer / Frame - Nameplate				ebmpapst / n/g		
Horse Power (HP)		3.75		n/g		
Brake Horse Power (BHP)				1.24		
Volts	Phase	480	3	491	492	493
Full Load Amps		4.30		1.67	1.48	1.37
Corrected Nameplate Amps		-		4.20		
Motor Speed (RPM / Setting)				D.D.		
Service Factor		-		n/g		
Current Overload Size/Setting		-		77% Speed		
FILTER INFORMATION						
DESIGN (MERV Rating)		***BANK #1 Style/Size(Qty)***		***BANK #2 Style/Size(Qty)***		
Merv 8		(4) 20x25x2				

Technician(s): Curtis Tunink Date: 1/11/2024

DOUBLE T BALANCING COMPANY, LLC
5910 S. University Blvd.
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Greenwood Village, CO 80121
Phone: 303-660-0620

NEBB CERTIFIED TESTING & BALANCING

RECTANGLE DUCT TRAVERSE TEST REPORT

PROJECT NAME:	1330 - King Soopers 147											
EQUIPMENT / SYSTEM:	RTU-5 - Total Air											
DUCT TRAVERSE INFORMATION												
Duct Zone:	RTU-5				Required CFM:	5000			Required FPM:	1152		
Duct Size:	25	X	25	WxH"	Area:	4.34			Static Pressure:	-0.16 in.w.g.		
Instrument:	Velgrid		Corr Factor	1	Altitude:	5280 FT			Temperature:	n/a		
DUCT TRAVERSE MEASUREMENTS												
Velocity Total (FPM):	4,666		Velocity Average (FPM):	1,167		Actual Airflow (CFM):	**5,063**					

POS	1	2	3	4	5	6	7	8	9	10	11	Distance Height
1	1329	1287										6.3
2	1094	956										18.8
3												31.3
4												43.8
5												56.3
6												68.8
7												81.3
8												93.8
9												106.3
10												118.8
11												131.3
Distance Width	6.3	18.8	31.3	43.8	56.3	68.8	81.3	93.8	106.3	118.8	131.3	Inches
Totals	2423	2243	0	0	0	0	0	0	0	0	0	

Comments: _____

Technician(s): Curtis Tunink Date: 1/18/2024

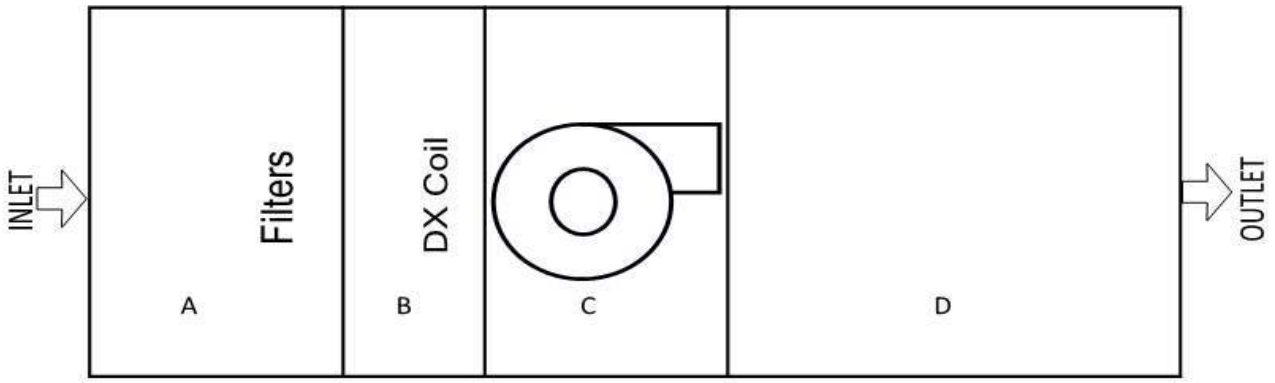
DOUBLE T BALANCING COMPANY, LLC
5910 S. University Blvd.
C-18, #354
Greenwood Village, CO 80121
Phone: 303-660-0620

NEBB CERTIFIED TESTING & BALANCING

STATIC PRESSURE PROFILE

PROJECT NAME:	1330 - King Soopers 147
EQUIPMENT / SYSTEM:	RTU-5

SYSTEM INFORMATION	
Static Pressure Profile Setup:	FILTER, COIL, FAN
Design Airflow (CFM)	5000
Measured Airflow (CFM)	5063



	ESP:		**0.47**			**TSP:**		**0.83**		
STATIC PRESSURE READINGS (in. w.g.)										
Location	**A**	**B**	**C**	**D**	**E**	**F**	**G**	**H**	**I**	**J**	**K**
Supply	-0.16	-0.43	-0.54	0.29							

Comments: _____

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Technician(s): Curtis Tunink Date: 1/19/24

DOUBLE T BALANCING COMPANY, LLC
5910 S. University Blvd.
C-18, #354
Greenwood Village, CO 80121
Phone: 303-660-0620

NEBB CERTIFIED TESTING & BALANCING

AIR APPARATUS TEST REPORT

PROJECT NAME:	1330 - King Soopers 147					
EQUIPMENT / SYSTEM:	RTU-6					
UNIT INFORMATION						
		DESIGN		***ACTUAL***		
MANUFACTURER		Lennox		Lennox		
MODEL #		LGM150U4E		LGM150U4EH1G		
SERIAL #				5622L00679		
LOCATION / SERVICE				Sales		
FAN INFORMATION						
		DESIGN		***ACTUAL***		
Total Airflow (CFM)		5,000		5,128		
Total of Terminals (CFM)		5,000		5,128		
Return Airflow (CFM)		5,000		5,128		
Outside Airflow (CFM)						
Total Static Pressure (in. w.g.)				0.85		
External Static Pressure (in. w.g.)		0.15		0.48		
Fan Speed (RPM / Setpoint)				D.D.		
VFD Speed (Hz)				n/a		
OA Damper Postion (% Open)				n/a		
MOTOR INFORMATION						
		DESIGN / NAMEPLATE		***ACTUAL***		
Manufacturer / Frame - Nameplate				ebmpapst / n/g		
Horse Power (HP)		3.75		n/g		
Brake Horse Power (BHP)				1.24		
Volts	Phase	480	3	491	492	493
Full Load Amps		4.30		1.38	1.51	1.62
Corrected Nameplate Amps		-		4.20		
Motor Speed (RPM / Setting)				D.D.		
Service Factor		-		n/a		
Current Overload Size/Setting		-		77% Speed		
FILTER INFORMATION						
DESIGN (MERV Rating)		***BANK #1 Style/Size(Qty)***		***BANK #2 Style/Size(Qty)***		
Merv 8		(4) 20x25x2				

Technician(s): Curtis Tunink Date: 1/11/2024

DOUBLE T BALANCING COMPANY, LLC
5910 S. University Blvd.
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Greenwood Village, CO 80121
Phone: 303-660-0620

NEBB CERTIFIED TESTING & BALANCING

RECTANGLE DUCT TRAVERSE TEST REPORT

PROJECT NAME:	1330 - King Soopers 147											
EQUIPMENT / SYSTEM:	RTU-6 - Total Air											
DUCT TRAVERSE INFORMATION												
Duct Zone:	RTU-6				Required CFM:	5000			Required FPM:	1152		
Duct Size:	25	X	25	WxH"	Area:	4.34			Static Pressure:	-0.16 in.w.g.		
Instrument:	Velgrid		Corr Factor	1	Altitude:	5280 FT			Temperature:	n/a		
DUCT TRAVERSE MEASUREMENTS												
Velocity Total (FPM):	4,726			Velocity Average (FPM):	1,182			Actual Airflow (CFM):	**5,128**			

POS	1	2	3	4	5	6	7	8	9	10	11	Distance Height
1	1384	1342										6.3
2	1159	841										18.8
3												31.3
4												43.8
5												56.3
6												68.8
7												81.3
8												93.8
9												106.3
10												118.8
11												131.3
Distance Width	6.3	18.8	31.3	43.8	56.3	68.8	81.3	93.8	106.3	118.8	131.3	Inches
Totals	2543	2183	0	0	0	0	0	0	0	0	0	

Comments: _____

Technician(s): Curtis Tunink Date: 1/19/2024

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5910 S. University Blvd.
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Greenwood Village, CO 80121
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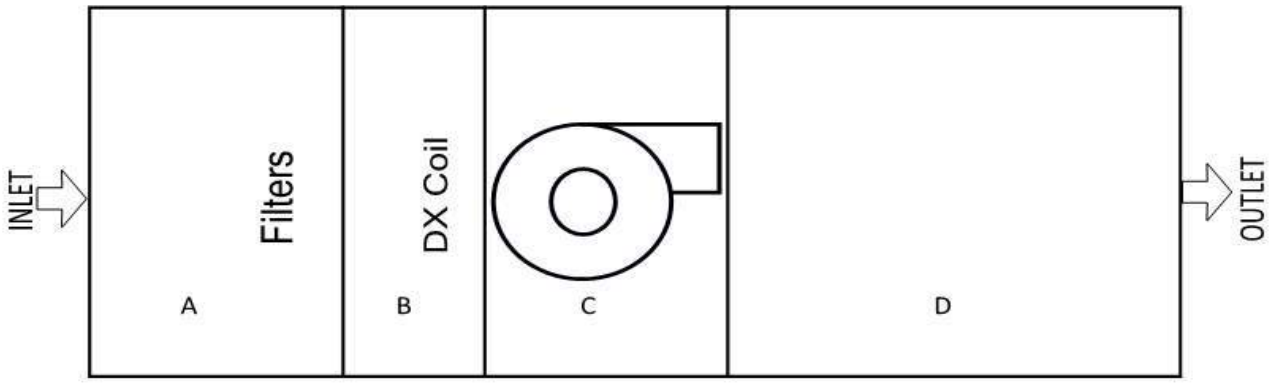
NEBB CERTIFIED TESTING & BALANCING

STATIC PRESSURE PROFILE

PROJECT NAME:	1330 - King Soopers 147
EQUIPMENT / SYSTEM:	RTU-6

SYSTEM INFORMATION	
Static Pressure Profile Setup:	FILTER, COIL, FAN
Design Airflow (CFM)	5000
Measured Airflow (CFM)	5128



	ESP:	0.48			TSP:	0.85				
STATIC PRESSURE READINGS (in. w.g.)										
Location	**A**	**B**	**C**	**D**	**E**	**F**	**G**	**H**	**I**	**J**	**K**
Supply	-0.13	0.33	0.52	0.35							

Comments: _____

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Technician(s): Curtis Tunink Date: 1/19/24

DOUBLE T BALANCING COMPANY, LLC
5910 S. University Blvd.
C-18, #354
Greenwood Village, CO 80121
Phone: 303-660-0620

NEBB CERTIFIED TESTING & BALANCING

AIR APPARATUS TEST REPORT

PROJECT NAME:	1330 - King Soopers 147					
EQUIPMENT / SYSTEM:	RTU-7					
UNIT INFORMATION						
		DESIGN		***ACTUAL***		
MANUFACTURER		Lennox		Lennox		
MODEL #		LGM150U4E		LGM150U4EH2G		
SERIAL #				2623D00603		
LOCATION / SERVICE				Sales		
FAN INFORMATION						
		DESIGN		***ACTUAL***		
Total Airflow (CFM)		5,000		5,102		
Total of Terminals (CFM)		5,000		5,102		
Return Airflow (CFM)		5,000		5,102		
Outside Airflow (CFM)						
Total Static Pressure (in. w.g.)				0.98		
External Static Pressure (in. w.g.)		0.15		0.61		
Fan Speed (RPM / Setpoint)				D.D.		
VFD Speed (Hz)				n/a		
OA Damper Postion (% Open)				n/a		
MOTOR INFORMATION						
		DESIGN / NAMEPLATE		***ACTUAL***		
Manufacturer / Frame - Nameplate				ebmpapst / n/g		
Horse Power (HP)		3.75		n/g		
Brake Horse Power (BHP)				1.59		
Volts	Phase	480	3	491	492	493
Full Load Amps		4.30		1.81	1.94	2.05
Corrected Nameplate Amps		-		4.20		
Motor Speed (RPM / Setting)				D.D.		
Service Factor		-		n/g		
Current Overload Size/Setting		-		77% Speed		
FILTER INFORMATION						
DESIGN (MERV Rating)		***BANK #1 Style/Size(Qty)***		***BANK #2 Style/Size(Qty)***		
Merv 8		(4) 20x25x2				

Technician(s): Curtis Tunink Date: 1/11/2024

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5910 S. University Blvd.
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Greenwood Village, CO 80121
Phone: 303-660-0620

NEBB CERTIFIED TESTING & BALANCING

RECTANGLE DUCT TRAVERSE TEST REPORT

PROJECT NAME:	1330 - King Soopers 147											
EQUIPMENT / SYSTEM:	RTU-7 - Total Air											
DUCT TRAVERSE INFORMATION												
Duct Zone:	RTU-7				Required CFM:	5000			Required FPM:	1152		
Duct Size:	25	X	25	WxH"	Area:	4.34			Static Pressure:	-0.14 in.w.g.		
Instrument:	Velgrid		Corr Factor	1	Altitude:	5280 FT			Temperature:	n/a		
DUCT TRAVERSE MEASUREMENTS												
Velocity Total (FPM):	4,702				Velocity Average (FPM):	1,176			Actual Airflow (CFM):	**5,102**		

POS	1	2	3	4	5	6	7	8	9	10	11	Distance Height
1	1391	1398										6.3
2	1032	881										18.8
3												31.3
4												43.8
5												56.3
6												68.8
7												81.3
8												93.8
9												106.3
10												118.8
11												131.3
Distance Width	6.3	18.8	31.3	43.8	56.3	68.8	81.3	93.8	106.3	118.8	131.3	Inches
Totals	2423	2279	0	0	0	0	0	0	0	0	0	

Comments: _____

Technician(s): Curtis Tunink Date: 1/17/2024

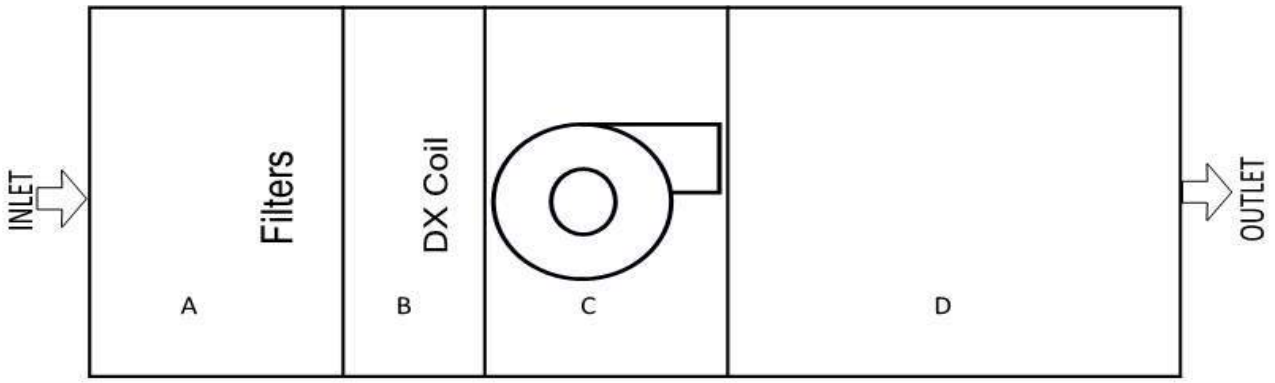
DOUBLE T BALANCING COMPANY, LLC
5910 S. University Blvd.
C-18, #354
Greenwood Village, CO 80121
Phone: 303-660-0620

NEBB CERTIFIED TESTING & BALANCING

STATIC PRESSURE PROFILE

PROJECT NAME:	1330 - King Soopers 147
EQUIPMENT / SYSTEM:	RTU-7

SYSTEM INFORMATION	
Static Pressure Profile Setup:	FILTER, COIL, FAN
Design Airflow (CFM)	5000
Measured Airflow (CFM)	5102



	ESP:		**0.61**				**TSP:**		**0.98**		
STATIC PRESSURE READINGS (in. w.g.)											
Location	**A**	**B**	**C**	**D**	**E**	**F**	**G**	**H**	**I**	**J**	**K**
Supply	-0.14	-0.34	-0.51	0.47							

Comments: _____

Technician(s): Curtis Tunink Date: 1/19/24

DOUBLE T BALANCING COMPANY, LLC
5910 S. University Blvd.
C-18, #354
Greenwood Village, CO 80121
Phone: 303-660-0620

NEBB CERTIFIED TESTING & BALANCING

AIR APPARATUS TEST REPORT

PROJECT NAME:	1330 - King Soopers 147					
EQUIPMENT / SYSTEM:	RTU-8					
UNIT INFORMATION						
		DESIGN		***ACTUAL***		
MANUFACTURER		Lennox		Lennox		
MODEL #		LGM150U4E		LGM150U4EH1G		
SERIAL #				5622L00681		
LOCATION / SERVICE				Sales		
FAN INFORMATION						
		DESIGN		***ACTUAL***		
Total Airflow (CFM)		5,000		5,086		
Total of Terminals (CFM)		5,000		5,086		
Return Airflow (CFM)		5,000		5,086		
Outside Airflow (CFM)						
Total Static Pressure (in. w.g.)				0.96		
External Static Pressure (in. w.g.)		0.15		0.55		
Fan Speed (RPM / Setpoint)				D.D.		
VFD Speed (Hz)				n/a		
OA Damper Postion (% Open)				n/a		
MOTOR INFORMATION						
		DESIGN / NAMEPLATE		***ACTUAL***		
Manufacturer / Frame - Nameplate				ebmpapst / n/g		
Horse Power (HP)		3.75		n/g		
Brake Horse Power (BHP)				1.20		
Volts	Phase	480	3	491	492	493
Full Load Amps		4.30		1.48	1.39	1.50
Corrected Nameplate Amps		-		4.20		
Motor Speed (RPM / Setting)				D.D.		
Service Factor		-		n/g		
Current Overload Size/Setting		-		77% Speed		
FILTER INFORMATION						
DESIGN (MERV Rating)		***BANK #1 Style/Size(Qty)***		***BANK #2 Style/Size(Qty)***		
Merv 8		(4) 20x25x2				

Technician(s): Curtis Tunink Date: 1/11/2024

DOUBLE T BALANCING COMPANY, LLC
5910 S. University Blvd.
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Greenwood Village, CO 80121
Phone: 303-660-0620

NEBB CERTIFIED TESTING & BALANCING

RECTANGLE DUCT TRAVERSE TEST REPORT

PROJECT NAME:	1330 - King Soopers 147											
EQUIPMENT / SYSTEM:	RTU-8 - Total Air											
DUCT TRAVERSE INFORMATION												
Duct Zone:	RTU-8				Required CFM:	5000			Required FPM:	1152		
Duct Size:	25	X	25	WxH"	Area:	4.34			Static Pressure:	-0.18 in.w.g.		
Instrument:	Velgrid		Corr Factor	1	Altitude:	5280 FT			Temperature:	n/a		
DUCT TRAVERSE MEASUREMENTS												
Velocity Total (FPM):	4,687				Velocity Average (FPM):	1,172			Actual Airflow (CFM):	**5,086**		

POS	1	2	3	4	5	6	7	8	9	10	11	Distance Height
1	1326	1276										6.3
2	1158	927										18.8
3												31.3
4												43.8
5												56.3
6												68.8
7												81.3
8												93.8
9												106.3
10												118.8
11												131.3
Distance Width	6.3	18.8	31.3	43.8	56.3	68.8	81.3	93.8	106.3	118.8	131.3	Inches
Totals	2484	2203	0	0	0	0	0	0	0	0	0	

Comments: _____

Technician(s): Curtis Tunink Date: 1/17/2024

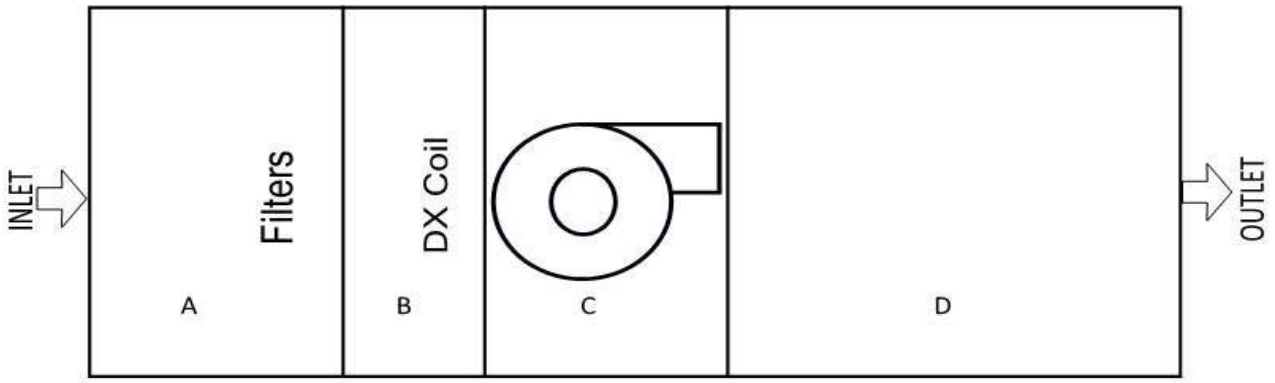
DOUBLE T BALANCING COMPANY, LLC
5910 S. University Blvd.
C-18, #354
Greenwood Village, CO 80121
Phone: 303-660-0620

NEBB CERTIFIED TESTING & BALANCING

STATIC PRESSURE PROFILE

PROJECT NAME:	1330 - King Soopers 147
EQUIPMENT / SYSTEM:	RTU-8

SYSTEM INFORMATION	
Static Pressure Profile Setup:	FILTER, COIL, FAN
Design Airflow (CFM)	5000
Measured Airflow (CFM)	5086



	ESP:		**0.55**				**TSP:**		**0.96**		
STATIC PRESSURE READINGS (in. w.g.)											
Location	**A**	**B**	**C**	**D**	**E**	**F**	**G**	**H**	**I**	**J**	**K**
Supply	-0.18	-0.42	-0.59	0.37							

Comments: _____

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Technician(s): Curtis Tunink Date: 1/17/24

DOUBLE T BALANCING COMPANY, LLC
5910 S. University Blvd.
C-18, #354
Greenwood Village, CO 80121
Phone: 303-660-0620

NEBB CERTIFIED TESTING & BALANCING

AIR APPARATUS TEST REPORT

PROJECT NAME:	1330 - King Soopers 147					
EQUIPMENT / SYSTEM:	RTU-9					
UNIT INFORMATION						
		DESIGN		***ACTUAL***		
MANUFACTURER		Lennox		Lennox		
MODEL #		LGM150U4E		LGM150U4EH1G		
SERIAL #				5622L00678		
LOCATION / SERVICE				Sales		
FAN INFORMATION						
		DESIGN		***ACTUAL***		
Total Airflow (CFM)		5,000		5,052		
Total of Terminals (CFM)		5,000		5,052		
Return Airflow (CFM)		5,000		5,052		
Outside Airflow (CFM)						
Total Static Pressure (in. w.g.)				0.86		
External Static Pressure (in. w.g.)		0.15		0.45		
Fan Speed (RPM / Setpoint)				D.D.		
VFD Speed (Hz)				n/a		
OA Damper Postion (% Open)				n/a		
MOTOR INFORMATION						
		DESIGN / NAMEPLATE		***ACTUAL***		
Manufacturer / Frame - Nameplate				Ebmpapst / n/g		
Horse Power (HP)		3.75		n/g		
Brake Horse Power (BHP)				1.21		
Volts	Phase	480	3	491	492	493
Full Load Amps		4.30		1.30	1.45	1.68
Corrected Nameplate Amps		-		4.20		
Motor Speed (RPM / Setting)				D.D.		
Service Factor		-		n/g		
Current Overload Size/Setting		-		77% Speed		
FILTER INFORMATION						
DESIGN (MERV Rating)		***BANK #1 Style/Size(Qty)***		***BANK #2 Style/Size(Qty)***		
Merv 8		(4) 20x25x2				

Technician(s): Curtis Tunink Date: 1/17/2024

DOUBLE T BALANCING COMPANY, LLC
5910 S. University Blvd.
C-18, #354
Greenwood Village, CO 80121
Phone: 303-660-0620

NEBB CERTIFIED TESTING & BALANCING

RECTANGLE DUCT TRAVERSE TEST REPORT

PROJECT NAME:	1330 - King Soopers 147											
EQUIPMENT / SYSTEM:	RTU-9 - Total Air											
DUCT TRAVERSE INFORMATION												
Duct Zone:	RTU-9				Required CFM:	5000			Required FPM:	1152		
Duct Size:	25	X	25	WxH"	Area:	4.34			Static Pressure:	-0.14 in.w.g.		
Instrument:	Velgrid		Corr Factor	1	Altitude:	5280 FT			Temperature:	n/a		
DUCT TRAVERSE MEASUREMENTS												
Velocity Total (FPM):	4,656				Velocity Average (FPM):	1,164			Actual Airflow (CFM):	**5,052**		

POS	1	2	3	4	5	6	7	8	9	10	11	Distance Height
1	1305	1215										6.3
2	1084	1052										18.8
3												31.3
4												43.8
5												56.3
6												68.8
7												81.3
8												93.8
9												106.3
10												118.8
11												131.3
Distance Width	6.3	18.8	31.3	43.8	56.3	68.8	81.3	93.8	106.3	118.8	131.3	Inches
Totals	2389	2267	0	0	0	0	0	0	0	0	0	

Comments: _____

Technician(s): Curtis Tunink Date: 1/17/2024

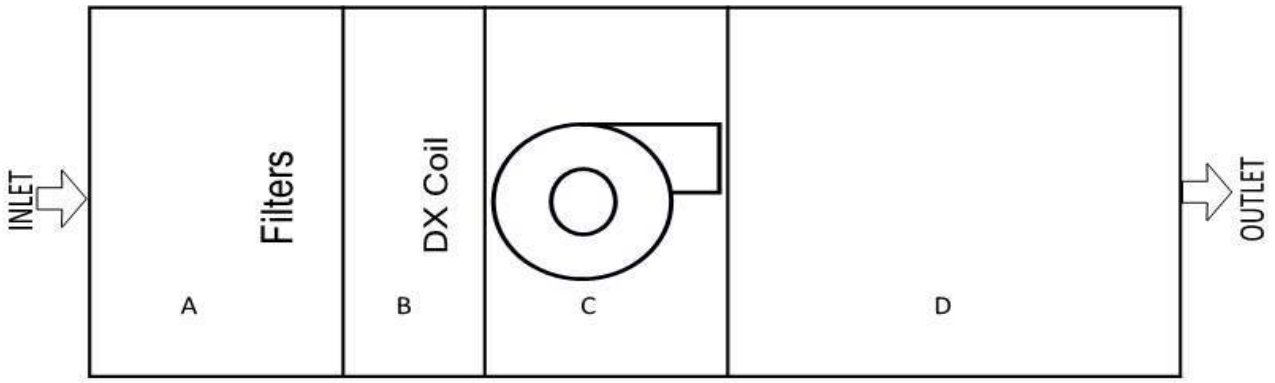
DOUBLE T BALANCING COMPANY, LLC
5910 S. University Blvd.
C-18, #354
Greenwood Village, CO 80121
Phone: 303-660-0620

NEBB CERTIFIED TESTING & BALANCING

STATIC PRESSURE PROFILE

PROJECT NAME:	1330 - King Soopers 147
EQUIPMENT / SYSTEM:	RTU-9

SYSTEM INFORMATION	
Static Pressure Profile Setup:	FILTER, COIL, FAN
Design Airflow (CFM)	5000
Measured Airflow (CFM)	5052



	ESP:	0.45			TSP:	0.86				

STATIC PRESSURE READINGS (in. w.g.)											
Location	**A**	**B**	**C**	**D**	**E**	**F**	**G**	**H**	**I**	**J**	**K**
Supply	-0.14	-0.36	0.55	0.31							

Comments: _____

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Technician(s): Curtis Tunink Date: 1/17/24

DOUBLE T BALANCING COMPANY, LLC
5910 S. University Blvd.
C-18, #354
Greenwood Village, CO 80121
Phone: 303-660-0620

NEBB CERTIFIED TESTING & BALANCING

AIR APPARATUS TEST REPORT

PROJECT NAME:	1330 - King Soopers 147						
EQUIPMENT / SYSTEM:	RTU-10						
UNIT INFORMATION							
		DESIGN			***ACTUAL***		
MANUFACTURER		Lennox			Lennox		
MODEL #		LGM150U4E			LGM150U4EH1G		
SERIAL #					5622K06410		
LOCATION / SERVICE					Sales		
FAN INFORMATION							
		DESIGN			***ACTUAL***		
Total Airflow (CFM)		5,000			5,058		
Total of Terminals (CFM)		5,000			5,058		
Return Airflow (CFM)		5,000			5,058		
Outside Airflow (CFM)							
Total Static Pressure (in. w.g.)					0.95		
External Static Pressure (in. w.g.)		0.15			0.64		
Fan Speed (RPM / Setpoint)					D.D.		
VFD Speed (Hz)					n/a		
OA Damper Postion (% Open)					n/a		
MOTOR INFORMATION							
		DESIGN / NAMEPLATE			***ACTUAL***		
Manufacturer / Frame - Nameplate					ebmpapst / n/g		
Horse Power (HP)		3.75			n/g		
Brake Horse Power (BHP)					1.24		
Volts	Phase	480	3		491	492	493
Full Load Amps		4.30			1.37	1.51	1.66
Corrected Nameplate Amps		-			4.20		
Motor Speed (RPM / Setting)					D.D.		
Service Factor		-			n/g		
Current Overload Size/Setting		-			77% Speed		
FILTER INFORMATION							
DESIGN (MERV Rating)		***BANK #1 Style/Size(Qty)***			***BANK #2 Style/Size(Qty)***		
Merv 8		(4) 20x25x2					

Technician(s): Curtis Tunink Date: 1/11/2024

DOUBLE T BALANCING COMPANY, LLC
5910 S. University Blvd.
C-18, #354
Greenwood Village, CO 80121
Phone: 303-660-0620

NEBB CERTIFIED TESTING & BALANCING

RECTANGLE DUCT TRAVERSE TEST REPORT

PROJECT NAME:	1330 - King Soopers 147											
EQUIPMENT / SYSTEM:	RTU-10 - Total Air											
DUCT TRAVERSE INFORMATION												
Duct Zone:	RTU-10				Required CFM:	5000			Required FPM:	1152		
Duct Size:	25	X	25	WxH"	Area:	4.34			Static Pressure:	-0.26 in.w.g.		
Instrument:	Velgrid		Corr Factor	1	Altitude:	5280 FT			Temperature:	n/a		
DUCT TRAVERSE MEASUREMENTS												
Velocity Total (FPM):	4,661		Velocity Average (FPM):	1,165			Actual Airflow (CFM):	**5,058**				

POS	1	2	3	4	5	6	7	8	9	10	11	Distance Height
1	1355	1296										6.3
2	914	1096										18.8
3												31.3
4												43.8
5												56.3
6												68.8
7												81.3
8												93.8
9												106.3
10												118.8
11												131.3
Distance Width	6.3	18.8	31.3	43.8	56.3	68.8	81.3	93.8	106.3	118.8	131.3	Inches
Totals	2269	2392	0	0	0	0	0	0	0	0	0	

Comments: _____

Technician(s): Curtis Tunink Date: 1/17/2024

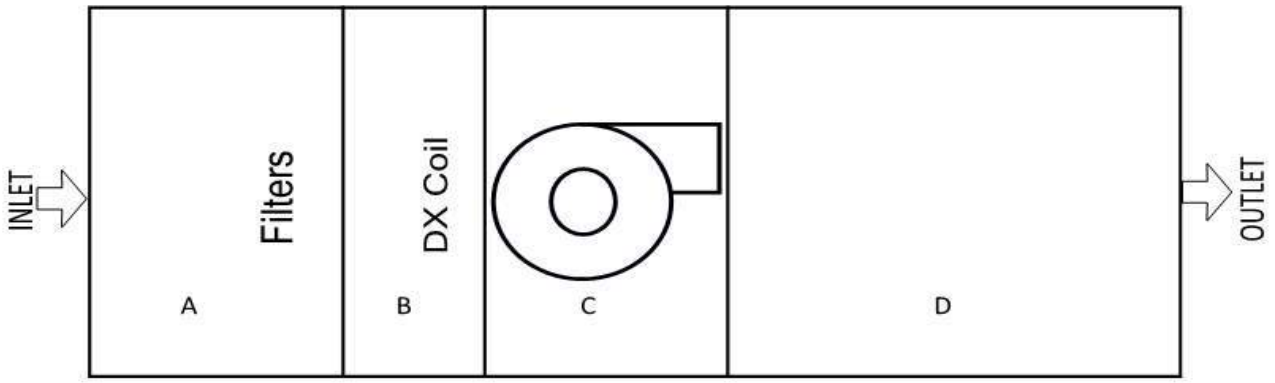
DOUBLE T BALANCING COMPANY, LLC
5910 S. University Blvd.
C-18, #354
Greenwood Village, CO 80121
Phone: 303-660-0620

NEBB CERTIFIED TESTING & BALANCING

STATIC PRESSURE PROFILE

PROJECT NAME:	1330 - King Soopers 147
EQUIPMENT / SYSTEM:	RTU-10

SYSTEM INFORMATION	
Static Pressure Profile Setup:	FILTER, COIL, FAN
Design Airflow (CFM)	5000
Measured Airflow (CFM)	5058



	ESP:	0.64				TSP:	0.95			
STATIC PRESSURE READINGS (in. w.g.)										
Location	**A**	**B**	**C**	**D**	**E**	**F**	**G**	**H**	**I**	**J**	**K**
Supply	-0.26	-0.40	-0.57	0.38							

Comments: _____

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Technician(s): Curtis Tunink Date: 1/17/24

DOUBLE T BALANCING COMPANY, LLC
5910 S. University Blvd.
C-18, #354
Greenwood Village, CO 80121
Phone: 303-660-0620

NEBB CERTIFIED TESTING & BALANCING

AIR APPARATUS TEST REPORT

PROJECT NAME:	1330 - King Soopers 147					
EQUIPMENT / SYSTEM:	RTU-11					
UNIT INFORMATION						
		DESIGN		***ACTUAL***		
MANUFACTURER		Lennox		Lennox		
MODEL #		LGM150U4E		LGM092U4ES1G		
SERIAL #				5622K06515		
LOCATION / SERVICE				Cart Corral		
FAN INFORMATION						
		DESIGN		***ACTUAL***		
Total Airflow (CFM)		3,000		2,951		
Total of Terminals (CFM)		3,000		2,951		
Return Airflow (CFM)		2,760				
Outside Airflow (CFM)		240				
Total Static Pressure (in. w.g.)				0.57		
External Static Pressure (in. w.g.)		0.15		0.38		
Fan Speed (RPM / Setpoint)				D.D.		
VFD Speed (Hz)				n/a		
OA Damper Postion (% Open)				5%		
MOTOR INFORMATION						
		DESIGN / NAMEPLATE		***ACTUAL***		
Manufacturer / Frame - Nameplate				ebmpapst / n/g		
Horse Power (HP)		3.75		n/g		
Brake Horse Power (BHP)				0.64		
Volts	Phase	480	3	491	492	493
Full Load Amps		4.30		0.83	0.68	0.81
Corrected Nameplate Amps		-		4.20		
Motor Speed (RPM / Setting)				D.D.		
Service Factor		-		n/g		
Current Overload Size/Setting		-		56% Speed		
FILTER INFORMATION						
DESIGN (MERV Rating)		***BANK #1 Style/Size(Qty)***		***BANK #2 Style/Size(Qty)***		
Merv 8		(4) 20x25x2				

Technician(s): Curtis Tunink Date: 1/22/2024

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5910 S. University Blvd.
C-18, #354
Greenwood Village, CO 80121
Phone: 303-660-0620

NEBB CERTIFIED TESTING & BALANCING

RECTANGLE DUCT TRAVERSE TEST REPORT

PROJECT NAME:	1330 - King Soopers 147											
EQUIPMENT / SYSTEM:	RTU-11 - Total Air											
DUCT TRAVERSE INFORMATION												
Duct Zone:	RTU-11				Required CFM:	3000			Required FPM:	691		
Duct Size:	25	X	25	WxH"	Area:	4.34			Static Pressure:	-0.26 in.w.g.		
Instrument:	Velgrid		Corr Factor	1	Altitude:	5280 FT			Temperature:	n/a		
DUCT TRAVERSE MEASUREMENTS												
Velocity Total (FPM):	2,720		Velocity Average (FPM):	680			Actual Airflow (CFM):	**2,951**				

POS	1	2	3	4	5	6	7	8	9	10	11	Distance Height
1	693	729										6.3
2	657	641										18.8
3												31.3
4												43.8
5												56.3
6												68.8
7												81.3
8												93.8
9												106.3
10												118.8
11												131.3
Distance Width	6.3	18.8	31.3	43.8	56.3	68.8	81.3	93.8	106.3	118.8	131.3	Inches
Totals	1350	1370	0	0	0	0	0	0	0	0	0	

Comments: _____

Technician(s): Curtis Tunink Date: 1/22/2024

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Greenwood Village, CO 80121
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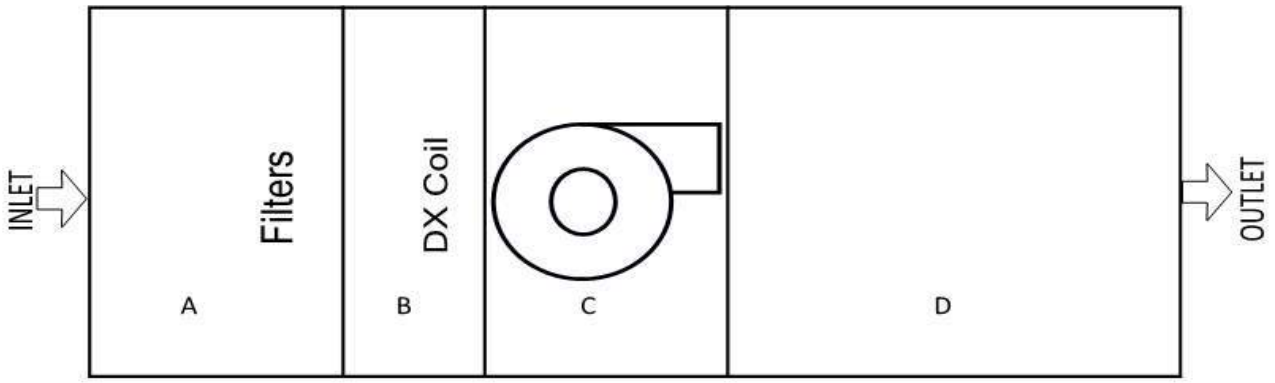
NEBB CERTIFIED TESTING & BALANCING

STATIC PRESSURE PROFILE

PROJECT NAME:	1330 - King Soopers 147
EQUIPMENT / SYSTEM:	RTU-11

SYSTEM INFORMATION	
Static Pressure Profile Setup:	FILTER, COIL, FAN
Design Airflow (CFM)	3000
Measured Airflow (CFM)	2951



	ESP:		**0.38**			**TSP:**		**0.57**		
STATIC PRESSURE READINGS (in. w.g.)										
Location	**A**	**B**	**C**	**D**	**E**	**F**	**G**	**H**	**I**	**J**	**K**
Supply	-0.18	-0.21	-0.37	0.20							

Comments: _____

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Technician(s): Curtis Tunink Date: 1/22/24

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Greenwood Village, CO 80121
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NEBB CERTIFIED TESTING & BALANCING

AIR APPARATUS TEST REPORT

PROJECT NAME:	1330 - King Soopers 147					
EQUIPMENT / SYSTEM:	RTU-13					
UNIT INFORMATION						
		DESIGN			***ACTUAL***	
MANUFACTURER		Lennox			LENNOX	
MODEL #		LGM092U4E			LGM074U4EQ1G	
SERIAL #					5623A02588	
LOCATION / SERVICE					Pharmacy	
FAN INFORMATION						
		DESIGN			***ACTUAL***	
Total Airflow (CFM)		2,400			2,484	
Total of Terminals (CFM)		2,400			2,484	
Return Airflow (CFM)		2,085			2,144	
Outside Airflow (CFM)		315			340	
Total Static Pressure (in. w.g.)					0.80	
External Static Pressure (in. w.g.)		0.15			0.65	
Fan Speed (RPM / Setpoint)					D.D.	
VFD Speed (Hz)					N/A	
OA Damper Postion (% Open)					13%	
MOTOR INFORMATION						
		DESIGN / NAMEPLATE			***ACTUAL***	
Manufacturer / Frame - Nameplate					EBMPAPST / N/G	
Horse Power (HP)		3.75			1700 WATTS	
Brake Horse Power (BHP)					1.71	
Volts	Phase	480	3		491	492	493
Full Load Amps		2.30			1.99	2.11	2.15
Corrected Nameplate Amps		-			2.24	
Motor Speed (RPM / Setting)					D.D.	
Service Factor		-			N/G	
Current Overload Size/Setting		-			90% SPEED	
FILTER INFORMATION						
DESIGN (MERV Rating)		***BANK #1 Style/Size(Qty)***			***BANK #2 Style/Size(Qty)***	
Merv 8		(4) 20x20x2				

Technician(s): Curtis Tunink Date: 1/11/2024

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NEBB CERTIFIED TESTING & BALANCING

AIR OUTLET TEST REPORT

PROJECT NAME:	1330 - King Soopers 147
EQUIPMENT / SYSTEM:	RTU-13 - Supply

OUTLET SUMMARY

Area Served	FH / RVA / TRV	ATI #	Outlet Type	Size LxW /	AK	Design FPM	Design CFM	Initial FPM	Initial CFM	Final FPM	Final CFM	Final %	Notes
		1	cd		1.0	*200*	200		**184**		**205**	103%	
		2	cd		1.0	*300*	**300**		**349**		**309**	103%	
		3	cd		1.0	*300*	**300**		**286**		**312**	104%	
		4	cd		1.0	*200*	**200**		**252**		**217**	109%	
		5	cd		1.0	*200*	**200**		**227**		**211**	106%	
		6	cd		1.0	*200*	**200**		**235**		**202**	101%	
		7	cd		1.0	*200*	200		**191**		**218**	109%	
		8	cd		1.0	*200*	**200**		**197**		**214**	107%	
		9	cd		1.0	*200*	**200**		**161**		**197**	99%	
		10	cd		1.0	*200*	**200**		**191**		**201**	101%	
		11	cd		1.0	*100*	**100**		**118**		**100**	100%	
		12	cd		1.0	*100*	**100**		**175**		**98**	98%	
							2400		**2566**		**2484**	104%	
												-	
Return		1	rg		1.0	*180*	**180**		**163**		**189**	105%	
		2	rg		1.0	*545*	**545**		**423**		**545**	100%	
		3	rg		1.0	*725*	**725**		**692**		**729**	101%	
		4	rg		1.0	*545*	**545**		**727**		**582**	107%	
		5	rg		1.0	*90*	90		**208**		**99**	110%	
							2085		**2213**		**2144**	103%	
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												-	
												-	

RVA = Rotating Vane Anemometer : FH = Flow Hood : TRV = Traverse

Comments: _____

Technician(s): Curtis Tunink Date: 1/16/2024

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5910 S. University Blvd.
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Greenwood Village, CO 80121
Phone: 303-660-0620

NEBB CERTIFIED TESTING & BALANCING

RECTANGLE DUCT TRAVERSE TEST REPORT

PROJECT NAME:	1330 - King Soopers 147											
EQUIPMENT / SYSTEM:	RTU-13 - Outside Air											
DUCT TRAVERSE INFORMATION												
Duct Zone:	RTU-13				Required CFM:	315			Required FPM:	116		
Duct Size:	28	X	14	WxH"	Area:	2.72			Static Pressure:	-0.43 in.w.g.		
Instrument:	Velgrid		Corr Factor	1	Altitude:	5280 FT			Temperature:	n/a		
DUCT TRAVERSE MEASUREMENTS												
Velocity Total (FPM):	250		Velocity Average (FPM):	125			Actual Airflow (CFM):	**340**				

POS	1	2	3	4	5	6	7	8	9	10	11	Distance Height
1	130	120										7.0
2												21.0
3												35.0
4												49.0
5												63.0
6												77.0
7												91.0
8												105.0
9												119.0
10												133.0
11												147.0
Distance Width	7.0	21.0	35.0	49.0	63.0	77.0	91.0	105.0	119.0	133.0	147.0	Inches
Totals	130	120	0	0	0	0	0	0	0	0	0	

Comments: _____

Technician(s): Curtis Tunink Date: 1/19/2024

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Greenwood Village, CO 80121
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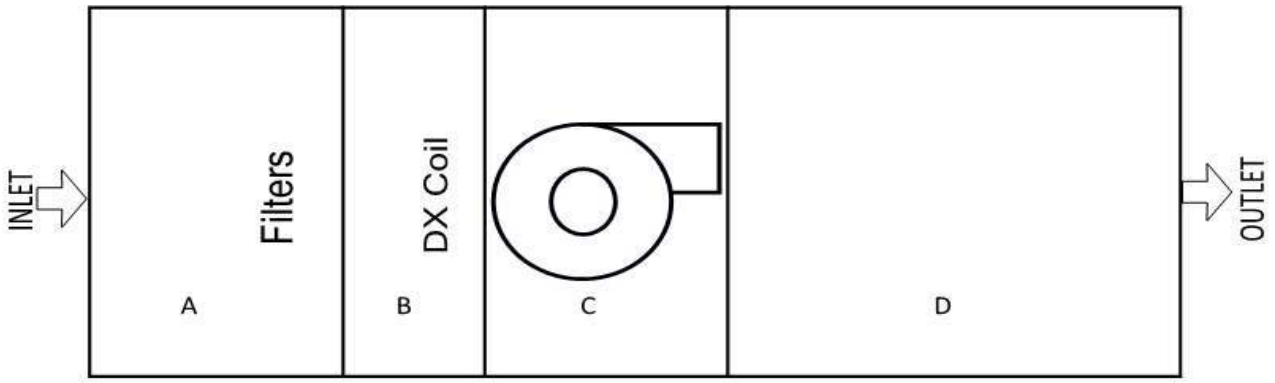
NEBB CERTIFIED TESTING & BALANCING

STATIC PRESSURE PROFILE

PROJECT NAME:	1330 - King Soopers 147
EQUIPMENT / SYSTEM:	RTU-13

SYSTEM INFORMATION	
Static Pressure Profile Setup:	FILTER, COIL, FAN
Design Airflow (CFM)	2400
Measured Airflow (CFM)	2484



	ESP:	0.65			TSP:	0.80				
STATIC PRESSURE READINGS (in. w.g.)										
Location	**A**	**B**	**C**	**D**	**E**	**F**	**G**	**H**	**I**	**J**	**K**
Supply	-0.43	-0.49	-0.58	0.22							

Comments: _____

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_____

Technician(s): Tony Short Date: 1/14/2024

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5910 S. University Blvd.
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Greenwood Village, CO 80121
Phone: 303-660-0620

NEBB CERTIFIED TESTING & BALANCING

AIR APPARATUS TEST REPORT

PROJECT NAME:	1330 - King Soopers 147					
EQUIPMENT / SYSTEM:	RTU-14					
UNIT INFORMATION						
		DESIGN		***ACTUAL***		
MANUFACTURER		Lennox		Lennox		
MODEL #		LGM120U4E		LGM120U4EM1G		
SERIAL #				5622L00821		
LOCATION / SERVICE				Deli		
FAN INFORMATION						
		DESIGN		***ACTUAL***		
Total Airflow (CFM)		4,000		3,847		
Total of Terminals (CFM)		4,000		3,847		
Return Airflow (CFM)		3,200		3,035		
Outside Airflow (CFM)		800		812		
Total Static Pressure (in. w.g.)				1.27		
External Static Pressure (in. w.g.)		0.15		1.04		
Fan Speed (RPM / Setpoint)				D.D.		
VFD Speed (Hz)				n/a		
OA Damper Postion (% Open)				20%		
MOTOR INFORMATION						
		DESIGN / NAMEPLATE		***ACTUAL***		
Manufacturer / Frame - Nameplate				ebmpapst / n/g		
Horse Power (HP)		3.75		n/g		
Brake Horse Power (BHP)				1.26		
Volts	Phase	480	3	491	492	493
Full Load Amps		4.30		1.64	1.41	1.54
Corrected Nameplate Amps		-		4.20		
Motor Speed (RPM / Setting)				D.D.		
Service Factor		-		n/g		
Current Overload Size/Setting		-		76% Speed		
FILTER INFORMATION						
DESIGN (MERV Rating)		***BANK #1 Style/Size(Qty)***		***BANK #2 Style/Size(Qty)***		
Merv 8		(4) 20x25x2				

Technician(s): Curtis Tunink Date: 1/11/2024

DOUBLE T BALANCING COMPANY, LLC
5910 S. University Blvd.
C-18, #354
Greenwood Village, CO 80121
Phone: 303-660-0620

NEBB CERTIFIED TESTING & BALANCING

AIR OUTLET TEST REPORT

PROJECT NAME:	1330 - King Soopers 147
EQUIPMENT / SYSTEM:	RTU-14

OUTLET SUMMARY

Area Served	FH / RVA / TRV	ATI #	Outlet Type	Size LxW /	AK	Design FPM	Design CFM	Initial FPM	Initial CFM	Final FPM	Final CFM	Final %	Notes
		1	cd		1.0	*200*	200		**234**		**192**	96%	
		2	cd		1.0	*150*	**150**		**230**		**141**	94%	
		3	cd		1.0	*300*	**300**		**55**		**289**	96%	
		4	cd		1.0	*150*	**150**		**283**		**145**	97%	
		5	cd		1.0	*50*	**50**		**189**		**45**	90%	
		6	cd		1.0	*150*	**150**		**247**		**150**	100%	
		7	cd		1.0	*400*	400		**443**		**410**	103%	
		8	cd		1.0	*400*	**400**		**54**		**391**	98%	
		9	cd		1.0	*300*	**300**		**52**		**320**	107%	
		10	cd		1.0	*400*	**400**		**419**		**372**	93%	
		11	cd		1.0	*400*	**400**		**374**		**365**	91%	
		12	cd		1.0	*400*	**400**		**421**		**370**	93%	
		13	cd		1.0	*400*	400		**413**		**387**	97%	
		14	rd		1.0	*300*	**300**		**286**		**270**	90%	
							4000		**3700**		**3847**	96%	
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RVA = Rotating Vane Anemometer : FH = Flow Hood : TRV = Traverse

Comments: _____

Technician(s): Curtis Tunink Date: 1/22/2024

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Greenwood Village, CO 80121
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NEBB CERTIFIED TESTING & BALANCING

RECTANGLE DUCT TRAVERSE TEST REPORT

PROJECT NAME:	1330 - King Soopers 147											
EQUIPMENT / SYSTEM:	RTU-14 - Outside Air											
DUCT TRAVERSE INFORMATION												
Duct Zone:	RTU-14				Required CFM:	800			Required FPM:	179		
Duct Size:	28	X	23	WxH"	Area:	4.47			Static Pressure:	-0.65 in.w.g.		
Instrument:	Velgrid		Corr Factor	1	Altitude:	5280 FT			Temperature:	n/a		
DUCT TRAVERSE MEASUREMENTS												
Velocity Total (FPM):	726		Velocity Average (FPM):	182			Actual Airflow (CFM):	**812**				

POS	1	2	3	4	5	6	7	8	9	10	11	Distance Height
1	184	191										5.8
2	174	177										17.3
3												28.8
4												40.3
5												51.8
6												63.3
7												74.8
8												86.3
9												97.8
10												109.3
11												120.8
Distance Width	7.0	21.0	35.0	49.0	63.0	77.0	91.0	105.0	119.0	133.0	147.0	Inches
Totals	358	368	0	0	0	0	0	0	0	0	0	

Comments: _____

Technician(s): Curtis Tunink Date: 1/22/2024

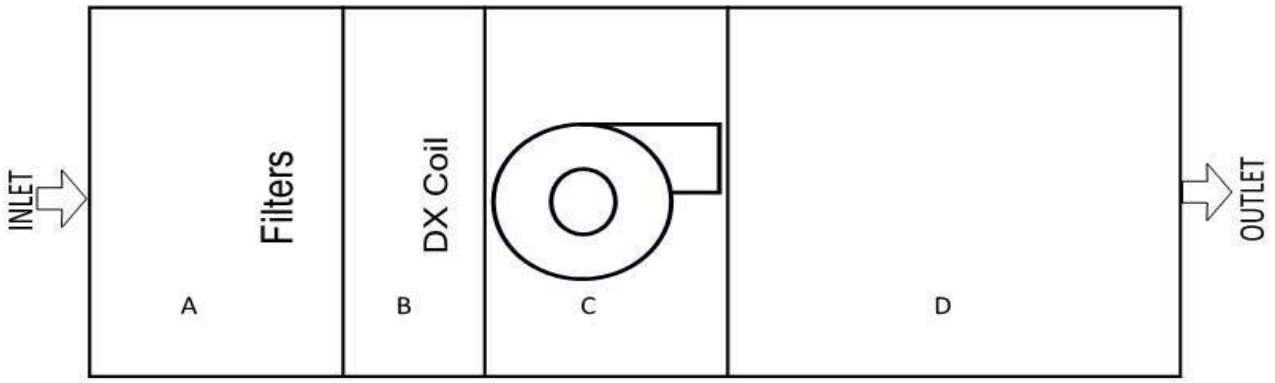
DOUBLE T BALANCING COMPANY, LLC
5910 S. University Blvd.
C-18, #354
Greenwood Village, CO 80121
Phone: 303-660-0620

NEBB CERTIFIED TESTING & BALANCING

STATIC PRESSURE PROFILE

PROJECT NAME:	1330 - King Soopers 147
EQUIPMENT / SYSTEM:	RTU-14

SYSTEM INFORMATION	
Static Pressure Profile Setup:	FILTER, COIL, FAN
Design Airflow (CFM)	4000
Measured Airflow (CFM)	3847



	ESP:	1.04			TSP:	1.27				
STATIC PRESSURE READINGS (in. w.g.)										
Location	**A**	**B**	**C**	**D**	**E**	**F**	**G**	**H**	**I**	**J**	**K**
Supply	-0.65	-0.76	-0.88	0.39							

Comments: _____

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Technician(s): Curtis Tunink Date: 1/22/24

DOUBLE T BALANCING COMPANY, LLC
5910 S. University Blvd.
C-18, #354
Greenwood Village, CO 80121
Phone: 303-660-0620

NEBB CERTIFIED TESTING & BALANCING

AIR APPARATUS TEST REPORT

PROJECT NAME:		1330 - King Soopers 147						
EQUIPMENT / SYSTEM:		RTU-15						
UNIT INFORMATION								
		DESIGN			***ACTUAL***			
MANUFACTURER		Lennox			Lennox			
MODEL #		LGM074U4E			LGM074U4EQ1G			
SERIAL #					5623A02606			
LOCATION / SERVICE					Bakery			
FAN INFORMATION								
		DESIGN			***ACTUAL***			
Total Airflow (CFM)		2,400			2,382			
Total of Terminals (CFM)		2,400			2,382			
Return Airflow (CFM)		1,800			1,769			
Outside Airflow (CFM)		600			613			
Total Static Pressure (in. w.g.)					0.83			
External Static Pressure (in. w.g.)		0.15			0.69			
Fan Speed (RPM / Setpoint)					D.D.			
VFD Speed (Hz)					n/a			
OA Damper Postion (% Open)					25%			
MOTOR INFORMATION								
		DESIGN / NAMEPLATE			***ACTUAL***			
Manufacturer / Frame - Nameplate					ebmpapst / n/g			
Horse Power (HP)		1.00			n/g			
Brake Horse Power (BHP)					1.23			
Volts	Phase	480	3		491	492	493	
Full Load Amps		4.30			1.58	1.44	1.46	
Corrected Nameplate Amps		-			4.20			
Motor Speed (RPM / Setting)					D.D.			
Service Factor		-			n/g			
Current Overload Size/Setting		-			82% Speed			
FILTER INFORMATION								
DESIGN (MERV Rating)		***BANK #1 Style/Size(Qty)***			***BANK #2 Style/Size(Qty)***			
Merv 8		(4) 20x20x2						

Technician(s): Curtis Tunink Date: 1/11/2024

DOUBLE T BALANCING COMPANY, LLC
5910 S. University Blvd.
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Greenwood Village, CO 80121
Phone: 303-660-0620

NEBB CERTIFIED TESTING & BALANCING

AIR OUTLET TEST REPORT

PROJECT NAME:	1330 - King Soopers 147
EQUIPMENT / SYSTEM:	RTU-15 - Supply

OUTLET SUMMARY

Area Served	FH / RVA / TRV	ATI #	Outlet Type	Size LxW /	AK	Design FPM	Design CFM	Initial FPM	Initial CFM	Final FPM	Final CFM	Final %	Notes
		1	cd		1.0	*240*	240		**329**		**239**	100%	
		2	cd		1.0	*240*	**240**		**356**		**238**	99%	
		3	cd		1.0	*240*	**240**		**290**		**248**	103%	
		4	cd		1.0	*240*	**240**		**290**		**242**	101%	
		5	cd		1.0	*240*	**240**		**335**		**235**	98%	
		6	cd		1.0	*240*	**240**		**356**		**240**	100%	
		7	cd		1.0	*240*	240		**170**		**218**	91%	
		8	cd		1.0	*240*	**240**		**220**		**225**	94%	
		9	cd		1.0	*240*	**240**		**250**		**255**	106%	
		10	cd		1.0	*240*	**240**		**262**		**242**	101%	
							2400		**2858**		**2382**	99%	
												-	
												-	
												-	
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RVA = Rotating Vane Anemometer : FH = Flow Hood : TRV = Traverse

Comments: _____

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Technician(s): Curtis Tunink Date: 1/20/2024

DOUBLE T BALANCING COMPANY, LLC
5910 S. University Blvd.
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Greenwood Village, CO 80121
Phone: 303-660-0620

NEBB CERTIFIED TESTING & BALANCING

RECTANGLE DUCT TRAVERSE TEST REPORT

PROJECT NAME:	1330 - King Soopers 147											
EQUIPMENT / SYSTEM:	RTU-15 - Outside Air											
DUCT TRAVERSE INFORMATION												
Duct Zone:	RTU-15				Required CFM:	600			Required FPM:	262		
Duct Size:	30	X	11	WxH"	Area:	2.29			Static Pressure:	-0.51 in.w.g.		
Instrument:	Velgrid		Corr Factor	1	Altitude:	5280 FT			Temperature:	n/a		
DUCT TRAVERSE MEASUREMENTS												
Velocity Total (FPM):	535		Velocity Average (FPM):	268			Actual Airflow (CFM):	**613**				

POS	1	2	3	4	5	6	7	8	9	10	11	Distance Height
1	277	258										5.5
2												16.5
3												27.5
4												38.5
5												49.5
6												60.5
7												71.5
8												82.5
9												93.5
10												104.5
11												115.5
Distance Width	7.5	22.5	37.5	52.5	67.5	82.5	97.5	112.5	127.5	142.5	157.5	Inches
Totals	277	258	0	0	0	0	0	0	0	0	0	

Comments: _____

Technician(s): Curtis Tunink Date: 1/20/2024

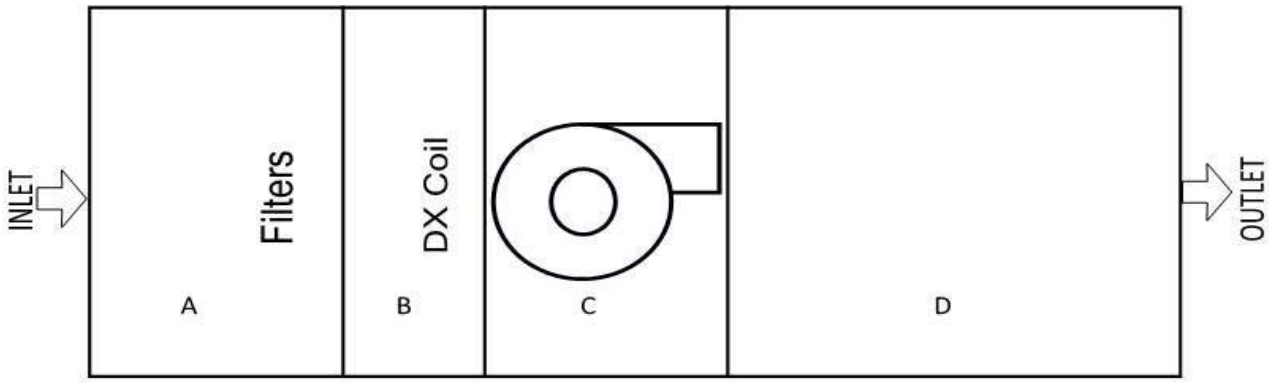
DOUBLE T BALANCING COMPANY, LLC
5910 S. University Blvd.
C-18, #354
Greenwood Village, CO 80121
Phone: 303-660-0620

NEBB CERTIFIED TESTING & BALANCING

STATIC PRESSURE PROFILE

PROJECT NAME:	1330 - King Soopers 147
EQUIPMENT / SYSTEM:	RTU-15

SYSTEM INFORMATION	
Static Pressure Profile Setup:	FILTER, COIL, FAN
Design Airflow (CFM)	2400
Measured Airflow (CFM)	2482



	ESP:		**0.69**				**TSP:**		**0.83**		
STATIC PRESSURE READINGS (in. w.g.)											
Location	**A**	**B**	**C**	**D**	**E**	**F**	**G**	**H**	**I**	**J**	**K**
Supply	-0.51	-0.54	-0.65	0.18							

Comments: _____

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Technician(s): Curtis Tunink Date: 1/20/24

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Greenwood Village, CO 80121
Phone: 303-660-0620

NEBB CERTIFIED TESTING & BALANCING

AIR APPARATUS TEST REPORT

PROJECT NAME:	1330 - King Soopers 147					
EQUIPMENT / SYSTEM:	RTU-16					
UNIT INFORMATION						
	DESIGN			***ACTUAL***		
MANUFACTURER	Lennox			Lennox		
MODEL #	LGM120U4E			LGM120U4EM1G		
SERIAL #				5622L00823		
LOCATION / SERVICE				Back Room		
FAN INFORMATION						
	DESIGN			***ACTUAL***		
Total Airflow (CFM)	4,000			4,134		
Total of Terminals (CFM)	4,000			4,134		
Return Airflow (CFM)	3,720			3,854		
Outside Airflow (CFM)	280			280		
Total Static Pressure (in. w.g.)				1.09		
External Static Pressure (in. w.g.)	0.15			0.83		
Fan Speed (RPM / Setpoint)				D.D.		
VFD Speed (Hz)				n/a		
OA Damper Postion (% Open)				7%		
MOTOR INFORMATION						
	DESIGN / NAMEPLATE			***ACTUAL***		
Manufacturer / Frame - Nameplate				ebmpapst / n/g		
Horse Power (HP)	3.75			n/g		
Brake Horse Power (BHP)				1.21		
Volts / Phase	480	3		491	492	493
Full Load Amps	4.30			1.67	1.45	1.30
Corrected Nameplate Amps	-			4.20		
Motor Speed (RPM / Setting)				D.D.		
Service Factor	-			n/g		
Current Overload Size/Setting	-			76% Speed		
FILTER INFORMATION						
DESIGN (MERV Rating)	***BANK #1 Style/Size(Qty)***			***BANK #2 Style/Size(Qty)***		
Merv 8	(4) 20x25x2					

Technician(s): Curtis Tunink Date: 1/11/2024

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Phone: 303-660-0620

NEBB CERTIFIED TESTING & BALANCING

RECTANGLE DUCT TRAVERSE TEST REPORT

PROJECT NAME:	1330 - King Soopers 147											
EQUIPMENT / SYSTEM:	RTU-16 - Total Air											
DUCT TRAVERSE INFORMATION												
Duct Zone:	RTU-16				Required CFM:	4000			Required FPM:	922		
Duct Size:	25	X	25	WxH"	Area:	4.34			Static Pressure:	-0.36 in.w.g.		
Instrument:	Velgrid		Corr Factor	1	Altitude:	5280 FT			Temperature:	n/a		
DUCT TRAVERSE MEASUREMENTS												
Velocity Total (FPM):	3,810				Velocity Average (FPM):	953			Actual Airflow (CFM):	**4,134**		

POS	1	2	3	4	5	6	7	8	9	10	11	Distance Height
1	1184	1069										6.3
2	812	745										18.8
3												31.3
4												43.8
5												56.3
6												68.8
7												81.3
8												93.8
9												106.3
10												118.8
11												131.3
Distance Width	6.3	18.8	31.3	43.8	56.3	68.8	81.3	93.8	106.3	118.8	131.3	Inches
Totals	1996	1814	0	0	0	0	0	0	0	0	0	

Comments: _____

Technician(s): Curtis Tunink Date: 1/20/2024

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Greenwood Village, CO 80121
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NEBB CERTIFIED TESTING & BALANCING

RECTANGLE DUCT TRAVERSE TEST REPORT

PROJECT NAME:	1330 - King Soopers 147											
EQUIPMENT / SYSTEM:	RTU-16 - Outside Air											
DUCT TRAVERSE INFORMATION												
Duct Zone:	RTU-16				Required CFM:	280			Required FPM:	63		
Duct Size:	28	X	23	WxH"	Area:	4.47			Static Pressure:	-0.36 in.w.g.		
Instrument:	Velgrid		Corr Factor	1	Altitude:	5280 FT			Temperature:	n/a		
DUCT TRAVERSE MEASUREMENTS												
Velocity Total (FPM):	250		Velocity Average (FPM):	63			Actual Airflow (CFM):	**280**				

POS	1	2	3	4	5	6	7	8	9	10	11	Distance Height
1	84	64										5.8
2	52	50										17.3
3												28.8
4												40.3
5												51.8
6												63.3
7												74.8
8												86.3
9												97.8
10												109.3
11												120.8
Distance Width	7.0	21.0	35.0	49.0	63.0	77.0	91.0	105.0	119.0	133.0	147.0	Inches
Totals	136	114	0	0	0	0	0	0	0	0	0	

Comments: _____

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Technician(s): Curtis Tunink Date: 1/20/2024

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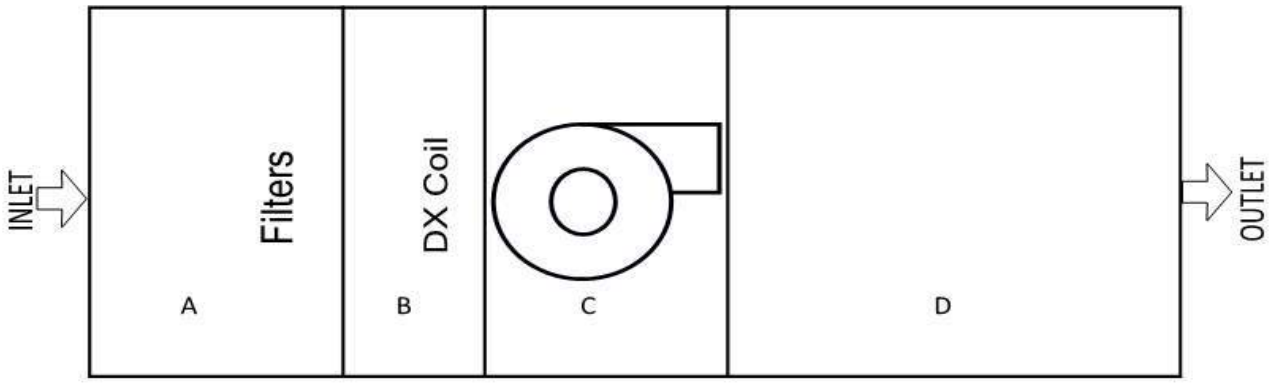
Greenwood Village, CO 80121
Phone: 303-660-0620

NEBB CERTIFIED TESTING & BALANCING

STATIC PRESSURE PROFILE

PROJECT NAME:	1330 - King Soopers 147
EQUIPMENT / SYSTEM:	RTU-16

SYSTEM INFORMATION	
Static Pressure Profile Setup:	FILTER, COIL, FAN
Design Airflow (CFM)	4000
Measured Airflow (CFM)	4134



	ESP:		**0.83**			**TSP:**		**1.09**		
STATIC PRESSURE READINGS (in. w.g.)										
Location	**A**	**B**	**C**	**D**	**E**	**F**	**G**	**H**	**I**	**J**	**K**
Supply	-0.36	-0.50	-0.62	0.47							

Comments: _____

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Technician(s): Curtis Tunink Date: 1/20/24

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Phone: 303-660-0620

NEBB CERTIFIED TESTING & BALANCING

AIR APPARATUS TEST REPORT

PROJECT NAME:	1330 - King Soopers 147					
EQUIPMENT / SYSTEM:	RTU-17					
UNIT INFORMATION						
		DESIGN		***ACTUAL***		
MANUFACTURER		Lennox		Lennox		
MODEL #		LGM120U4E		LGM120U4EM1G		
SERIAL #				5622L00824		
LOCATION / SERVICE				Back Room		
FAN INFORMATION						
		DESIGN		***ACTUAL***		
Total Airflow (CFM)		4,000		4,120		
Total of Terminals (CFM)		4,000		4,120		
Return Airflow (CFM)		3,720		3,825		
Outside Airflow (CFM)		280		295		
Total Static Pressure (in. w.g.)				1.02		
External Static Pressure (in. w.g.)		0.15		0.73		
Fan Speed (RPM / Setpoint)				D.D.		
VFD Speed (Hz)				n/g		
OA Damper Postion (% Open)				7%		
MOTOR INFORMATION						
		DESIGN / NAMEPLATE		***ACTUAL***		
Manufacturer / Frame - Nameplate				ebmpapst / n/g		
Horse Power (HP)		3.75		n/g		
Brake Horse Power (BHP)				1.23		
Volts	Phase	480	3	491	492	493
Full Load Amps		4.30		1.66	1.47	1.35
Corrected Nameplate Amps		-		4.20		
Motor Speed (RPM / Setting)				D.D.		
Service Factor		-		n/g		
Current Overload Size/Setting		-		76% Speed		
FILTER INFORMATION						
DESIGN (MERV Rating)		***BANK #1 Style/Size(Qty)***		***BANK #2 Style/Size(Qty)***		
Merv 8		(4) 20x25x2				

Technician(s): Curtis Tunink Date: 1/20/2024

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Greenwood Village, CO 80121
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NEBB CERTIFIED TESTING & BALANCING

RECTANGLE DUCT TRAVERSE TEST REPORT

PROJECT NAME:	1330 - King Soopers 147											
EQUIPMENT / SYSTEM:	RTU-17 - Total Air											
DUCT TRAVERSE INFORMATION												
Duct Zone:	RTU-17				Required CFM:	4000			Required FPM:	922		
Duct Size:	25	X	25	WxH"	Area:	4.34			Static Pressure:	-0.33 in.w.g.		
Instrument:	Velgrid		Corr Factor	1	Altitude:	5280 FT			Temperature:	n/a		
DUCT TRAVERSE MEASUREMENTS												
Velocity Total (FPM):	3,797		Velocity Average (FPM):	949			Actual Airflow (CFM):	**4,120**				

POS	1	2	3	4	5	6	7	8	9	10	11	Distance Height
1	1025	1097										6.3
2	934	741										18.8
3												31.3
4												43.8
5												56.3
6												68.8
7												81.3
8												93.8
9												106.3
10												118.8
11												131.3
Distance Width	6.3	18.8	31.3	43.8	56.3	68.8	81.3	93.8	106.3	118.8	131.3	Inches
Totals	1959	1838	0	0	0	0	0	0	0	0	0	

Comments: _____

Technician(s): Curtis Tunink Date: 1/20/2024

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NEBB CERTIFIED TESTING & BALANCING

RECTANGLE DUCT TRAVERSE TEST REPORT

PROJECT NAME:	1330 - King Soopers 147											
EQUIPMENT / SYSTEM:	RTU-17 - Outside Air											
DUCT TRAVERSE INFORMATION												
Duct Zone:	RTU-17				Required CFM:	280			Required FPM:	63		
Duct Size:	28	X	23	WxH"	Area:	4.47			Static Pressure:	-0.33 in.w.g.		
Instrument:	Velgrid		Corr Factor	1	Altitude:	5280 FT			Temperature:	n/a		
DUCT TRAVERSE MEASUREMENTS												
Velocity Total (FPM):	264		Velocity Average (FPM):	66			Actual Airflow (CFM):	**295**				

POS	1	2	3	4	5	6	7	8	9	10	11	Distance Height
1	62	75										5.8
2	60	67										17.3
3												28.8
4												40.3
5												51.8
6												63.3
7												74.8
8												86.3
9												97.8
10												109.3
11												120.8
Distance Width	7.0	21.0	35.0	49.0	63.0	77.0	91.0	105.0	119.0	133.0	147.0	Inches
Totals	122	142	0	0	0	0	0	0	0	0	0	

Comments: _____

Technician(s): Curtis Tunink Date: 1/20/2024

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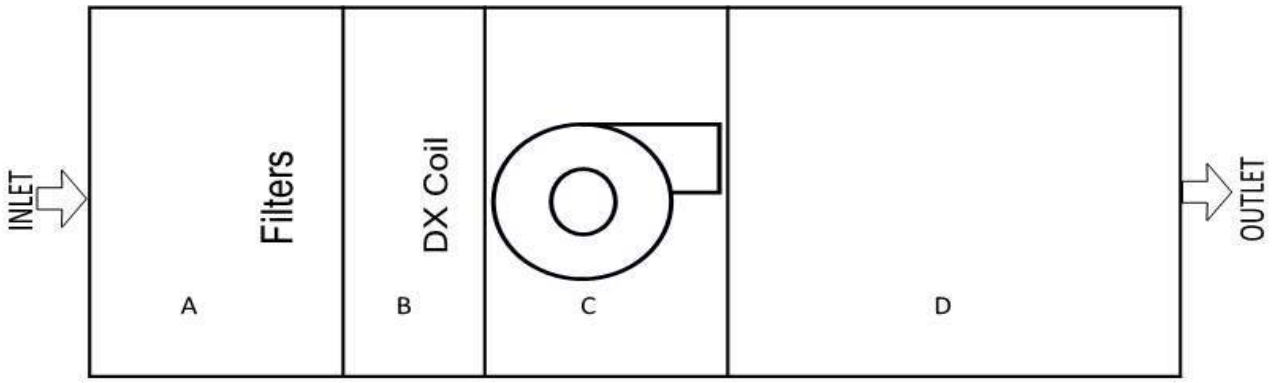
5910 S. University Blvd.
C-18, #354
Greenwood Village, CO 80121
Phone: 303-660-0620

NEBB CERTIFIED TESTING & BALANCING

STATIC PRESSURE PROFILE

PROJECT NAME:	1330 - King Soopers 147
EQUIPMENT / SYSTEM:	RTU-17

SYSTEM INFORMATION	
Static Pressure Profile Setup:	FILTER, COIL, FAN
Design Airflow (CFM)	4000
Measured Airflow (CFM)	4120



	ESP:		**0.73**				**TSP:**		**1.02**		
STATIC PRESSURE READINGS (in. w.g.)											
Location	**A**	**B**	**C**	**D**	**E**	**F**	**G**	**H**	**I**	**J**	**K**
Supply	-0.33	-0.49	-0.62	0.40							

Comments: _____

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Technician(s): Curtis Tunink Date: 1/20/24

DOUBLE T BALANCING COMPANY, LLC
5910 S. University Blvd.
C-18, #354
Greenwood Village, CO 80121
Phone: 303-660-0620

NEBB CERTIFIED TESTING & BALANCING

AIR APPARATUS TEST REPORT

PROJECT NAME:	1330 - King Soopers 147					
EQUIPMENT / SYSTEM:	RTU-18					
UNIT INFORMATION						
	DESIGN			***ACTUAL***		
MANUFACTURER	Lennox			Lennox		
MODEL #	LGM092U4E			LGM092U4ES1G		
SERIAL #				5622K06518		
LOCATION / SERVICE				Office Area		
FAN INFORMATION						
	DESIGN			***ACTUAL***		
Total Airflow (CFM)	3,000			3,079		
Total of Terminals (CFM)	3,000			3,079		
Return Airflow (CFM)	2,495			2,543		
Outside Airflow (CFM)	505			536		
Total Static Pressure (in. w.g.)				0.81		
External Static Pressure (in. w.g.)	0.15			0.63		
Fan Speed (RPM / Setpoint)				D.D.		
VFD Speed (Hz)				N/A		
OA Damper Postion (% Open)				10%		
MOTOR INFORMATION						
	DESIGN / NAMEPLATE			***ACTUAL***		
Manufacturer / Frame - Nameplate				EBMPAPST / N/G		
Horse Power (HP)	3.75			N/G		
Brake Horse Power (BHP)				0.42		
Volts / Phase	480	3		491	492	493
Full Load Amps	4.30			0.52	0.51	0.50
Corrected Nameplate Amps	-			4.20		
Motor Speed (RPM / Setting)				D.D.		
Service Factor	-			N/G		
Current Overload Size/Setting	-			59% SPEED		
FILTER INFORMATION						
DESIGN (MERV Rating)	***BANK #1 Style/Size(Qty)***			***BANK #2 Style/Size(Qty)***		
MERV 8	(4) 20X25X2			-		

Technician(s): Curtis Tunink Date: 1/11/2024

DOUBLE T BALANCING COMPANY, LLC
5910 S. University Blvd.
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Greenwood Village, CO 80121
Phone: 303-660-0620

NEBB CERTIFIED TESTING & BALANCING

AIR OUTLET TEST REPORT

PROJECT NAME:	1330 - King Soopers 147
EQUIPMENT / SYSTEM:	RTU-18 - Supply

OUTLET SUMMARY

Area Served	FH / RVA / TRV	ATI #	Outlet Type	Size LxW /	AK	Design FPM	Design CFM	Initial FPM	Initial CFM	Final FPM	Final CFM	Final %	Notes
		1	cd		1.0	*250*	250		**345**		**247**	99%	
		2	cd		1.0	*250*	**250**		**320**		**238**	95%	
		3	cd		1.0	*100*	**100**		**113**		**107**	107%	
		4	cd		1.0	*100*	**100**		**125**		**105**	105%	
		5	cd		1.0	*250*	**250**		**245**		**254**	102%	
		6	cd		1.0	*100*	**100**		**402**		**105**	105%	
		7	cd		1.0	*200*	200		**125**		**194**	97%	
		8	cd		1.0	*300*	**300**		**226**		**324**	108%	
		9	cd		1.0	*200*	**200**		**190**		**188**	94%	
		10	cd		1.0	*100*	**100**		**184**		**108**	108%	
		11	cd		1.0	*100*	**100**		**188**		**99**	99%	
		12	cd		1.0	*250*	**250**		**338**		**265**	106%	
		13	cd		1.0	*200*	200		**194**		**206**	103%	
		14	cd		1.0	*200*	**200**		**198**		**206**	103%	
		15	cd		1.0	*200*	**200**		**152**		**215**	108%	
		16	cd		1.0	*200*	**200**		**163**		**218**	109%	
							3000		**3508**		**3079**	103%	
												-	
												-	
												-	
Return		1	rg		1.0	*800*	**800**		**556**		**823**	103%	
		2	rg		1.0	*100*	**100**		**244**		**105**	105%	
		3	rg		1.0	*600*	600		**591**		**625**	104%	
		4	rg		1.0	*100*	100		**306**		**105**	105%	
		5	rg		1.0	*100*	100		**245**		**109**	109%	
		6	rg		1.0	*750*	750		**967**		**776**	103%	
							2450		**2909**		**2543**	104%	
												-	
												-	
												-	
												-	
												-	
												-	
												-	

RVA = Rotating Vane Anemometer : FH = Flow Hood : TRV = Traverse

Comments: _____

Technician(s): Curtis Tunink Date: 1/16/2024

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5910 S. University Blvd.
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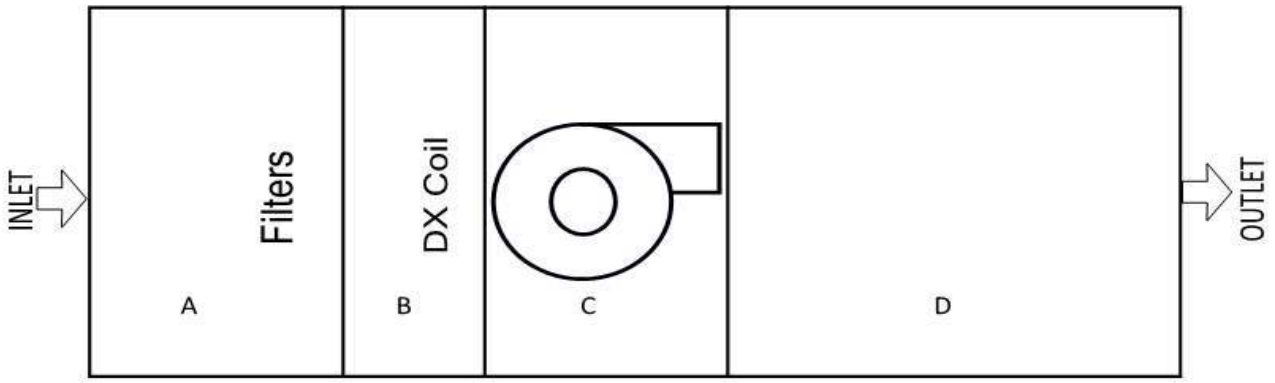
Greenwood Village, CO 80121
Phone: 303-660-0620

NEBB CERTIFIED TESTING & BALANCING

STATIC PRESSURE PROFILE

PROJECT NAME:	1330 - King Soopers 147
EQUIPMENT / SYSTEM:	RTU-18

SYSTEM INFORMATION	
Static Pressure Profile Setup:	FILTER, COIL, FAN
Design Airflow (CFM)	3000
Measured Airflow (CFM)	3079



	ESP:		**0.63**				**TSP:**		**0.81**		
STATIC PRESSURE READINGS (in. w.g.)											
Location	**A**	**B**	**C**	**D**	**E**	**F**	**G**	**H**	**I**	**J**	**K**
Supply	-0.28	-0.36	-0.46	0.35							

Comments: _____

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Technician(s): Tony Short Date: 1/14/2024

DOUBLE T BALANCING COMPANY, LLC
5910 S. University Blvd.
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Greenwood Village, CO 80121
Phone: 303-660-0620

NEBB CERTIFIED TESTING & BALANCING

AIR APPARATUS TEST REPORT

PROJECT NAME:	1330 - King Soopers 147					
EQUIPMENT / SYSTEM:	RTU-19					
UNIT INFORMATION						
		DESIGN			***ACTUAL***	
MANUFACTURER		Lennox			Lennox	
MODEL #		LGM092U4E			LGM074U4EQ1G	
SERIAL #					5623A02612	
LOCATION / SERVICE					Curb Side Pick Up	
FAN INFORMATION						
		DESIGN			***ACTUAL***	
Total Airflow (CFM)		2,400			2,040	
Total of Terminals (CFM)		2,400			2,040	
Return Airflow (CFM)		2,085			1,771	
Outside Airflow (CFM)		315			269	
Total Static Pressure (in. w.g.)					0.69	
External Static Pressure (in. w.g.)		0.15			0.60	
Fan Speed (RPM / Setpoint)					D.D.	
VFD Speed (Hz)					N/A	
OA Damper Postion (% Open)					15%	
MOTOR INFORMATION						
		DESIGN / NAMEPLATE			***ACTUAL***	
Manufacturer / Frame - Nameplate					EBMPAPST / N/G	
Horse Power (HP)		3.75			1700 WATTS	
Brake Horse Power (BHP)					1.45	
Volts	Phase	480	3		491	492	493
Full Load Amps		2.40			1.69	1.74	1.86
Corrected Nameplate Amps		-			2.34	
Motor Speed (RPM / Setting)					N/G	
Service Factor		-			N/G	
Current Overload Size/Setting		-			80% SPEED	
FILTER INFORMATION						
DESIGN (MERV Rating)		***BANK #1 Style/Size(Qty)***			***BANK #2 Style/Size(Qty)***	
MERV 8		(4) 20X20X2			-	

Technician(s): Curtis Tunink Date: 1/11/2024

DOUBLE T BALANCING COMPANY, LLC
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Greenwood Village, CO 80121
Phone: 303-660-0620

NEBB CERTIFIED TESTING & BALANCING

AIR OUTLET TEST REPORT

PROJECT NAME:	1330 - King Soopers 147
EQUIPMENT / SYSTEM:	RTU-19

OUTLET SUMMARY

Area Served	FH / RVA / TRV	ATI #	Outlet Type	Size LxW /	AK	Design FPM	Design CFM	Initial FPM	Initial CFM	Final FPM	Final CFM	Final %	Notes
		1	sw		1.0	*600*	600		**651**		**521**	87%	
		2	sw		1.0	*600*	**600**		**482**		**505**	84%	
		3	sw		1.0	*600*	**600**		**446**		**501**	84%	
		4	sw		1.0	*600*	**600**		**464**		**513**	86%	
							2400		**2043**		**2040**	85%	
												-	
												-	
												-	
												-	
												-	
												-	
												-	
												-	
												-	
												-	
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												-	
												-	

RVA = Rotating Vane Anemometer : FH = Flow Hood : TRV = Traverse

Comments: Unit motor will not go above 80% speed. System has been proportioned with available airflow.

Technician(s): Curtis Tunink Date: 1/11/2024

DOUBLE T BALANCING COMPANY, LLC
5910 S. University Blvd.
C-18, #354
Greenwood Village, CO 80121
Phone: 303-660-0620

NEBB CERTIFIED TESTING & BALANCING

RECTANGLE DUCT TRAVERSE TEST REPORT

PROJECT NAME:	1330 - King Soopers 147											
EQUIPMENT / SYSTEM:	RTU-19											
DUCT TRAVERSE INFORMATION												
Duct Zone:	RTU-19				Required CFM:	315			Required FPM:	116		
Duct Size:	28	X	14	WxH"	Area:	2.72			Static Pressure:	-0.25 in.w.g.		
Instrument:	Velgrid		Corr Factor	1	Altitude:	5280 FT			Temperature:	n/a		
DUCT TRAVERSE MEASUREMENTS												
Velocity Total (FPM):	395		Velocity Average (FPM):	99			Actual Airflow (CFM):	**269**				

POS	1	2	3	4	5	6	7	8	9	10	11	Distance Height
1	114	100										3.5
2	85	96										10.5
3												17.5
4												24.5
5												31.5
6												38.5
7												45.5
8												52.5
9												59.5
10												66.5
11												73.5
Distance Width	7.0	21.0	35.0	49.0	63.0	77.0	91.0	105.0	119.0	133.0	147.0	Inches
Totals	199	196	0	0	0	0	0	0	0	0	0	

Comments: _____

Technician(s): Curtis Tunink Date: 1/20/2024

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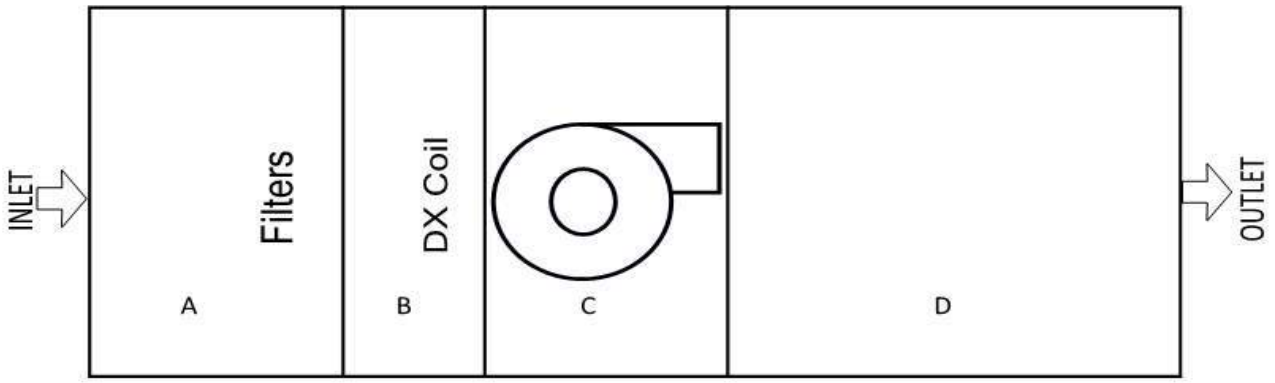
NEBB CERTIFIED TESTING & BALANCING

STATIC PRESSURE PROFILE

PROJECT NAME:	1330 - King Soopers 147
EQUIPMENT / SYSTEM:	RTU-19

SYSTEM INFORMATION	
Static Pressure Profile Setup:	FILTER, COIL, FAN
Design Airflow (CFM)	2400
Measured Airflow (CFM)	2040



	ESP:		**0.60**			**TSP:**		**0.69**		
STATIC PRESSURE READINGS (in. w.g.)										
Location	**A**	**B**	**C**	**D**	**E**	**F**	**G**	**H**	**I**	**J**	**K**
Supply	-0.25	-0.29	-0.34	0.35							

Comments: _____

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Technician(s): Tony Short Date: 1/14/2024

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NEBB CERTIFIED TESTING & BALANCING

AIR APPARATUS TEST REPORT

PROJECT NAME:	1330 - King Soopers 147					
EQUIPMENT / SYSTEM:	RTU-20					
UNIT INFORMATION						
		DESIGN		***ACTUAL***		
MANUFACTURER		Lennox		Lennox		
MODEL #		LGM150U4E		LGM150U4EH1G		
SERIAL #				5622L00781		
LOCATION / SERVICE				Dock		
FAN INFORMATION						
		DESIGN		***ACTUAL***		
Total Airflow (CFM)		5,000		5,018		
Total of Terminals (CFM)		5,000		5,018		
Return Airflow (CFM)		4,300		4,304		
Outside Airflow (CFM)		700		714		
Total Static Pressure (in. w.g.)				1.11		
External Static Pressure (in. w.g.)		0.15		0.84		
Fan Speed (RPM / Setpoint)				D.D.		
VFD Speed (Hz)				n/g		
OA Damper Postion (% Open)				14%		
MOTOR INFORMATION						
		DESIGN / NAMEPLATE		***ACTUAL***		
Manufacturer / Frame - Nameplate				ebmpapst / n/g		
Horse Power (HP)		3.75		n/g		
Brake Horse Power (BHP)				1.24		
Volts	Phase	480	3	491	492	493
Full Load Amps		4.30		1.52	1.45	1.55
Corrected Nameplate Amps		-		4.20		
Motor Speed (RPM / Setting)				D.D.		
Service Factor		-		n/g		
Current Overload Size/Setting		-		77% Speed		
FILTER INFORMATION						
DESIGN (MERV Rating)		***BANK #1 Style/Size(Qty)***		***BANK #2 Style/Size(Qty)***		
Merv 8		(4) 20x25x2				

Technician(s): Curtis Tunink Date: 1/11/2024

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NEBB CERTIFIED TESTING & BALANCING

RECTANGLE DUCT TRAVERSE TEST REPORT

PROJECT NAME:	1330 - King Soopers 147											
EQUIPMENT / SYSTEM:	RTU-20 - Total Air											
DUCT TRAVERSE INFORMATION												
Duct Zone:	RTU-20				Required CFM:	5000			Required FPM:	1152		
Duct Size:	25	X	25	WxH"	Area:	4.34			Static Pressure:	-0.14 in.w.g.		
Instrument:	Velgrid		Corr Factor	1	Altitude:	5280 FT			Temperature:	n/a		
DUCT TRAVERSE MEASUREMENTS												
Velocity Total (FPM):	4,625				Velocity Average (FPM):	1,156			Actual Airflow (CFM):	**5,018**		

POS	1	2	3	4	5	6	7	8	9	10	11	Distance Height
1	1348	1359										6.3
2	1061	857										18.8
3												31.3
4												43.8
5												56.3
6												68.8
7												81.3
8												93.8
9												106.3
10												118.8
11												131.3
Distance Width	6.3	18.8	31.3	43.8	56.3	68.8	81.3	93.8	106.3	118.8	131.3	Inches
Totals	2409	2216	0	0	0	0	0	0	0	0	0	

Comments: _____

Technician(s): Curtis Tunink Date: 1/20/2024

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Greenwood Village, CO 80121
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NEBB CERTIFIED TESTING & BALANCING

RECTANGLE DUCT TRAVERSE TEST REPORT

PROJECT NAME:	1330 - King Soopers 147											
EQUIPMENT / SYSTEM:	RTU-20 - Outside Air											
DUCT TRAVERSE INFORMATION												
Duct Zone:	RTU-20				Required CFM:	700		Required FPM:	157			
Duct Size:	28	X	23	WxH"	Area:	4.47		Static Pressure:	-0.41 in.w.g.			
Instrument:	Velgrid		Corr Factor	1	Altitude:	5280 FT		Temperature:	n/a			
DUCT TRAVERSE MEASUREMENTS												
Velocity Total (FPM):	639		Velocity Average (FPM):	160		Actual Airflow (CFM):	**714**					

POS	1	2	3	4	5	6	7	8	9	10	11	Distance Height
1	174	159										5.8
2	145	161										17.3
3												28.8
4												40.3
5												51.8
6												63.3
7												74.8
8												86.3
9												97.8
10												109.3
11												120.8
Distance Width	7.0	21.0	35.0	49.0	63.0	77.0	91.0	105.0	119.0	133.0	147.0	Inches
Totals	319	320	0	0	0	0	0	0	0	0	0	

Comments: _____

Technician(s): Curtis Tunink Date: 1/20/2024

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5910 S. University Blvd.
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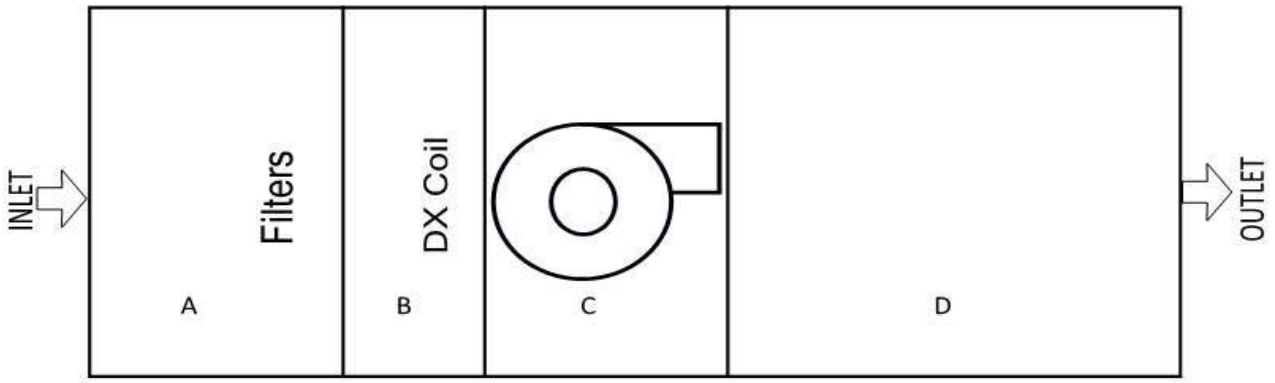
Greenwood Village, CO 80121
Phone: 303-660-0620

NEBB CERTIFIED TESTING & BALANCING

STATIC PRESSURE PROFILE

PROJECT NAME:	1330 - King Soopers 147
EQUIPMENT / SYSTEM:	RTU-20

SYSTEM INFORMATION	
Static Pressure Profile Setup:	FILTER, COIL, FAN
Design Airflow (CFM)	5000
Measured Airflow (CFM)	5018



	ESP:	0.84			TSP:	1.11				
STATIC PRESSURE READINGS (in. w.g.)										
Location	**A**	**B**	**C**	**D**	**E**	**F**	**G**	**H**	**I**	**J**	**K**
Supply	-0.41	-0.53	-0.68	0.43							

Comments: _____

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Technician(s): Curtis Tunink Date: 1/20/24

DOUBLE T BALANCING COMPANY, LLC
5910 S. University Blvd.
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Greenwood Village, CO 80121
Phone: 303-660-0620

NEBB CERTIFIED TESTING & BALANCING

AIR APPARATUS TEST REPORT

PROJECT NAME:	1330 - King Soopers 147					
EQUIPMENT / SYSTEM:	RTU-21					
UNIT INFORMATION						
		DESIGN		***ACTUAL***		
MANUFACTURER		Lennox		Lennox		
MODEL #		LGM120U4E		LGM120U4EM1G		
SERIAL #				5622L00819		
LOCATION / SERVICE				Seating		
FAN INFORMATION						
		DESIGN		***ACTUAL***		
Total Airflow (CFM)		4,000		4,141		
Total of Terminals (CFM)		4,000		4,141		
Return Airflow (CFM)		3,320		3,449		
Outside Airflow (CFM)		680		692		
Total Static Pressure (in. w.g.)				0.96		
External Static Pressure (in. w.g.)		0.15		0.70		
Fan Speed (RPM / Setpoint)				D.D.		
VFD Speed (Hz)				n/a		
OA Damper Postion (% Open)				17%		
MOTOR INFORMATION						
		DESIGN / NAMEPLATE		***ACTUAL***		
Manufacturer / Frame - Nameplate				ebmpapst / n/g		
Horse Power (HP)		3.75		n/g		
Brake Horse Power (BHP)				1.22		
Volts	Phase	480	3	491	492	493
Full Load Amps		4.30		1.57	1.40	1.48
Corrected Nameplate Amps		-		4.20		
Motor Speed (RPM / Setting)				D.D.		
Service Factor		-		n/g		
Current Overload Size/Setting		-		76% Speed		
FILTER INFORMATION						
DESIGN (MERV Rating)		***BANK #1 Style/Size(Qty)***		***BANK #2 Style/Size(Qty)***		
Merv 8		(4) 20x25x2				

Technician(s): Curtis Tunink Date: 1/20/2024

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Phone: 303-660-0620

NEBB CERTIFIED TESTING & BALANCING

RECTANGLE DUCT TRAVERSE TEST REPORT

PROJECT NAME:	1330 - King Soopers 147											
EQUIPMENT / SYSTEM:	RTU-21 - Total Air											
DUCT TRAVERSE INFORMATION												
Duct Zone:	RTU-21				Required CFM:	4000			Required FPM:	922		
Duct Size:	25	X	25	WxH"	Area:	4.34			Static Pressure:	0.39 in.w.g.		
Instrument:	Velgrid		Corr Factor	1	Altitude:	5280 FT			Temperature:	n/a		
DUCT TRAVERSE MEASUREMENTS												
Velocity Total (FPM):	3,816		Velocity Average (FPM):	954			Actual Airflow (CFM):	**4,141**				

POS	1	2	3	4	5	6	7	8	9	10	11	Distance Height
1	1243	1041										6.3
2	915	617										18.8
3												31.3
4												43.8
5												56.3
6												68.8
7												81.3
8												93.8
9												106.3
10												118.8
11												131.3
Distance Width	6.3	18.8	31.3	43.8	56.3	68.8	81.3	93.8	106.3	118.8	131.3	Inches
Totals	2158	1658	0	0	0	0	0	0	0	0	0	

Comments: _____

Technician(s): Curtis Tunink Date: 1/20/2024

DOUBLE T BALANCING COMPANY, LLC
5910 S. University Blvd.
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NEBB CERTIFIED TESTING & BALANCING

RECTANGLE DUCT TRAVERSE TEST REPORT

PROJECT NAME:	1330 - King Soopers 147											
EQUIPMENT / SYSTEM:	RTU-21 - Outside Air											
DUCT TRAVERSE INFORMATION												
Duct Zone:	RTU-21				Required CFM:	680			Required FPM:	152		
Duct Size:	28	X	23	WxH"	Area:	4.47			Static Pressure:	0.39 in.w.g.		
Instrument:	Velgrid		Corr Factor	1	Altitude:	5280 FT			Temperature:	n/a		
DUCT TRAVERSE MEASUREMENTS												
Velocity Total (FPM):	619			Velocity Average (FPM):	155				Actual Airflow (CFM):	**692**		

POS	1	2	3	4	5	6	7	8	9	10	11	Distance Height
1	166	160										5.8
2	142	151										17.3
3												28.8
4												40.3
5												51.8
6												63.3
7												74.8
8												86.3
9												97.8
10												109.3
11												120.8
Distance Width	7.0	21.0	35.0	49.0	63.0	77.0	91.0	105.0	119.0	133.0	147.0	Inches
Totals	308	311	0	0	0	0	0	0	0	0	0	

Comments: _____

Technician(s): Curtis Tunink Date: 1/20/2024

DOUBLE T BALANCING COMPANY, LLC
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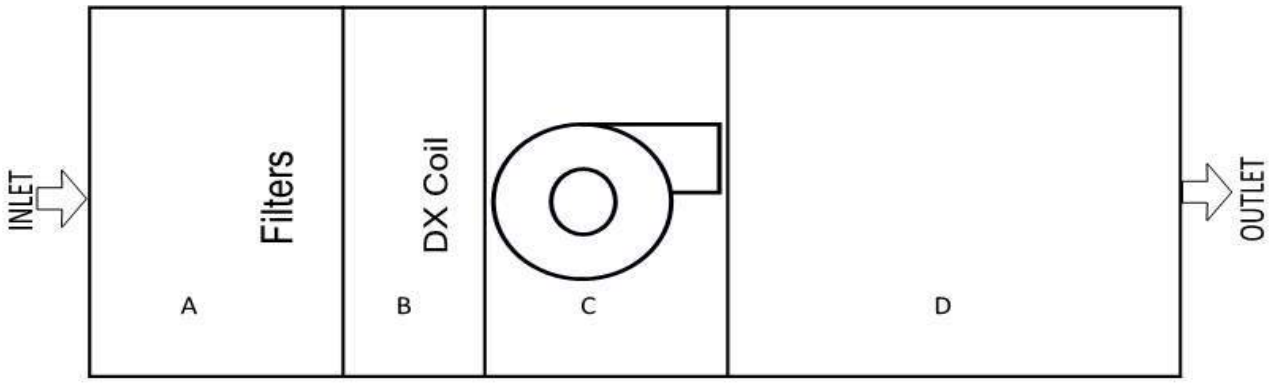
Greenwood Village, CO 80121
Phone: 303-660-0620

NEBB CERTIFIED TESTING & BALANCING

STATIC PRESSURE PROFILE

PROJECT NAME:	1330 - King Soopers 147
EQUIPMENT / SYSTEM:	RTU-21

SYSTEM INFORMATION	
Static Pressure Profile Setup:	FILTER, COIL, FAN
Design Airflow (CFM)	4000
Measured Airflow (CFM)	4141



	ESP:		**0.70**			**TSP:**		**0.96**		
STATIC PRESSURE READINGS (in. w.g.)										
Location	**A**	**B**	**C**	**D**	**E**	**F**	**G**	**H**	**I**	**J**	**K**
Supply	-0.39	-0.50	-0.64	0.31							

Comments: _____

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Technician(s): Curtis Tunink Date: 1/20/24

DOUBLE T BALANCING COMPANY, LLC
5910 S. University Blvd.
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Greenwood Village, CO 80121
Phone: 303-660-0620

NEBB CERTIFIED TESTING & BALANCING

FAN TEST REPORT

PROJECT NAME:	1330 - King Soopers 147					
EQUIPMENT / SYSTEM:	EF-CC					
UNIT INFORMATION						
		DESIGN			***ACTUAL***	
MANUFACTURER		Captive Aire			Captive Aire	
MODEL #		DR12HFA			DR12HFA	
SERIAL #					4050672	
LOCATION / SERVICE					Wash Bay	
FAN INFORMATION						
		DESIGN			***ACTUAL***	
Total Airflow (CFM)		600			579	
Total of Terminal Airflows (CFM)		600			579	
External Static Pressure		0.125 in.w.g.			0.08 in.w.g.	
SP Reading - Intake					-0.08 in.w.g.	
SP Reading - Discharge					ATM	
Fan Speed (RPM / Setpoint)					D.D. / Variable	
MOTOR INFORMATION						
		DESIGN / NAMEPLATE			***ACTUAL***	
Manufacturer / Frame - Nameplate					HSSA / 42Y	
Horse Power (HP)					0.16	
Brake Horse Power (BHP)					0.11	
Volts	Phase	115	1		121	
Full Load Amps		1.90			0.92	
Corrected Nameplate Amps		-			1.81	
Motor Speed (RPM / Setting)					1,625	
Service Factor		-			1.00	
Current Overload Size/Setting		-			Variable	

Comments: _____

Technician(s): Curtis Tunink Date: 1/18/2024

DOUBLE T BALANCING COMPANY, LLC
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Greenwood Village, CO 80121
Phone: 303-660-0620

NEBB CERTIFIED TESTING & BALANCING

AIR INLET TEST REPORT

PROJECT NAME:	1330 - King Soopers 147
EQUIPMENT / SYSTEM:	EF-CC

INLET SUMMARY

Area Served	FH / RVA / TRV	ATI #	Outlet Type	Size LxW /	AK	Design FPM	Design CFM	Initial FPM	Initial CFM	Final FPM	Final CFM	Final %	Notes
		1	eg		1.0	*300*	300		285		290	97%	
		2	eg		1.0	*300*	300		268		289	96%	
							600		553		579	97%	

RVA = Rotating Vane Anemometer : FH = Flow Hood : TRV = Traverse

Comments: _____

Technician(s): Curtis Tunink Date: 1/19/2024

DOUBLE T BALANCING COMPANY, LLC
5910 S. University Blvd.
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Greenwood Village, CO 80121
Phone: 303-660-0620

NEBB CERTIFIED TESTING & BALANCING

FAN TEST REPORT

PROJECT NAME:	1330 - King Soopers 147					
EQUIPMENT / SYSTEM:	EF-ER					
UNIT INFORMATION						
		DESIGN			***ACTUAL***	
MANUFACTURER		Captive Aire			Captive Aire	
MODEL #		DR30HFA			DR30HFA	
SERIAL #					4050672	
LOCATION / SERVICE					Electrical Room	
FAN INFORMATION						
		DESIGN			***ACTUAL***	
Total Airflow (CFM)		750			760	
Total of Terminal Airflows (CFM)		750			760	
External Static Pressure		0.15 in.w.g.			0.10 in.w.g.	
SP Reading - Intake					-0.1 in.w.g.	
SP Reading - Discharge					ATM	
Fan Speed (RPM / Setpoint)					D.D. / Variable	
MOTOR INFORMATION						
		DESIGN / NAMEPLATE			***ACTUAL***	
Manufacturer / Frame - Nameplate					HSSA / 48Y	
Horse Power (HP)		0.25			0.25	
Brake Horse Power (BHP)					0.19	
Volts	Phase	115	1		121	
Full Load Amps		3.00			1.65	
Corrected Nameplate Amps		-			2.85	
Motor Speed (RPM / Setting)		1,261			1,625	
Service Factor		-			1.00	
Current Overload Size/Setting		-			Variable	

Comments: _____

Technician(s): Curtis Tunink Date: 1/11/2024

DOUBLE T BALANCING COMPANY, LLC
5910 S. University Blvd.
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Greenwood Village, CO 80121
Phone: 303-660-0620

NEBB CERTIFIED TESTING & BALANCING

AIR INLET TEST REPORT

PROJECT NAME:	1330 - King Soopers 147
EQUIPMENT / SYSTEM:	EF-ER

INLET SUMMARY

Area Served	FH / RVA / TRV	ATI #	Outlet Type	Size LxW /	AK	Design FPM	Design CFM	Initial FPM	Initial CFM	Final FPM	Final CFM	Final %	Notes
		1	eg		1.0	*200*	200		102		191	96%	
		2	eg		1.0	*200*	200		110		210	105%	
		3	eg		1.0	*200*	200		119		206	103%	
		4	eg		1.0	*150*	150		132		153	102%	
							750		463		760	101%	

RVA = Rotating Vane Anemometer : FH = Flow Hood : TRV = Traverse

Comments: _____

Technician(s): Curtis Tunink Date: 1/19/2024

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Greenwood Village, CO 80121
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NEBB CERTIFIED TESTING & BALANCING

FAN TEST REPORT

PROJECT NAME:	1330 - King Soopers 147
EQUIPMENT / SYSTEM:	EF-ER2

UNIT INFORMATION		
	DESIGN	***ACTUAL***
MANUFACTURER	Captive Aire	Captive Aire
MODEL #	DR12HFA	DR12HFA
SERIAL #		4050672
LOCATION / SERVICE		Electrical Closet

FAN INFORMATION		
	DESIGN	***ACTUAL***
Total Airflow (CFM)	600	641
Total of Terminal Airflows (CFM)	600	641
External Static Pressure	0.125 in.w.g.	nac
SP Reading - Intake		nac
SP Reading - Discharge		atm
Fan Speed (RPM / Setpoint)		D.D. / Variable

MOTOR INFORMATION				
		DESIGN / NAMEPLATE		***ACTUAL***
Manufacturer / Frame - Nameplate				HSSA / 42Y
Horse Power (HP)		0.18		0.16
Brake Horse Power (BHP)				0.15
Volts	Phase	115	1	122
Full Load Amps		1.90		1.28
Corrected Nameplate Amps		-		1.79
Motor Speed (RPM / Setting)		1,467		1,625
Service Factor		-		1.00
Current Overload Size/Setting		-		Variable

Comments: _____

Technician(s): Curtis Tunink Date: 1/11/2024

DOUBLE T BALANCING COMPANY, LLC
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Greenwood Village, CO 80121
Phone: 303-660-0620

NEBB CERTIFIED TESTING & BALANCING

AIR INLET TEST REPORT

PROJECT NAME:	1330 - King Soopers 147
EQUIPMENT / SYSTEM:	EF-ER2

INLET SUMMARY

Area Served	FH / RVA / TRV	ATI #	Outlet Type	Size LxW /	AK	Design FPM	Design CFM	Initial FPM	Initial CFM	Final FPM	Final CFM	Final %	Notes
		1	eg		1.0	*75*	75		97		72	96%	
		2	eg		1.0	*125*	125		133		129	103%	
		3	eg		1.0	*400*	400		417		440	110%	
							600		647		641	107%	

RVA = Rotating Vane Anemometer : FH = Flow Hood : TRV = Traverse

Comments: _____

Technician(s): Curtis Tunink Date: 1/19/2024

DOUBLE T BALANCING COMPANY, LLC
5910 S. University Blvd.
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Greenwood Village, CO 80121
Phone: 303-660-0620

NEBB CERTIFIED TESTING & BALANCING

FAN TEST REPORT

PROJECT NAME:	1330 - King Soopers 147					
EQUIPMENT / SYSTEM:	EF-ER1					
UNIT INFORMATION						
		DESIGN			***ACTUAL***	
MANUFACTURER		Captive Aire			Captive Aire	
MODEL #		DR10HFA			DR10HFA	
SERIAL #					4050672	
LOCATION / SERVICE					Family RR	
FAN INFORMATION						
		DESIGN			***ACTUAL***	
Total Airflow (CFM)		150			152	
Total of Terminal Airflows (CFM)		150			152	
External Static Pressure		0.13 in.w.g.			nac	
SP Reading - Intake					nac	
SP Reading - Discharge					atm	
Fan Speed (RPM / Setpoint)					D.D. / Variable	
MOTOR INFORMATION						
		DESIGN / NAMEPLATE			***ACTUAL***	
Manufacturer / Frame - Nameplate					HSSA / n/g	
Horse Power (HP)					0.06	
Brake Horse Power (BHP)					0.06	
Volts	Phase	115	1		122	
Full Load Amps		0.94			0.47	
Corrected Nameplate Amps		-			0.89	
Motor Speed (RPM / Setting)					1,550	
Service Factor		-			n/g	
Current Overload Size/Setting		-			Variable	

Comments: _____

Technician(s): Curtis Tunink Date: 1/19/2024

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NEBB CERTIFIED TESTING & BALANCING

AIR INLET TEST REPORT

PROJECT NAME:	1330 - King Soopers 147
EQUIPMENT / SYSTEM:	EF-ER1

INLET SUMMARY

Area Served	FH / RVA / TRV	ATI #	Outlet Type	Size LxW /	AK	Design FPM	Design CFM	Initial FPM	Initial CFM	Final FPM	Final CFM	Final %	Notes
		1	eg		1.0	*150*	150		362		152	101%	
							150		362		152	101%	

RVA = Rotating Vane Anemometer : FH = Flow Hood : TRV = Traverse

Comments: _____

Technician(s): Curtis Tunink Date: 1/19/2024

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NEBB CERTIFIED TESTING & BALANCING

FAN TEST REPORT

PROJECT NAME:	1330 - King Soopers 147
EQUIPMENT / SYSTEM:	EF-R2

UNIT INFORMATION		
	DESIGN	***ACTUAL***
MANUFACTURER	Captive Aire	Captive Aire
MODEL #	DR30HFA	DR30HFA
SERIAL #		4050672
LOCATION / SERVICE		Customer RR

FAN INFORMATION		
	DESIGN	***ACTUAL***
Total Airflow (CFM)	850	817
Total of Terminal Airflows (CFM)	850	817
External Static Pressure	0.15 in.w.g.	nac
SP Reading - Intake		nac
SP Reading - Discharge		atm
Fan Speed (RPM / Setpoint)		D.D. / Variable

MOTOR INFORMATION				
		DESIGN / NAMEPLATE		***ACTUAL***
Manufacturer / Frame - Nameplate				HSSA / 48Y
Horse Power (HP)		0.25		0.25
Brake Horse Power (BHP)				0.24
Volts	Phase	115	1	122
Full Load Amps		3.00		2.06
Corrected Nameplate Amps		-		2.83
Motor Speed (RPM / Setting)		1,393		1,625
Service Factor		-		1.00
Current Overload Size/Setting		-		Variable

Comments: _____

Technician(s): Curtis Tunink Date: 1/11/2024

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NEBB CERTIFIED TESTING & BALANCING

AIR INLET TEST REPORT

PROJECT NAME:	1330 - King Soopers 147
EQUIPMENT / SYSTEM:	EF-R2

INLET SUMMARY

Area Served	FH / RVA / TRV	ATI #	Outlet Type	Size LxW /	AK	Design FPM	Design CFM	Initial FPM	Initial CFM	Final FPM	Final CFM	Final %	Notes
		1	eg		1.0	*350*	350		448		338	97%	
		2	eg		1.0	*150*	150		325		145	97%	
		3	eg		1.0	*350*	350		434		334	95%	
							850		1207		817	96%	

RVA = Rotating Vane Anemometer : FH = Flow Hood : TRV = Traverse

Comments: _____

Technician(s): Curtis Tunink Date: 1/16/2024

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Phone: 303-660-0620

NEBB CERTIFIED TESTING & BALANCING

FAN TEST REPORT

PROJECT NAME:	1330 - King Soopers 147
EQUIPMENT / SYSTEM:	EF-R3

UNIT INFORMATION		
	DESIGN	***ACTUAL***
MANUFACTURER	Captive Aire	Captive Aire
MODEL #	DR12HFA	DR10HFA
SERIAL #		4050672
LOCATION / SERVICE		Associate RR

FAN INFORMATION		
	DESIGN	***ACTUAL***
Total Airflow (CFM)	300	305
Total of Terminal Airflows (CFM)	300	305
External Static Pressure	0.125 in.w.g.	nac
SP Reading - Intake		nac
SP Reading - Discharge		atm
Fan Speed (RPM / Setpoint)		D.D. / Variable

MOTOR INFORMATION					
		DESIGN / NAMEPLATE		***ACTUAL***	
Manufacturer / Frame - Nameplate				HSSA / n/g	
Horse Power (HP)		0.18		0.06	
Brake Horse Power (BHP)				0.06	
Volts	Phase	115	1	122	
Full Load Amps		0.94		0.55	
Corrected Nameplate Amps		-		0.89	
Motor Speed (RPM / Setting)		1,467		1,550	
Service Factor		-		n/g	
Current Overload Size/Setting		-		Variable	

Comments: _____

Technician(s): Curtis Tunink Date: 1/11/2024

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Phone: 303-660-0620

NEBB CERTIFIED TESTING & BALANCING

AIR INLET TEST REPORT

PROJECT NAME:	1330 - King Soopers 147
EQUIPMENT / SYSTEM:	EF-R3

INLET SUMMARY

Area Served	FH / RVA / TRV	ATI #	Outlet Type	Size LxW /	AK	Design FPM	Design CFM	Initial FPM	Initial CFM	Final FPM	Final CFM	Final %	Notes
		1	eg		1.0	*150*	150		203		155	103%	
		2	eg		1.0	*150*	150		198		150	100%	
							300		401		305	102%	

RVA = Rotating Vane Anemometer : FH = Flow Hood : TRV = Traverse

Comments: _____

Technician(s): Curtis Tunink Date: 1/19/2024

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NEBB CERTIFIED TESTING & BALANCING

FAN TEST REPORT

PROJECT NAME:	1330 - King Soopers 147
EQUIPMENT / SYSTEM:	EF-S

UNIT INFORMATION		
	DESIGN	***ACTUAL***
MANUFACTURER	Captive Aire	Captive Aire
MODEL #	DR30HFA	DR30HFA
SERIAL #		4050672
LOCATION / SERVICE		Seafood

FAN INFORMATION		
	DESIGN	***ACTUAL***
Total Airflow (CFM)	900	947
Total of Terminal Airflows (CFM)	900	947
External Static Pressure	0.125 in.w.g.	0.11 in.w.g.
SP Reading - Intake		-0.11 in.w.g.
SP Reading - Discharge		ATM
Fan Speed (RPM / Setpoint)		D.D. / Variable

MOTOR INFORMATION				
		DESIGN / NAMEPLATE		***ACTUAL***
Manufacturer / Frame - Nameplate				HSSA / 48Y
Horse Power (HP)		0.25		0.25
Brake Horse Power (BHP)				0.27
Volts	Phase	115	1	121
Full Load Amps		4.00		2.32
Corrected Nameplate Amps		-		3.80
Motor Speed (RPM / Setting)		1,442		1,625
Service Factor		-		1.00
Current Overload Size/Setting		-		Variable

Comments: _____

Technician(s): Curtis Tunink Date: 1/11/2024

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NEBB CERTIFIED TESTING & BALANCING

AIR INLET TEST REPORT

PROJECT NAME:	1330 - King Soopers 147
EQUIPMENT / SYSTEM:	EF-S

INLET SUMMARY

Area Served	FH / RVA / TRV	ATI #	Outlet Type	Size LxW /	AK	Design FPM	Design CFM	Initial FPM	Initial CFM	Final FPM	Final CFM	Final %	Notes
		1	eg		1.0	*150*	150		189		162	108%	
		2	eg		1.0	*150*	150		217		146	97%	
		3	eg		1.0	*150*	150		278		155	103%	
		4	eg		1.0	*150*	150		380		156	104%	
		5	eg		1.0	*300*	300		250		328	109%	
							900		1314		947	105%	

RVA = Rotating Vane Anemometer : FH = Flow Hood : TRV = Traverse

Comments: _____

Technician(s): Curtis Tunink Date: 1/16/2024

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NEBB CERTIFIED TESTING & BALANCING

FAN TEST REPORT

PROJECT NAME:	1330 - King Soopers 147					
EQUIPMENT / SYSTEM:	EF-G1					
UNIT INFORMATION						
		DESIGN			***ACTUAL***	
MANUFACTURER		Captive Aire			Captive Aire	
MODEL #		DU50HFA			DU50HFA	
SERIAL #					4050672	
LOCATION / SERVICE					Bakery Hood	
FAN INFORMATION						
		DESIGN			***ACTUAL***	
Total Airflow (CFM)		900			887	
Total of Terminal Airflows (CFM)		900			887	
External Static Pressure		0.125 in.w.g.			0.4 in.w.g.	
SP Reading - Intake					0.4 in.w.g.	
SP Reading - Discharge					ATM	
Fan Speed (RPM / Setpoint)					D.D.	
MOTOR INFORMATION						
		DESIGN / NAMEPLATE			***ACTUAL***	
Manufacturer / Frame - Nameplate					Nema / n/g	
Horse Power (HP)					0.50	
Brake Horse Power (BHP)					0.43	
Volts	Phase	115	1		121	
Full Load Amps		6.30			3.70	
Corrected Nameplate Amps		-			5.99	
Motor Speed (RPM / Setting)					1,800	
Service Factor		-			n/g	
Current Overload Size/Setting		-			65% SPEED	

Comments: _____

Technician(s): Curtis Tunink Date: 1/19/2024

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NEBB CERTIFIED TESTING & BALANCING

RECTANGLE DUCT TRAVERSE TEST REPORT

PROJECT NAME:	King Soopers 147											
EQUIPMENT / SYSTEM:	EF-G1											
DUCT TRAVERSE INFORMATION												
Duct Zone:	TOTAL EXHAUST				Required CFM:	900			Required FPM:	307		
Duct Size:	65	X	6.5	WxH"	Area:	2.93			Static Pressure:	-0.4 in.w.g.		
Instrument:	VELGRID		Corr.	1	Altitude:	5280 FT			Temperature:	N/A		
DUCT TRAVERSE MEASUREMENTS												
Velocity Total (FPM):	1,511				Velocity Average (FPM):	302			Actual Airflow (CFM):	**887**		

POS	1	2	3	4	5	6	7	8	9	10	11	Distance Height
1	309	285	294	302	321							0
2												#VALUE!
3												#VALUE!
4												#VALUE!
5												#VALUE!
6												#VALUE!
7												#VALUE!
8												#VALUE!
9												#VALUE!
10												#VALUE!
11												#VALUE!
Distance Width	0	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	Inches
Totals	309	285	294	302	321	0	0	0	0	0	0	

Comments: _____

Technician(s): Tony Short Date: 1/19/2024

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NEBB CERTIFIED TESTING & BALANCING

FAN TEST REPORT

PROJECT NAME:	1330 - King Soopers 147
EQUIPMENT / SYSTEM:	EF-G2

UNIT INFORMATION		
	DESIGN	***ACTUAL***
MANUFACTURER	Captive Aire	Captive Aire
MODEL #	DU50HFA	DU50HFA
SERIAL #		4050672
LOCATION / SERVICE		Bakery Hood

FAN INFORMATION		
	DESIGN	***ACTUAL***
Total Airflow (CFM)	900	914
Total of Terminal Airflows (CFM)	900	914
External Static Pressure	0.125 in.w.g.	0.42 in.w.g.
SP Reading - Intake		-0.42 in.w.g.
SP Reading - Discharge		ATM
Fan Speed (RPM / Setpoint)		D.D.

MOTOR INFORMATION					
		DESIGN / NAMEPLATE		***ACTUAL***	
Manufacturer / Frame - Nameplate				Nema / n/g	
Horse Power (HP)				0.50	
Brake Horse Power (BHP)				0.40	
Volts	Phase	115	1	121	
Full Load Amps		6.30		3.42	
Corrected Nameplate Amps		-		5.99	
Motor Speed (RPM / Setting)				1,800	
Service Factor		-		n/g	
Current Overload Size/Setting		-		65% SPEED	

Comments: _____

Technician(s): Curtis Tunink Date: 1/19/2024

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Phone: 303-660-0620

NEBB CERTIFIED TESTING & BALANCING

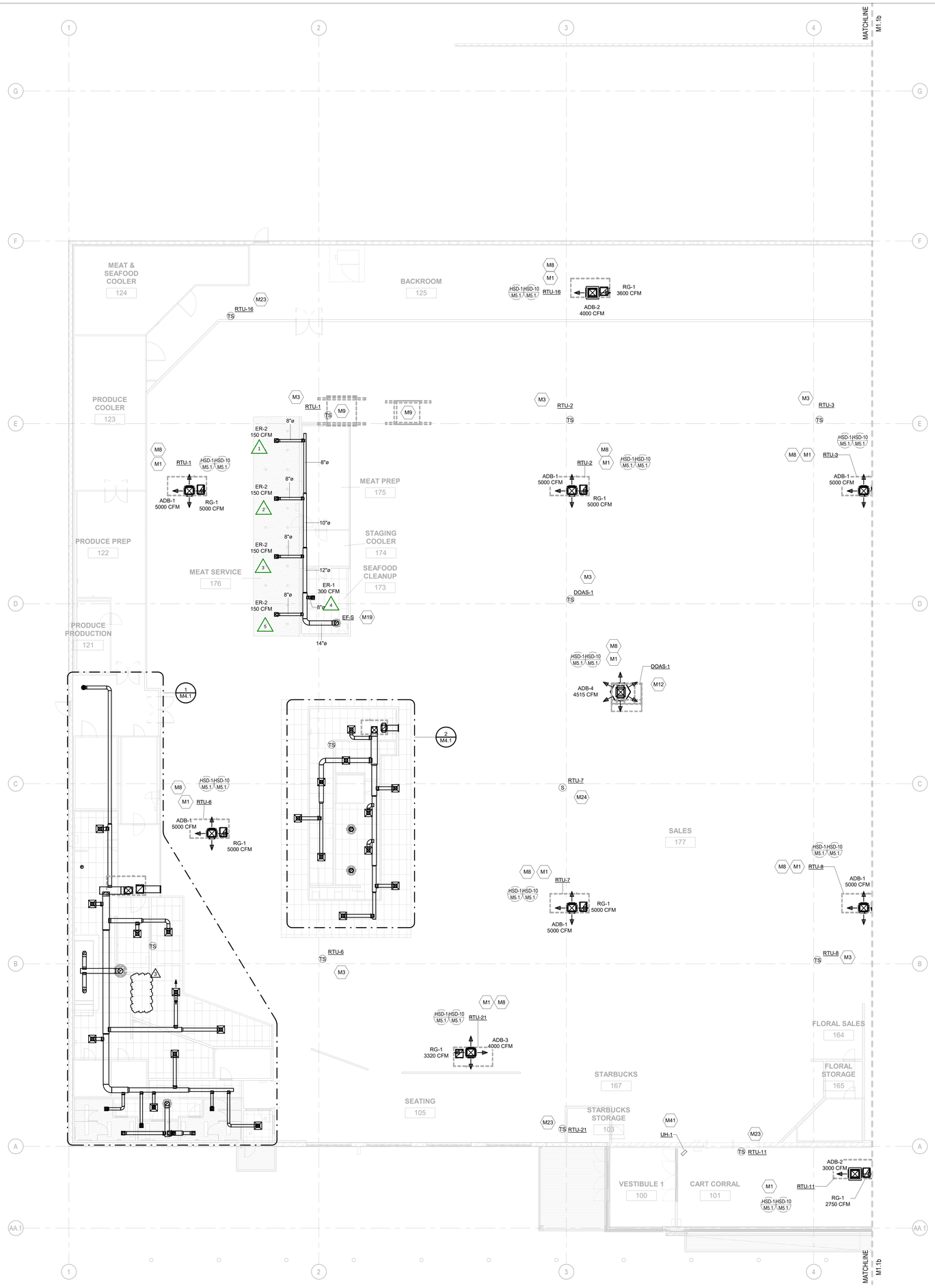
RECTANGLE DUCT TRAVERSE TEST REPORT

PROJECT NAME:	King Soopers 147											
EQUIPMENT / SYSTEM:	EF-G1											
DUCT TRAVERSE INFORMATION												
Duct Zone:	TOTAL EXHAUST				Required CFM:	900			Required FPM:	307		
Duct Size:	65	X	6.5	WxH"	Area:	2.93			Static Pressure:	-0.42 in.w.g.		
Instrument:	VELGRID		Corr.	1	Altitude:	5280 FT			Temperature:	N/A		
DUCT TRAVERSE MEASUREMENTS												
Velocity Total (FPM):	1,557				Velocity Average (FPM):	311			Actual Airflow (CFM):	**914**		

POS	1	2	3	4	5	6	7	8	9	10	11	Distance Height
1	313	296	307	316	325							0
2												#VALUE!
3												#VALUE!
4												#VALUE!
5												#VALUE!
6												#VALUE!
7												#VALUE!
8												#VALUE!
9												#VALUE!
10												#VALUE!
11												#VALUE!
Distance Width	0	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	Inches
Totals	313	296	307	316	325	0	0	0	0	0	0	

Comments: _____

Technician(s): Tony Short Date: 1/19/2024



KEYNOTE LEGEND

NUMBER	KEYNOTE
M1	DROP BOX DIFFUSER SYSTEM. REFER TO DIFFUSER SCHEDULE FOR AES MODEL NUMBERS AND QUANTITIES. REFER TO PLANS FOR THROW DIRECTIONS AND CFM.
M3	TEMPERATURE SENSOR FOR ROOF MOUNTED RTU FURNISHED BY CONTROL PROVIDER. ROUTE CONTROL WIRING THROUGH RTU AND BACK TO BUILDING CONTROL PANEL. MOUNT SENSOR 7'-6" AFF ON COLUMN. COORDINATE LOCATION WITH KROGER EQUIPMENT AND FURNISHINGS. PROVIDE LOCKABLE PROTECTIVE COVER OVER DEVICE.
M8	REFER TO ARCHITECTURAL ROOF PLAN FOR HVAC ROOFTOP DIMENSIONAL INFORMATION. REFER TO STRUCTURAL DRAWINGS FOR JOIST AND BEAM LOCATIONS AND DIMENSIONAL INFORMATION.
M9	NEW ROOFTOP REFRIGERATION EQUIPMENT. REFER TO REFRIGERATION DRAWINGS FOR UNIT LOCATIONS AND PIPE ROUTINGS PRIOR TO ANY WORK.
M12	REFER TO DRAWINGS M5.8 AND M5.9 FOR DOAS UNIT INFORMATION.
M19	EXTEND FULL SIZE DUCTWORK (CURB SIZE) UP THROUGH ROOF AND SEAL OPENING AIRTIGHT. REFER TO DRAWINGS M5.3 AND M5.4 FOR EXHAUST FAN INFORMATION.
M23	TEMPERATURE SENSOR FOR ROOF MOUNTED RTU FURNISHED BY CONTROL PROVIDER. ROUTE CONTROL WIRING THROUGH RTU AND BACK TO BUILDING CONTROL PANEL. MOUNT SENSOR A MINIMUM OF 4'-0" AFF ON WALL. COORDINATE LOCATION WITH KROGER EQUIPMENT AND FURNISHINGS. PROVIDE LOCKABLE PROTECTIVE COVER OVER DEVICE.
M24	COMBINATION RELATIVE HUMIDITY/TEMPERATURE SENSOR TO BE MOUNTED 7'-6" AFF AND, IN THE CASE OF RTU-5, USED FOR CYCLING ANTI-SWEAT CASE HEATERS AND HVAC HUMIDITY CONTROL.
M41	SUSPENDED ELECTRIC HEATER USING THREADED ROD TO UNISTRUT CHANNEL OR APPROVED EQUAL. MOUNT 12'-0" AFF TO BOTTOM OF UNIT. VERIFY LOCATION AND REQUIREMENTS WITH OWNER. REFER TO M6.1 FOR MORE INFORMATION.

WHERE SMOKE DETECTORS ARE INSTALLED MORE THAN 10 FEET ABOVE THE FINISHED FLOOR OR IN ARRANGEMENT WHERE THE DETECTOR'S ALARM OR SUPERVISORY INDICATOR IS NOT VISIBLE TO RESPONDING PERSONNEL, THE DETECTOR SHALL BE PROVIDED WITH REMOTE ALARM OR SUPERVISORY INDICATOR IN A LOCATION ACCEPTABLE TO AUTHORITY HAVING JURISDICTION. PROVIDE AN LED INDICATOR LIGHT ON CEILING BENEATH EACH HVAC UNIT THAT IS EQUIPPED WITH A SMOKE DETECTOR WHEN ACTIVATION LIGHT IS NOT VISIBLE FROM BELOW.

1 M1.1a HVAC PLAN - WEST
SCALE: 3/32" = 1'-0"
NORTH

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REVIEWED BY: DMH

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CONSULTANTS

OWNER
KING Soopers

DATE	ISSUE
11/21/2019	90% OWNER REVIEW
10/04/2021	ISSUED FOR BID

#	DATE	REVISION
1	10/25/2021	ADDENDUM NO. 2
2	12/01/2021	BULLETIN NO. 1
3	05/04/2023	BULLETIN NO. 10

PROJECT TITLE
KING SOOPERS
KS147

MERIDIAN + WOODMEN
FALCON, CO

COMMISSION NO. 519000
ISSUE DATE 10/04/2021
SHEET TITLE
HVAC PLAN - WEST

SHEET NO.
M1.1a

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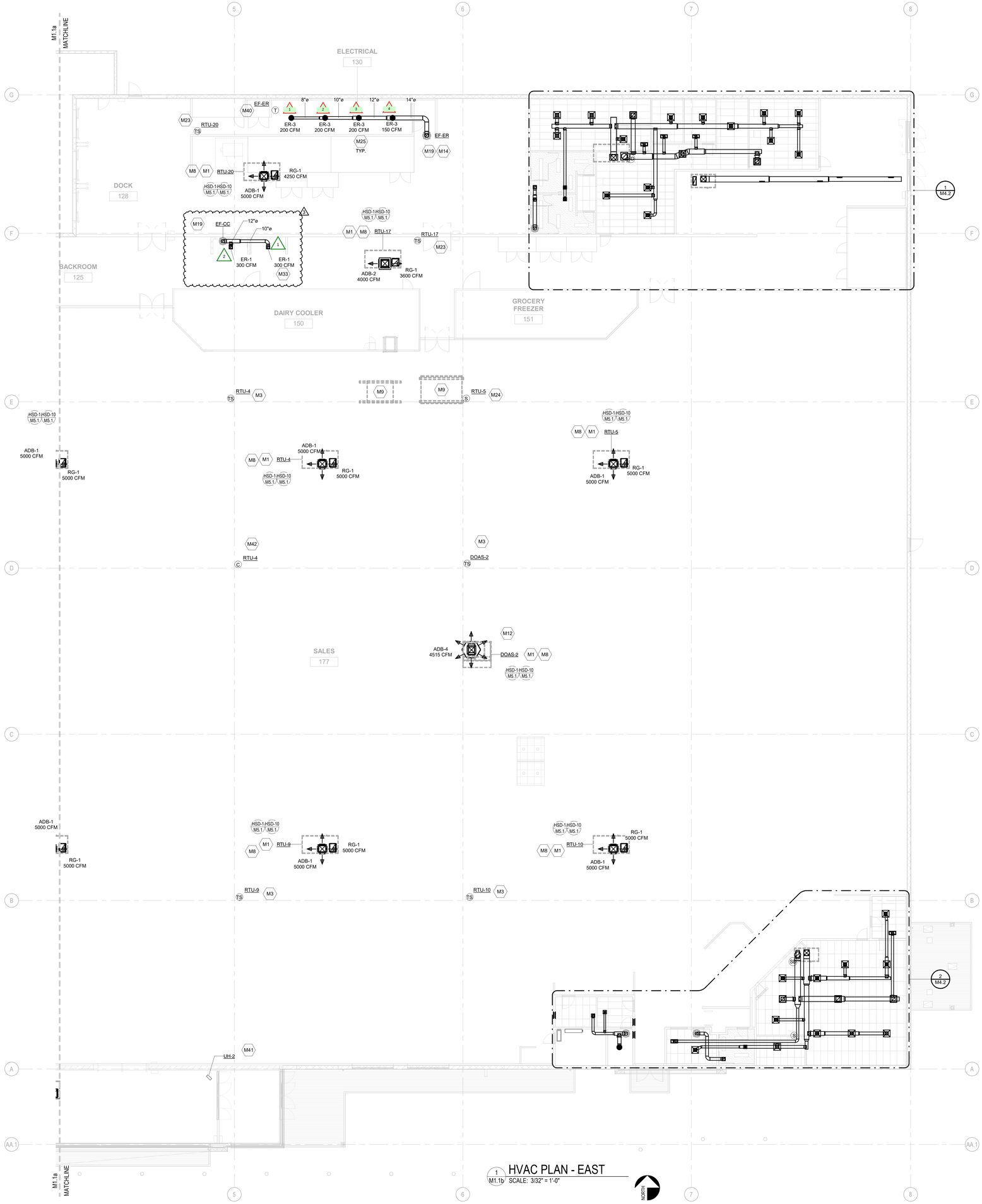

1 HVAC PLAN - EAST
M1.1b SCALE: 3/32" = 1'-0"

KEYNOTE LEGEND

NUMBER	KEYNOTE
M1	DROP BOX DIFFUSER SYSTEM. REFER TO DIFFUSER SCHEDULE FOR AES MODEL NUMBERS AND QUANTITIES. REFER TO PLANS FOR THROW DIRECTIONS AND CFM.
M3	TEMPERATURE SENSOR FOR ROOF MOUNTED RTU FURNISHED BY CONTROL PROVIDER. ROUTE CONTROL WIRING THROUGH RTU AND BACK TO BUILDING CONTROL PANEL. MOUNT SENSOR 7'-6" AFF ON COLUMN. COORDINATE LOCATION WITH KROGER EQUIPMENT AND FURNISHINGS. PROVIDE LOCKABLE PROTECTIVE COVER OVER DEVICE.
M8	REFER TO ARCHITECTURAL ROOF PLAN FOR HVAC ROOFTOP DIMENSIONAL INFORMATION. REFER TO STRUCTURAL DRAWINGS FOR JOIST AND BEAM LOCATIONS AND DIMENSIONAL INFORMATION.
M9	NEW ROOFTOP REFRIGERATION EQUIPMENT. REFER TO REFRIGERATION DRAWINGS FOR UNIT LOCATIONS AND PIPE ROUTINGS PRIOR TO ANY WORK.
M12	REFER TO DRAWINGS M5.8 AND M5.9 FOR DOAS UNIT INFORMATION.
M14	DUCT UP TO OPENING THROUGH ROOF. H.C. TO PROVIDE REVERSE ACTING THERMOSTAT FOR FAN. FAN TO ENERGIZE WHEN SPACE TEMPERATURE EXCEEDS 80 DEG F.
M19	EXTEND FULL SIZE DUCTWORK (CURB SIZE) UP THROUGH ROOF AND SEAL OPENING AIRTIGHT. REFER TO DRAWINGS M5.3 AND M5.4 FOR EXHAUST FAN INFORMATION.
M23	TEMPERATURE SENSOR FOR ROOF MOUNTED RTU FURNISHED BY CONTROL PROVIDER. ROUTE CONTROL WIRING THROUGH RTU AND BACK TO BUILDING CONTROL PANEL. MOUNT SENSOR A MINIMUM OF 4'-0" AFF ON WALL. COORDINATE LOCATION WITH KROGER EQUIPMENT AND FURNISHINGS. PROVIDE LOCKABLE PROTECTIVE COVER OVER DEVICE.
M24	COMBINATION RELATIVE HUMIDITY/TEMPERATURE SENSOR TO BE MOUNTED 7'-6" AFF AND, IN THE CASE OF RTU-5, USED FOR CYCLING ANTI-SWEAT CASE HEATERS AND HVAC HUMIDITY CONTROL.
M25	DIFFUSER/GRILLE/REGISTER TO BE INSTALLED 10'-2" AFF.
M33	EXHAUST GRILLE TO BE INSTALLED 8'-0" AFF.
M40	THERMOSTAT TO BE MOUNTED AT 5'-0" AFF. PROVIDE LOCKABLE PROTECTIVE COVER OVER DEVICE. REFER TO EM DRAWINGS FOR MORE INFORMATION.
M41	SUSPENDED ELECTRIC HEATER USING THREADED ROD TO UNISTRUT CHANNEL OR APPROVED EQUAL. MOUNT 12'-0" AFF TO BOTTOM OF UNIT. VERIFY LOCATION AND REQUIREMENTS WITH OWNER. REFER TO M6.1 FOR MORE INFORMATION.
M42	CO2 SENSOR FOR SALES FLOOR TO BE MOUNTED 7'-6" AFF ON COLUMN.

WHERE SMOKE DETECTORS ARE INSTALLED MORE THAN 10 FEET ABOVE THE FINISHED FLOOR OR IN ARRANGEMENT WHERE THE DETECTOR'S ALARM OR SUPERVISORY INDICATOR IS NOT VISIBLE TO RESPONDING PERSONNEL, THE DETECTOR SHALL BE PROVIDED WITH REMOTE ALARM OR SUPERVISORY INDICATOR IN A LOCATION ACCEPTABLE TO AUTHORITY HAVING JURISDICTION. PROVIDE AN LED INDICATOR LIGHT ON CEILING BENEATH EACH HVAC UNIT THAT IS EQUIPPED WITH A SMOKE DETECTOR WHEN ACTIVATION LIGHT IS NOT VISIBLE FROM BELOW.

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REVIEWED BY: DMH

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KING Soopers

DATE	ISSUE
11/21/2019	90% OWNER REVIEW
10/04/2021	ISSUED FOR BID

#	DATE	REVISION
1	10/25/2021	ADDENDUM NO. 2
2	12/01/2021	BULLETIN NO. 1
3	05/04/2023	BULLETIN NO. 10

PROJECT TITLE
KING SOOPERS
KS147

MERIDIAN + WOODMEN
FALCON, CO

COMMISSION NO. 519000
ISSUE DATE 10/04/2021

SHEET TITLE
HVAC PLAN - EAST

SHEET NO.
M1.1b

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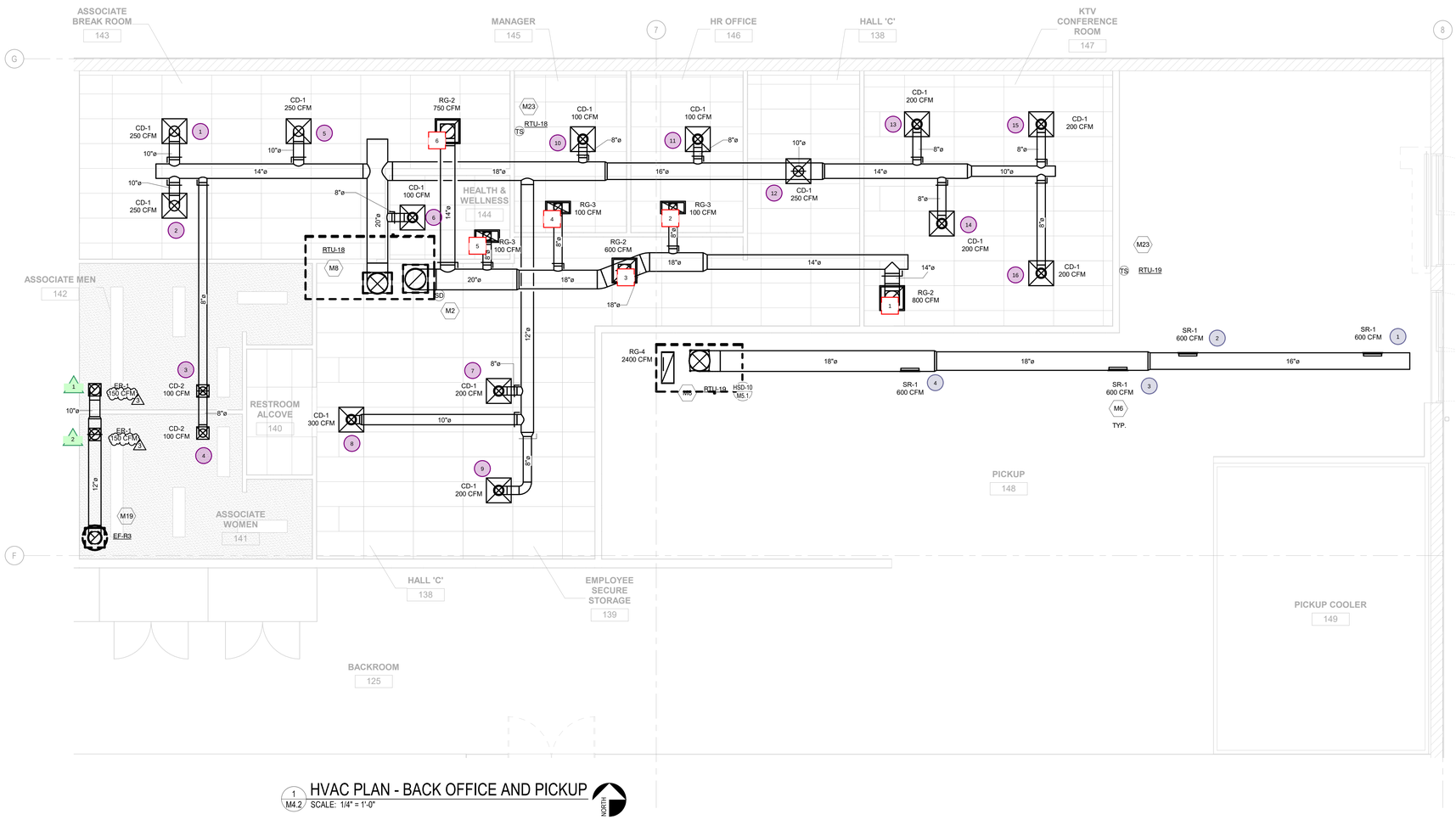
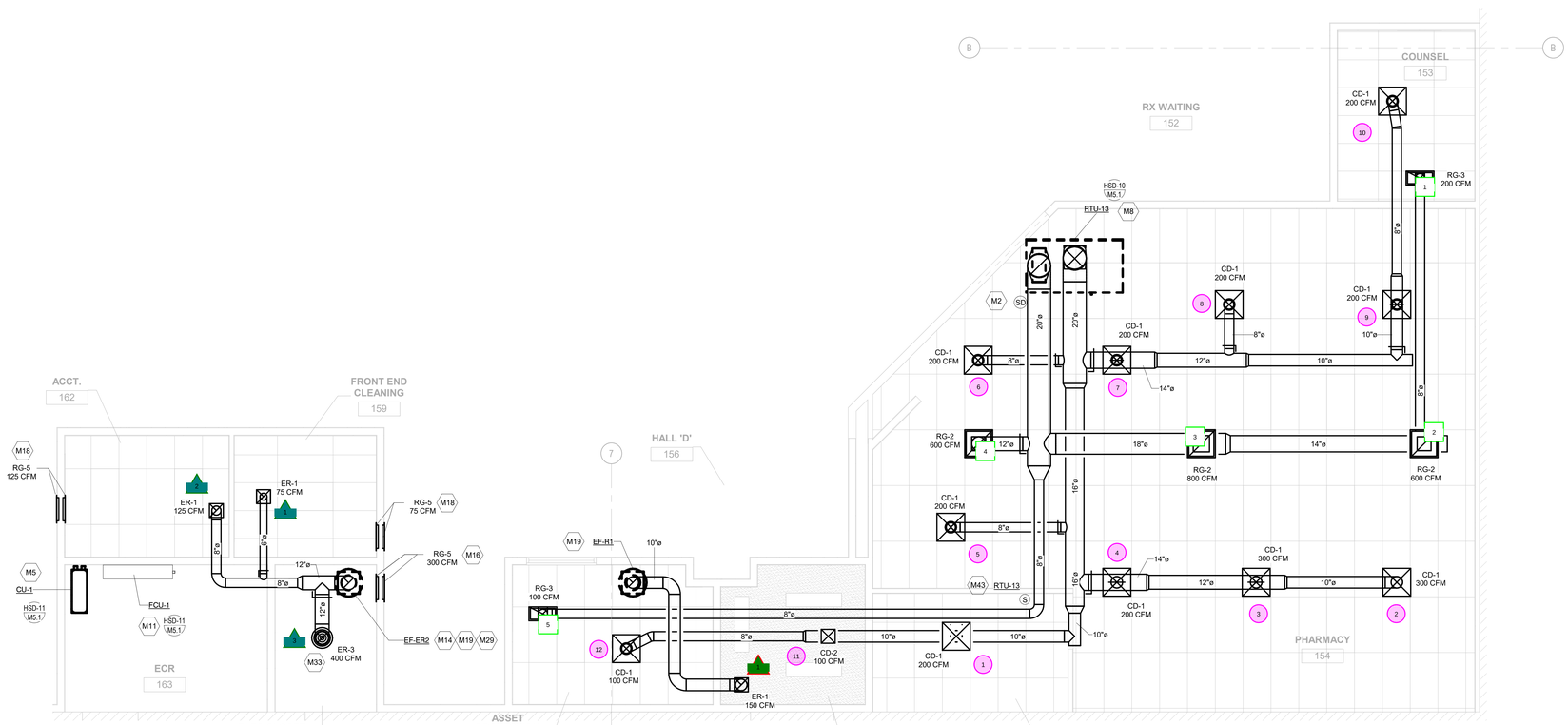


1 M4.2 HVAC PLAN - BACK OFFICE AND PICKUP
SCALE: 1/4" = 1'-0"

KEYNOTE LEGEND

NUMBER	KEYNOTE
M2	INSTALL SMOKE DETECTOR IN THE RETURN DUCTWORK DOWNSTREAM OF FILTERS AND UPSTREAM OF ANY BRANCH CONNECTIONS. INSTALL SAMPLING TUBE(S) AND DETECTOR HOUSING IN STRICT ACCORDANCE WITH MANUFACTURER'S INSTALLATION INSTRUCTIONS. DETECTOR,FAN SHUTDOWN WIRING, AND CONTROLS BY OTHERS.
M5	NEW ROOFTOP OUTDOOR CONDENSING UNIT. PROVIDE SUPPORTS PER MANUFACTURER'S INSTALLATION PROCEDURES. COORDINATE LOCATION WITH OTHER ROOFTOP EQUIPMENT. FIELD VERIFY REFRIGERANT PIPE ROUTINGS PRIOR TO INSTALLATION.
M6	SIDEWALL DIFFUSERS TO BE INSTALLED AT 45 DEGREES DOWNWARD.
M8	REFER TO ARCHITECTURAL ROOF PLAN FOR HVAC ROOFTOP DIMENSIONAL INFORMATION. REFER TO STRUCTURAL DRAWINGS FOR JOIST AND BEAM LOCATIONS AND DIMENSIONAL INFORMATION.
M11	INSTALL WALL-MOUNTED AIR CONDITIONING UNIT AT 7'-0" (BOTTOM OF UNIT) PER MANUFACTURER'S INSTALLATION PROCEDURES. EXTEND CONDENSATE PIPE AND DRAIN TO NEAREST DRAIN HUB. REFER TO PLUMBING DRAWINGS FOR LOCATION. COORDINATE POWER REQUIREMENTS WITH HC.
M14	DUCT UP TO OPENING THROUGH ROOF. H.C. TO PROVIDE REVERSE ACTING THERMOSTAT FOR FAN. FAN TO ENERGIZE WHEN SPACE TEMPERATURE EXCEEDS 80 DEG F.
M16	INSTALL TRANSFER GRILLE IN WALL 15'0" A.F.F. COORDINATE FINAL LOCATION WITH OWNER AND ARCHITECT.
M18	INSTALL TRANSFER GRILLE AND NECESSARY DUCTWORK IN WALL AS LOW AS POSSIBLE. COORDINATE FINAL LOCATION WITH OWNER AND ARCHITECT.
M19	EXTEND FULL SIZE DUCTWORK (CURB SIZE) UP THROUGH ROOF AND SEAL OPENING AIRTIGHT. REFER TO DRAWINGS M5.3 AND M5.4 FOR EXHAUST FAN INFORMATION.
M23	TEMPERATURE SENSOR FOR ROOF MOUNTED RTU FURNISHED BY CONTROL PROVIDER. ROUTE CONTROL WIRING THROUGH RTU AND BACK TO BUILDING CONTROL PANEL. MOUNT SENSOR A MINIMUM OF 4'-0" AFF ON WALL. COORDINATE LOCATION WITH KROGER EQUIPMENT AND FURNISHINGS. PROVIDE LOCKABLE PROTECTIVE COVER OVER DEVICE.
M29	DROP DUCT DOWN TO 10'-6" TO MINIMIZE VISIBILITY FROM THE SALES FLOOR.
M33	EXHAUST GRILLE TO BE INSTALLED 6'-0" AFF.
M43	PHARMACY TO RECEIVE COMBINATION RELATIVE HUMIDITY/TEMPERATURE SENSOR. ROUTE CONTROL WIRING THROUGH RTU AND BACK TO BUILDING CONTROL PANEL. MOUNT SENSOR A MINIMUM OF 4'-0" AFF ON WALL. COORDINATE LOCATION WITH KROGER EQUIPMENT AND FURNISHINGS. PROVIDE LOCKABLE PROTECTIVE COVER OVER DEVICE.



2 M4.2 HVAC PLAN - PHARMACY
SCALE: 1/4" = 1'-0"

WHERE SMOKE DETECTORS ARE INSTALLED MORE THAN 10 FEET ABOVE THE FINISHED FLOOR OR IN ARRANGEMENT WHERE THE DETECTOR'S ALARM OR SUPERVISORY INDICATOR IS NOT VISIBLE TO RESPONDING PERSONNEL, THE DETECTOR SHALL BE PROVIDED WITH REMOTE ALARM OR SUPERVISORY INDICATOR IN A LOCATION ACCEPTABLE TO AUTHORITY HAVING JURISDICTION. PROVIDE AN LED INDICATOR LIGHT ON CEILING BENEATH EACH HVAC UNIT THAT IS EQUIPPED WITH A SMOKE DETECTOR WHEN ACTIVATION LIGHT IS NOT VISIBLE FROM BELOW.

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2	12/01/2021	BULLETIN NO. 1
3	05/19/2023	BULLETIN NO. 11

PROJECT TITLE
KING SOOPERS
KS147
MERIDIAN + WOODMEN
FALCON, CO

COMMISSION NO. 519000
ISSUE DATE 10/04/2021
SHEET TITLE
HVAC ENLARGED PLANS

SHEET NO.
M4.2

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EXHAUST FAN INFORMATION – JOB#4050672

FAN UNIT NO	TAG	QTY	FAN UNIT MODEL #	MANUFACTURER	CFM	ESP	RPM	MOTOR ENCL	HP	BHP	PHASE	VOLT	FLA	DISCHARGE VELOCITY	WEIGHT (LBS)	SONES
1	EF-CC: K-0002356	1	DR12HFA	CAPTIVEAIRE	600	0.125	1467	ODP	0.180	0.1090	1	115	1.9		52	9.7
2	EF-ER: K-0002354	1	DR30HFA	CAPTIVEAIRE	750	0.150	1261	ODP	0.250	0.0900	1	115	3.8		63	8.3
3	EF-ER2 K-0002356	1	DR12HFA	CAPTIVEAIRE	600	0.125	1467	ODP	0.180	0.1090	1	115	1.9		48	9.7
4	EF-G1: PNET42845	1	DU50HFA	CAPTIVEAIRE	900	1.100	1695	TEAO-ECM	0.500	0.3920	1	115	6.3	342 FPM	81	19.8
5	EF-G2: PNET42845	1	DU50HFA	CAPTIVEAIRE	900	1.100	1695	TEAO-ECM	0.500	0.3920	1	115	6.3	342 FPM	81	19.8
6	EF-K1: PNET42845	1	DU180HFA	CAPTIVEAIRE	2800	1.500	1426	ODP,PREMIUM	2.000	1.0810	3	208	8.3	647 FPM	187	21
7	EF-K2 K-0002371	1	REMOVED FROM PROJECT SCOPE													
8	EF-R1: K-0002358	1	DR18HFA	CAPTIVEAIRE	150	0.125	1299	ODP	0.060	0.0340	1	115	1.1		46	5
9	EF-R2: K-0002354	1	DR30HFA	CAPTIVEAIRE	850	0.150	1393	ODP	0.250	0.1220	1	115	3.8		63	10.1
10	EF-R3: K-0002356	1	DR12HFA	CAPTIVEAIRE	600	0.125	1467	ODP	0.180	0.1090	1	115	1.9		52	9.7
11	EF-S: K-0002354	1	DR30HFA	CAPTIVEAIRE	900	0.125	1442	ODP	0.250	0.1350	1	115	3.8		63	10.7

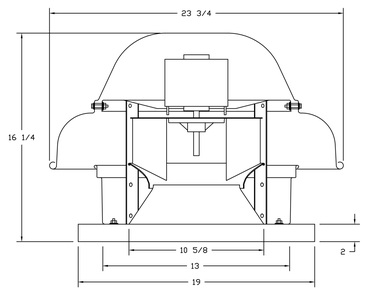
FAN OPTIONS

FAN UNIT NO	TAG	QTY	DESCRIPTION
1	EF-CC: K-0002356	1	1 12-BDD DAMPER.
		1	HINGE KIT - SHIPS LOOSE FOR CURB SUPPLIED BY OTHERS.
		1	2 YEAR PARTS WARRANTY.
2	EF-ER: K-0002354	1	1 15-BDD DAMPER.
		1	HINGE KIT - SHIPS LOOSE FOR CURB SUPPLIED BY OTHERS.
		1	2 YEAR PARTS WARRANTY.
3	EF-ER2 K-0002356	1	1 12-BDD DAMPER.
		1	2 YEAR PARTS WARRANTY.
4	EF-G1: PNET42845	1	GREASE BOX.
		1	HINGE KIT - SHIPS LOOSE FOR CURB SUPPLIED BY OTHERS.
		1	ECM WIRING PACKAGE - MANUAL OR 0-10VDC REFERENCE SPEED CONTROL (TELCO MOTOR), CCW ROTATION.
		1	2 YEAR PARTS WARRANTY.
5	EF-G2: PNET42845	1	GREASE BOX.
		1	HINGE KIT - SHIPS LOOSE FOR CURB SUPPLIED BY OTHERS.
		1	ECM WIRING PACKAGE - MANUAL OR 0-10VDC REFERENCE SPEED CONTROL (TELCO MOTOR), CCW ROTATION.
		1	2 YEAR PARTS WARRANTY.
6	EF-K1: PNET42845	1	GREASE BOX.
		1	HINGE KIT - SHIPS LOOSE FOR CURB SUPPLIED BY OTHERS.
		1	2 YEAR PARTS WARRANTY.
7	EF-K2 K-0002371	REMOVED FROM PROJECT SCOPE	
8	EF-R1: K-0002358	1	1 15-BDD DAMPER.
		1	HINGE KIT - SHIPS LOOSE FOR CURB SUPPLIED BY OTHERS.
		1	2 YEAR PARTS WARRANTY.
9	EF-R2: K-0002354	1	1 15-BDD DAMPER.
		1	HINGE KIT - SHIPS LOOSE FOR CURB SUPPLIED BY OTHERS.
		1	2 YEAR PARTS WARRANTY.
10	EF-R3: K-0002356	1	1 12-BDD DAMPER.
		1	HINGE KIT - SHIPS LOOSE FOR CURB SUPPLIED BY OTHERS.
		1	2 YEAR PARTS WARRANTY.
11	EF-S: K-0002354	1	1 15-BDD DAMPER.
		1	HINGE KIT - SHIPS LOOSE FOR CURB SUPPLIED BY OTHERS.
		1	2 YEAR PARTS WARRANTY.

FAN ACCESSORIES

FAN UNIT NO	TAG	EXHAUST			SUPPLY			
		GREASE CUP	GRAVITY DAMPER	WALL MOUNT	SIDE DISCHARGE	GRAVITY DAMPER	MOTORIZED DAMPER	WALL MOUNT
1	EF-CC: K-0002356		YES					
2	EF-ER: K-0002354		YES					
3	EF-ER2 K-0002356		YES					
4	EF-G1: PNET42845	YES						
5	EF-G2: PNET42845	YES						
6	EF-K1: PNET42845	YES						
7	EF-K2 K-0002371	YES						
8	EF-R1: K-0002358		YES					
9	EF-R2: K-0002354		YES					
10	EF-R3: K-0002356		YES					
11	EF-S: K-0002354		YES					

FANS #1 (EF-CC: K-0002356), #3 (EF-ER2: K-0002356), #10 (EF-R3: K-0002356) - DR12HFA EXHAUST FAN



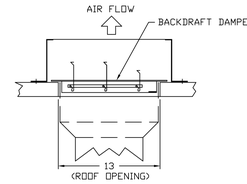
FEATURES:

- DIRECT DRIVE CONSTRUCTION (NO BELTS/PULLEYS)
- ROOF MOUNTED FANS
- UL705
- SAFETY DISCONNECT
- STANDARD BIRD SCREEN
- SPEED CONTROL

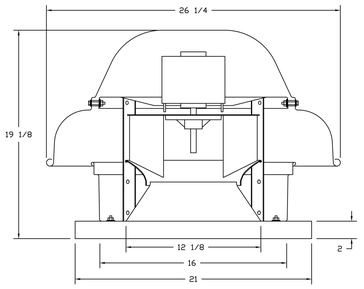
OPTIONS

1 12-BDD DAMPER.
HINGE KIT - SHIPS LOOSE FOR CURB SUPPLIED BY OTHERS.

BACKDRAFT DAMPER INSTALLATION



FANS #2 (EF-ER: K-0002354), #9 (EF-R2: K-0002354), #11 (EF-S: K-0002354) - DR30HFA EXHAUST FAN



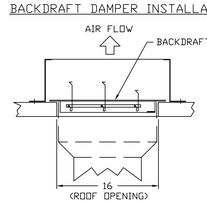
FEATURES:

- DIRECT DRIVE CONSTRUCTION (NO BELTS/PULLEYS)
- ROOF MOUNTED FANS
- UL705
- SAFETY DISCONNECT
- STANDARD BIRD SCREEN
- SPEED CONTROL

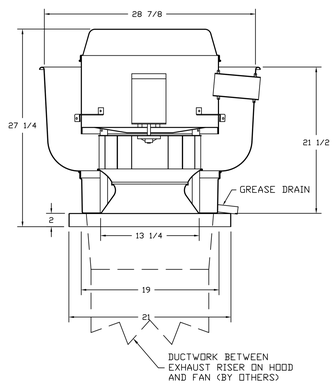
OPTIONS

1 15-BDD DAMPER.
HINGE KIT - SHIPS LOOSE FOR CURB SUPPLIED BY OTHERS.

BACKDRAFT DAMPER INSTALLATION



FANS #4 (EF-G1: PNET42845), #5 (EF-G2: PNET42845) - DU50HFA EXHAUST FAN



FEATURES:

- DIRECT DRIVE CONSTRUCTION (NO BELTS/PULLEYS)
- ROOF MOUNTED FANS
- RESTAURANT MODEL
- UL705 AND UL762 AND ULC-S645
- VARIABLE SPEED CONTROL
- INTERNAL WIRING
- WEATHERPROOF DISCONNECT
- THERMAL OVERLOAD PROTECTION (SINGLE PHASE)
- HIGH HEAT OPERATION 300°F (149°C)
- GREASE CLASSIFICATION TESTING

NORMAL TEMPERATURE TEST
EXHAUST FAN MUST OPERATE CONTINUOUSLY WHILE EXHAUSTING AIR AT 300°F (149°C) UNTIL ALL FAN PARTS HAVE REACHED THERMAL EQUILIBRIUM, AND WITHOUT ANY DETERIORATING EFFECTS TO THE FAN WHICH WOULD CAUSE UNSAFE OPERATION.

ABNORMAL FLARE-UP TEST
EXHAUST FAN MUST OPERATE CONTINUOUSLY WHILE EXHAUSTING BURNING GREASE VAPORS AT 600°F (316°C) FOR A PERIOD OF 15 MINUTES WITHOUT THE FAN BECOMING DAMAGED TO ANY EXTENT THAT COULD CAUSE AN UNSAFE CONDITION.

OPTIONS

GREASE BOX.
HINGE KIT - SHIPS LOOSE FOR CURB SUPPLIED BY OTHERS.
ECM WIRING PACKAGE - MANUAL OR 0-10VDC REFERENCE SPEED CONTROL (TELCO MOTOR), CCW ROTATION.

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	DESCRIPTION	DATE:
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3		
4		

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PEYTON, CO, 80831

DATE: 11/6/2019

DWG.#: 4050672

DRAWN BY: JAC

SCALE: 3/4" = 1'-0"

MASTER DRAWING

SHEET NO. 2

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2	05/04/2023	BULLETIN NO. 10

PROJECT TITLE
KING SOOPERS
KS147

MERIDIAN + WOODMEN
FALCON, CO

COMMISSION NO. 519000
ISSUE DATE 10/04/2021

SHEET TITLE
HVAC DETAILS

SHEET NO.
M5.3

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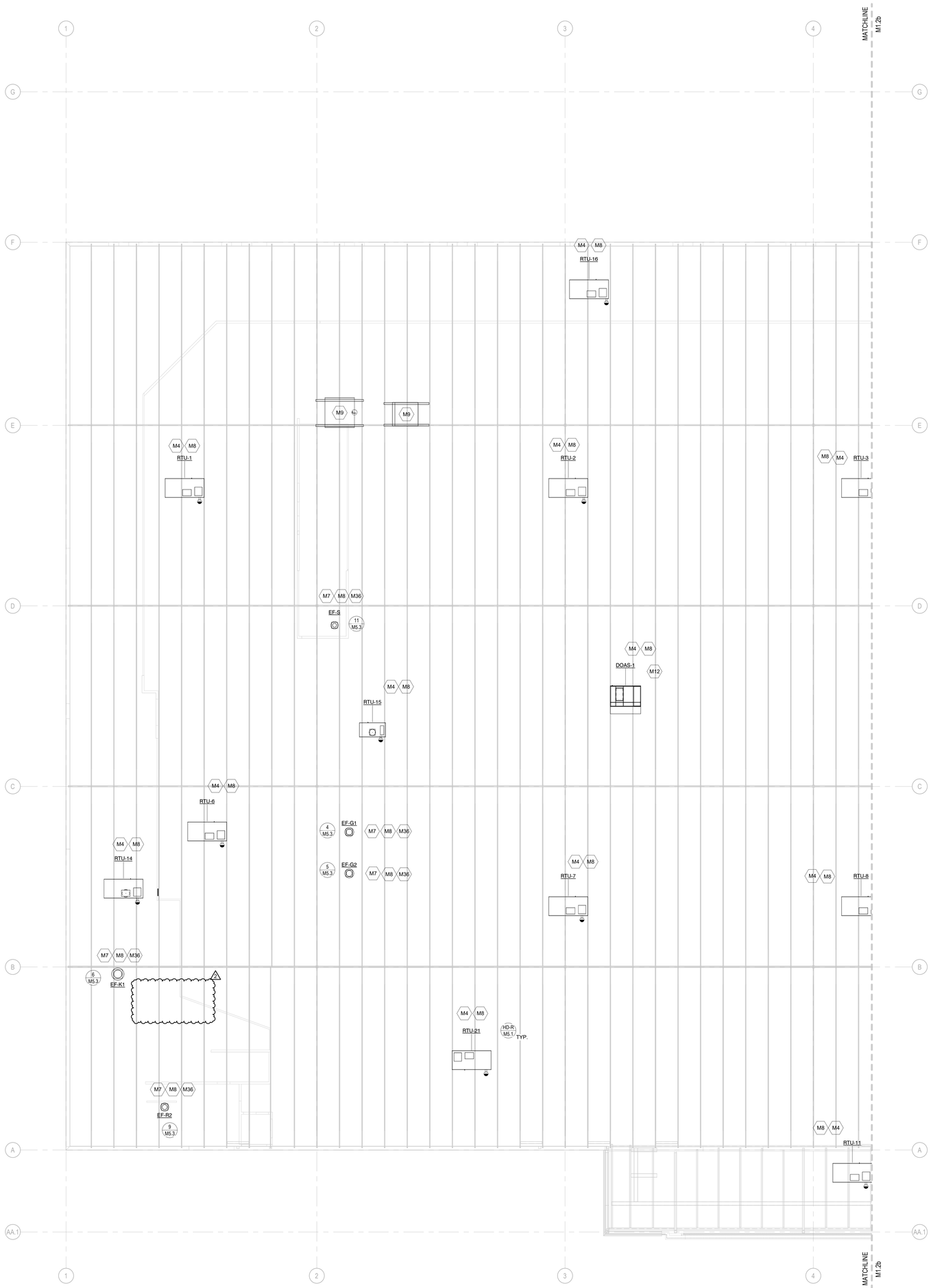

1 M1.2a HVAC ROOF PLAN - WEST
SCALE: 3/32" = 1'-0"

NORTH

KEYNOTE LEGEND

NUMBER	KEYNOTE
M4	NEW PACKAGED ROOFTOP UNIT FURNISHED BY KROGER AND INSTALLED BY HC. REFER TO DRAWING M6.1 FOR UNIT REQUIREMENTS INCLUDING ROOF CURB INFORMATION. ROOF DUCTWORK PENETRATIONS TO BE FULL SIZE. SEAL AROUND OPENING AIR TIGHT. REFER TO PLUMBING DRAWINGS FOR NATURAL GAS REQUIREMENTS. REFER TO ELECTRICAL DRAWINGS FOR POWER REQUIREMENTS.
M7	NEW ROOFTOP EXHAUST FAN FURNISHED BY KROGER AND INSTALLED BY HC. REFER TO HVAC DETAIL DRAWINGS AND DRAWING M5.4 FOR UNIT REQUIREMENTS, INCLUDING ROOF CURB INFORMATION. ROOF PENETRATION TO BE FULL SIZE. SEAL AROUND OPENING AIR TIGHT. REFER TO ELECTRICAL DRAWINGS FOR POWER REQUIREMENTS.
M8	REFER TO ARCHITECTURAL ROOF PLAN FOR HVAC ROOFTOP DIMENSIONAL INFORMATION. REFER TO STRUCTURAL DRAWINGS FOR JOIST AND BEAM LOCATIONS AND DIMENSIONAL INFORMATION.
M9	NEW ROOFTOP REFRIGERATION EQUIPMENT. REFER TO REFRIGERATION DRAWINGS FOR UNIT LOCATIONS AND PIPE ROUTINGS PRIOR TO ANY WORK.
M12	REFER TO DRAWINGS M5.8 AND M5.9 FOR DOAS UNIT INFORMATION.
M36	INSTALL FLUES AND EXHAUST FANS A MINIMUM OF 10 FEET FROM OUTSIDE AIR INTAKE OF ROOFTOP UNITS.

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FALCON, CO

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ISSUE DATE 10/04/2021
SHEET TITLE
HVAC ROOF PLAN - WEST

SHEET NO.
M1.2a

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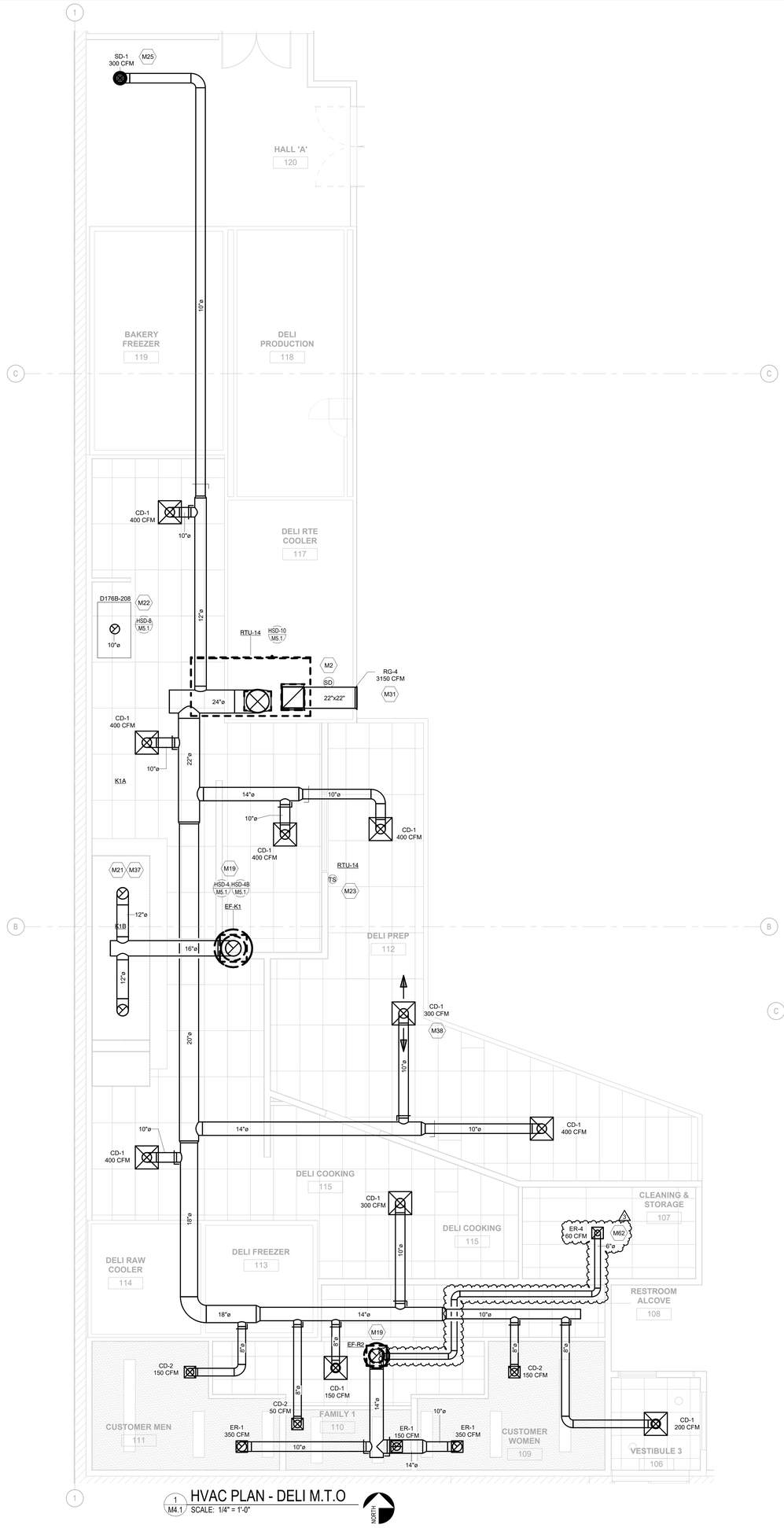
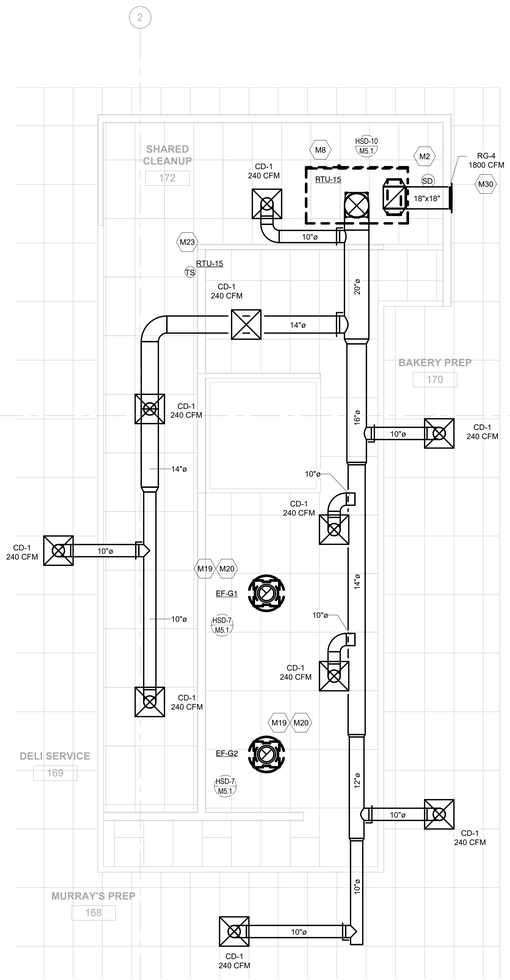


1 HVAC PLAN - DELI M.T.O
M4.1 SCALE: 1/4" = 1'-0"

NORTH



2 HVAC PLAN - DELI/BAKERY
M4.1 SCALE: 1/4" = 1'-0"

NORTH

WHERE SMOKE DETECTORS ARE INSTALLED MORE THAN 10 FEET ABOVE THE FINISHED FLOOR OR IN ARRANGEMENT WHERE THE DETECTORS ALARM OR SUPERVISORY INDICATOR IS NOT VISIBLE TO RESPONDING PERSONNEL, THE DETECTOR SHALL BE PROVIDED WITH REMOTE ALARM OR SUPERVISORY INDICATOR IN A LOCATION ACCEPTABLE TO AUTHORITY HAVING JURISDICTION. PROVIDE AN LED INDICATOR LIGHT ON CEILING BENEATH EACH HVAC UNIT THAT IS EQUIPPED WITH A SMOKE DETECTOR WHEN ACTIVATION LIGHT IS NOT VISIBLE FROM BELOW.

KEYNOTE LEGEND

NUMBER	KEYNOTE
M2	INSTALL SMOKE DETECTOR IN THE RETURN DUCTWORK DOWNSTREAM OF FILTERS AND UPSTREAM OF ANY BRANCH CONNECTIONS. INSTALL SAMPLING TUBE(S) AND DETECTOR HOUSING IN STRICT ACCORDANCE WITH MANUFACTURER'S INSTALLATION INSTRUCTIONS. DETECTOR,FAN SHUTDOWN WIRING, AND CONTROLS BY OTHERS.
M8	REFER TO ARCHITECTURAL ROOF PLAN FOR HVAC ROOFTOP DIMENSIONAL INFORMATION. REFER TO STRUCTURAL DRAWINGS FOR JOIST AND BEAM LOCATIONS AND DIMENSIONAL INFORMATION.
M19	EXTEND FULL SIZE DUCTWORK (CURB SIZE) UP THROUGH ROOF AND SEAL OPENING AIRTIGHT. REFER TO DRAWINGS M5.3 AND M5.4 FOR EXHAUST FAN INFORMATION.
M20	VENT DUCT UP FROM OVEN RACK VENT COLLAR THROUGH ROOF. DUCTS ARE ONLY TO BE OFFSET ABOVE CEILING TILE. DUCTS ARE TO BE STRAIGHT AND VERTICAL WHEN VISIBLE TO SALES FLOOR.
M21	GREASE DUCT FROM EXHAUST HOOD TO OPENING THROUGH ROOF PER NFPA 96. H.C. TO INSTALL PROVIDED HOME KIT. DUCTWRAP TO BE INSTALLED THE ENTIRE LENGTH OF GREASE DUCT FROM CEILING PENETRATION TO FAN.
M22	INSTALL UW-50 VENT KIT INCLUDED WITH UNIT AND SUPPLIED BY HOBART. H.C. TO CONNECT STAINLESS STEEL DUCT TO VENT KIT OPENING THROUGH ROOF.
M23	TEMPERATURE SENSOR FOR ROOF MOUNTED RTU FURNISHED BY CONTROL PROVIDER. ROUTE CONTROL WIRING THROUGH RTU AND BACK TO BUILDING CONTROL PANEL. MOUNT SENSOR A MINIMUM OF 4'-0" AFF ON WALL. COORDINATE LOCATION WITH KROGER EQUIPMENT AND FURNISHINGS. PROVIDE LOCKABLE PROTECTIVE COVER OVER DEVICE.
M25	DIFFUSER/GRILLE/REGISTER TO BE INSTALLED 10'-2" AFF.
M30	INSTALL TOP OF RETURN GRILLE 15'0" AFF. COORDINATE LOCATION WITH ARCHITECT AND WITH DECOR. LOCATION OF DECOR TAKES PRECEDENCE OVER LOCATION OF RETURN GRILLE.
M31	INSTALL TOP OF RETURN GRILLE 17'0" AFF. COORDINATE LOCATION WITH ARCHITECT AND WITH DECOR. LOCATION OF DECOR TAKES PRECEDENCE OVER LOCATION OF RETURN GRILLE.
M37	REMOTE MANUAL HOOD ANSUL PULL STATION TO BE LOCATED IN THE MAIN PATH OF EGRESS, A MINIMUM OF 10 FEET AND A MAXIMUM OF 20 FEET FROM THE HOOD. MOUNTING HEIGHT SHOULD BE 42"-48" AFF. COORDINATE FINAL LOCATION WITH OWNER AND ARCHITECT. PROVIDE NAMEPLATE AT STATION WITH HOOD NUMBER AND LOCATION. REFER TO DETAIL SHEETS M5.5 AND M5.6 FOR ADDITIONAL INFORMATION.
M38	DIFFUSER AROUND HOOD TO BE A 2-WAY DIFFUSER FACING AWAY FROM THE HOOD TO PREVENT INTERFERENCE WITH THE HOOD'S CONTAIN AND CAPTURE.
M62	UNDERCUT DOOR 1". COORDINATE WITH GC FOR RESPONSIBILITY.

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2	05/04/2023	BULLETIN NO. 10
3	01/05/2024	BULLETIN NO. 14

PROJECT TITLE
KING SOOPERS
KS147

MERIDIAN + WOODMEN
FALCON, CO

COMMISSION NO. 519000
ISSUE DATE 10/04/2021

SHEET TITLE
HVAC ENLARGED PLANS

SHEET NO.
M4.1

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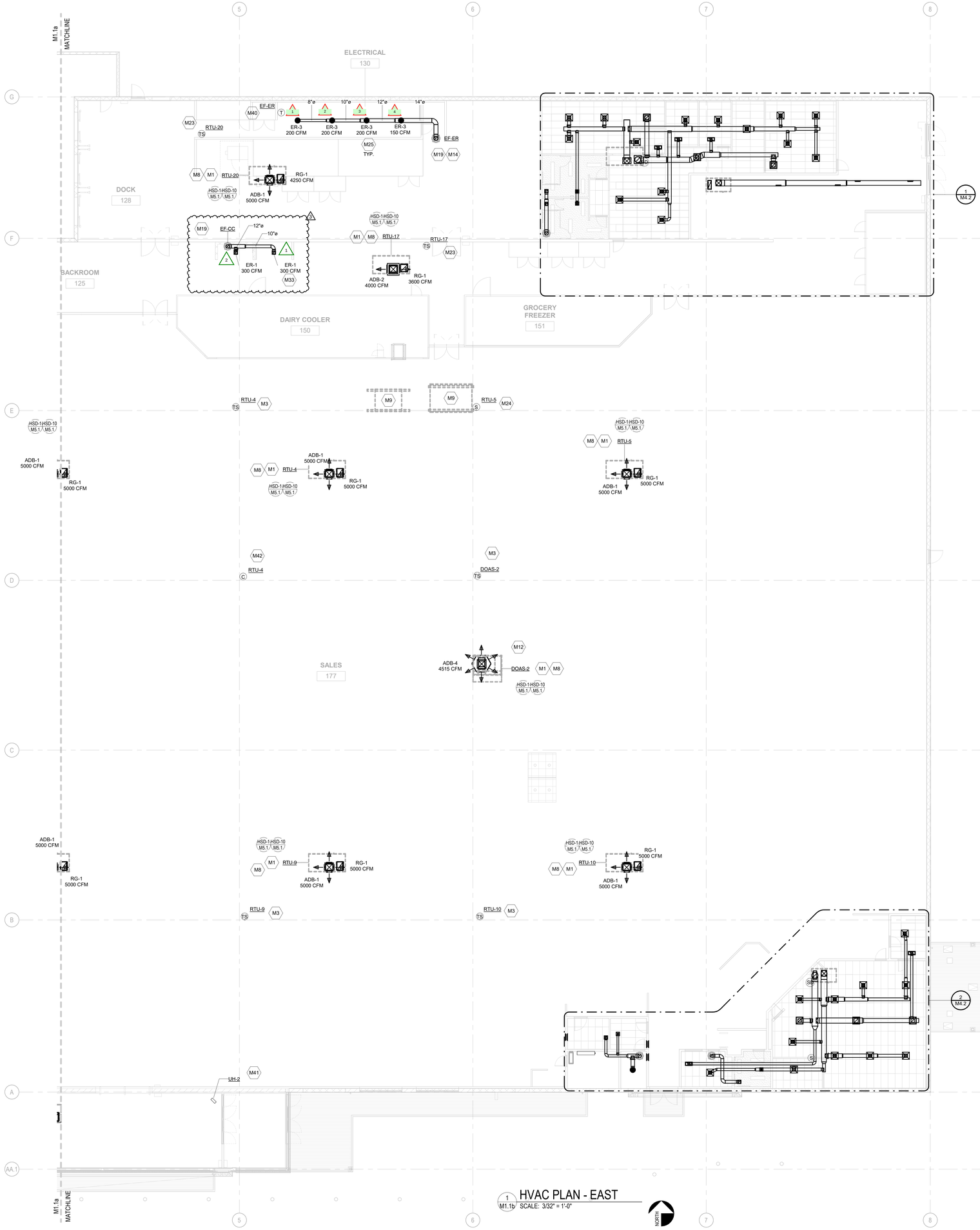

KEYNOTE LEGEND

NUMBER	KEYNOTE
M1	DROP BOX DIFFUSER SYSTEM. REFER TO DIFFUSER SCHEDULE FOR AES MODEL NUMBERS AND QUANTITIES. REFER TO PLANS FOR THROW DIRECTIONS AND CFM.
M3	TEMPERATURE SENSOR FOR ROOF MOUNTED RTU FURNISHED BY CONTROL PROVIDER. ROUTE CONTROL WIRING THROUGH RTU AND BACK TO BUILDING CONTROL PANEL. MOUNT SENSOR 7'-6" AFF ON COLUMN. COORDINATE LOCATION WITH KROGER EQUIPMENT AND FURNISHINGS. PROVIDE LOCKABLE PROTECTIVE COVER OVER DEVICE.
M8	REFER TO ARCHITECTURAL ROOF PLAN FOR HVAC ROOFTOP DIMENSIONAL INFORMATION. REFER TO STRUCTURAL DRAWINGS FOR JOIST AND BEAM LOCATIONS AND DIMENSIONAL INFORMATION.
M9	NEW ROOFTOP REFRIGERATION EQUIPMENT. REFER TO REFRIGERATION DRAWINGS FOR UNIT LOCATIONS AND PIPE ROUTINGS PRIOR TO ANY WORK.
M12	REFER TO DRAWINGS M5.8 AND M5.9 FOR DOAS UNIT INFORMATION.
M14	DUCT UP TO OPENING THROUGH ROOF. H.C. TO PROVIDE REVERSE ACTING THERMOSTAT FOR FAN. FAN TO ENERGIZE WHEN SPACE TEMPERATURE EXCEEDS 80 DEG F.
M19	EXTEND FULL SIZE DUCTWORK (CURB SIZE) UP THROUGH ROOF AND SEAL OPENING AIRTIGHT. REFER TO DRAWINGS M5.3 AND M5.4 FOR EXHAUST FAN INFORMATION.
M23	TEMPERATURE SENSOR FOR ROOF MOUNTED RTU FURNISHED BY CONTROL PROVIDER. ROUTE CONTROL WIRING THROUGH RTU AND BACK TO BUILDING CONTROL PANEL. MOUNT SENSOR A MINIMUM OF 4'-0" AFF ON WALL. COORDINATE LOCATION WITH KROGER EQUIPMENT AND FURNISHINGS. PROVIDE LOCKABLE PROTECTIVE COVER OVER DEVICE.
M24	COMBINATION RELATIVE HUMIDITY/TEMPERATURE SENSOR TO BE MOUNTED 7'-6" AFF AND, IN THE CASE OF RTU-5, USED FOR CYCLING ANTI-SWEAT CASE HEATERS AND HVAC HUMIDITY CONTROL.
M25	DIFFUSER/GRILLE/REGISTER TO BE INSTALLED 10'-2" AFF.
M33	EXHAUST GRILLE TO BE INSTALLED 8'-0" AFF.
M40	THERMOSTAT TO BE MOUNTED AT 5'-0" AFF. PROVIDE LOCKABLE PROTECTIVE COVER OVER DEVICE. REFER TO EM DRAWINGS FOR MORE INFORMATION.
M41	SUSPENDED ELECTRIC HEATER USING THREADED ROD TO UNISTRUT CHANNEL OR APPROVED EQUAL. MOUNT 12'-0" AFF TO BOTTOM OF UNIT. VERIFY LOCATION AND REQUIREMENTS WITH OWNER. REFER TO M6.1 FOR MORE INFORMATION.
M42	CO2 SENSOR FOR SALES FLOOR TO BE MOUNTED 7'-6" AFF ON COLUMN.

WHERE SMOKE DETECTORS ARE INSTALLED MORE THAN 10 FEET ABOVE THE FINISHED FLOOR OR IN ARRANGEMENT WHERE THE DETECTOR'S ALARM OR SUPERVISORY INDICATOR IS NOT VISIBLE TO RESPONDING PERSONNEL, THE DETECTOR SHALL BE PROVIDED WITH REMOTE ALARM OR SUPERVISORY INDICATOR IN A LOCATION ACCEPTABLE TO AUTHORITY HAVING JURISDICTION. PROVIDE AN LED INDICATOR LIGHT ON CEILING BENEATH EACH HVAC UNIT THAT IS EQUIPPED WITH A SMOKE DETECTOR WHEN ACTIVATION LIGHT IS NOT VISIBLE FROM BELOW.

1 HVAC PLAN - EAST
M1.1b SCALE: 3/32" = 1'-0"

NORTH

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KS147

MERIDIAN + WOODMEN
FALCON, CO

COMMISSION NO. 519000
ISSUE DATE 10/04/2021

SHEET TITLE
HVAC PLAN - EAST

SHEET NO.
M1.1b

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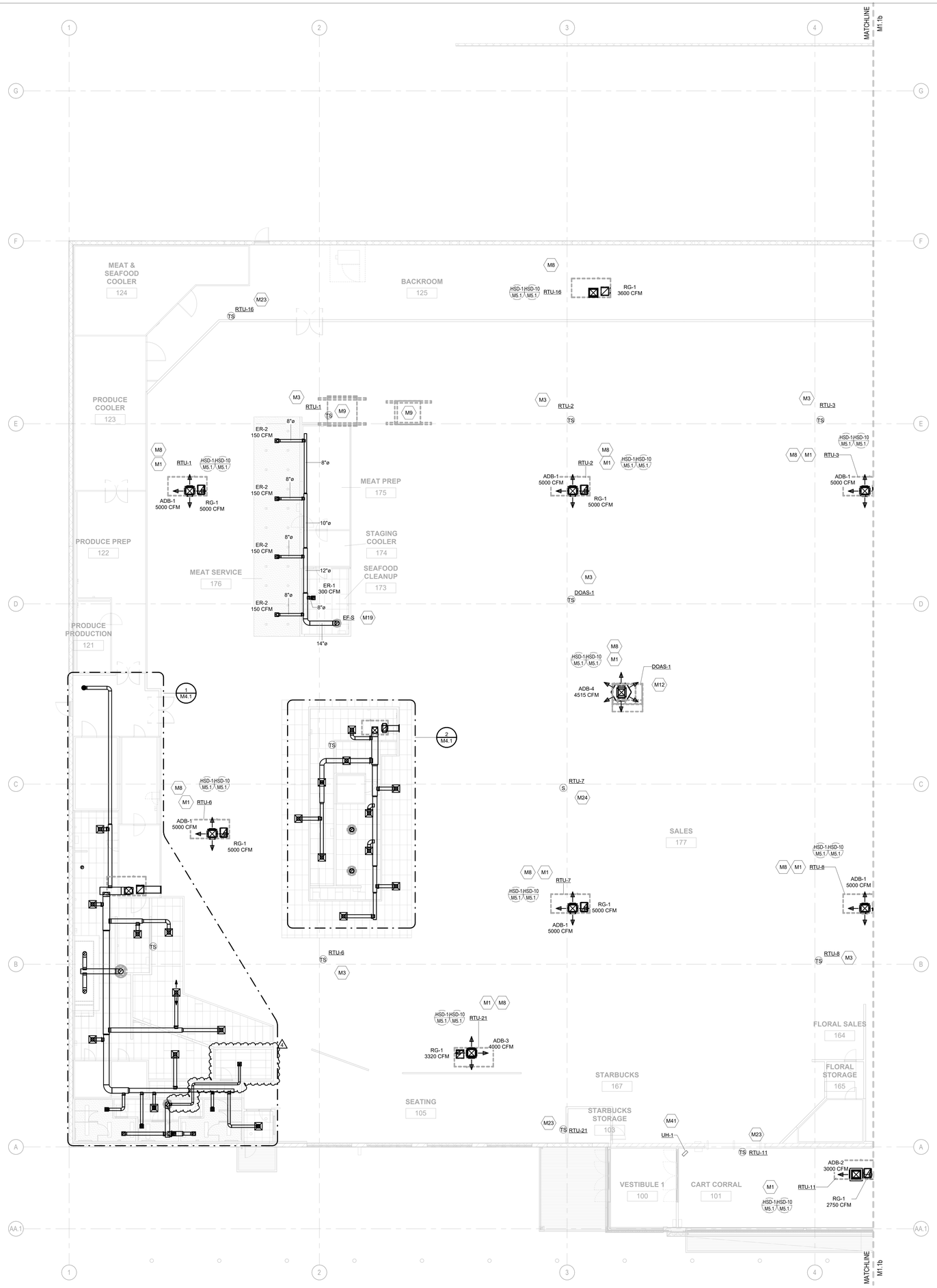

1 M1.1a HVAC PLAN - WEST
SCALE: 3/32" = 1'-0"

NORTH

KEYNOTE LEGEND

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M12	REFER TO DRAWINGS M5.8 AND M5.9 FOR DOAS UNIT INFORMATION.
M19	EXTEND FULL SIZE DUCTWORK (CURB SIZE) UP THROUGH ROOF AND SEAL OPENING AIRTIGHT. REFER TO DRAWINGS M5.3 AND M5.4 FOR EXHAUST FAN INFORMATION.
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MERIDIAN + WOODMEN
FALCON, CO

COMMISSION NO. 519000
ISSUE DATE 10/04/2021

SHEET TITLE
HVAC PLAN - WEST

SHEET NO.
M1.1a

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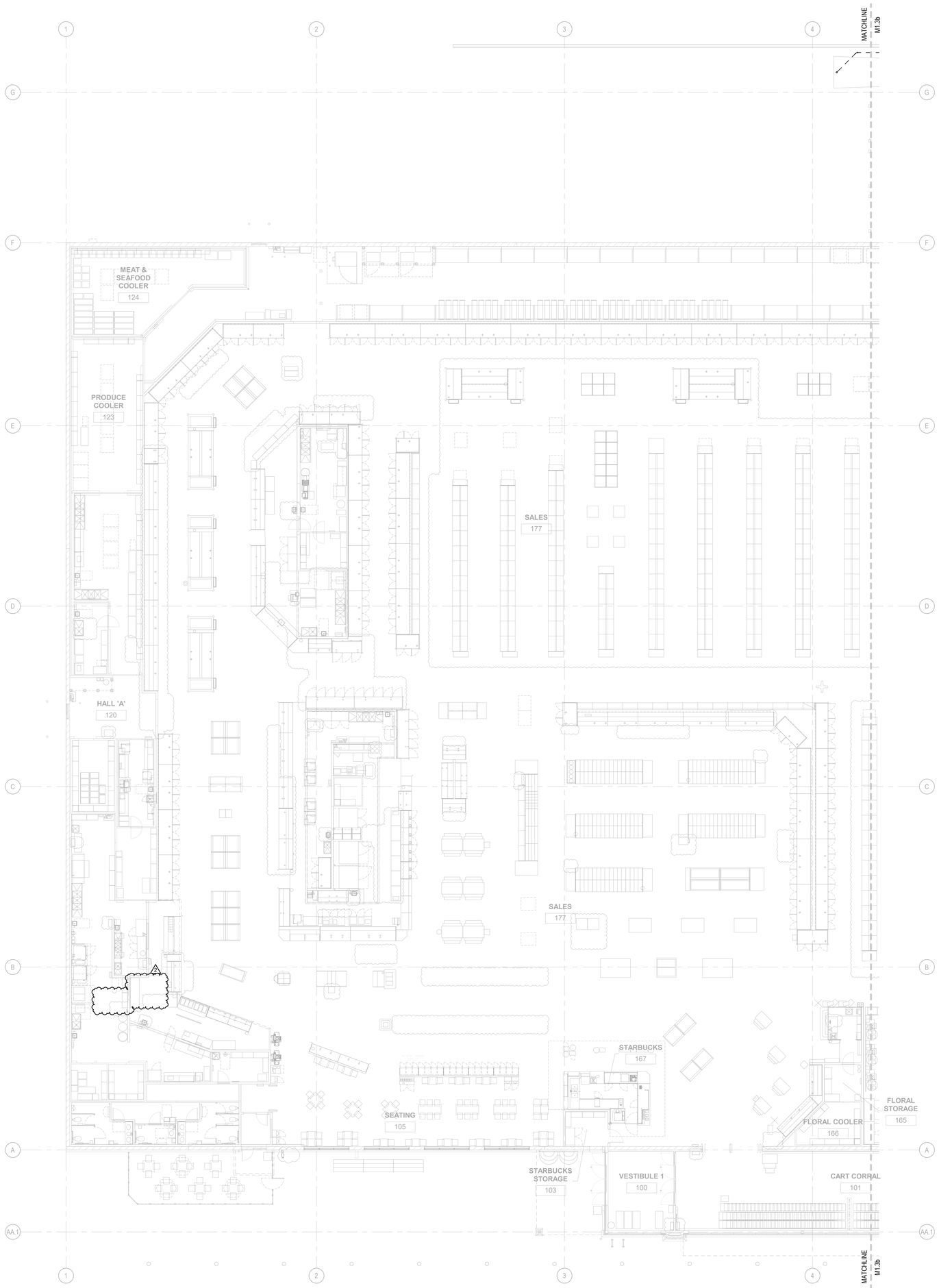

1 M1.3a GAS PIPING PLAN - WEST
SCALE: 3/32" = 1'-0"

NORTH

KEYNOTE LEGEND

NUMBER	KEYNOTE

EXECUTED BY: PRF
REVIEWED BY: RAT

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MERIDIAN + WOODMEN
FALCON, CO

COMMISSION NO. 519000
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SHEET TITLE
GAS PIPING PLAN - WEST

SHEET NO.
M1.3a

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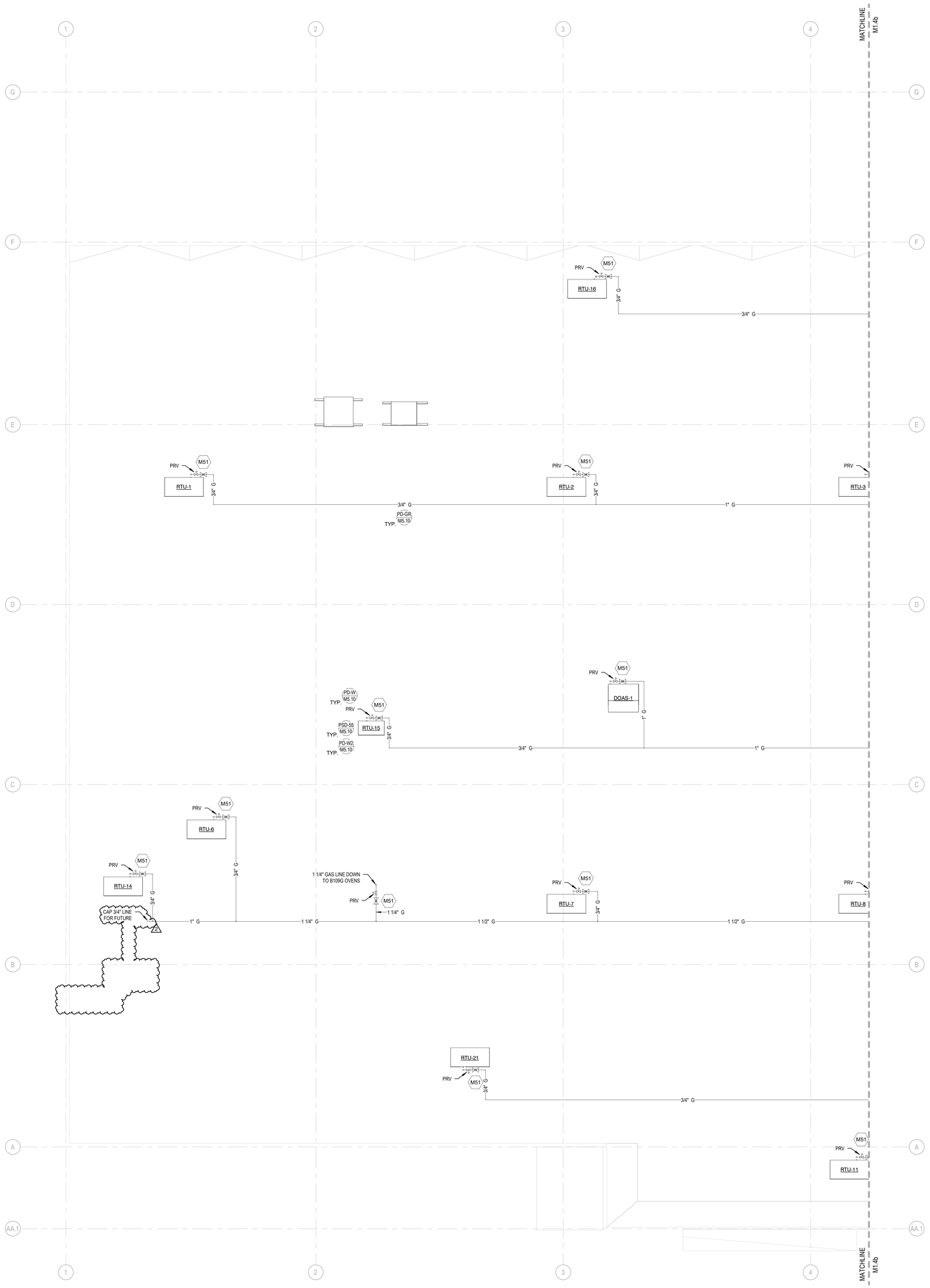

1 GAS PIPING ROOF PLAN - WEST
M1.4a SCALE: 3/32" = 1'-0"

KEYNOTE LEGEND

NUMBER	KEYNOTE
M51	PROVIDE GAS COCK, UNION, DIRT LEG, PRV (WHERE REQUIRED) AND FLEXIBLE CONNECTOR AT NEW GAS-FIRED EQUIPMENT. REFER TO SHEET M6.1 FOR PRV SCHEDULE.

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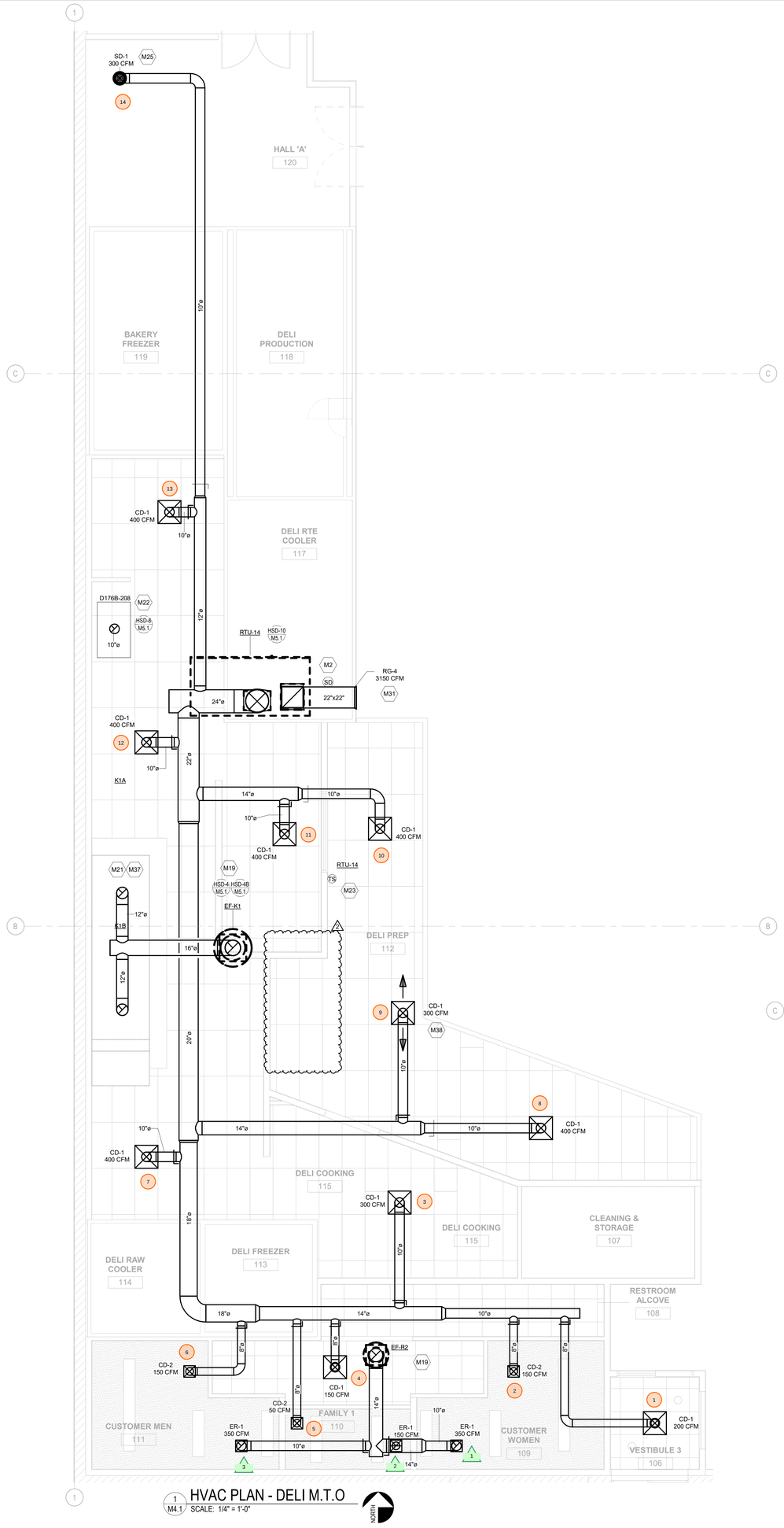
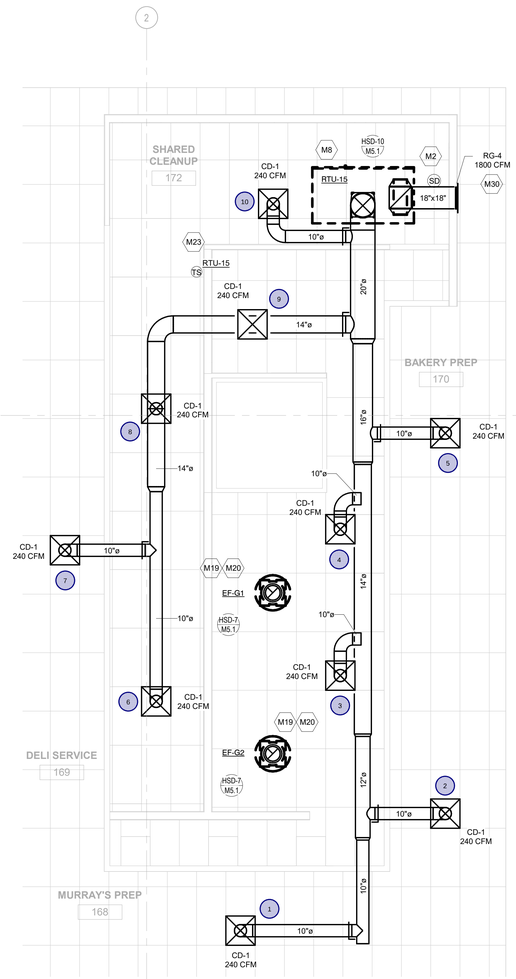


1 M4.1 HVAC PLAN - DELI M.T.O
SCALE: 1/4" = 1'-0"



2 M4.1 HVAC PLAN - DELI/BAKERY
SCALE: 1/4" = 1'-0"

WHERE SMOKE DETECTORS ARE INSTALLED MORE THAN 10 FEET ABOVE THE FINISHED FLOOR OR IN ARRANGEMENT WHERE THE DETECTOR'S ALARM OR SUPERVISORY INDICATOR IS NOT VISIBLE TO RESPONDING PERSONNEL, THE DETECTOR SHALL BE PROVIDED WITH REMOTE ALARM OR SUPERVISORY INDICATOR IN A LOCATION ACCEPTABLE TO AUTHORITY HAVING JURISDICTION. PROVIDE AN LED INDICATOR LIGHT ON CEILING BENEATH EACH HVAC UNIT THAT IS EQUIPPED WITH A SMOKE DETECTOR WHEN ACTIVATION LIGHT IS NOT VISIBLE FROM BELOW.

KEYNOTE LEGEND

NUMBER	KEYNOTE
M2	INSTALL SMOKE DETECTOR IN THE RETURN DUCTWORK DOWNSTREAM OF FILTERS AND UPSTREAM OF ANY BRANCH CONNECTIONS. INSTALL SAMPLING TUBES(S) AND DETECTOR HOUSING IN STRICT ACCORDANCE WITH MANUFACTURER'S INSTALLATION INSTRUCTIONS. DETECTOR,FAN SHUTDOWN WIRING, AND CONTROLS BY OTHERS.
M8	REFER TO ARCHITECTURAL ROOF PLAN FOR HVAC ROOFTOP DIMENSIONAL INFORMATION. REFER TO STRUCTURAL DRAWINGS FOR JOIST AND BEAM LOCATIONS AND DIMENSIONAL INFORMATION.
M19	EXTEND FULL SIZE DUCTWORK (CURB SIZE) UP THROUGH ROOF AND SEAL OPENING AIRTIGHT. REFER TO DRAWINGS M5.3 AND M5.4 FOR EXHAUST FAN INFORMATION.
M20	VENT DUCT UP FROM OVEN RACK VENT COLLAR THROUGH ROOF. DUCTS ARE ONLY TO BE OFFSET ABOVE CEILING TILE. DUCTS ARE TO BE STRAIGHT AND VERTICAL WHEN VISIBLE TO SALES FLOOR.
M21	GREASE DUCT FROM EXHAUST HOOD TO OPENING THROUGH ROOF PER NFPA 96. H.C. TO INSTALL PROVIDED HOME KIT. DUCTWRAP TO BE INSTALLED THE ENTIRE LENGTH OF GREASE DUCT FROM CEILING PENETRATION TO FAN.
M22	INSTALL UW-50 VENT KIT INCLUDED WITH UNIT AND SUPPLIED BY HOBART. H.C. TO CONNECT STAINLESS STEEL DUCT TO VENT KIT OPENING THROUGH ROOF.
M23	TEMPERATURE SENSOR FOR ROOF MOUNTED RTU FURNISHED BY CONTROL PROVIDER. ROUTE CONTROL WIRING THROUGH RTU AND BACK TO BUILDING CONTROL PANEL. MOUNT SENSOR A MINIMUM OF 4'-0" AFF ON WALL. COORDINATE LOCATION WITH KROGER EQUIPMENT AND FURNISHINGS. PROVIDE LOCKABLE PROTECTIVE COVER OVER DEVICE.
M25	DIFFUSER/GRILLE/REGISTER TO BE INSTALLED 10'-2" AFF.
M30	INSTALL TOP OF RETURN GRILLE 15'0" AFF. COORDINATE LOCATION WITH ARCHITECT AND WITH DECOR. LOCATION OF DECOR TAKES PRECEDENCE OVER LOCATION OF RETURN GRILLE.
M31	INSTALL TOP OF RETURN GRILLE 17'0" AFF. COORDINATE LOCATION WITH ARCHITECT AND WITH DECOR. LOCATION OF DECOR TAKES PRECEDENCE OVER LOCATION OF RETURN GRILLE.
M37	REMOTE MANUAL HOOD ANSUL PULL STATION TO BE LOCATED IN THE MAIN PATH OF EGRESS, A MINIMUM OF 10 FEET AND A MAXIMUM OF 20 FEET FROM THE HOOD. MOUNTING HEIGHT SHOULD BE 42"-48" AFF. COORDINATE FINAL LOCATION WITH OWNER AND ARCHITECT. PROVIDE NAMEPLATE AT STATION WITH HOOD NUMBER AND LOCATION. REFER TO DETAIL SHEETS M5.5 AND M5.6 FOR ADDITIONAL INFORMATION.
M38	DIFFUSER AROUND HOOD TO BE A 2-WAY DIFFUSER FACING AWAY FROM THE HOOD TO PREVENT INTERFERENCE WITH THE HOOD'S CONTAIN AND CAPTURE.

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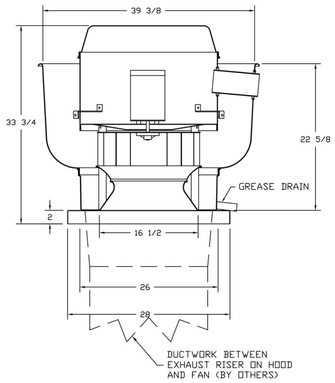
FOR REFERENCE ONLY.

FAN #6 DU180HFA - EXHAUST FAN (CF-K1: PNET42845)



FEATURES:

- DIRECT DRIVE CONSTRUCTION (NO BELTS/PULLEYS)
- ROOF MOUNTED FANS
- RESTAURANT MODEL
- UL705 AND UL762 AND ULC-S645
- VARIABLE SPEED CONTROL
- INTERNAL WIRING
- WEATHERPROOF DISCONNECT
- THERMAL OVERLOAD PROTECTION (SINGLE PHASE)
- HIGH HEAT OPERATION 300°F (149°C)
- GREASE CLASSIFICATION TESTING

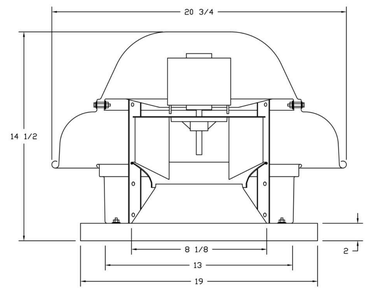
NORMAL TEMPERATURE TEST
EXHAUST FAN MUST OPERATE CONTINUOUSLY WHILE EXHAUSTING AIR AT 300°F (149°C) UNTIL ALL FAN PARTS HAVE REACHED THERMAL EQUILIBRIUM, AND WITHOUT ANY DETERIORATING EFFECTS TO THE FAN WHICH WOULD CAUSE UNSAFE OPERATION.

ABNORMAL FLARE-UP TEST
EXHAUST FAN MUST OPERATE CONTINUOUSLY WHILE EXHAUSTING BURNING GREASE VAPORS AT 600°F (316°C) FOR A PERIOD OF 15 MINUTES WITHOUT THE FAN BECOMING DAMAGED TO ANY EXTENT THAT COULD CAUSE AN UNSAFE CONDITION.

OPTIONS

GREASE BOX.
HINGE KIT - SHIPS LOOSE FOR CURB SUPPLIED BY OTHERS.

FAN #8 DR10HFA - EXHAUST FAN (CF-R1: K-000235B)



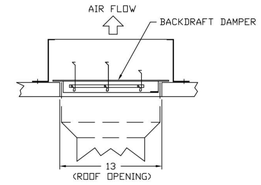
FEATURES:

- DIRECT DRIVE CONSTRUCTION (NO BELTS/PULLEYS)
- ROOF MOUNTED FANS
- UL705
- SAFETY DISCONNECT
- STANDARD BIRD SCREEN
- SPEED CONTROL

OPTIONS

1 12-BDD DAMPER.
HINGE KIT - SHIPS LOOSE FOR CURB SUPPLIED BY OTHERS.

BACKDRAFT DAMPER INSTALLATION

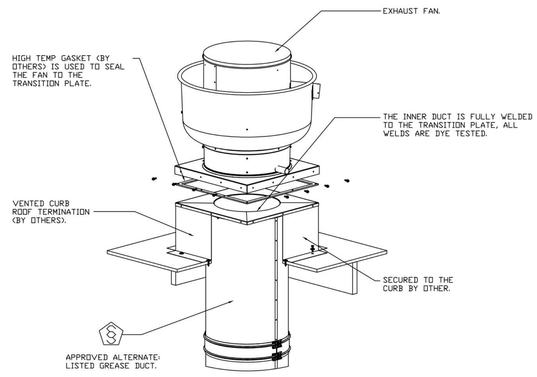


REMOVED FROM PROJECT SCOPE

CAPTIVE AIRE UL LISTED DUCT IS APPROVED AS AN ALTERNATE - SPEC BELOW

GREASE DUCT & CHIMNEY SPECIFICATIONS:
PROVIDE GREASE DUCT EQUAL TO CAPTIVEAIRE SYSTEMS MODEL "DW" ROUND 20 GAUGE 430 STAINLESS STEEL DUCTWORK. MODEL "DW" IS LISTED TO UL-1978 AND IS INSTALLED USING "V" CLAMP LOCKING CONNECTIONS SEALED WITH 3M FIRE BARRIER 2000 PLUS. MODEL "DW" DOES NOT REQUIRE WELDING PROVIDING IT HAS BEEN INSTALLED PER THE MANUFACTURES INSTALLATION GUIDE.
PROVIDE RATED ACCESS DOORS AT EVERY CHANGE IN DIRECTION AND EVERY 12' ON CENTER.
PER MANUFACTURES LISTING MODEL "DW" HORIZONTAL RUNS LESS THAN 75 FT. CAN BE SLOPED 1/16" PER 12", HORIZONTAL RUNS MORE THAN 75 FT. CAN BE SLOPED 3/16" PER 12". DUCT SHOULD BE SLOPED AS MUCH AS POSSIBLE TO REDUCE THE CHANCE OF GREASE ACCUMULATION IN HORIZONTAL RUNS.

IF THE DUCT OR CHIMNEY IS WITHIN 18 INCHES OF COMBUSTIBLE MATERIAL, PROVIDE UL-2221 OR UL-103 HT LISTED DOUBLE WALL GREASE DUCT OR DOUBLE WALL CHIMNEY EQUAL TO CAPTIVEAIRE SYSTEMS MODEL "DW- 2R, 2R TYPE HT, 3R, OR 3Z" ROUND 20 GAUGE 430 STAINLESS INNER DUCT INSULATED WITH A 24 GAUGE 430 STAINLESS OUTER SHELL.



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KING SOOPERS #147 - FALCON (PEYTON), CO
PEYTON, CO, 80831

DATE: 11/6/2019
DWG.#: 40506672
DRAWN BY: JAC
SCALE: 3/4" = 1'-0"
MASTER DRAWING
SHEET NO. 3

EXECUTED BY: MLM
REVIEWED BY: DMH

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10/04/2021	ISSUED FOR BID

#	DATE	REVISION
1	10/25/2021	ADDENDUM NO. 2
2	05/04/2023	BULLETIN NO. 10

PROJECT TITLE
KING SOOPERS
KS147

MERIDIAN + WOODMEN
FALCON, CO

COMMISSION NO. 519000
ISSUE DATE 10/04/2021
SHEET TITLE
HVAC DETAILS

SHEET NO.
M5.4

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KING SOOPERS #147 - FALCON (PEYTON), CO DDAS
PEYTON, CO, 80831

DATE: 11/15/2019

DWG.#: 4069410

DRAWN BY:

SCALE: 3/4" = 1'-0"

MASTER DRAWING

SHEET NO. 1

EXECUTED BY: TDS
REVIEWED BY: JCL

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FALCON, CO

COMMISSION NO. 519000
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SHEET TITLE
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ROOFTOP UNIT SCHEDULE

Mark	Manufacturer	Model	Nominal Tons	Supply CFM	Motor HP	Static Pressure	Cooling MBH	Cooling Sensible	Cooling EAT	Cooling LAT	Heating EAT	Heating LAT	Heating MBH In	Heating MBH Out	Min Gas Pressure (IN W.C.)	MCA	MOCP	Voltage	Phase	Number of Poles	Accessories
RTU-1	LENNOX	LGM150U4E	12.5	5000 CFM	3.75	.15	144	138	73	59	73	101	240	192	7	29 A	35 A	480 V	3	3	1,5,6,7,8,12
RTU-2	LENNOX	LGM150U4E	12.5	5000 CFM	3.75	.15	144	138	73	59	73	101	240	192	7	29 A	35 A	480 V	3	3	1,5,6,7,8,12
RTU-3	LENNOX	LGM150U4E	12.5	5000 CFM	3.75	.15	144	138	73	59	73	101	240	192	7	29 A	35 A	480 V	3	3	1,5,6,7,8,12
RTU-4	LENNOX	LGM150U4E	12.5	5000 CFM	3.75	.15	144	138	73	59	73	101	240	192	7	29 A	35 A	480 V	3	3	1,5,6,7,8,12
RTU-5	LENNOX	LGM150U4E	12.5	5000 CFM	3.75	.15	144	138	73	59	73	101	240	192	7	29 A	35 A	480 V	3	3	1,5,6,7,8,12
RTU-6	LENNOX	LGM150U4E	12.5	5000 CFM	3.75	.15	144	138	73	59	73	101	240	192	7	29 A	35 A	480 V	3	3	1,5,6,7,8,12
RTU-7	LENNOX	LGM150U4E	12.5	5000 CFM	3.75	.15	144	138	73	59	73	101	240	192	7	29 A	35 A	480 V	3	3	1,5,6,7,8,12
RTU-8	LENNOX	LGM150U4E	12.5	5000 CFM	3.75	.15	144	138	73	59	73	101	240	192	7	29 A	35 A	480 V	3	3	1,5,6,7,8,12
RTU-9	LENNOX	LGM150U4E	12.5	5000 CFM	3.75	.15	144	138	73	59	73	101	240	192	7	29 A	35 A	480 V	3	3	1,5,6,7,8,12
RTU-10	LENNOX	LGM150U4E	12.5	5000 CFM	3.75	.15	144	138	73	59	73	101	240	192	7	29 A	35 A	480 V	3	3	1,5,6,7,8,12
RTU-11	LENNOX	LGM092U4E	7.5	3000 CFM	3.75	.15	91	86	73	63	71	105	130	104	7	19 A	20 A	480 V	3	3	1,3,5,6,7,8,9,10,12,14
RTU-13	LENNOX	LGM074U4E	6	2400 CFM	1	1.0	71	69	73	62	52	100	108	87	7	15 A	20 A	480 V	3	3	1,3,5,6,7,8,9,10,12,14,15
RTU-14	LENNOX	LGM120U4E	10	4000 CFM	3.75	1.5	122	114	73	60	69	106	180	144	7	24 A	30 A	480 V	3	3	1,3,5,6,7,8,9,10,12,14
RTU-15	LENNOX	LGM074U4E	6	2400 CFM	1	1.0	71	69	73	62	52	100	108	87	7	15 A	20 A	480 V	3	3	1,3,5,6,7,8,9,10,12,14
RTU-16	LENNOX	LGM120U4E	10	4000 CFM	3.75	.15	122	114	73	60	69	106	180	144	7	24 A	30 A	480 V	3	3	1,3,5,6,7,8,9,12,14
RTU-17	LENNOX	LGM120U4E	10	4000 CFM	3.75	.15	122	114	73	60	69	106	180	144	7	24 A	30 A	480 V	3	3	1,3,5,6,7,8,9,12,14
RTU-18	LENNOX	LGM092U4E	7.5	3000 CFM	3.75	1.5	91	86	73	63	71	105	130	104	7	19 A	20 A	480 V	3	3	1,3,5,6,7,8,9,10,12,14
RTU-19	LENNOX	LGM074U4E	6	2400 CFM	1	0.5	71	69	73	62	52	100	108	87	7	15 A	20 A	480 V	3	3	1,3,5,6,7,8,9,10,12,14
RTU-20	LENNOX	LGM150U4E	12.5	5000 CFM	3.75	.15	144	138	73	59	73	101	240	192	7	29 A	35 A	480 V	3	3	1,3,5,6,7,8,9,12,14
RTU-21	LENNOX	LGM120U4E	10	4000 CFM	3.75	.15	122	114	73	60	69	106	180	144	7	24 A	30 A	480 V	3	3	1,3,5,6,7,8,9,12,14

HVAC RTU ACCESSORIES

1. ROOF CURB-ADJUSTABLE
2. 2 POSITION AUTOMATIC OUTSIDE AIR DAMPER
3. ECONOMIZER
4. HEAT RECLAIM COILS
5. FACTORY CONTROLS PER KROGER STANDARDS
6. FACTORY GFCI RECEPTACLE
7. FACTORY DISCONNECT WITH FUSING (MANUFACTURER TO CONFIRM LOCAL AHJ REQUIREMENT)
8. CONDENSATION OVERFLOW SWITCH
9. CONSTANT VOLUME WITH VFD FOR BALANCING
10. RETURN AIR SMOKE DETECTOR BY OTHERS
11. PROVIDE CURB ADAPTOR - FIELD VERIFY EXACT SIZE
12. NO SUBSTITUTIONS
13. SEACOAST PROTECTION
14. VARIABLE POSITION OUTSIDE AIR DAMPER - CO2 CONTROL
15. MODULATING HOT GAS REHEAT

HEATER SCHEDULE

NAME	MANUFACTURER	MODEL NO.	kW	VOLTAGE	PHASE	MCA	MOCP	ACCESSORIES
UH-1	QMARK	MUH07-8	7.5	208 V	1	24 A	30 A	1,2
UH-2	QMARK	MUH07-8	7.5	208 V	1	24 A	30 A	1,2

HEATER ACCESSORIES

1. UHMT1 - SINGLE POLE INTERNAL THERMOSTAT
2. HANGING KIT

AIR CONDITIONING UNIT SCHEDULE

Mark	Manufacturer	Model	Nominal Tons	Supply CFM	Voltage	Phase	MCA	MOCP	Cooling MBH	Accessories	Weight
CU-1	TRANE	PUY-A36NKA7			208 V	1	25 A	35 A	36	1,6	126
FCU-1	TRANE	PKA-A36KA7		1000 CFM	208 V	1	2 A	15 A	0		40

HVAC FCU ACCESSORIES

1. K-NUMBER KIT INCLUDES EVAP, CONDENSER,CONDENSATE PUMP, 50' LINESET
2. 5/8" CONDENSATE LINE CONNECTION
3. 9/16 CONDENSATE LINE CONNECTION
4. ROUTE REFRIGERANT LINES PER PLANS
5. PROVIDE LOW AMBIENT KIT WB-PA2 (2-3 TON) K-0013856
6. NO SUBSTITUTIONS ALLOWED

3

DUCTWORK SCHEDULE

SERVICE	LOCATION	SERVES	MATERIAL	PRESSURE CLASS	INSULATION 1	2	3	4	5	6	COMMENTS
SUPPLY	INSIDE	ROOF TOP UNITS	GALVANIZED	2" WC	X					X	
RETURN	INSIDE	ROOF TOP UNITS	GALVANIZED	2" WC	X					X	
EXHAUST	INSIDE	EXHAUST	GALVANIZED	2" WC					X		
HOOD	INSIDE	EXH HOOD SYSTEMS	16 GA BLACK IRON	WELDED			X				
OVEN	INSIDE	BAKERY OVENS	B-VENT	N/A							
TRANSFER	INSIDE	INTERIOR SPACES	GALVANIZED	2" WC	X					X	
FLUE	INSIDE	UNIT HEATERS	PVC	N/A							
COMBUSTION AIR	INSIDE	UNIT HEATERS	GALVANIZED	2" WC					X		
VENT	INSIDE	UTENSIL WASHER	STAINLESS STEEL	N/A							
VENT	INSIDE	WATER HEATER (GAS)	B-VENT	N/A							

HVAC DUCTWORK INSULATION

1. 1" INTERNAL LINER
2. 1.5" EXTERNALLY WRAPPED
3. FIRE WRAP
4. 1" INTERNAL LINER FIRST 10 FEET FROM CONNECTION TO UNIT UNLESS OTHERWISE NOTED
5. 1.5" EXTERNALLY WRAPPED FIRST 5 FEET FROM ROOF/EXTERIOR PENETRATION
6. ALL EXPOSED DUCTWORK TO BE PAINTGRIP - READY FOR PAINT BY OTHERS - WITH 1" INSULATION

AIR TERMINAL SCHEDULE

Mark	Manufacturer	Description	Model	Comments
ADB-1	AES INDUSTRIES	DROP BOX 4-WAY	ADB-1-12-4	5
ADB-2	AES INDUSTRIES	DROP BOX 2-WAY	ADB-1-10-2	5
ADB-3	AES INDUSTRIES	DROP BOX 4-WAY	ADB-1-10-4	5
ADB-4	AES INDUSTRIES	DROP BOX 6-WAY	ADB-6-20	5
CD-1	TITUS	24" x 24" CEILING DIFFUSER	TDC	5
CD-2	TITUS	12" x 12" CEILING DIFFUSER	TDC	5
ER-1	TITUS	12" x 12" EXHAUST GRILLE	350FL	5
ER-2	TITUS	12" x 12" EXHAUST GRILLE	350FL	5,6
ER-3	TITUS	18" ROUND SUSPENDED EXHAUST GRILLE	R-OMNI	5
RG-1	TITUS	30" x 30" SURFCE MOUNTED RETURN GRILLE	23RL	5
RG-2	TITUS	24" x 24" RETURN GRILLE	23RL	5
RG-3	TITUS	12" x 24" RETURN GRILLE	23RL	5
RG-4	TITUS	30" x 30" SURFCE MOUNTED RETURN GRILLE	23RL	5
RG-5	TITUS	12" x 24" TRANSFER GRILLE	23RL	2
SD-1	TITUS	12" ROUND CEILING DIFFUSER	TDC	5
SR-1	TITUS	18"x12" CURVED SIDEWALL DIFFUSER	S300FS	5

HVAC AIR TERMINAL OPTIONS/ACCESSORIES

1. LAY-IN MOUNTING
2. SURFACE MOUNTING
3. SUSPENDED MOUNTING
4. NO SUBSTITUTIONS ALLOWED
5. PROVIDE WITH BALANCE DAMPER IF NO BALANCE DAMPER IS IN BRANCH DUCTWORK
6. PAINT TO MATCH ARCH AND DECOR

KS147
AIR FLOW SUMMARY - BUILDING PRESSURE CALCULATION

EQUIPMENT	TYPE	DESIGN	HOODS ON CO2 SATISIFIED	HOODS OFF OA MINIMUM	EXHAUST AIR
RTU-1	SALES	0	0	0	0
RTU-2	SALES	0	0	0	0
RTU-3	SALES	0	0	0	0
RTU-4	SALES	0	0	0	0
RTU-5	SALES	0	0	0	0
RTU-6	SALES	0	0	0	0
RTU-7	SALES	0	0	0	0
RTU-8	SALES	0	0	0	0
RTU-9	SALES	0	0	0	0
RTU-10	SALES	0	0	0	0
RTU-11	VESTIBULE	240	240	240	0
RTU-13	PHARMACY	315	315	315	0
RTU-14	DELI	840	840	840	0
RTU-15	BAKERY	600	600	600	0
RTU-16	BACKROOM	280	280	280	0
RTU-17	BACKROOM	280	280	280	0
RTU-18	BACK OFFICES	505	505	505	0
RTU-19	PICKUP	315	315	315	0
RTU-20	DOCK	750	750	750	0
RTU-21	SEATING	680	680	680	0
DOAS-1	SALES OA	4,515	2,550	2,258	0
DOAS-2	SALES OA	4,515	2,550	2,258	0
EF-CC	ROOF- CLEANING CENTER & SPRAY DOWN AREA	0	0	0	-600
EF-ER	ROOF- BACK ELECTRICAL RM	0	0	0	-750
EF-G1	ROOF- B109G OVEN	0	0	0	-900
EF-G2	ROOF- B108G OVEN	0	0	0	-900
EF-K1	ROOF- HOOD GE54G-16	0	0	0	-2800
EF-R1	ROOF- RR FAMILY	0	0	0	-150
EF-R2	ROOF- RR CUSTOMER	0	0	0	-850
EF-R3	ROOF- RR ASSOCIATES	0	0	0	-300
EF-S	ROOF- SEAFOOD	0	0	0	-900
BUILDING TOTALS		13,835	9,905	9,320	-8,150
				NET PRESSURE:	1,755

EF-K2 REMOVED. REFER TO BULLETIN NO. 10. 4

DOAS SUPPLIED VENTILATION SCHEDULE

SYSTEM	ROOM	SPACE CLASSIFICATION	AREA	OA PER AREA	NO. OF PEOPLE	OA PER PERSON	REQUIRED OA	SYSTEM PERCENTAGE	SUPPLIED OA (FROM DOAS)
DOAS-1	STARBUCKS STORAGE	Storage	104 SF	0.12 CFM/SF	0	5.0 CFM	12 CFM	100%	12 CFM
DOAS-1	FLORAL SALES	Supermarket Sales Area - Retail	149 SF	0.06 CFM/SF	1	7.5 CFM	16 CFM	100%	16 CFM
DOAS-1	FLORAL STORAGE	Storage	96 SF	0.12 CFM/SF	0	5.0 CFM	12 CFM	100%	12 CFM
DOAS-1	STARBUCKS	Supermarket Sales Area - Retail	227 SF	0.06 CFM/SF	2	7.5 CFM	29 CFM	100%	31 CFM
DOAS-1	SALES	Supermarket Sales Area - Retail	42214 SF	0.06 CFM/SF	253	7.5 CFM	4430 CFM	100%	4444 CFM
			42791 SF		256		4499 CFM		4515 CFM
DOAS-2	FITTING ROOMS	Supermarket Sales Area - Retail	112 SF	0.06 CFM/SF	1	7.5 CFM	14 CFM	100%	15 CFM
DOAS-2	FRONT END CLEANING	Storage	89 SF	0.12 CFM/SF	0	5.0 CFM	11 CFM	11%	
DOAS-2	ACCT.	Office - Enclosed	103 SF	0.06 CFM/SF	1	5.0 CFM	11 CFM	11%	
DOAS-2	HALL 'D'	Corridor/Transition	75 SF	0.06 CFM/SF	0	0.0 CFM	4 CFM	100%	5 CFM
DOAS-2	CUSTOMER SERVICE	Supermarket Sales Area - Retail	210 SF	0.06 CFM/SF	2	7.5 CFM	28 CFM	100%	28 CFM
DOAS-2	RX WAITING	Lobby	244 SF	0.06 CFM/SF	3	5.0 CFM	30 CFM	100%	35 CFM
DOAS-2	SALES	Supermarket Sales Area - Retail	42238 SF	0.06 CFM/SF	253	7.5 CFM	4432 CFM	100%	4432 CFM
			43070 SF		260		4530 CFM		4515 CFM

RTU SUPPLIED VENTILATION SCHEDULE

SYSTEM	ROOM	SPACE CLASSIFICATION	AREA	OA PER AREA	NO. OF PEOPLE	OA PER PERSON	SUPPLY AIRFLOW	RETURN AIRFLOW	EXHAUST AIRFLOW	REQUIRED OA	SYSTEM PERCENTAGE	SUPPLIED OA
RTU-11	CART CORRAL	Lobby	2075 SF	0.06 CFM/SF	21	5.0 CFM	3000 CFM	2750 CFM	0 CFM	230 CFM	8%	240 CFM
			2075 SF		21		3000 CFM	2750 CFM	0 CFM	230 CFM		240 CFM
RTU-13	ASSET PROTECTION	Office - Enclosed	141 SF	0.06 CFM/SF	1	5.0 CFM	100 CFM	100 CFM	0 CFM	13 CFM	13%	13 CFM
RTU-13	COUNSEL	Office - Enclosed	120 SF	0.06 CFM/SF	1	5.0 CFM	200 CFM	200 CFM	0 CFM	12 CFM	13%	26 CFM
RTU-13	FAMILY	Restrooms	99 SF	0.00 CFM/SF	0	0.0 CFM	100 CFM	0 CFM	150 CFM	0 CFM	13%	13 CFM
RTU-13	PHARMACY	Pharmacy - Hospital/Healthcare	1345 SF	0.12 CFM/SF	14	5.0 CFM	1800 CFM	1800 CFM	0 CFM	231 CFM	13%	234 CFM
RTU-13	RX STORAGE	Storage	120 SF	0.12 CFM/SF	0	5.0 CFM	200 CFM	200 CFM	0 CFM	14 CFM	13%	26 CFM
			1825 SF		16		2400 CFM	2300 CFM	150 CFM	271 CFM		312 CFM
RTU-14	CUSTOMER MEN	Restrooms	150 SF	0.00 CFM/SF	0	0.0 CFM	150 CFM	0 CFM	350 CFM	0 CFM	21%	32 CFM
RTU-14	CUSTOMER WOMEN	Restrooms	150 SF	0.00 CFM/SF	0	0.0 CFM	150 CFM	0 CFM	350 CFM	0 CFM	21%	32 CFM
RTU-14	DELI COOKING	Food Preparation	1059 SF	0.12 CFM/SF	22	7.5 CFM	1500 CFM	1500 CFM	0 CFM	292 CFM	21%	315 CFM
RTU-14	DELI PREP	Food Preparation	594 SF	0.12 CFM/SF	12	7.5 CFM	1100 CFM	1100 CFM	0 CFM	161 CFM	21%	231 CFM
RTU-14	FAMILY 1	Restrooms	56 SF	0.00 CFM/SF	0	0.0 CFM	50 CFM	0 CFM	150 CFM	0 CFM	21%	11 CFM
RTU-14	HALL 'A'	Corridor/Transition	360 SF	0.06 CFM/SF	0	0.0 CFM	300 CFM	0 CFM	0 CFM	22 CFM	21%	63 CFM
RTU-14	RESTROOM ALCOVE	Corridor/Transition	232 SF	0.06 CFM/SF	0	0.0 CFM	150 CFM	150 CFM	0 CFM	14 CFM	21%	32 CFM
RTU-14	SUSHI PREP	Food Preparation	171 SF	0.12 CFM/SF	4	7.5 CFM	400 CFM	400 CFM	0 CFM	51 CFM	21%	84 CFM
RTU-14	VESTIBULE 3	Lobby	65 SF	0.06 CFM/SF	1	5.0 CFM	200 CFM	0 CFM	0 CFM	9 CFM	21%	42 CFM
			2839 SF		39		4000 CFM	3150 CFM	850 CFM	548 CFM		840 CFM
RTU-15	BAKERY PREP	Food Preparation	581 SF	0.12 CFM/SF	12	7.5 CFM	1200 CFM	600 CFM	0 CFM	160 CFM	25%	300 CFM
RTU-15	DELI SERVICE	Food Preparation	618 SF	0.12 CFM/SF	13	7.5 CFM	720 CFM	720 CFM	0 CFM	172 CFM	25%	180 CFM
RTU-15	MURRAY'S PREP	Food Preperation	345 SF	0.12 CFM/SF	2	7.5 CFM	240 CFM	240 CFM	0 CFM	56 CFM	25%	60 CFM
RTU-15	SHARED CLEANUP	Food Preparation	185 SF	0.12 CFM/SF	4	7.5 CFM	240 CFM	240 CFM	0 CFM	52 CFM	25%	60 CFM
			1728 SF		31		2400 CFM	1800 CFM	0 CFM	440 CFM		600 CFM
RTU-16	BACKROOM	Warehouse	3345 SF	0.06 CFM/SF	7	10.0 CFM	4000 CFM	3720 CFM	0 CFM	271 CFM	7%	280 CFM
			3345 SF		7		4000 CFM	3720 CFM	0 CFM	271 CFM		280 CFM
RTU-17	BACKROOM	Warehouse	3344 SF	0.06 CFM/SF	7	10.0 CFM	4000 CFM	3400 CFM	600 CFM	271 CFM	7%	280 CFM
			3344 SF		7		4000 CFM	3400 CFM	600 CFM	271 CFM		280 CFM
RTU-18	ASSOCIATE BREAK ROOM	Office - Enclosed	451 SF	0.06 CFM/SF	3	5.0 CFM	750 CFM	750 CFM	0 CFM	42 CFM	19%	143 CFM
RTU-18	ASSOCIATE MEN	Restrooms	190 SF	0.00 CFM/SF	0	0.0 CFM	100 CFM	0 CFM	300 CFM	0 CFM	19%	19 CFM
RTU-18	ASSOCIATE WOMEN	Restrooms	188 SF	0.00 CFM/SF	0	0.0 CFM	100 CFM	0 CFM	300 CFM	0 CFM	19%	19 CFM
RTU-18	EMPLOYEE SECURE STORAGE	Storage	332 SF	0.12 CFM/SF	0	5.0 CFM	200 CFM	200 CFM	0 CFM	40 CFM	19%	38 CFM
RTU-18	HALL 'C'	Corridor/Transition	485 SF	0.06 CFM/SF	0	0.0 CFM	350 CFM	350 CFM	0 CFM	29 CFM	19%	67 CFM
RTU-18	HEALTH & WELLNESS	Office - Enclosed	65 SF	0.06 CFM/SF	1	5.0 CFM	100 CFM	100 CFM	0 CFM	9 CFM	19%	19 CFM
RTU-18	HR OFFICE	Office - Enclosed	117 SF	0.06 CFM/SF	1	5.0 CFM	100 CFM	100 CFM	0 CFM	12 CFM	19%	19 CFM
RTU-18	KTV CONFERENCE ROOM	Conference Meeting/Multipurpose	410 SF	0.06 CFM/SF	21	5.0 CFM	800 CFM	800 CFM	0 CFM	130 CFM	19%	152 CFM
RTU-18	MANAGER	Office - Enclosed	117 SF	0.06 CFM/SF	1	5.0 CFM	100 CFM	100 CFM	0 CFM	12 CFM	19%	19 CFM
RTU-18	RESTROOM ALCOVE	Corridor/Transition	53 SF	0.06 CFM/SF	0	0.0 CFM	50 CFM	50 CFM	0 CFM	3 CFM	19%	10 CFM
			2408 SF		27		2650 CFM	2450 CFM	600 CFM	277 CFM		504 CFM
RTU-19	PICKUP	Shipping/Receiving Area	2052 SF	0.12 CFM/SF	5	10.0 CFM	2400 CFM	2090 CFM	0 CFM	296 CFM	13%	312 CFM
			2052 SF		5		2400 CFM	2090 CFM	0 CFM	296 CFM		312 CFM
RTU-20	ADULT BEV STORAGE	Storage	249 SF	0.12 CFM/SF	0	5.0 CFM	500 CFM	500 CFM	0 CFM	30 CFM	15%	75 CFM
RTU-20	APPAREL SECURE STORAGE	Storage	249 SF	0.12 CFM/SF	0	5.0 CFM	500 CFM	500 CFM	0 CFM	30 CFM	15%	75 CFM
RTU-20	DOCK	Shipping/Receiving Area	3880 SF	0.12 CFM/SF	8	10.0 CFM	4000 CFM	3250 CFM	750 CFM	546 CFM	15%	600 CFM
			4378 SF		8		5000 CFM	4250 CFM	750 CFM	605 CFM		750 CFM
RTU-21	SEATING	Dining Area - Lounge/Leisure Dining	1423 SF	0.18 CFM/SF	57	7.5 CFM	4000 CFM	3320 CFM	0 CFM	684 CFM	17%	680 CFM
			1423 SF		57		4000 CFM	3320 CFM	0 CFM	684 CFM		680 CFM

GAS PRESSURE REDUCING VALVE SCHEDULE

MARK	INLET SIZE	OUTLET SIZE	BASIS OF DESIGN	INLET PRESSURE	OUTLET PRESSURE	REMARKS
PRV-1	3/4"	1-1/2"	FISCHER	2 PSI	7-11" WC	B C
PRV-2	1"	1-1/2"	FISCHER	2 PSI	7-11" WC	B C
PRV-3	1"	2"	FISCHER	2 PSI	7-11" WC	B C
PRV-4	1-1/2"	2"	FISCHER	2 PSI	7-11" WC	B C
PRV-5	1-1/2"	2-1/2"	FISCHER	2 PSI	7-11" WC	B C
PRV-6	1-1/2"	3"	FISCHER	2 PSI	7-11" WC	B C

NOTES:
A.) PROVIDE FULL SIZE RELIEF DRAIN. VERIFY FLOOR DRAIN WILL HANDLE DISCHARGE.
B.) PROVIDE WITH STRAINER.
C.) ALL MATERIALS SHALL BE LEAD FREE.

GAS VALVE SCHEDULE

SIZE	SERVING	MANUFACTURER	MODEL	MAXIMUM PRESSURE	REMARKS
3/4"	SEE PLAN	CAPTIVEAIRE	24-55598	10 PSI	A
1"	SEE PLAN	CAPTIVEAIRE	25-55601	10 PSI	A
1-1/4"	SEE PLAN	CAPTIVEAIRE	26-55604	10 PSI	A
1-1/2"	SEE PLAN	CAPTIVEAIRE	27-55607	10 PSI	A
2"	SEE PLAN	CAPTIVEAIRE	27-55610	10 PSI	A
2-1/2"	SEE PLAN	CAPTIVEAIRE	27-55937	5 PSI	A
3"	SEE PLAN	CAPTIVEAIRE	27-55938	5 PSI	A

NOTES:
A.) PROVIDE FULL SIZE RELIEF DRAIN. VERIFY FLOOR DRAIN WILL HANDLE DISCHARGE.
B.) PROVIDE WITH STRAINER.
C.) ALL MATERIALS SHALL BE LEAD FREE.

GAS CALCULATION SCHEDULE

EQUIPMENT	CFH INPUT
B109G	300
B109G	300
CN1	1158
DOAS-1	225
DOAS-2	225
PL138G	199
RTU-1	240
RTU-2	240
RTU-3	240
RTU-4	240
RTU-5	240
RTU-6	240
RTU-7	240
RTU-8	240
RTU-9	240
RTU-10	240
RTU-11	130
RTU-13	108
RTU-14	180
RTU-15	108
RTU-16	180
RTU-17	180
RTU-18	130
RTU-19	108
RTU-20	240
RTU-21	180
Grand total	6351 4

CALCULATIONS BASED ON 0 PSI DELIVERY PRESSURE. SEE LINE AL FEET TO ____ FOR PIPE SIZING FROM 2 PSI DELIVERY PRESSURE.
UNITS REMOVED. REFER TO BULLETIN NO. 10 4

EXECUTED BY: MLM
REVIEWED BY: DMH

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10/04/2021	ISSUED FOR BID

#	DATE	REVISION
1	10/25/2021	ADDENDUM NO. 2
2	12/01/2021	BULLETIN NO. 1
3	08/01/2022	BULLETIN NO. 4
4	05/04/2023	BULLETIN NO. 10

PROJECT TITLE
KING SOOPERS
KS147

MERIDIAN + WOODMEN
FALCON, CO

COMMISSION NO. 519000
ISSUE DATE 10/04/2021
SHEET TITLE
HVAC SCHEDULES

SHEET NO.
M6.1

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ROOFTOP UNIT SCHEDULE

Mark	Manufacturer	Model	Nominal Tons	Supply CFM	Motor HP	Static Pressure	Cooling MBH	Cooling Sensible	Cooling EAT	Cooling LAT	Heating EAT	Heating LAT	Heating MBH In	Heating MBH Out	Min Gas Pressure (IN W.C.)	MCA	MOCP	Voltage	Phase	Number of Poles	Accessories
RTU-1	LENNOX	LGM150U4E	12.5	5000 CFM	3.75	.15	144	138	73	59	73	101	240	192	7	29 A	35 A	480 V	3	3	1,5,6,7,8,12
RTU-2	LENNOX	LGM150U4E	12.5	5000 CFM	3.75	.15	144	138	73	59	73	101	240	192	7	29 A	35 A	480 V	3	3	1,5,6,7,8,12
RTU-3	LENNOX	LGM150U4E	12.5	5000 CFM	3.75	.15	144	138	73	59	73	101	240	192	7	29 A	35 A	480 V	3	3	1,5,6,7,8,12
RTU-4	LENNOX	LGM150U4E	12.5	5000 CFM	3.75	.15	144	138	73	59	73	101	240	192	7	29 A	35 A	480 V	3	3	1,5,6,7,8,12
RTU-5	LENNOX	LGM150U4E	12.5	5000 CFM	3.75	.15	144	138	73	59	73	101	240	192	7	29 A	35 A	480 V	3	3	1,5,6,7,8,12
RTU-6	LENNOX	LGM150U4E	12.5	5000 CFM	3.75	.15	144	138	73	59	73	101	240	192	7	29 A	35 A	480 V	3	3	1,5,6,7,8,12
RTU-7	LENNOX	LGM150U4E	12.5	5000 CFM	3.75	.15	144	138	73	59	73	101	240	192	7	29 A	35 A	480 V	3	3	1,5,6,7,8,12
RTU-8	LENNOX	LGM150U4E	12.5	5000 CFM	3.75	.15	144	138	73	59	73	101	240	192	7	29 A	35 A	480 V	3	3	1,5,6,7,8,12
RTU-9	LENNOX	LGM150U4E	12.5	5000 CFM	3.75	.15	144	138	73	59	73	101	240	192	7	29 A	35 A	480 V	3	3	1,5,6,7,8,12
RTU-10	LENNOX	LGM150U4E	12.5	5000 CFM	3.75	.15	144	138	73	59	73	101	240	192	7	29 A	35 A	480 V	3	3	1,5,6,7,8,12
RTU-11	LENNOX	LGM092U4E	7.5	3000 CFM	3.75	.15	91	86	73	63	71	105	130	104	7	19 A	20 A	480 V	3	3	1,3,5,6,7,8,9,10,12,14
RTU-13	LENNOX	LGM074U4E	6	2400 CFM	1	1.0	71	69	73	62	52	100	108	87	7	15 A	20 A	480 V	3	3	1,3,5,6,7,8,9,10,12,14,15
RTU-14	LENNOX	LGM120U4E	10	4000 CFM	3.75	1.5	122	114	73	60	69	106	180	144	7	24 A	30 A	480 V	3	3	1,3,5,6,7,8,9,10,12,14
RTU-15	LENNOX	LGM074U4E	6	2400 CFM	1	1.0	71	69	73	62	52	100	108	87	7	15 A	20 A	480 V	3	3	1,3,5,6,7,8,9,10,12,14
RTU-16	LENNOX	LGM120U4E	10	4000 CFM	3.75	.15	122	114	73	60	69	106	180	144	7	24 A	30 A	480 V	3	3	1,3,5,6,7,8,9,12,14
RTU-17	LENNOX	LGM120U4E	10	4000 CFM	3.75	.15	122	114	73	60	69	106	180	144	7	24 A	30 A	480 V	3	3	1,3,5,6,7,8,9,12,14
RTU-18	LENNOX	LGM092U4E	7.5	3000 CFM	3.75	1.5	91	86	73	63	71	105	130	104	7	19 A	20 A	480 V	3	3	1,3,5,6,7,8,9,10,12,14
RTU-19	LENNOX	LGM074U4E	6	2400 CFM	1	0.5	71	69	73	62	52	100	108	87	7	15 A	20 A	480 V	3	3	1,3,5,6,7,8,9,10,12,14
RTU-20	LENNOX	LGM150U4E	12.5	5000 CFM	3.75	.15	144	138	73	59	73	101	240	192	7	29 A	35 A	480 V	3	3	1,3,5,6,7,8,9,12,14
RTU-21	LENNOX	LGM120U4E	10	4000 CFM	3.75	.15	122	114	73	60	69	106	180	144	7	24 A	30 A	480 V	3	3	1,3,5,6,7,8,9,12,14

HVAC RTU ACCESSORIES

1. ROOF CURB-ADJUSTABLE
2. 2 POSITION AUTOMATIC OUTSIDE AIR DAMPER
3. ECONOMIZER
4. HEAT RECLAIM COILS
5. FACTORY CONTROLS PER KROGER STANDARDS
6. FACTORY GFCI RECEPTACLE
7. FACTORY DISCONNECT WITH FUSING (MANUFACTURER TO CONFIRM LOCAL AHJ REQUIREMENT)
8. CONDENSATION OVERFLOW SWITCH
9. CONSTANT VOLUME WITH VFD FOR BALANCING
10. RETURN AIR SMOKE DETECTOR BY OTHERS
11. PROVIDE CURB ADAPTOR - FIELD VERIFY EXACT SIZE
12. NO SUBSTITUTIONS
13. SEACOAST PROTECTION
14. VARIABLE POSITION OUTSIDE AIR DAMPER - CO2 CONTROL
15. MODULATING HOT GAS REHEAT

HEATER SCHEDULE

NAME	MANUFACTURER	MODEL NO.	kW	VOLTAGE	PHASE	MCA	MOCP	ACCESSORIES
UH-1	QMARK	MUH07-8	7.5	208 V	1	24 A	30 A	1,2
UH-2	QMARK	MUH07-8	7.5	208 V	1	24 A	30 A	1,2

HEATER ACCESSORIES

1. UHMT1 - SINGLE POLE INTERNAL THERMOSTAT
2. HANGING KIT

AIR CONDITIONING UNIT SCHEDULE

Mark	Manufacturer	Model	Nominal Tons	Supply CFM	Voltage	Phase	MCA	MOCP	Cooling MBH	Accessories	Weight
CU-1	TRANE	PUY-A36NKA7			208 V	1	25 A	35 A	36	1,6	126
FCU-1	TRANE	PKA-A36KA7		1000 CFM	208 V	1	2 A	15 A	0		40

HVAC FCU ACCESSORIES

1. K-NUMBER KIT INCLUDES EVAP, CONDENSER,CONDENSATE PUMP, 50' LINESET
2. 5/8" CONDENSATE LINE CONNECTION
3. 9/16 CONDENSATE LINE CONNECTION
4. ROUTE REFRIGERANT LINES PER PLANS
5. PROVIDE LOW AMBIENT KIT WB-PA2 (2-3 TON) K-0013856
6. NO SUBSTITUTIONS ALLOWED

3

DUCTWORK SCHEDULE

SERVICE	LOCATION	SERVES	MATERIAL	PRESSURE CLASS	INSULATION 1	2	3	4	5	6	COMMENTS
SUPPLY	INSIDE	ROOF TOP UNITS	GALVANIZED	2" WC	X					X	
RETURN	INSIDE	ROOF TOP UNITS	GALVANIZED	2" WC	X					X	
EXHAUST	INSIDE	EXHAUST	GALVANIZED	2" WC					X		
HOOD	INSIDE	EXH HOOD SYSTEMS	16 GA BLACK IRON	WELDED			X				
OVEN	INSIDE	BAKERY OVENS	B-VENT	N/A							
TRANSFER	INSIDE	INTERIOR SPACES	GALVANIZED	2" WC	X					X	
FLUE	INSIDE	UNIT HEATERS	PVC	N/A							
COMBUSTION AIR	INSIDE	UNIT HEATERS	GALVANIZED	2" WC					X		
VENT	INSIDE	UTENSIL WASHER	STAINLESS STEEL	N/A							
VENT	INSIDE	WATER HEATER (GAS)	B-VENT	N/A							

HVAC DUCTWORK INSULATION

1. 1" INTERNAL LINER
2. 1.5" EXTERNALLY WRAPPED
3. FIRE WRAP
4. 1" INTERNAL LINER FIRST 10 FEET FROM CONNECTION TO UNIT UNLESS OTHERWISE NOTED
5. 1.5" EXTERNALLY WRAPPED FIRST 5 FEET FROM ROOF/EXTERIOR PENETRATION
6. ALL EXPOSED DUCTWORK TO BE PAINTGRIP - READY FOR PAINT BY OTHERS - WITH 1" INSULATION

AIR TERMINAL SCHEDULE

Mark	Manufacturer	Description	Model	Comments
ADB-1	AES INDUSTRIES	DROP BOX 4-WAY	ADB-1-12-4	5
ADB-2	AES INDUSTRIES	DROP BOX 2-WAY	ADB-1-10-2	5
ADB-3	AES INDUSTRIES	DROP BOX 4-WAY	ADB-1-10-4	5
ADB-4	AES INDUSTRIES	DROP BOX 6-WAY	ADB-6-20	5
CD-1	TITUS	24" x 24" CEILING DIFFUSER	TDC	5
CD-2	TITUS	12" x 12" CEILING DIFFUSER	TDC	5
ER-1	TITUS	12" x 12" EXHAUST GRILLE	350FL	5
ER-2	TITUS	12" x 12" EXHAUST GRILLE	350FL	5,6
ER-3	TITUS	18" ROUND SUSPENDED EXHAUST GRILLE	R-OMNI	5
RG-1	TITUS	30" x 30" SURFCE MOUNTED RETURN GRILLE	23RL	5
RG-2	TITUS	24" x 24" RETURN GRILLE	23RL	5
RG-3	TITUS	12" x 24" RETURN GRILLE	23RL	5
RG-4	TITUS	30" x 30" SURFCE MOUNTED RETURN GRILLE	23RL	5
RG-5	TITUS	12" x 24" TRANSFER GRILLE	23RL	2
SD-1	TITUS	12" ROUND CEILING DIFFUSER	TDC	5
SR-1	TITUS	18"x12" CURVED SIDEWALL DIFFUSER	S300FS	5

HVAC AIR TERMINAL OPTIONS/ACCESSORIES

1. LAY-IN MOUNTING
2. SURFACE MOUNTING
3. SUSPENDED MOUNTING
4. NO SUBSTITUTIONS ALLOWED
5. PROVIDE WITH BALANCE DAMPER IF NO BALANCE DAMPER IS IN BRANCH DUCTWORK
6. PAINT TO MATCH ARCH AND DECOR

KS147
AIR FLOW SUMMARY - BUILDING PRESSURE CALCULATION

EQUIPMENT	TYPE	DESIGN	HOODS ON CO2 SATISFIED	HOODS OFF OA MINIMUM	EXHAUST AIR
RTU-1	SALES	0	0	0	0
RTU-2	SALES	0	0	0	0
RTU-3	SALES	0	0	0	0
RTU-4	SALES	0	0	0	0
RTU-5	SALES	0	0	0	0
RTU-6	SALES	0	0	0	0
RTU-7	SALES	0	0	0	0
RTU-8	SALES	0	0	0	0
RTU-9	SALES	0	0	0	0
RTU-10	SALES	0	0	0	0
RTU-11	VESTIBULE	240	240	240	0
RTU-13	PHARMACY	315	315	315	0
RTU-14	DELI	840	840	840	0
RTU-15	BAKERY	600	600	600	0
RTU-16	BACKROOM	280	280	280	0
RTU-17	BACKROOM	280	280	280	0
RTU-18	BACK OFFICES	505	505	505	0
RTU-19	PICKUP	315	315	315	0
RTU-20	DOCK	750	750	750	0
RTU-21	SEATING	680	680	680	0
DOAS-1	SALES OA	4,515	2,550	2,258	0
DOAS-2	SALES OA	4,515	2,550	2,258	0
EF-CC	ROOF- CLEANING CENTER & SPRAY DOWN AREA	0	0	0	-600
EF-ER	ROOF- BACK ELECTRICAL RM	0	0	0	-750
EF-ER2	ROOF - PHARMACY ELECTRIC CLOSET	0	0	0	-600
EF-S1	ROOF- B108G OVEN	0	0	0	-900
EF-G2	ROOF- B108G OVEN	0	0	0	-900
EF-K1	ROOF- HOOD GE54G-16	0	0	0	-2800
EF-R1	ROOF- RR FAMILY	0	0	0	-150
EF-R2	ROOF- RR CUSTOMER	0	0	0	-850
EF-R3	ROOF- RR ASSOCIATES	0	0	0	-300
EF-S	ROOF- SEAFOOD	0	0	0	-900
BUILDING TOTALS		13,835	9,905	9,320	-8,750
				NET PRESSURE:	1,155

EF-K2 REMOVED. REFER TO BULLETIN NO. 10.

DOAS SUPPLIED VENTILATION SCHEDULE

SYSTEM	ROOM	SPACE CLASSIFICATION	AREA	OA PER AREA	NO. OF PEOPLE	OA PER PERSON	REQUIRED OA	SYSTEM PERCENTAGE	SUPPLIED OA (FROM DOAS)
DOAS-1	STARBUCKS STORAGE	Storage	104 SF	0.12 CFM/SF	0	5.0 CFM	12 CFM	100%	12 CFM
DOAS-1	FLORAL SALES	Supermarket Sales Area - Retail	149 SF	0.06 CFM/SF	1	7.5 CFM	16 CFM	100%	16 CFM
DOAS-1	FLORAL STORAGE	Storage	96 SF	0.12 CFM/SF	0	5.0 CFM	12 CFM	100%	12 CFM
DOAS-1	STARBUCKS	Supermarket Sales Area - Retail	227 SF	0.06 CFM/SF	2	7.5 CFM	29 CFM	100%	31 CFM
DOAS-1	SALES	Supermarket Sales Area - Retail	42214 SF	0.06 CFM/SF	253	7.5 CFM	4430 CFM	100%	4444 CFM
			42791 SF		256		4499 CFM		4515 CFM
DOAS-2	FITTING ROOMS	Supermarket Sales Area - Retail	112 SF	0.06 CFM/SF	1	7.5 CFM	14 CFM	100%	15 CFM
DOAS-2	FRONT END CLEANING	Storage	89 SF	0.12 CFM/SF	0	5.0 CFM	11 CFM	11%	
DOAS-2	ACCT.	Office - Enclosed	103 SF	0.06 CFM/SF	1	5.0 CFM	11 CFM	11%	
DOAS-2	HALL 'D'	Corridor/Transition	75 SF	0.06 CFM/SF	0	0.0 CFM	4 CFM	100%	5 CFM
DOAS-2	CUSTOMER SERVICE	Supermarket Sales Area - Retail	210 SF	0.06 CFM/SF	2	7.5 CFM	28 CFM	100%	28 CFM
DOAS-2	RX WAITING	Lobby	244 SF	0.06 CFM/SF	3	5.0 CFM	30 CFM	100%	35 CFM
DOAS-2	SALES	Supermarket Sales Area - Retail	42238 SF	0.06 CFM/SF	253	7.5 CFM	4432 CFM	100%	4432 CFM
			43070 SF		260		4530 CFM		4515 CFM

RTU SUPPLIED VENTILATION SCHEDULE

SYSTEM	ROOM	SPACE CLASSIFICATION	AREA	OA PER AREA	NO. OF PEOPLE	OA PER PERSON	SUPPLY AIRFLOW	RETURN AIRFLOW	EXHAUST AIRFLOW	REQUIRED OA	SYSTEM PERCENTAGE	SUPPLIED OA
RTU-11	CART CORRAL	Lobby	2075 SF	0.06 CFM/SF	21	5.0 CFM	3000 CFM	2750 CFM	0 CFM	230 CFM	8%	240 CFM
			2075 SF		21		3000 CFM	2750 CFM	0 CFM	230 CFM		240 CFM
RTU-13	ASSET PROTECTION	Office - Enclosed	141 SF	0.06 CFM/SF	1	5.0 CFM	100 CFM	100 CFM	0 CFM	13 CFM	13%	13 CFM
RTU-13	COUNSEL	Office - Enclosed	120 SF	0.06 CFM/SF	1	5.0 CFM	200 CFM	200 CFM	0 CFM	12 CFM	13%	26 CFM
RTU-13	FAMILY	Restrooms	99 SF	0.00 CFM/SF	0	0.0 CFM	100 CFM	0 CFM	150 CFM	0 CFM	13%	13 CFM
RTU-13	PHARMACY	Pharmacy - Hospital/Healthcare	1345 SF	0.12 CFM/SF	14	5.0 CFM	1800 CFM	1800 CFM	0 CFM	231 CFM	13%	234 CFM
RTU-13	RX STORAGE	Storage	120 SF	0.12 CFM/SF	0	5.0 CFM	200 CFM	200 CFM	0 CFM	14 CFM	13%	26 CFM
			1825 SF		16		2400 CFM	2300 CFM	150 CFM	271 CFM		312 CFM
RTU-14	CUSTOMER MEN	Restrooms	150 SF	0.00 CFM/SF	0	0.0 CFM	150 CFM	0 CFM	350 CFM	0 CFM	21%	32 CFM
RTU-14	CUSTOMER WOMEN	Restrooms	150 SF	0.00 CFM/SF	0	0.0 CFM	150 CFM	0 CFM	350 CFM	0 CFM	21%	32 CFM
RTU-14	DELI COOKING	Food Preparation	1059 SF	0.12 CFM/SF	22	7.5 CFM	1500 CFM	1500 CFM	0 CFM	292 CFM	21%	315 CFM
RTU-14	DELI PREP	Food Preparation	594 SF	0.12 CFM/SF	12	7.5 CFM	1100 CFM	1100 CFM	0 CFM	161 CFM	21%	231 CFM
RTU-14	FAMILY 1	Restrooms	56 SF	0.00 CFM/SF	0	0.0 CFM	50 CFM	0 CFM	150 CFM	0 CFM	21%	11 CFM
RTU-14	HALL 'A'	Corridor/Transition	360 SF	0.06 CFM/SF	0	0.0 CFM	300 CFM	0 CFM	0 CFM	22 CFM	21%	63 CFM
RTU-14	RESTROOM ALCOVE	Corridor/Transition	232 SF	0.06 CFM/SF	0	0.0 CFM	150 CFM	150 CFM	0 CFM	14 CFM	21%	32 CFM
RTU-14	SUSHI PREP	Food Preparation	171 SF	0.12 CFM/SF	4	7.5 CFM	400 CFM	400 CFM	0 CFM	51 CFM	21%	84 CFM
RTU-14	VESTIBULE 3	Lobby	65 SF	0.06 CFM/SF	1	5.0 CFM	200 CFM	0 CFM	0 CFM	9 CFM	21%	42 CFM
			2839 SF		39		4000 CFM	3150 CFM	850 CFM	548 CFM		840 CFM
RTU-15	BAKERY PREP	Food Preparation	581 SF	0.12 CFM/SF	12	7.5 CFM	1200 CFM	600 CFM	0 CFM	160 CFM	25%	300 CFM
RTU-15	DELI SERVICE	Food Preparation	618 SF	0.12 CFM/SF	13	7.5 CFM	720 CFM	720 CFM	0 CFM	172 CFM	25%	180 CFM
RTU-15	MURRAY'S PREP	Food Preperation	345 SF	0.12 CFM/SF	2	7.5 CFM	240 CFM	240 CFM	0 CFM	56 CFM	25%	60 CFM
RTU-15	SHARED CLEANUP	Food Preparation	185 SF	0.12 CFM/SF	4	7.5 CFM	240 CFM	240 CFM	0 CFM	52 CFM	25%	60 CFM
			1728 SF		31		2400 CFM	1800 CFM	0 CFM	440 CFM		600 CFM
RTU-16	BACKROOM	Warehouse	3345 SF	0.06 CFM/SF	7	10.0 CFM	4000 CFM	3720 CFM	0 CFM	271 CFM	7%	280 CFM
			3345 SF		7		4000 CFM	3720 CFM	0 CFM	271 CFM		280 CFM
RTU-17	BACKROOM	Warehouse	3344 SF	0.06 CFM/SF	7	10.0 CFM	4000 CFM	3400 CFM	600 CFM	271 CFM	7%	280 CFM
			3344 SF		7		4000 CFM	3400 CFM	600 CFM	271 CFM		280 CFM
RTU-18	ASSOCIATE BREAK ROOM	Office - Enclosed	451 SF	0.06 CFM/SF	3	5.0 CFM	750 CFM	750 CFM	0 CFM	42 CFM	19%	143 CFM
RTU-18	ASSOCIATE MEN	Restrooms	190 SF	0.00 CFM/SF	0	0.0 CFM	100 CFM	0 CFM	300 CFM	0 CFM	19%	19 CFM
RTU-18	ASSOCIATE WOMEN	Restrooms	188 SF	0.00 CFM/SF	0	0.0 CFM	100 CFM	0 CFM	300 CFM	0 CFM	19%	19 CFM
RTU-18	EMPLOYEE SECURE STORAGE	Storage	332 SF	0.12 CFM/SF	0	5.0 CFM	200 CFM	200 CFM	0 CFM	40 CFM	19%	38 CFM
RTU-18	HALL 'C'	Corridor/Transition	485 SF	0.06 CFM/SF	0	0.0 CFM	350 CFM	350 CFM	0 CFM	29 CFM	19%	67 CFM
RTU-18	HEALTH & WELLNESS	Office - Enclosed	65 SF	0.06 CFM/SF	1	5.0 CFM	100 CFM	100 CFM	0 CFM	9 CFM	19%	19 CFM
RTU-18	HR OFFICE	Office - Enclosed	117 SF	0.06 CFM/SF	1	5.0 CFM	100 CFM	100 CFM	0 CFM	12 CFM	19%	19 CFM
RTU-18	KTV CONFERENCE ROOM	Conference Meeting/Multipurpose	410 SF	0.06 CFM/SF	21	5.0 CFM	800 CFM	800 CFM	0 CFM	130 CFM	19%	152 CFM
RTU-18	MANAGER	Office - Enclosed	117 SF	0.06 CFM/SF	1	5.0 CFM	100 CFM	100 CFM	0 CFM	12 CFM	19%	19 CFM
RTU-18	RESTROOM ALCOVE	Corridor/Transition	53 SF	0.06 CFM/SF	0	0.0 CFM	50 CFM	50 CFM	0 CFM	3 CFM	19%	10 CFM
			2408 SF		27		2650 CFM	2450 CFM	600 CFM	277 CFM		504 CFM
RTU-19	PICKUP	Shipping/Receiving Area	2052 SF	0.12 CFM/SF	5	10.0 CFM	2400 CFM	2090 CFM	0 CFM	296 CFM	13%	312 CFM
			2052 SF		5		2400 CFM	2090 CFM	0 CFM	296 CFM		312 CFM
RTU-20	ADULT BEV STORAGE	Storage	249 SF	0.12 CFM/SF	0	5.0 CFM	500 CFM	500 CFM	0 CFM	30 CFM	15%	75 CFM
RTU-20	APPAREL SECURE STORAGE	Storage	249 SF	0.12 CFM/SF	0	5.0 CFM	500 CFM	500 CFM	0 CFM	30 CFM	15%	75 CFM
RTU-20	DOCK	Shipping/Receiving Area	3880 SF	0.12 CFM/SF	8	10.0 CFM	4000 CFM	3250 CFM	750 CFM	546 CFM	15%	600 CFM
			4378 SF		8		5000 CFM	4250 CFM	750 CFM	605 CFM		750 CFM
RTU-21	SEATING	Dining Area - Lounge/Leisure Dining	1423 SF	0.18 CFM/SF	57	7.5 CFM	4000 CFM	3320 CFM	0 CFM	684 CFM	17%	680 CFM
			1423 SF		57		4000 CFM	3320 CFM	0 CFM	684 CFM		680 CFM

GAS PRESSURE REDUCING VALVE SCHEDULE

MARK	INLET SIZE	OUTLET SIZE	BASIS OF DESIGN	INLET PRESSURE	OUTLET PRESSURE	REMARKS
PRV-1	3/4"	1-1/2"	FISCHER	2 PSI	7-11" WC	B C
PRV-2	1"	1-1/2"	FISCHER	2 PSI	7-11" WC	B C
PRV-3	1"	2"	FISCHER	2 PSI	7-11" WC	B C
PRV-4	1-1/2"	2"	FISCHER	2 PSI	7-11" WC	B C
PRV-5	1-1/2"	2-1/2"	FISCHER	2 PSI	7-11" WC	B C
PRV-6	1-1/2"	3"	FISCHER	2 PSI	7-11" WC	B C

NOTES:
A.) PROVIDE FULL SIZE RELIEF DRAIN. VERIFY FLOOR DRAIN WILL HANDLE DISCHARGE.
B.) PROVIDE WITH STRAINER.
C.) ALL MATERIALS SHALL BE LEAD FREE.

GAS VALVE SCHEDULE

SIZE	SERVING	MANUFACTURER	MODEL	MAXIMUM PRESSURE	REMARKS
3/4"	SEE PLAN	CAPTIVEAIRE	24-55598	10 PSI	A
1"	SEE PLAN	CAPTIVEAIRE	25-55601	10 PSI	A
1-1/4"	SEE PLAN	CAPTIVEAIRE	26-55604	10 PSI	A
1-1/2"	SEE PLAN	CAPTIVEAIRE	27-55607	10 PSI	A
2"	SEE PLAN	CAPTIVEAIRE	27-55610	10 PSI	A
2-1/2"	SEE PLAN	CAPTIVEAIRE	27-55937	5 PSI	A
3"	SEE PLAN	CAPTIVEAIRE	27-55938	5 PSI	A

NOTES:
A.) PROVIDE FULL SIZE RELIEF DRAIN. VERIFY FLOOR DRAIN WILL HANDLE DISCHARGE.
B.) PROVIDE WITH STRAINER.
C.) ALL MATERIALS SHALL BE LEAD FREE.

GAS CALCULATION SCHEDULE

EQUIPMENT	CFH INPUT
B109G	300
B109G	300
CN1	1158
DOAS-1	225
DOAS-2	225
PL138G	199
RTU-1	240
RTU-2	240
RTU-3	240
RTU-4	240
RTU-5	240
RTU-6	240
RTU-7	240
RTU-8	240
RTU-9	240
RTU-10	240
RTU-11	130
RTU-13	108
RTU-14	180
RTU-15	108
RTU-16	180
RTU-17	180
RTU-18	130
RTU-19	108
RTU-20	240
RTU-21	180
Grand total	6351

CALCULATIONS BASED ON 5 PSI DELIVERY PRESSURE. SEE LINEAL FEET TO FURTHEST DELIVERY POINT, 0.6 SPECIFIC GRAVITY.

D97G REMOVED. REFER TO BULLETIN NO. 10.

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KING Soopers

DATE	ISSUE
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10/04/2021	ISSUED FOR BID

#	DATE	REVISION
1	10/25/2021	ADDENDUM NO. 2
2	12/01/2021	BULLETIN NO. 1
3	08/01/2022	BULLETIN NO. 4
4	05/04/2023	BULLETIN NO. 10
5	05/19/2023	BULLETIN NO. 11

PROJECT TITLE
KING SOOPERS
KS147

MERIDIAN + WOODMEN
FALCON, CO

COMMISSION NO. 519000
ISSUE DATE 10/04/2021
SHEET TITLE
HVAC SCHEDULES

SHEET NO.
M6.1

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ROOFTOP UNIT SCHEDULE

Mark	Manufacturer	Model	Nominal Tons	Supply CFM	Motor HP	Static Pressure	Cooling MBH	Cooling Sensible	Cooling EAT	Cooling LAT	Heating EAT	Heating LAT	Heating MBH In	Heating MBH Out	Min Gas Pressure (IN W.C.)	MCA	MOCP	Voltage	Phase	Number of Poles	Accessories
RTU-1	LENNOX	LGM150U4E	12.5	5000 CFM	3.75	.15	144	138	73	59	73	101	240	192	7	29 A	35 A	480 V	3	3	1,5,6,7,8,12
RTU-2	LENNOX	LGM150U4E	12.5	5000 CFM	3.75	.15	144	138	73	59	73	101	240	192	7	29 A	35 A	480 V	3	3	1,5,6,7,8,12
RTU-3	LENNOX	LGM150U4E	12.5	5000 CFM	3.75	.15	144	138	73	59	73	101	240	192	7	29 A	35 A	480 V	3	3	1,5,6,7,8,12
RTU-4	LENNOX	LGM150U4E	12.5	5000 CFM	3.75	.15	144	138	73	59	73	101	240	192	7	29 A	35 A	480 V	3	3	1,5,6,7,8,12
RTU-5	LENNOX	LGM150U4E	12.5	5000 CFM	3.75	.15	144	138	73	59	73	101	240	192	7	29 A	35 A	480 V	3	3	1,5,6,7,8,12
RTU-6	LENNOX	LGM150U4E	12.5	5000 CFM	3.75	.15	144	138	73	59	73	101	240	192	7	29 A	35 A	480 V	3	3	1,5,6,7,8,12
RTU-7	LENNOX	LGM150U4E	12.5	5000 CFM	3.75	.15	144	138	73	59	73	101	240	192	7	29 A	35 A	480 V	3	3	1,5,6,7,8,12
RTU-8	LENNOX	LGM150U4E	12.5	5000 CFM	3.75	.15	144	138	73	59	73	101	240	192	7	29 A	35 A	480 V	3	3	1,5,6,7,8,12
RTU-9	LENNOX	LGM150U4E	12.5	5000 CFM	3.75	.15	144	138	73	59	73	101	240	192	7	29 A	35 A	480 V	3	3	1,5,6,7,8,12
RTU-10	LENNOX	LGM150U4E	12.5	5000 CFM	3.75	.15	144	138	73	59	73	101	240	192	7	29 A	35 A	480 V	3	3	1,5,6,7,8,12
RTU-11	LENNOX	LGM092U4E	7.5	3000 CFM	3.75	.15	91	86	73	63	71	105	130	104	7	19 A	20 A	480 V	3	3	1,3,5,6,7,8,9,10,12,14
RTU-13	LENNOX	LGM074U4E	6	2400 CFM	1	1.0	71	69	73	62	52	100	108	87	7	15 A	20 A	480 V	3	3	1,3,5,6,7,8,9,10,12,14,15
RTU-14	LENNOX	LGM120U4E	10	4000 CFM	3.75	1.5	122	114	73	60	69	106	180	144	7	24 A	30 A	480 V	3	3	1,3,5,6,7,8,9,10,12,14
RTU-15	LENNOX	LGM074U4E	6	2400 CFM	1	1.0	71	69	73	62	52	100	108	87	7	15 A	20 A	480 V	3	3	1,3,5,6,7,8,9,10,12,14
RTU-16	LENNOX	LGM120U4E	10	4000 CFM	3.75	.15	122	114	73	60	69	106	180	144	7	24 A	30 A	480 V	3	3	1,3,5,6,7,8,9,12,14
RTU-17	LENNOX	LGM120U4E	10	4000 CFM	3.75	.15	122	114	73	60	69	106	180	144	7	24 A	30 A	480 V	3	3	1,3,5,6,7,8,9,12,14
RTU-18	LENNOX	LGM092U4E	7.5	3000 CFM	3.75	1.5	91	86	73	63	71	105	130	104	7	19 A	20 A	480 V	3	3	1,3,5,6,7,8,9,10,12,14
RTU-19	LENNOX	LGM074U4E	6	2400 CFM	1	0.5	71	69	73	62	52	100	108	87	7	15 A	20 A	480 V	3	3	1,3,5,6,7,8,9,10,12,14
RTU-20	LENNOX	LGM150U4E	12.5	5000 CFM	3.75	.15	144	138	73	59	73	101	240	192	7	29 A	35 A	480 V	3	3	1,3,5,6,7,8,9,12,14
RTU-21	LENNOX	LGM120U4E	10	4000 CFM	3.75	.15	122	114	73	60	69	106	180	144	7	24 A	30 A	480 V	3	3	1,3,5,6,7,8,9,12,14

HVAC RTU ACCESSORIES

1. ROOF CURB-ADJUSTABLE
2. 2 POSITION AUTOMATIC OUTSIDE AIR DAMPER
3. ECONOMIZER
4. HEAT RECLAIM COILS
5. FACTORY CONTROLS PER KROGER STANDARDS
6. FACTORY GFCI RECEPTACLE
7. FACTORY DISCONNECT WITH FUSING (MANUFACTURER TO CONFIRM LOCAL AHJ REQUIREMENT)
8. CONDENSATION OVERFLOW SWITCH
9. CONSTANT VOLUME WITH VFD FOR BALANCING
10. RETURN AIR SMOKE DETECTOR BY OTHERS
11. PROVIDE CURB ADAPTOR - FIELD VERIFY EXACT SIZE
12. NO SUBSTITUTIONS
13. SEACOAST PROTECTION
14. VARIABLE POSITION OUTSIDE AIR DAMPER - CO2 CONTROL
15. MODULATING HOT GAS REHEAT

HEATER SCHEDULE

NAME	MANUFACTURER	MODEL NO.	kW	VOLTAGE	PHASE	MCA	MOCP	ACCESSORIES
UH-1	QMARK	MUH07-8	7.5	208 V	1	24 A	30 A	1,2
UH-2	QMARK	MUH07-8	7.5	208 V	1	24 A	30 A	1,2

HEATER ACCESSORIES

1. UHMT1 - SINGLE POLE INTERNAL THERMOSTAT
2. HANGING KIT

AIR CONDITIONING UNIT SCHEDULE

Mark	Manufacturer	Model	Nominal Tons	Supply CFM	Voltage	Phase	MCA	MOCP	Cooling MBH	Accessories	Weight
CU-1	TRANE	PUY-A36NKA7			208 V	1	25 A	35 A	36	1,6	126
FCU-1	TRANE	PKA-A36KA7		1000 CFM	208 V	1	2 A	15 A	0		40

HVAC FCU ACCESSORIES

1. K-NUMBER KIT INCLUDES EVAP, CONDENSER,CONDENSATE PUMP, 50' LINESET
2. 5/8" CONDENSATE LINE CONNECTION
3. 9/16 CONDENSATE LINE CONNECTION
4. ROUTE REFRIGERANT LINES PER PLANS
5. PROVIDE LOW AMBIENT KIT WB-PA2 (2-3 TON) K-0013856
6. NO SUBSTITUTIONS ALLOWED

3

AIR TERMINAL SCHEDULE

Mark	Manufacturer	Description	Model	Comments
ADB-1	AES INDUSTRIES	DROP BOX 4-WAY	ADB-1-12-4	5
ADB-2	AES INDUSTRIES	DROP BOX 2-WAY	ADB-1-10-2	5
ADB-3	AES INDUSTRIES	DROP BOX 4-WAY	ADB-1-10-4	5
ADB-4	AES INDUSTRIES	DROP BOX 6-WAY	ADB-6-20	5
CD-1	TITUS	24" x 24" CEILING DIFFUSER	TDC	5
CD-2	TITUS	12" x 12" CEILING DIFFUSER	TDC	5
ER-1	TITUS	12" x 12" EXHAUST GRILLE	350FL	5
ER-2	TITUS	12" x 12" EXHAUST GRILLE	350FL	5,6
ER-3	TITUS	18" ROUND SUSPENDED EXHAUST GRILLE	R-OMNI	5
ER-4	TITUS	12" x 12" EXHAUST GRILLE	350FL	5
RG-1	TITUS	30" x 30" SURFCE MOUNTED RETURN GRILLE	23RL	5
RG-2	TITUS	24" x 24" RETURN GRILLE	23RL	5
RG-3	TITUS	12" x 24" RETURN GRILLE	23RL	5
RG-4	TITUS	30" x 30" SURFCE MOUNTED RETURN GRILLE	23RL	5
RG-5	TITUS	12" x 24" TRANSFER GRILLE	23RL	2
SD-1	TITUS	12" ROUND CEILING DIFFUSER	TDC	5
SR-1	TITUS	18"x12" CURVED SIDEWALL DIFFUSER	S300FS	5

HVAC AIR TERMINAL OPTIONS/ACCESSORIES

1. LAY-IN MOUNTING
2. SURFACE MOUNTING
3. SUSPENDED MOUNTING
4. NO SUBSTITUTIONS ALLOWED
5. PROVIDE WITH BALANCE DAMPER IF NO BALANCE DAMPER IS IN BRANCH DUCTWORK
6. PAINT TO MATCH ARCH AND DECOR

DUCTWORK SCHEDULE

SERVICE	LOCATION	SERVES	MATERIAL	PRESSURE CLASS	INSULATION 1	2	3	4	5	6	COMMENTS
SUPPLY	INSIDE	ROOF TOP UNITS	GALVANIZED	2" WC	X					X	
RETURN	INSIDE	ROOF TOP UNITS	GALVANIZED	2" WC	X					X	
EXHAUST	INSIDE	EXHAUST	GALVANIZED	2" WC					X		
HOOD	INSIDE	EXH HOOD SYSTEMS	16 GA BLACK IRON	WELDED			X				
OVEN	INSIDE	BAKERY OVENS	B-VENT	N/A							
TRANSFER	INSIDE	INTERIOR SPACES	GALVANIZED	2" WC	X					X	
FLUE	INSIDE	UNIT HEATERS	PVC	N/A							
COMBUSTION AIR	INSIDE	UNIT HEATERS	GALVANIZED	2" WC					X		
VENT	INSIDE	UTENSIL WASHER	STAINLESS STEEL	N/A							
VENT	INSIDE	WATER HEATER (GAS)	B-VENT	N/A							

HVAC DUCTWORK INSULATION

1. 1" INTERNAL LINER
2. 1.5" EXTERNALLY WRAPPED
3. FIRE WRAP
4. 1" INTERNAL LINER FIRST 10 FEET FROM CONNECTION TO UNIT UNLESS OTHERWISE NOTED
5. 1.5" EXTERNALLY WRAPPED FIRST 5 FEET FROM ROOF/EXTERIOR PENETRATION
6. ALL EXPOSED DUCTWORK TO BE PAINTGRIP - READY FOR PAINT BY OTHERS - WITH 1" INSULATION

KS147
AIR FLOW SUMMARY - BUILDING PRESSURE CALCULATION

EQUIPMENT	TYPE	DESIGN	HOODS ON CO2 SATISIFIED	HOODS OFF OA MINIMUM	EXHAUST AIR
RTU-1	SALES	0	0	0	0
RTU-2	SALES	0	0	0	0
RTU-3	SALES	0	0	0	0
RTU-4	SALES	0	0	0	0
RTU-5	SALES	0	0	0	0
RTU-6	SALES	0	0	0	0
RTU-7	SALES	0	0	0	0
RTU-8	SALES	0	0	0	0
RTU-9	SALES	0	0	0	0
RTU-10	SALES	0	0	0	0
RTU-11	VESTBULE	240	240	240	0
RTU-13	PHARMACY	315	315	315	0
RTU-14	DELI	840	840	840	0
RTU-15	BAKERY	600	600	600	0
RTU-16	BACKROOM	280	280	280	0
RTU-17	BACKROOM	280	280	280	0
RTU-18	BACK OFFICES	505	505	505	0
RTU-19	PICKUP	315	315	315	0
RTU-20	DOCK	750	750	750	0
RTU-21	SEATING	680	680	680	0
DOAS-1	SALES OA	4,515	2,550	2,258	0
DOAS-2	SALES OA	4,515	2,550	2,258	0
EF-CC	ROOF- CLEANING CENTER & SPRAY DOWN AREA	0	0	0	-600
EF-ER	ROOF- BACK ELECTRICAL RM	0	0	0	-750
EF-ER2	ROOF - PHARMACY ELECTRIC CLOSET	0	0	0	-600
EF-G1	ROOF- B109G OVEN	0	0	0	-900
EF-G2	ROOF- B108G OVEN	0	0	0	-900
EF-K1	ROOF- HOOD GE54G-16	0	0	0	-2800
EF-R1	ROOF- RR FAMILY	0	0	0	-150
EF-R2	ROOF- RR CUSTOMER	0	0	0	-910
EF-R3	ROOF- RR ASSOCIATES	0	0	0	-300
EF-S	ROOF- SEAFOOD	0	0	0	-900
BUILDING TOTALS		13,835	9,905	9,320	-8,810
				NET PRESSURE:	1,095

EF-K2 REMOVED. REFER TO BULLETIN NO. 10.

DOAS SUPPLIED VENTILATION SCHEDULE

SYSTEM	ROOM	SPACE CLASSIFICATION	AREA	OA PER AREA	NO. OF PEOPLE	OA PER PERSON	REQUIRED OA	SYSTEM PERCENTAGE	SUPPLIED OA (FROM DOAS)
DOAS-1	STARBUCKS STORAGE	Storage	104 SF	0.12 CFM/SF	0	5.0 CFM	12 CFM	100%	12 CFM
DOAS-1	FLORAL SALES	Supermarket Sales Area - Retail	149 SF	0.06 CFM/SF	1	7.5 CFM	16 CFM	100%	16 CFM
DOAS-1	FLORAL STORAGE	Storage	96 SF	0.12 CFM/SF	0	5.0 CFM	12 CFM	100%	12 CFM
DOAS-1	STARBUCKS	Supermarket Sales Area - Retail	227 SF	0.06 CFM/SF	2	7.5 CFM	29 CFM	100%	31 CFM
DOAS-1	SALES	Supermarket Sales Area - Retail	42214 SF	0.06 CFM/SF	253	7.5 CFM	4430 CFM	100%	4444 CFM
			42791 SF		256		4499 CFM		4515 CFM
DOAS-2	FITTING ROOMS	Supermarket Sales Area - Retail	112 SF	0.06 CFM/SF	1	7.5 CFM	14 CFM	100%	15 CFM
DOAS-2	FRONT END CLEANING	Storage	89 SF	0.12 CFM/SF	0	5.0 CFM	11 CFM	11%	
DOAS-2	ACCT.	Office - Enclosed	103 SF	0.06 CFM/SF	1	5.0 CFM	11 CFM	11%	
DOAS-2	HALL 'D"	Corridor/Transition	75 SF	0.06 CFM/SF	0	0.0 CFM	4 CFM	100%	5 CFM
DOAS-2	CUSTOMER SERVICE	Supermarket Sales Area - Retail	210 SF	0.06 CFM/SF	2	7.5 CFM	28 CFM	100%	28 CFM
DOAS-2	RX WAITING	Lobby	244 SF	0.06 CFM/SF	3	5.0 CFM	30 CFM	100%	35 CFM
DOAS-2	SALES	Supermarket Sales Area - Retail	42238 SF	0.06 CFM/SF	253	7.5 CFM	4432 CFM	100%	4432 CFM
			43070 SF		260		4530 CFM		4515 CFM

RTU SUPPLIED VENTILATION SCHEDULE

SYSTEM	ROOM	SPACE CLASSIFICATION	AREA	OA PER AREA	NO. OF PEOPLE	OA PER PERSON	SUPPLY AIRFLOW	RETURN AIRFLOW	EXHAUST AIRFLOW	REQUIRED OA	SYSTEM PERCENTAGE	SUPPLIED OA
RTU-11	CART CORRAL	Lobby	2075 SF	0.06 CFM/SF	21	5.0 CFM	3000 CFM	2750 CFM	0 CFM	230 CFM	8%	240 CFM
			2075 SF		21		3000 CFM	2750 CFM	0 CFM	230 CFM		240 CFM
RTU-13	ASSET PROTECTION	Office - Enclosed	141 SF	0.06 CFM/SF	1	5.0 CFM	100 CFM	100 CFM	0 CFM	13 CFM	13%	13 CFM
RTU-13	COUNSEL	Office - Enclosed	120 SF	0.06 CFM/SF	1	5.0 CFM	200 CFM	200 CFM	0 CFM	12 CFM	13%	26 CFM
RTU-13	FAMILY	Restrooms	99 SF	0.00 CFM/SF	0	0.0 CFM	100 CFM	0 CFM	150 CFM	0 CFM	13%	13 CFM
RTU-13	PHARMACY	Pharmacy - Hospital/Healthcare	1345 SF	0.12 CFM/SF	14	5.0 CFM	1800 CFM	1800 CFM	0 CFM	231 CFM	13%	234 CFM
RTU-13	RX STORAGE	Storage	120 SF	0.12 CFM/SF	0	5.0 CFM	200 CFM	200 CFM	0 CFM	14 CFM	13%	26 CFM
			1825 SF		16		2400 CFM	2300 CFM	150 CFM	271 CFM		312 CFM
RTU-14	CUSTOMER MEN	Restrooms	150 SF	0.00 CFM/SF	0	0.0 CFM	150 CFM	0 CFM	350 CFM	0 CFM	21%	32 CFM
RTU-14	CUSTOMER WOMEN	Restrooms	150 SF	0.00 CFM/SF	0	0.0 CFM	150 CFM	0 CFM	350 CFM	0 CFM	21%	32 CFM
RTU-14	DELI COOKING	Food Preparation	1059 SF	0.12 CFM/SF	22	7.5 CFM	1500 CFM	1500 CFM	0 CFM	292 CFM	21%	315 CFM
RTU-14	DELI PREP	Food Preparation	594 SF	0.12 CFM/SF	12	7.5 CFM	1100 CFM	1100 CFM	0 CFM	161 CFM	21%	231 CFM
RTU-14	FAMILY 1	Restrooms	56 SF	0.00 CFM/SF	0	0.0 CFM	50 CFM	0 CFM	150 CFM	0 CFM	21%	11 CFM
RTU-14	HALL 'A'	Corridor/Transition	360 SF	0.06 CFM/SF	0	0.0 CFM	300 CFM	0 CFM	0 CFM	22 CFM	21%	63 CFM
RTU-14	RESTROOM ALCOVE	Corridor/Transition	232 SF	0.06 CFM/SF	0	0.0 CFM	150 CFM	150 CFM	0 CFM	14 CFM	21%	32 CFM
RTU-14	SUSHI PREP	Food Preparation	171 SF	0.12 CFM/SF	4	7.5 CFM	400 CFM	400 CFM	0 CFM	51 CFM	21%	84 CFM
RTU-14	VESTIBULE 3	Lobby	65 SF	0.06 CFM/SF	1	5.0 CFM	200 CFM	0 CFM	0 CFM	9 CFM	21%	42 CFM
			2839 SF		39		4000 CFM	3150 CFM	850 CFM	548 CFM		840 CFM
RTU-15	BAKERY PREP	Food Preparation	581 SF	0.12 CFM/SF	12	7.5 CFM	1200 CFM	600 CFM	0 CFM	160 CFM	25%	300 CFM
RTU-15	DELI SERVICE	Food Preparation	618 SF	0.12 CFM/SF	13	7.5 CFM	720 CFM	720 CFM	0 CFM	172 CFM	25%	180 CFM
RTU-15	MURRAY'S PREP	Food Preperation	345 SF	0.12 CFM/SF	2	7.5 CFM	240 CFM	240 CFM	0 CFM	56 CFM	25%	60 CFM
RTU-15	SHARED CLEANUP	Food Preparation	185 SF	0.12 CFM/SF	4	7.5 CFM	240 CFM	240 CFM	0 CFM	52 CFM	25%	60 CFM
			1728 SF		31		2400 CFM	1800 CFM	0 CFM	440 CFM		600 CFM
RTU-16	BACKROOM	Warehouse	3345 SF	0.06 CFM/SF	7	10.0 CFM	4000 CFM	3720 CFM	0 CFM	271 CFM	7%	280 CFM
			3345 SF		7		4000 CFM	3720 CFM	0 CFM	271 CFM		280 CFM
RTU-17	BACKROOM	Warehouse	3344 SF	0.06 CFM/SF	7	10.0 CFM	4000 CFM	3400 CFM	600 CFM	271 CFM	7%	280 CFM
			3344 SF		7		4000 CFM	3400 CFM	600 CFM	271 CFM		280 CFM
RTU-18	ASSOCIATE BREAK ROOM	Office - Enclosed	451 SF	0.06 CFM/SF	3	5.0 CFM	750 CFM	750 CFM	0 CFM	42 CFM	19%	143 CFM
RTU-18	ASSOCIATE MEN	Restrooms	190 SF	0.00 CFM/SF	0	0.0 CFM	100 CFM	0 CFM	300 CFM	0 CFM	19%	19 CFM
RTU-18	ASSOCIATE WOMEN	Restrooms	188 SF	0.00 CFM/SF	0	0.0 CFM	100 CFM	0 CFM	300 CFM	0 CFM	19%	19 CFM
RTU-18	EMPLOYEE SECURE STORAGE	Storage	332 SF	0.12 CFM/SF	0	5.0 CFM	200 CFM	200 CFM	0 CFM	40 CFM	19%	38 CFM
RTU-18	HALL 'C'	Corridor/Transition	485 SF	0.06 CFM/SF	0	0.0 CFM	350 CFM	350 CFM	0 CFM	29 CFM	19%	67 CFM
RTU-18	HEALTH & WELLNESS	Office - Enclosed	65 SF	0.06 CFM/SF	1	5.0 CFM	100 CFM	100 CFM	0 CFM	9 CFM	19%	19 CFM
RTU-18	HR OFFICE	Office - Enclosed	117 SF	0.06 CFM/SF	1	5.0 CFM	100 CFM	100 CFM	0 CFM	12 CFM	19%	19 CFM
RTU-18	KTV CONFERENCE ROOM	Conference Meeting/Multipurpose	410 SF	0.06 CFM/SF	21	5.0 CFM	800 CFM	800 CFM	0 CFM	130 CFM	19%	152 CFM
RTU-18	MANAGER	Office - Enclosed	117 SF	0.06 CFM/SF	1	5.0 CFM	100 CFM	100 CFM	0 CFM	12 CFM	19%	19 CFM
RTU-18	RESTROOM ALCOVE	Corridor/Transition	53 SF	0.06 CFM/SF	0	0.0 CFM	50 CFM	50 CFM	0 CFM	3 CFM	19%	10 CFM
			2408 SF		27		2650 CFM	2450 CFM	600 CFM	277 CFM		504 CFM
RTU-19	PICKUP	Shipping/Receiving Area	2052 SF	0.12 CFM/SF	5	10.0 CFM	2400 CFM	2090 CFM	0 CFM	296 CFM	13%	312 CFM
			2052 SF		5		2400 CFM	2090 CFM	0 CFM	296 CFM		312 CFM
RTU-20	ADULT BEV STORAGE	Storage	249 SF	0.12 CFM/SF	0	5.0 CFM	500 CFM	500 CFM	0 CFM	30 CFM	15%	75 CFM
RTU-20	APPAREL SECURE STORAGE	Storage	249 SF	0.12 CFM/SF	0	5.0 CFM	500 CFM	500 CFM	0 CFM	30 CFM	15%	75 CFM
RTU-20	DOCK	Shipping/Receiving Area	3880 SF	0.12 CFM/SF	8	10.0 CFM	4000 CFM	3250 CFM	750 CFM	546 CFM	15%	600 CFM
			4378 SF		8		5000 CFM	4250 CFM	750 CFM	605 CFM		750 CFM
RTU-21	SEATING	Dining Area - Lounge/Leisure Dining	1423 SF	0.18 CFM/SF	57	7.5 CFM	4000 CFM	3320 CFM	0 CFM	684 CFM	17%	680 CFM
			1423 SF		57		4000 CFM	3320 CFM	0 CFM	684 CFM		680 CFM

GAS PRESSURE REDUCING VALVE SCHEDULE

MARK	INLET SIZE	OUTLET SIZE	BASIS OF DESIGN	INLET PRESSURE	OUTLET PRESSURE	REMARKS
PRV-1	3/4"	1-1/2"	FISCHER	2 PSI	7-11" WC	B C
PRV-2	1"	1-1/2"	FISCHER	2 PSI	7-11" WC	B C
PRV-3	1"	2"	FISCHER	2 PSI	7-11" WC	B C
PRV-4	1-1/2"	2"	FISCHER	2 PSI	7-11" WC	B C
PRV-5	1-1/2"	2-1/2"	FISCHER	2 PSI	7-11" WC	B C
PRV-6	1-1/2"	3"	FISCHER	2 PSI	7-11" WC	B C

NOTES:
A) PROVIDE FULL SIZE RELIEF DRAIN. VERIFY FLOOR DRAIN WILL HANDLE DISCHARGE.
B) PROVIDE WITH STRAINER.
C) ALL MATERIALS SHALL BE LEAD FREE.

GAS VALVE SCHEDULE

SIZE	SERVING	MANUFACTURER	MODEL	MAXIMUM PRESSURE	REMARKS
3/4"	SEE PLAN	CAPTIVEAIRE	24-55598	10 PSI	A
1"	SEE PLAN	CAPTIVEAIRE	25-55601	10 PSI	A
1-1/4"	SEE PLAN	CAPTIVEAIRE	26-55604	10 PSI	A
1-1/2"	SEE PLAN	CAPTIVEAIRE	27-55607	10 PSI	A
2"	SEE PLAN	CAPTIVEAIRE	27-55610	10 PSI	A
2-1/2"	SEE PLAN	CAPTIVEAIRE	27-55937	5 PSI	A
3"	SEE PLAN	CAPTIVEAIRE	27-55938	5 PSI	A

NOTES:
A) PROVIDE FULL SIZE RELIEF DRAIN. VERIFY FLOOR DRAIN WILL HANDLE DISCHARGE.
B) PROVIDE WITH STRAINER.
C) ALL MATERIALS SHALL BE LEAD FREE.

GAS CALCULATION SCHEDULE

EQUIPMENT	CFH INPUT
B109G	300
B109G	300
CN1	1158
DOAS-1	225
DOAS-2	225
PL13BG	199
RTU-1	240
RTU-2	240
RTU-3	240
RTU-4	240
RTU-5	240
RTU-6	240
RTU-7	240
RTU-8	240
RTU-9	240
RTU-10	240
RTU-11	130
RTU-13	108
RTU-14	180
RTU-15	108
RTU-16	180
RTU-17	180
RTU-18	130
RTU-19	108
RTU-20	240
RTU-21	180
Grand total	6351

CALCULATIONS BASED ON 2 PSI DELIVERY PRESSURE, 0.60 SPECIFIC GRAVITY, 1000 BTU/CF, AND 100 EQUIVALENT LINEAR FEET TO FURTHEST DELIVERY POINT. 0.6 SPECIFIC GRAVITY.

EM70 REMOVED. REFER TO BULLETIN NO. 10.

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#	DATE	REVISION
1	10/25/2021	ADDENDUM NO. 2
2	1/201/2021	BULLETIN NO. 1
3	08/01/2022	BULLETIN NO. 4
4	05/04/2023	BULLETIN NO. 10
5	05/19/2023	BULLETIN NO. 11
6	01/05/2024	BULLETIN NO. 14

PROJECT TITLE
KING SOOPERS
KS147

MERIDIAN + WOODMEN
FALCON, CO

COMMISSION NO. 519000
ISSUE DATE 10/04/2021
SHEET TITLE
HVAC SCHEDULES

SHEET NO.
M6.1

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14/2024 6:40:17 PM

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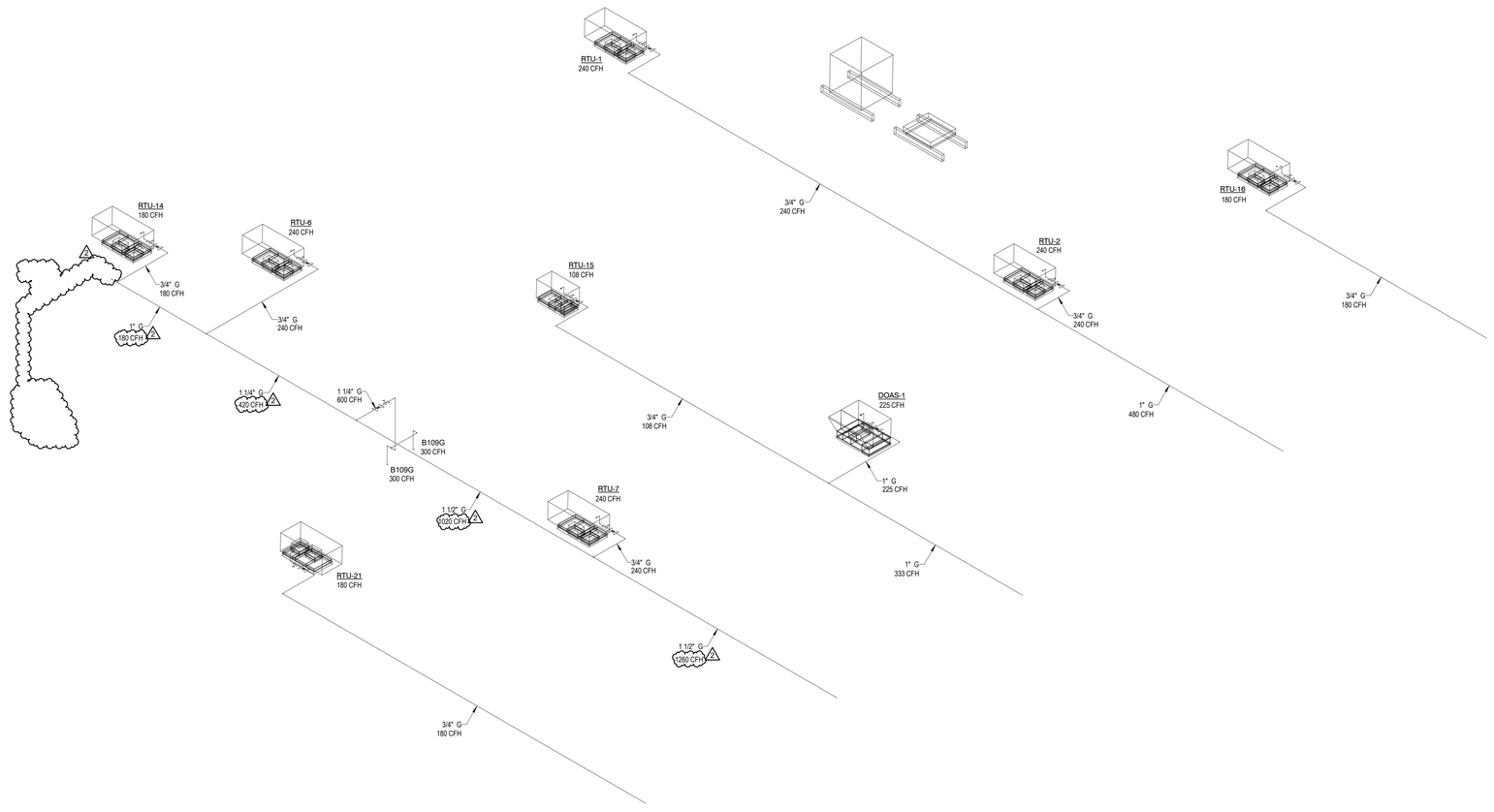
GAS PIPE SIZING BASED ON:
LONGEST RUN = 592'-0"
TOTAL CONNECTED LOAD = 6,351,000BTU
INLET PRESSURE = 2 PSI
PRESSURE DROP = 1.0 PSI
SPECIFIC GRAVITY = 0.60
PLUMBING CODE (2018 IFGC) TABLE 402.4(5)



1 M9.1a GAS RISER - WEST
SCALE:

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REVIEWED BY: RAT

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2	05/04/2023	BULLETIN NO. 10

PROJECT TITLE
KING SOOPERS
KS147

MERIDIAN + WOODMEN
FALCON, CO

COMMISSION NO. 519000
ISSUE DATE 07/27/2022
SHEET TITLE
GAS RISER - WEST

SHEET NO.
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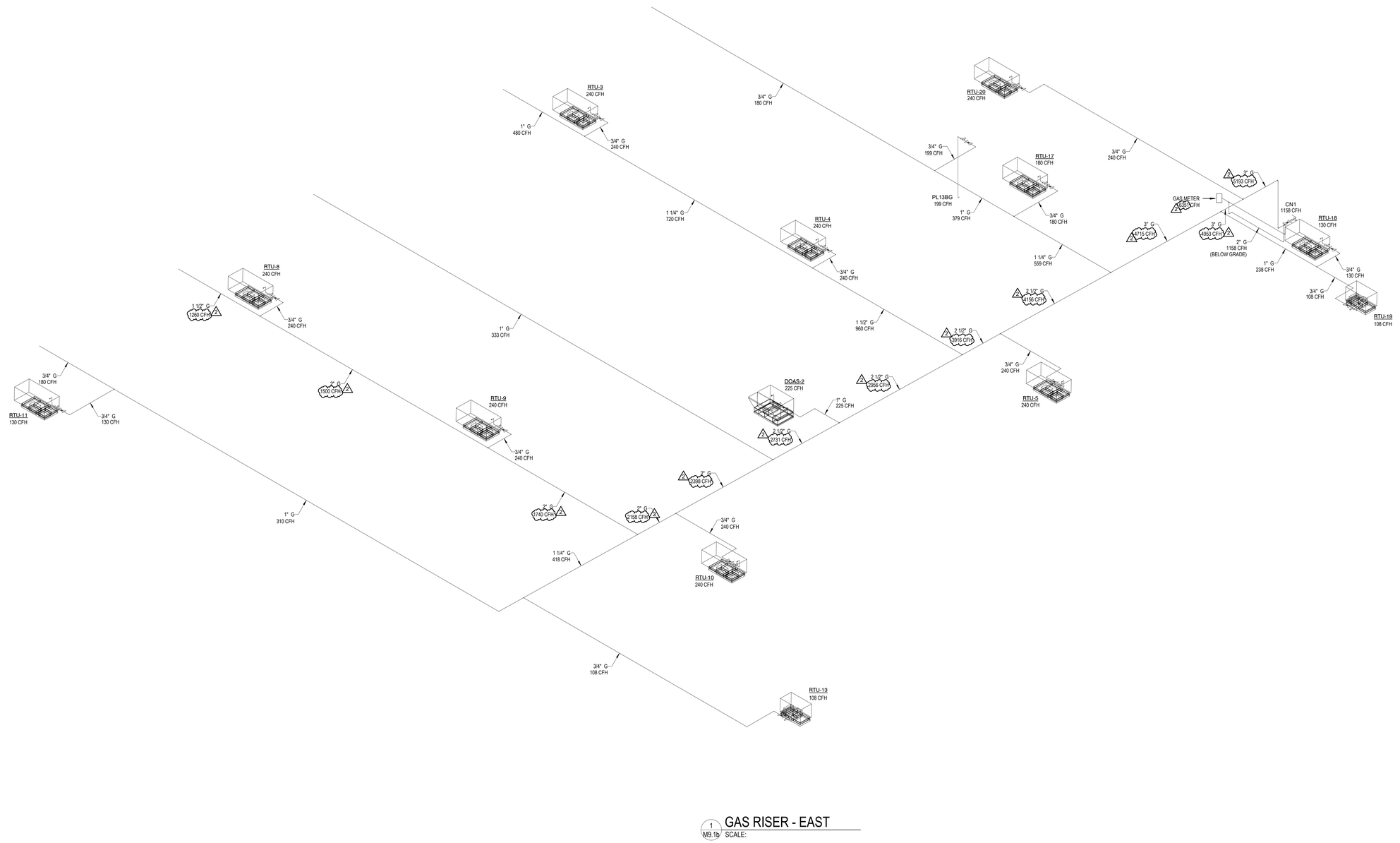
GAS PIPE SIZING BASED ON:
LONGEST RUN = 592'-0"
TOTAL CONNECTED LOAD = 6,351,000 BTU
INLET PRESSURE = 2 PSI
PRESSURE DROP = 1.0 PSI
SPECIFIC GRAVITY = 0.60
PLUMBING CODE (2018 IFGC) TABLE 402.4(5)



1 M9.1b GAS RISER - EAST
SCALE:

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SHEET TITLE
GAS RISER - EAST

SHEET NO.
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HOOD INFORMATION – JOB#4050672

HOOD NO	TAG	MODEL	MANUFACTURER	LENGTH	MAX COOKING TEMP	TYPE	APPLIANCE DUTY	DESIGN CFM/FT	TOTAL EXH CFM	EXHAUST PLENUM RISER(S) WIDTH	LENG	HEIGHT	DIA	CFM	VEL	SP	HOOD CONSTRUCTION	HOOD CONFIG END TO END	ROW
1	K1A: K-0002317	6024 ND-2	CAPTIVEAIRE	8' 0"	450 DEG	I	MEDIUM	175	1400			4"	12"	1400	1783	-0.400"	430 SS WHERE EXPOSED	LEFT	ALONE
2	K1B: K-0002317	6024 ND-2	CAPTIVEAIRE	8' 0"	450 DEG	I	MEDIUM	175	1400			4"	12"	1400	1783	-0.400"	304 SS WHERE EXPOSED	RIGHT	ALONE

HOOD INFORMATION

HOOD NO	TAG	FILTER(S) TYPE	QTY	HEIGHT	LENGTH	EFFICIENCY @ 7 MICRONS	LIGHT(S) QTY	TYPE	WIRE GUARD	UTILITY CABINET(S) LOCATION	SIZE	FIRE SYSTEM TYPE	FIRE SYSTEM SIZE	ELECTRICAL MODEL #	SWITCHES QUANTITY	FIRE SYSTEM PIPING	HOOD HANGING WEIGHT
1	K1A: K-0002317	SS BAFFLE WITH HANDLES	5	16"	16"	30%	3	L55 SERIES E26	NO	LEFT	12"x60"x24"	TANK FS	4.0/4.0	SC-310110MA	1 LIGHT 1 FAN	YES	744 LBS
2	K1B: K-0002317	SS BAFFLE WITH HANDLES	5	16"	16"	30%	3	L55 SERIES E26	NO							YES	420 LBS

HOOD OPTIONS

HOOD NO	TAG	OPTION
1	K1A: K-0002317	FIELD WRAPPER 18.00" HIGH FRONT, LEFT.
		LEFT VERTICAL END PANEL 27" TOP WIDTH, 21" BOTTOM WIDTH, 80" HIGH INSULATED 430 SS.
		SENSOR-CV.
2	K1B: K-0002317	FIELD WRAPPER 18.00" HIGH FRONT, RIGHT.
		RIGHT VERTICAL END PANEL 27" TOP WIDTH, 21" BOTTOM WIDTH, 80" HIGH INSULATED 304 SS.
		SENSOR-CV.

FIRE SYSTEM INFORMATION – JOB#4050672

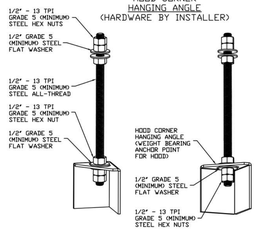
FIRE SYSTEM NO	TAG	TYPE	SIZE	FLOW POINTS	INSTALLATION SYSTEM	LOCATION ON HOOD
1		TANK FS	4.0/4.0	36	FIRE CABINET LEFT	LEFT, HOOD 1

CAPTIVE-AIRE HOODS ARE BUILT IN COMPLIANCE WITH UL 710 AND NFPA 96 AND ARE RECOGNIZED BY ONE OR MORE OF THE FOLLOWING:

ETL SANITATION LISTED

ETL LISTED
FILE# 102900319PRT-001

HOOD CORNER HANGING ANGLE (HARDWARE BY INSTALLER)

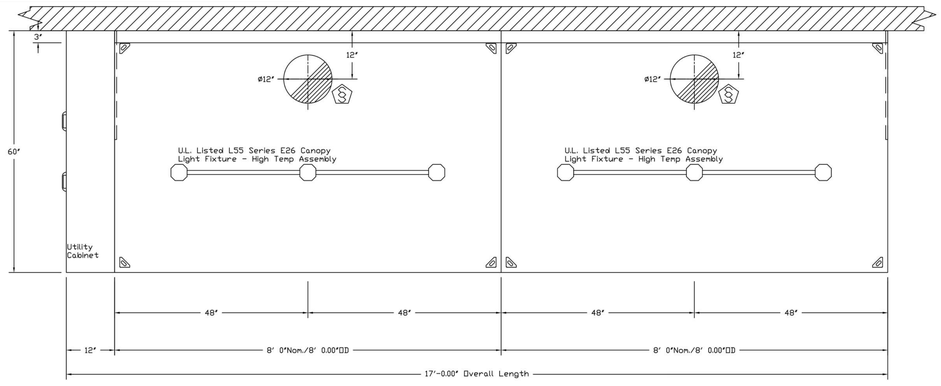


ASSEMBLY INSTRUCTIONS

HANGING ANGLE MUST BE SUPPORTED WITH 1/2" - 13 TPI GRADE 5 (MINIMUM) ALL-THREAD. SANDWICH HANGING ANGLES AND CEILING ANCHOR POINTS WITH 1/2" GRADE 5 (MINIMUM) STEEL FLAT WASHERS AND 1/2" - 13 TPI GRADE 5 (MINIMUM) HEX NUTS AS SHOWN. MUST USE DOUBLED HEX NUT CONFIGURATION BENEATH HOOD HANGING ANGLES AND ABOVE CEILING ANCHORS. MAINTAIN 1/4" OF EXPOSED THREADS BENEATH BOTTOM HEX NUT. TORQUE ALL HEX NUTS TO 57 FT-LBS.

HVAC DISTRIBUTION NOTE

IT IS RECOMMENDED NOT TO INSTALL HIGH VELOCITY DIFFUSERS OR HVAC RETURNS WITHIN TEN (10) FEET OF THE EXHAUST HOOD. PERFORATED DIFFUSERS ARE RECOMMENDED.



PLAN VIEW – Hood #1 (K1A: K-0002317)
8' 0.00" LONG 6024ND-2

PLAN VIEW – Hood #2 (K1B: K-0002317)
8' 0.00" LONG 6024ND-2

UL 300 HOOD FIRE SUPPRESSION SYSTEM

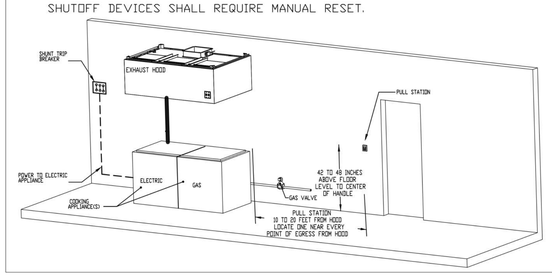
FIRE SYSTEM OPERATION

1. KITCHEN HOOD SHALL BE CONSTRUCTED AND INSTALLED PER NFPA 96.
2. HOOD ELECTRICAL CONTROL PANEL AND FIRE CONTROL SYSTEM SHALL SHUT DOWN KITCHEN HOOD MAKE UP AIR FAN UPON ACTIVATION OF FIRE EXTINGUISHING SYSTEM. KITCHEN HOOD EXHAUST FAN SHALL CONTINUE TO OPERATE OR POWER ON UPON ACTIVATION. THE HOOD ELECTRICAL PANEL AND FIRE SYSTEM WILL PROVIDE MEANS OF INTERLOCK FOR AUTOMATIC OPERATION OF FIRE SUPPRESSION SYSTEM WITH:
   A. GAS VALVE AND/OR SHUNT TRIP BREAKER AS NEEDED FOR FUEL SHUTOFF.
   B. HOOD SUPPLY AND EXHAUST FAN
   C. REMOTE MANUAL PULL STATION
   D. FIRE ALARM SYSTEM NOTIFICATION
3. SEE HOOD DRAWINGS FOR DETAILS.
4. ALL EXPOSED PIPING WITH FIRE SUPPRESSION SYSTEM SHALL BE CHROME PLATED BRASS OR STAINLESS STEEL.
5. MECHANICAL CONTRACTOR SHALL INSTALL CONDUIT IN WALL FOR MANUAL PULL STATION. PULL STATION SHALL BE LOCATED AT OR NEAR A MEANS OF EGRESS FROM THE COOKING AREA.
6. FIRE SUPPRESSION SYSTEM SHALL BE IN ACCORDANCE WITH NFPA96 AND UL 300.

NFPA96 REQUIREMENTS FOR FUEL SHUTOFF IN THE EVENT OF A FIRE:

UPON ACTIVATION OF ANY FIRE-EXTINGUISHING SYSTEM FOR A COOKING OPERATION, ALL SOURCES OF FUEL AND ELECTRICAL POWER THAT PRODUCE HEAT TO ALL EQUIPMENT REQUIRING PROTECTION BY THAT SYSTEM SHALL AUTOMATICALLY SHUT OFF.

SHUTOFF DEVICES SHALL REQUIRE MANUAL RESET.



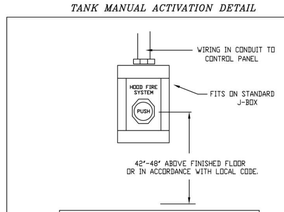
THE TANK WET CHEMICAL FIRE SUPPRESSION SYSTEM IS UL & ULC LISTED IN ACCORDANCE WITH UL300, UL1254, ULCORD-C1254.6 UNDER FILE# EX27953.

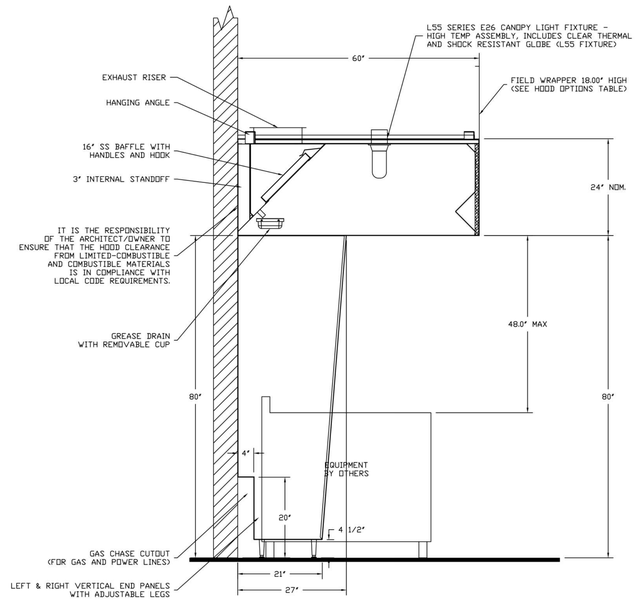
THE MICROPROCESSOR-BASED CONTROL BOARD IS ETL LISTED TO UL864 AND CAN/ULC-S527-11.

THE TANK WET CHEMICAL FIRE SUPPRESSION SYSTEM IS ACCEPTABLE FOR USE IN NEW YORK CITY, IS APPROVED PER FDNY COA #5870.

MEETS THE REQUIREMENTS OF NFPA 96 AND NFPA 17A.

TANK MANUAL ACTIVATION DETAIL





SECTION VIEW – MODEL 6024ND-2
HOODS – #1 & #2 (K1A & K1B: K-0002317)

REVISIONS

#	DESCRIPTION	DATE:
△		
△		
△		
△		

CAPTIVE-AIRE
National Accounts
4641 Paragon Park Rd., Raleigh, NC. 27616 PHONE: (919) 882-2410 FAX: (919) 227-5948 EMAIL: reg15@captiveaire.com
www.captiveaire.com

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PEYTON, CO, 80831

DATE: 11/6/2019
DWG.#: 4050672
DRAWN BY: JAC
SCALE: 3/4" = 1'-0"
MASTER DRAWING

SHEET NO. 1

EXECUTED BY: MLM
REVIEWED BY: DMH

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#	DATE	REVISION
1	10/25/2021	ADDENDUM NO. 2
2	05/19/2023	BULLETIN NO. 11

PROJECT TITLE
KING SOOPERS
KS147

MERIDIAN + WOODMEN
FALCON, CO

COMMISSION NO. 519000
ISSUE DATE 10/04/2021
SHEET TITLE
HVAC DETAILS

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EXHAUST FAN INFORMATION – JOB#4050672

FAN UNIT NO	TAG	QTY	FAN UNIT MODEL #	MANUFACTURER	CFM	ESP	RPM	MOTOR ENCL	HP	BHP	PHASE	VOLT	FLA	DISCHARGE VELOCITY	WEIGHT (LBS)	SONES
1	EF-CC: K-0002356	1	DR12HFA	CAPTIVEAIRE	600	0.125	1467	ODP	0.180	0.1090	1	115	1.9		53	8.5
2	EF-ER: K-0002354	1	DR30HFA	CAPTIVEAIRE	750	0.150	1261	ODP	0.250	0.0900	1	115	3.8		64	7.7
3	EF-ER2 K-0002356	1	DR12HFA	CAPTIVEAIRE	600	0.125	1467	ODP	0.180	0.1090	1	115	1.9		53	8.5
4	EF-G1: PNET42845	1	DU50HFA	CAPTIVEAIRE	900	1.100	1695	TEAO-ECM	0.500	0.3920	1	115	6.3	342 FPM	82	20.1
5	EF-G2: PNET42845	1	DU50HFA	CAPTIVEAIRE	900	1.100	1695	TEAO-ECM	0.500	0.3920	1	115	6.3	342 FPM	82	20.1
6	EF-K1: PNET42845	1	DU180HFA	CAPTIVEAIRE	2800	1.500	1426	ODP,PREMIUM	2.000	1.0810	3	208	8.3	647 FPM	188	22.5
7	EF-R1: K-0002358	1	DR10HFA	CAPTIVEAIRE	150	0.125	926	ODP	0.060	0.0120	1	115	1.1		47	1.8
8	EF-R2: K-0002354	1	DR30HFA	CAPTIVEAIRE	850	0.150	1393	ODP	0.250	0.1220	1	115	3.8		64	9.3
9	EF-R3: K-0002358	1	DR10HFA	CAPTIVEAIRE	300	0.125	1299	ODP	0.060	0.0340	1	115	1.1		47	4.2
10	EF-S: K-0002354	1	DR30HFA	CAPTIVEAIRE	900	0.125	1442	ODP	0.250	0.1350	1	115	3.8		64	10

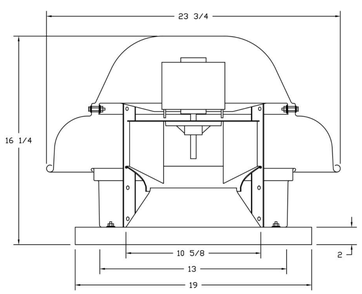
FAN OPTIONS

FAN UNIT NO	TAG	QTY	DESCRIPTION
1	EF-CC: K-0002356	1	I 12-BDD DAMPER
		1	HINGE KIT - SHIPS LOOSE FOR CURB SUPPLIED BY OTHERS
		1	2 YEAR PARTS WARRANTY
2	EF-ER: K-0002354	1	I 15-BDD DAMPER
		1	HINGE KIT - SHIPS LOOSE FOR CURB SUPPLIED BY OTHERS
		1	2 YEAR PARTS WARRANTY
3	EF-ER2 K-0002356	1	I 12-BDD DAMPER
		1	HINGE KIT - SHIPS LOOSE FOR CURB SUPPLIED BY OTHERS
		1	2 YEAR PARTS WARRANTY
4	EF-G1: PNET42845	1	GREASE BOX
		1	HINGE KIT - SHIPS LOOSE FOR CURB SUPPLIED BY OTHERS
		1	ECM WIRING PACKAGE - MANUAL OR 0-10VDC REFERENCE SPEED CONTROL -RTC- (TELCO MOTOR), CCW ROTATION
		1	2 YEAR PARTS WARRANTY
5	EF-G2: PNET42845	1	GREASE BOX
		1	HINGE KIT - SHIPS LOOSE FOR CURB SUPPLIED BY OTHERS
		1	ECM WIRING PACKAGE - MANUAL OR 0-10VDC REFERENCE SPEED CONTROL -RTC- (TELCO MOTOR), CCW ROTATION
		1	2 YEAR PARTS WARRANTY
6	EF-K1: PNET42845	1	GREASE BOX
		1	HINGE KIT - SHIPS LOOSE FOR CURB SUPPLIED BY OTHERS
		1	2 YEAR PARTS WARRANTY
7	EF-R1: K-0002358	1	I 12-BDD DAMPER
		1	HINGE KIT - SHIPS LOOSE FOR CURB SUPPLIED BY OTHERS
		1	2 YEAR PARTS WARRANTY
8	EF-R2: K-0002354	1	I 15-BDD DAMPER
		1	HINGE KIT - SHIPS LOOSE FOR CURB SUPPLIED BY OTHERS
		1	2 YEAR PARTS WARRANTY
9	EF-R3: K-0002358	1	I 12-BDD DAMPER
		1	HINGE KIT - SHIPS LOOSE FOR CURB SUPPLIED BY OTHERS
		1	2 YEAR PARTS WARRANTY
10	EF-S: K-0002354	1	I 15-BDD DAMPER
		1	HINGE KIT - SHIPS LOOSE FOR CURB SUPPLIED BY OTHERS
		1	2 YEAR PARTS WARRANTY

FAN ACCESSORIES

FAN UNIT NO	TAG	EXHAUST			SUPPLY			
		GREASE CUP	GRAVITY DAMPER	WALL MOUNT	SIDE DISCHARGE	GRAVITY DAMPER	MOTORIZED DAMPER	WALL MOUNT
1	EF-CC: K-0002356		YES					
2	EF-ER: K-0002354		YES					
3	EF-ER2 K-0002356		YES					
4	EF-G1: PNET42845	YES						
5	EF-G2: PNET42845	YES						
6	EF-K1: PNET42845	YES						
7	EF-R1: K-0002358		YES					
8	EF-R2: K-0002354		YES					
9	EF-R3: K-0002358		YES					
10	EF-S: K-0002354		YES					

FANS #1 (EF-CC: K-0002356), #3 (EF-ER2: K-0002356) - DR12HFA EXHAUST FAN



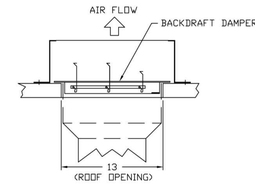
FEATURES:

- DIRECT DRIVE CONSTRUCTION (NO BELTS/PULLEYS)
- ROOF MOUNTED FANS
- UL705
- SAFETY DISCONNECT
- STANDARD BIRD SCREEN
- SPEED CONTROL

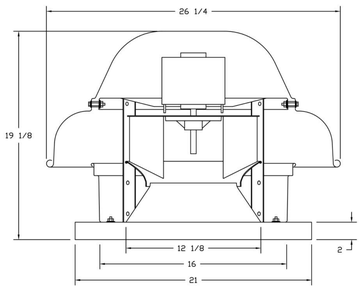
OPTIONS

I 12-BDD DAMPER.
HINGE KIT - SHIPS LOOSE FOR CURB SUPPLIED BY OTHERS.

BACKDRAFT DAMPER INSTALLATION



FANS #2 (EF-ER: K-0002354), #8 (EF-R2: K-0002354), #10 (EF-S: K-0002354) - DR30HFA EXHAUST FAN



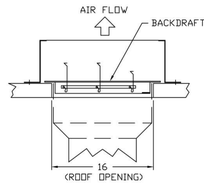
FEATURES:

- DIRECT DRIVE CONSTRUCTION (NO BELTS/PULLEYS)
- ROOF MOUNTED FANS
- UL705
- SAFETY DISCONNECT
- STANDARD BIRD SCREEN
- SPEED CONTROL

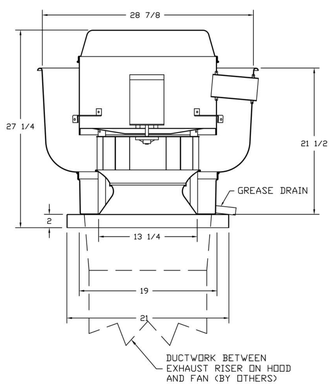
OPTIONS

I 15-BDD DAMPER.
HINGE KIT - SHIPS LOOSE FOR CURB SUPPLIED BY OTHERS.

BACKDRAFT DAMPER INSTALLATION



FANS #4 (EF-G1: PNET42845), #5 (EF-G2: PNET42845) - DU50HFA EXHAUST FAN



FEATURES:

- DIRECT DRIVE CONSTRUCTION (NO BELTS/PULLEYS)
- ROOF MOUNTED FANS
- RESTAURANT MODEL
- UL705 AND UL762 AND ULC-S645
- VARIABLE SPEED CONTROL
- INTERNAL WIRING
- WEATHERPROOF DISCONNECT
- THERMAL OVERLOAD PROTECTION (SINGLE PHASE)
- HIGH HEAT OPERATION 300°F (149°C)
- GREASE CLASSIFICATION TESTING

NORMAL TEMPERATURE TEST
EXHAUST FAN MUST OPERATE CONTINUOUSLY WHILE EXHAUSTING AIR AT 300°F (149°C) UNTIL ALL FAN PARTS HAVE REACHED THERMAL EQUILIBRIUM, AND WITHOUT ANY DETERIORATING EFFECTS TO THE FAN WHICH WOULD CAUSE UNSAFE OPERATION.

ABNORMAL FLARE-UP TEST
EXHAUST FAN MUST OPERATE CONTINUOUSLY WHILE EXHAUSTING BURNING GREASE VAPORS AT 600°F (316°C) FOR A PERIOD OF 15 MINUTES WITHOUT THE FAN BECOMING DAMAGED TO ANY EXTENT THAT COULD CAUSE AN UNSAFE CONDITION.

OPTIONS

GREASE BOX.
HINGE KIT - SHIPS LOOSE FOR CURB SUPPLIED BY OTHERS.
ECM WIRING PACKAGE - MANUAL OR 0-10VDC REFERENCE SPEED CONTROL (TELCO MOTOR), CCW ROTATION.

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KING SOOPERS #147 - FALCON (PEYTON), CO
PEYTON, CO, 80831

DATE: 11/6/2019

DWG.#: 4050672

DRAWN BY: JAC

SCALE: 3/4" = 1'-0"

MASTER DRAWING

SHEET NO. 2

EXECUTED BY: MLM
REVIEWED BY: DMH

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2	05/04/2023	BULLETIN NO. 10
3	05/19/2023	BULLETIN NO. 11

PROJECT TITLE
KING SOOPERS
KS147

MERIDIAN + WOODMEN
FALCON, CO

COMMISSION NO. 519000
ISSUE DATE 10/04/2021
SHEET TITLE
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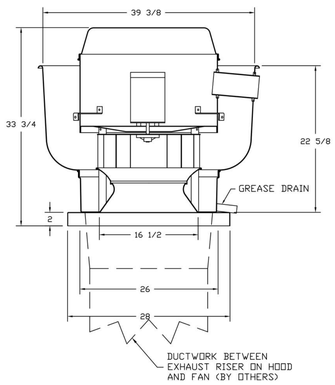
FAN #6 DU180HFA - EXHAUST FAN (CF-K1: PNET42845)



FEATURES:

- DIRECT DRIVE CONSTRUCTION (NO BELTS/PULLEYS)
- ROOF MOUNTED FANS
- RESTAURANT MODEL
- UL705 AND UL762 AND ULC-S645
- VARIABLE SPEED CONTROL
- INTERNAL WIRING
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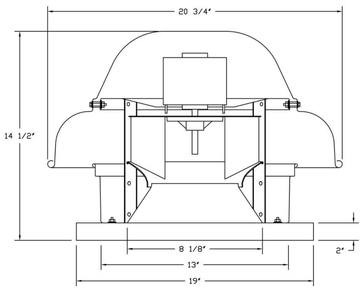
OPTIONS

GREASE BOX.
HINGE KIT - SHIPS LOOSE FOR CURB SUPPLIED BY OTHERS.

FANS #7 (CF-R1: K-0002358), #9 (CF-R3: K-0002358) - DR10HFA EXHAUST FAN



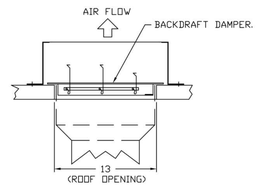
FEATURES:

- DIRECT DRIVE CONSTRUCTION (NO BELTS/PULLEYS).
- ROOF MOUNTED FANS.
- UL705.
- SAFETY DISCONNECT.
- STANDARD BIRD SCREEN.
- SPEED CONTROL.
- THERMAL OVERLOAD PROTECTION (SINGLE PHASE).

OPTIONS

- 1 12-BDD DAMPER.
- HINGE KIT - SHIPS LOOSE FOR CURB SUPPLIED BY OTHERS.
- 2 YEAR PARTS WARRANTY.

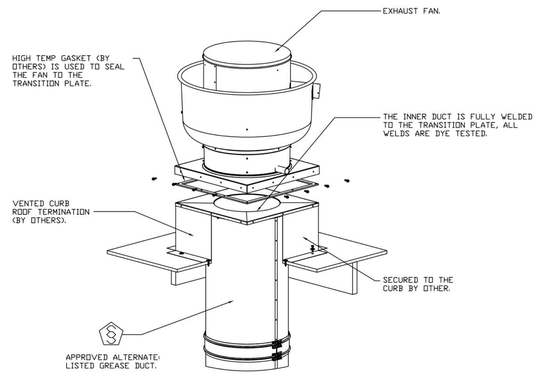
BACKDRAFT DAMPER INSTALLATION



CAPTIVE AIRE UL LISTED DUCT IS APPROVED AS AN ALTERNATE - SPEC BELOW

GREASE DUCT & CHIMNEY SPECIFICATIONS:
PROVIDE GREASE DUCT EQUAL TO CAPTIVEAIRE SYSTEMS MODEL "DW" ROUND 20 GAUGE 430 STAINLESS STEEL DUCTWORK. MODEL "DW" IS LISTED TO UL-1978 AND IS INSTALLED USING "V" CLAMP LOCKING CONNECTIONS SEALED WITH 3M FIRE BARRIER 2000 PLUS. MODEL "DW" DOES NOT REQUIRE WELDING PROVIDING IT HAS BEEN INSTALLED PER THE MANUFACTURES INSTALLATION GUIDE.
PROVIDE RATED ACCESS DOORS AT EVERY CHANGE IN DIRECTION AND EVERY 12' ON CENTER.
PER MANUFACTURES LISTING MODEL "DW" HORIZONTAL RUNS LESS THAN 75 FT. CAN BE SLOPED 1/16" PER 12", HORIZONTAL RUNS MORE THAN 75 FT. CAN BE SLOPED 3/16" PER 12". DUCT SHOULD BE SLOPED AS MUCH AS POSSIBLE TO REDUCE THE CHANCE OF GREASE ACCUMULATION IN HORIZONTAL RUNS.

IF THE DUCT OR CHIMNEY IS WITHIN 18 INCHES OF COMBUSTIBLE MATERIAL, PROVIDE UL-2221 OR UL-103 HT LISTED DOUBLE WALL GREASE DUCT OR DOUBLE WALL CHIMNEY EQUAL TO CAPTIVEAIRE SYSTEMS MODEL "DW- 2R, 2R TYPE HT, 3R, OR 3Z" ROUND 20 GAUGE 430 STAINLESS INNER DUCT INSULATED WITH A 24 GAUGE 430 STAINLESS OUTER SHELL.



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PEYTON, CO, 80831

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DWG.#: 40506672
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SCALE: 3/4" = 1'-0"
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2	05/04/2023	BULLETIN NO. 10
3	05/19/2023	BULLETIN NO. 11

PROJECT TITLE
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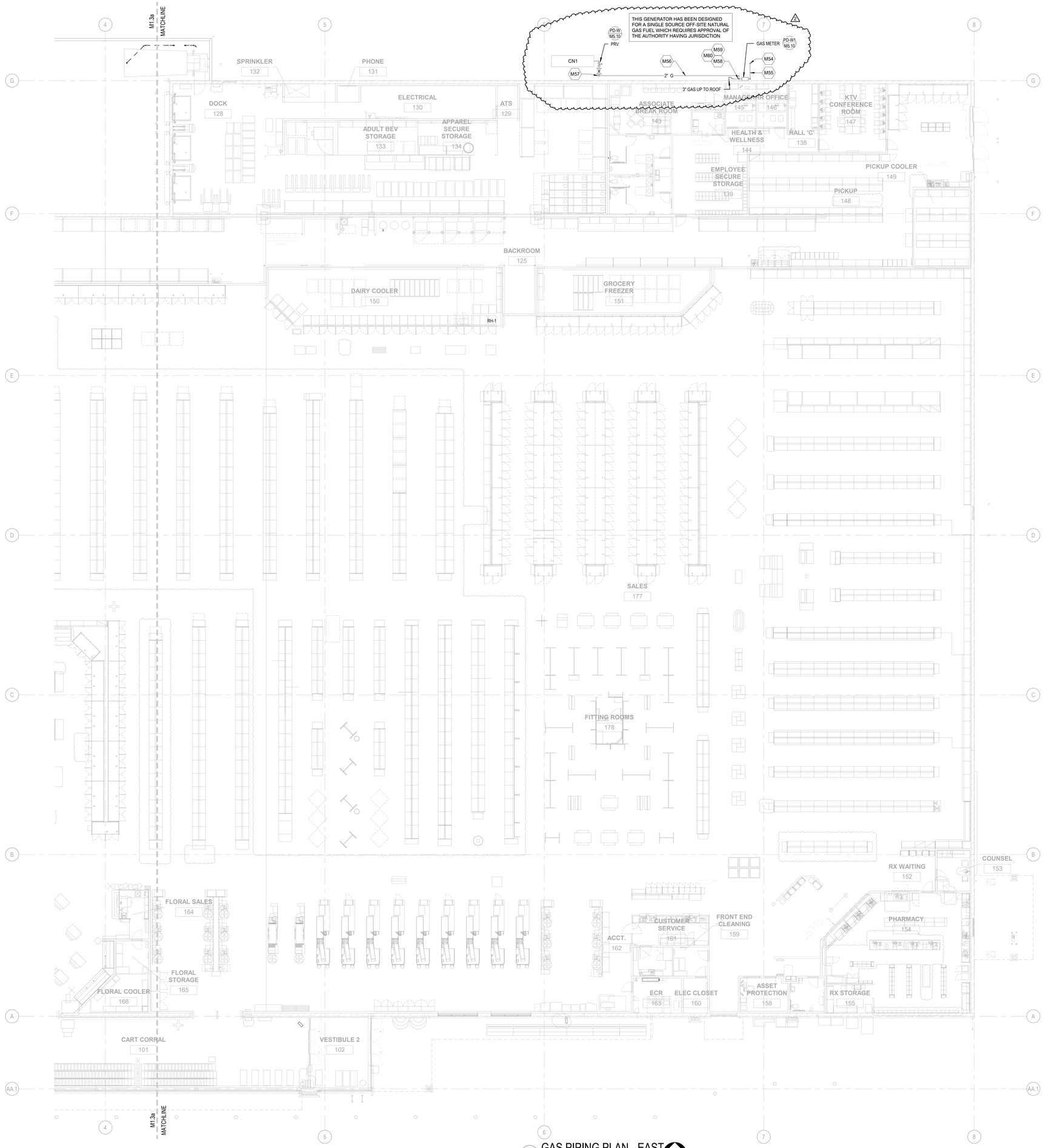

1 M1.3b GAS PIPING PLAN - EAST
SCALE: 3/32" = 1'-0"

NORTH

KEYNOTE LEGEND

NUMBER	KEYNOTE
M54	GAS SERVICE. PIPE SIZE TO BE DETERMINED BY GAS COMPANY. REFER TO SITE UTILITY PLAN FOR CONTINUATION. VERIFY EXISTING GAS PRESSURE WITH LOCAL UTILITY COMPANY.
M55	GAS METER/REGULATOR SETTING BY GAS COMPANY. VERIFY EXISTING GAS PRESSURE WITH LOCAL UTILITY COMPANY PRIOR TO START OF WORK. REFER TO GAS CALCULATION SCHEDULE ON SHEET M6.1.
M56	PIPING LOCATED BELOW GRADE.
M57	GAS PIPING STUB UP FROM BELOW GRADE. COORDINATE PRV LOCATION WITH EQUIPMENT CONNECTIONS AND CONCRETE PLACEMENT.
M58	ABOVE GROUND PORTIONS OF GAS PIPE TO GENERATOR IDENTIFIED BY PERMANENT LABEL WITH THE WORDS "GAS SUPPLY TO EMERGENCY GENERATOR" INSTALLED PER NFPA 37-2010 SECTION 5.4 AND LOCAL UTILITY REQUIREMENTS.
M59	GAS MAIN SHUT OFF VALVE MOUNTED PER THE LOCAL UTILITY COMPANY, IDENTIFIED BY THE WORDS "BUILDING GAS MAIN SHUT OFF VALVE".
M60	GAS SHUT OFF VALVE TO GENERATOR. INSTALL PER NFPA AND LOCAL UTILITY REQUIREMENTS.

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2	08/04/2023	BULLETIN NO. 12

PROJECT TITLE
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FALCON, CO

COMMISSION NO. 519000
ISSUE DATE 07/27/2022
SHEET TITLE
GAS PIPING PLAN - EAST

SHEET NO.
M1.3b

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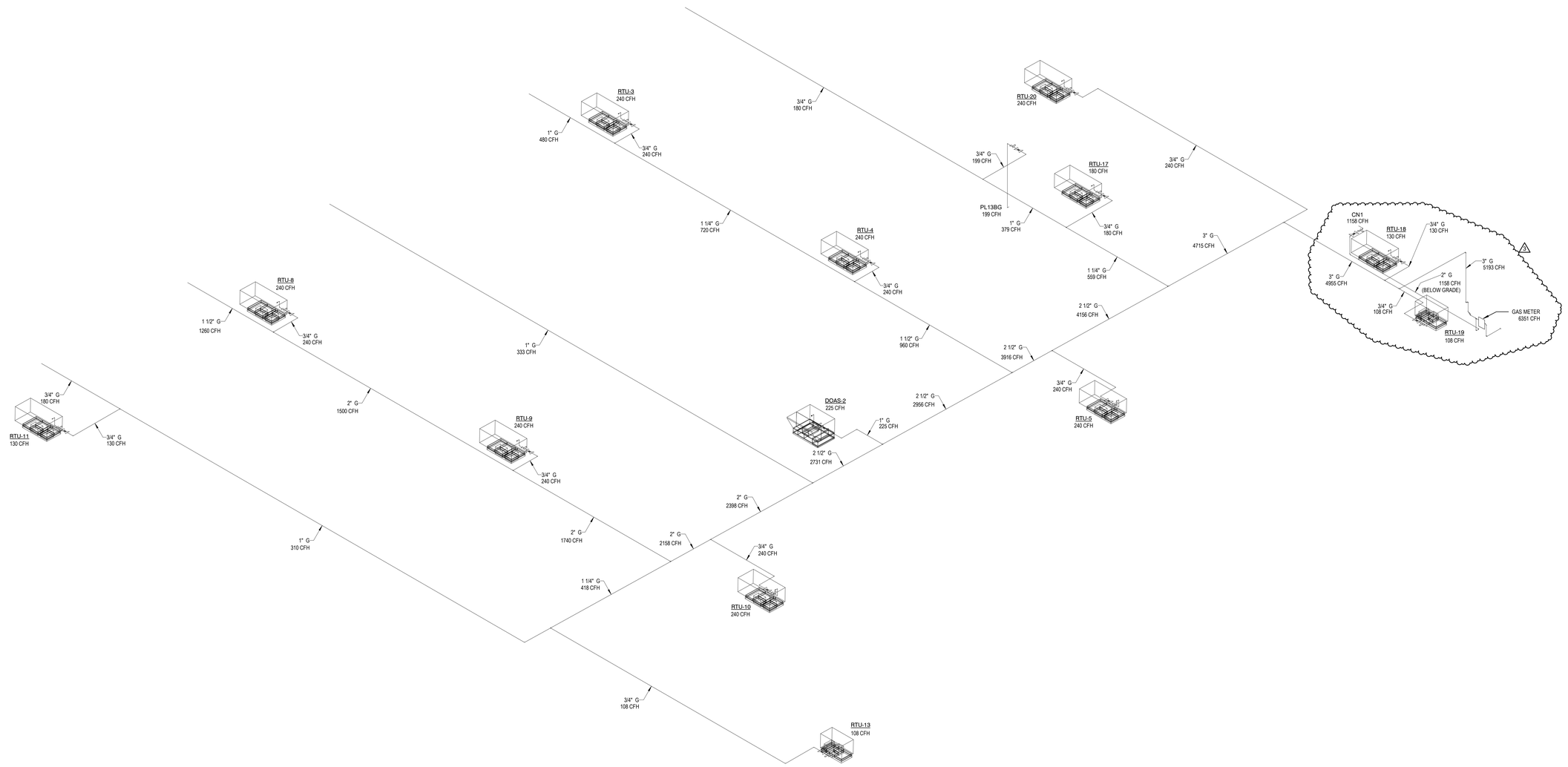
GAS PIPE SIZING BASED ON:
LONGEST RUN = 592'-0"
TOTAL CONNECTED LOAD = 6,351,000 BTU
INLET PRESSURE = 2 PSI
PRESSURE DROP = 1.0 PSI
SPECIFIC GRAVITY = 0.60
PLUMBING CODE (2018 IFGC) TABLE 402.4(5)



1 M9.1b GAS RISER - EAST
SCALE:

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3	08/04/2023	BULLETIN NO. 12

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FALCON, CO

COMMISSION NO. 519000
ISSUE DATE 07/27/2022
SHEET TITLE
GAS RISER - EAST

SHEET NO.
M9.1b

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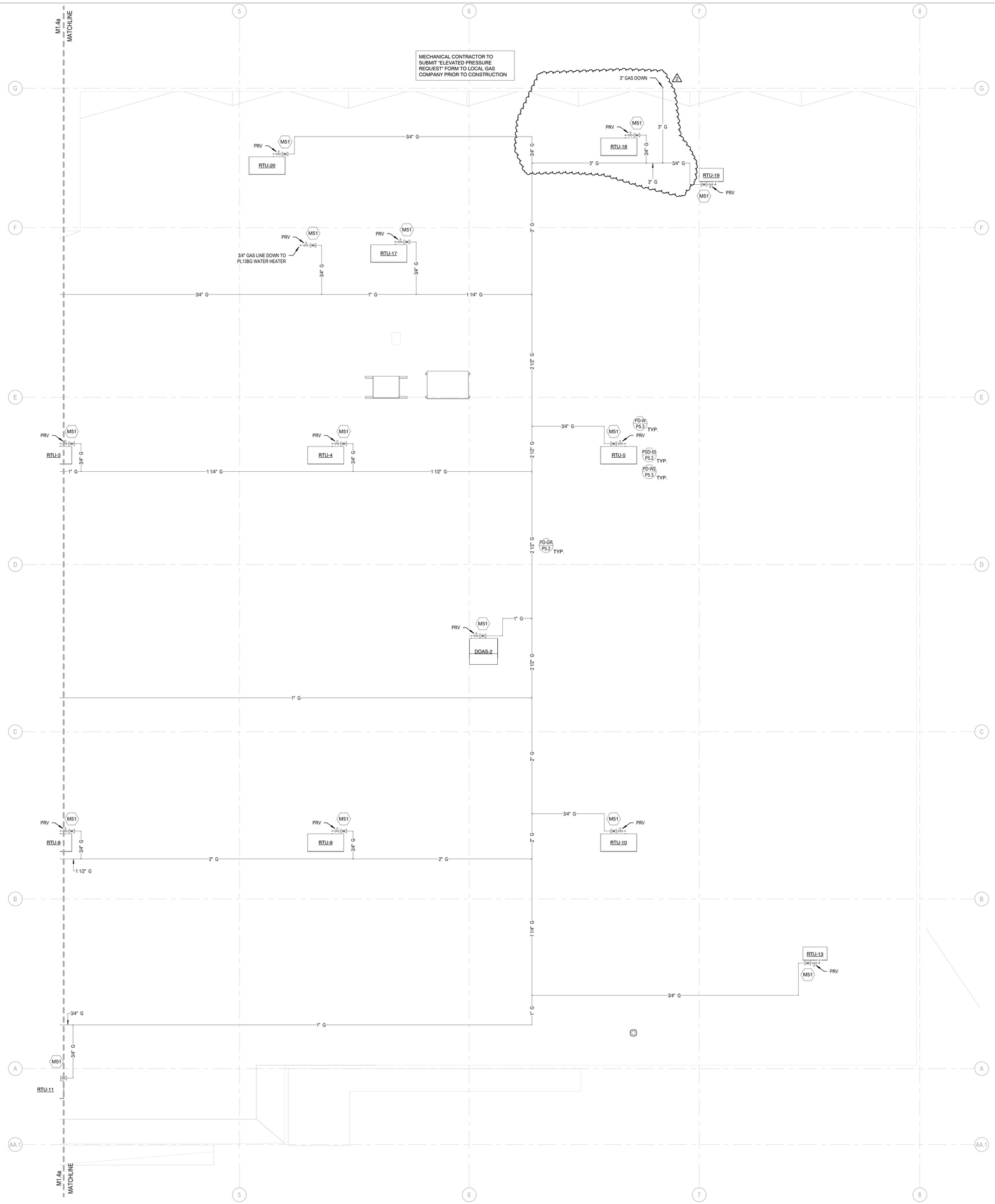

1 GAS PIPING ROOF PLAN - EAST
M1.4b SCALE: 3/32" = 1'-0"

NORTH

KEYNOTE LEGEND

NUMBER	KEYNOTE
M51	PROVIDE GAS COCK, UNION, DIRT LEG, PRV (WHERE REQUIRED) AND FLEXIBLE CONNECTOR AT NEW GAS-FIRED EQUIPMENT. REFER TO SHEET M6.1 FOR PRV SCHEDULE.

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REVIEWED BY: RAT

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#	DATE	REVISION
1	08/01/2022	BULLETIN NO. 4
2	08/04/2023	BULLETIN NO. 12

PROJECT TITLE
KING SOOPERS
KS147

MERIDIAN + WOODMEN
FALCON, CO

COMMISSION NO. 519000
ISSUE DATE 10/04/2021
SHEET TITLE
GAS PIPING ROOF PLAN - EAST

SHEET NO.
M1.4b

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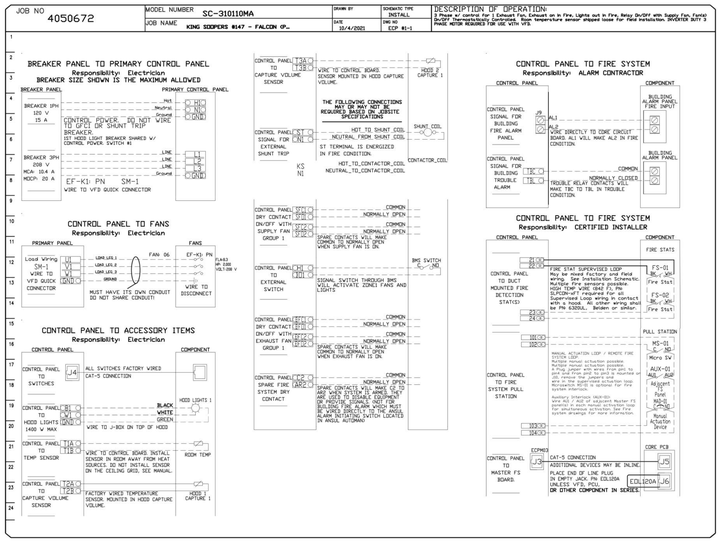
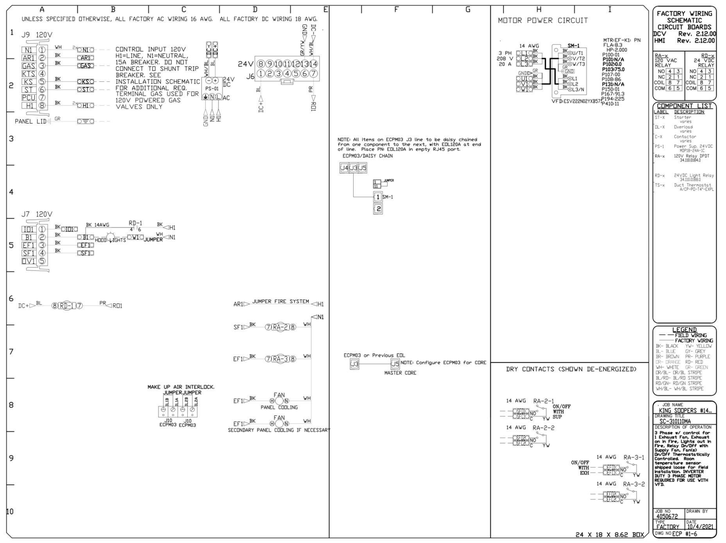
ELECTRICAL PACKAGE – JOB#4050672

NO	TAG	PACKAGE #	LOCATION	SWITCHES		OPTION	FANS CONTROLLED				
				LOCATION	QUANTITY		FAN TAG	TYPE	Φ	HP	VOLT	FLA
1		SC-310110MA	UTILITY CABINET LEFT	03 – UTILITY CABINET LEFT	1 LIGHT	SMART CONTROLS THERMOSTATIC CONTROL W/ RELAY ON/OFF WITH SUPPLY	EF-K1: PNET42845	EXHAUST	3	2.000	208	8.3
				HOOD # 1	1 FAN							
2		SC-110110MA	UTILITY CABINET LEFT	03 – UTILITY CABINET LEFT	1 LIGHT	SMART CONTROLS THERMOSTATIC CONTROL W/ RELAY ON/OFF WITH SUPPLY	EF-K2 K-0002371	EXHAUST	1	0.333	115	5.6
				HOOD # 3	1 FAN							

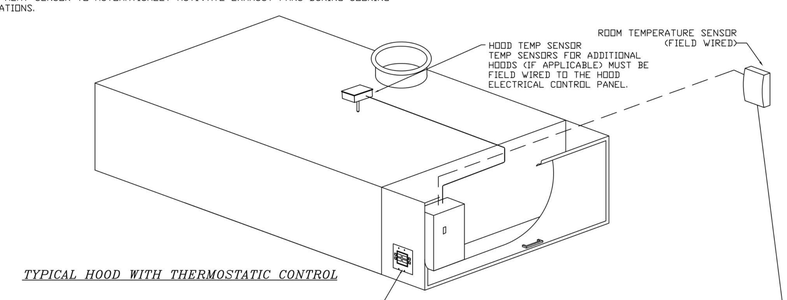
K1 HOOD CONTROL SCHEMATICS →



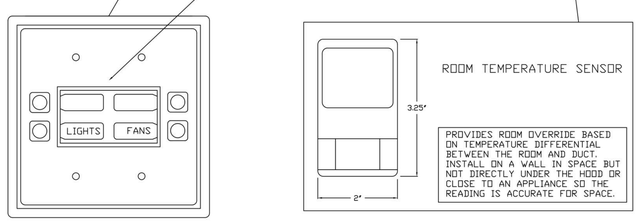


TEMPERATURE SENSOR INTERLOCK

THE TEMPERATURE SENSOR INTERLOCK OPTION COMPLIES WITH IMC 507.1.1.1 AND NFPA 96 11.1.1 BY INTERLOCKING WITH COOKING APPLIANCES THROUGH MEANS OF A HEAT SENSOR TO AUTOMATICALLY ACTIVATE EXHAUST FANS DURING COOKING OPERATIONS.



TYPICAL HOOD WITH THERMOSTATIC CONTROL



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1	10/25/2021	ADDENDUM NO. 2
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KING SOOPERS #147 – FALCON (PEYTON), CO
PEYTON, CO, 80831

DATE: 11/6/2019

DWG.#: 4050672

DRAWN BY: JAC

SCALE: 3/4" = 1'-0"

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SHEET NO. 4

PROJECT TITLE
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MERIDIAN + WOODMEN FALCON, CO

COMMISSION NO. 519000
ISSUE DATE 10/04/2021
SHEET TITLE
HVAC DETAILS

SHEET NO.
M5.5

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SECTION 23 74 33
FACTORY FABRICATED PACKAGED, 100% OUTDOOR, HEATING AND COOLING MAKEUP AIR UNITS

SPECIFICATIONS
TAG: DDAS-1

PART 1 - GENERAL

1.1 SUMMARY

A. This section includes packaged heating and cooling units capable of supplying up to 100 percent outdoor air.

1.2 SUBMITTALS

A. The manufacturer assumes no liability for the use or results of use of this document. This specification is to be reviewed by the engineer to confirm requirements of the project and building codes are met.

B. As the manufacturer continues product development, it reserves the right to change design and specifications without notice.

1.3 SEISMIC DESIGN

A. Should the project be located within a seismic zone requiring special provisions for support and restraint of equipment, components, and piping, Refer to state or local codes for Seismic, Wind, Flood Load Design for additional requirements.

1.4 WIND LOAD DESIGN

A. Refer to state or local codes for Seismic, Wind, Flood Load Design for additional requirements.

1.5 QUALITY ASSURANCE

A. All models shall be ETL listed and conply to safety standards UL 1995, the Standard for Safety for Heating and Cooling Equipment. The Engineer of Record shall take responsibility for the approval of any modifications or additions to the unit, including aftermarket UV or Ionization Filtration devices.Units outfitted with indirect fired heaters shall also comply with ANSI Z83.8-2013, and CSA 2.6-2013.

B. All models shall be ETL listed and conply to safety standards CSA Std. C22.2, No. 236-11.

C. Units outfitted with indirect fired heaters shall also comply with ANSI Z83.8-2013, and CSA 2.6-2013.

D. This unit has been tested in accordance to the following standards:

- ANSI/AHRI Standard 340/360
- ANSI/ASHRAE Standard 37
- AHRI Standard 270/370

1.6 WARRANTY

A. All units shall be provided with the following standard warranties:

1. 10-Year (non-prorated) parts warranty covering the entire unit when accompanied by a company provided service plan. 5-Year (non-prorated) parts warranty covering the entire unit otherwise.
2. 25-year (non-prorated) parts warranty for SS heat exchanger on indirect fired units.

B. This warranty shall not apply if:

1. The equipment is not installed by a qualified installer per the manufacturer's installation instructions shipped with the product.
2. The equipment is not installed in accordance with Federal, State, and Local codes and regulations.
3. The equipment is misused, neglected, or not maintained per the manufacturer's maintenance instructions.
4. The equipment is not operated within its published capacity.
5. The invoice is not paid within the terms of the sales agreement.

C. The manufacturer shall not be liable for incidental and consequential losses and damages potentially attributable to malfunctioning equipment. Should any part of the equipment prove to be defective in material or workmanship within the 10-year period, upon examination by the manufacturer, such part will be repaired or replaced by manufacturer at no charge. The buyer shall pay all labor costs incurred in connection with such repair or replacement. Equipment shall not be returned without manufacturer's prior authorization and all returned equipment shall be shipped by the buyer, freight prepaid to a destination determined by the manufacturer.

PART 2 PRODUCTS

2.1 GENERAL

A. Supply single zone one piece packaged units that are complete as per the following specification, deliver all capacities scheduled, and conform to design indicated herein. Alternate layouts or dimensional changes will not be accepted.

2.2 CABINET

A. Size 2, 3 or 4 units shall be constructed of minimum 20 gauge G-90 galvanized steel riveted together via structural pop-rivets. All metal shall be CNC bent for precise assembly. All metal shall be CNC bent for precise assembly.

1. Rigging Provisions: Cabinet sizes 2, 3 & 4 shall have a structural base constructed of minimum 14 gauge G-90 galvanized steel. Include full-sized fork pockets and lifting points on all four sides. Include full-sized fork pockets and lifting points on all four sides.
2. Roof Construction: The lids shall be fabricated by forming a double-standing, self-locking seam that requires no additional support. Roof shall be pitched to allow for proper drainage.
3. Exterior Wall Construction: All exterior walls shall consist of a double wall, G-90 galvanized steel construction. Cabinet sizes 2, 3 & 4 shall be insulated with 2in. thick, R13 closed cell foam.
4. Service Access Doors: All door jambs shall be gasketed around their perimeter, and allow for doors to be mounted via removable, spring actuated, stainless steel hinges with stainless steel rivets, and self-compressing latches. Each compartment shall have removable access panels to allow for ease of service and maintainability. Electrical cabinet access doors shall have a door hold installed to prop doors open. All doors shall have stainless steel latches which are pad lockable. Electrical cabinet doors shall be outfitted with schematic/manual pouches formed into the door, along with wiring diagram attached to the indoor of the door from the factory.

B. Entire interior and exterior casing shall be constructed of minimum G90 galvanized steel. The unit casing will not be painted. Unit shall have undergone a salt spray corrosion test as per ASTM B 117.

2.3 AIRFLOW CONFIGURATIONS

A. Discharge: Unit shall be configurable for Down (Vertical) Discharge through the unit's base.

B. Return: Unit shall be configurable for Down (Vertical) Return through the unit's base.

C. Unit intake airflow configuration shall be through use of a fresh/outdoor and return air damper.

1. Damper: Shall exceed AMCA Class 1A standard for low leakage. Damper assembly shall be a single assembly, and outfitted with an integral bird screen. Louver/gutter system used to divert any drainage through the unit's base -intake air hood not required.
2. Actuator: A single direct drive damper actuator shall be used with spring return to ensure that the outdoor air section closes when not powered.

2.4 SUPPLY AIR BLOWER AND MOTOR

A. All supply fans shall be direct drive (belt-drive not acceptable) variable speed plenum fans.

B. Blower Motor: Motor shall be a premium efficiency motor available as:

C. Fans to be selected at or near efficiency peak. (Submit fan curves)

D. Blower and motor assembly shall be dynamically balanced. The entire blower and motor assembly shall be mounted on rubber vibration isolators. Wheels balanced as per AMCA 204-96, Balance Quality and Vibration Levels for Fans.

E. Unit equipped with total CFM monitoring to measure airflow across supply discharge.

2.5 REFRIGERATION SYSTEM Fans #1, 2:

A. Unit shall utilize a variable speed inverter duty scroll compressor with the following features:

1. Modulation: Compressor shall be capable of compressor speed modulation from 15%-100% on 5, 6, 7.5, 8, 10, & 12.5 Ton units.
2. Refrigerant: Unit shall be factory charged with R410A refrigerant.
3. Vibration Isolation: Compressor as well as blower assembly shall each be mounted on rubber vibration isolators to reduce transmission of vibration to the building structure.
4. Internal Overload Protection: Compressor shall include internal thermal overload production to protect against excessive motor temperatures.
5. Crankcase Heater: Compressor shall include a crankcase heater to protect against liquid flood-back and elimination of oil foaming on startup. The crankcase heater must remain powered when the compressor is not in operation.
6. Oil Management: Unit shall utilize both passive and active oil return management using Oil Level Sensor and scheduled oil boosts.
7. Monitored Envelope: Unit shall monitor all critical refrigeration points to ensure compressor does not operate outside of safe operating envelope.
8. Throttling Logic: Unit shall allow for high head pressure monitoring throttle mode for high ambient operation, and low suction pressure throttle mode for low capacity operation or any conditions resulting in low suction pressure.
9. Pump-Down: Active pump-down mode with discharge line check valve to protect against liquid migration into compressor during idle times.

B. The unit shall be outfitted with the following:

1. Indoor Coil: Indoor coil shall be a high efficiency 6 row coil design with aluminum fins mechanically bonded to copper tubes. Coil is staggered to increase turbulence, reduce the coil bypass factor, and ultimately increase the time the air stays within the coil. Includes two probe sensors to read average coil face temperature.
2. Electronic Expansion Valve: Each refrigeration circuit will be outfitted with an electronic expansion valve metering device which can be throttled from 0-100% open to allow for precise superheat control.
3. Indoor Coil Drain Pan: The indoor coil shall be outfitted with a sloped stainless steel drain pan. This pan shall be insulated along the entire base to prevent condensation, and outfitted with a safety overflow switch which will automatically shut down cooling operation prior to water overflowing the drain pan in the event of a drain clog. The entire drain pan shall be 20 GA Stainless Steel construction and wrap beneath the entire coil with flashing on entering side of coil to ensure capture of all condensate. Drain pan discharge pipe shall also be stainless steel construction. Drain pan shall be pitched to exceed ASHRAE 62.1 standard.
4. Base of the condensing coil cabinet shall be pitched away fron the unit as a safety to ensure all draining exits away from the curb.
5. Optional Hot Gas Reheat Coil: The unit shall include an optional copper tube and aluminum fin hot gas reheat coil mounted downstream of the indoor coil. This coil shall be controlled via fully modulating hot gas reheat valve to provide precise reheat temperature control. This coil shall include the addition of an evaporative coil leaving condition sensor to maintain a coil dew point. This also prevents operation of a dehumidification call when intake dew point conditions are found to be below space dew point conditions, preventing wasted energy.
6. Outdoor (Condenser) Coil: Outdoor coil shall be a high efficiency coil design with aluminum fins mechanically bonded to copper tubes. The coil shall be downward sloped to protect coil from hail damage. Optional hail guards may also be outfitted to the outdoor coil for added protection from hail bouncing off of the roof of the unit up the coil. Mixed air shall have optional 2"MERV-8 filters.
7. Outdoor Fans: The outdoor coil shall have a vertical discharge outfitted with quiet, efficient, fully modulating Electronically Commutated Motor (ECM) condensing fans. These fans shall modulate to maintain a temperature differential between outside air and the outdoor coil.

C. To help mitigate any long-term potential for leaks or hardware failures, the unit shall be outfitted with the following protection measures:

1. Suction line accumulator for added protection against liquid entering suction line of compressor.
2. Bi-Flow, low pressure drop, filter drier.
3. Electronic Expansion Valve (EEV) For precise superheat control. EEV shall open partially allowing system pressure equalization prior to activation of the compressor.
4. On optional heat pump units, use of a single 3-way reheat valve to prevent obstructions due to valve failure. <HEATPUMP>
5. Protective rubber sleeves installed on all distribution lines of indoor coil to prevent wear from rubbing.
6. All refrigeration ports shall be short-stub assembly and any access port with a transducer or switch is mounted vertically to mitigate risk of bent/cracked stub joints.
7. Refrigeration circuit shall be mechanically CNC pre-bent tubing wherever possible with minimal brazed joints to minimize points for potential refrigeration leaks.
8. Factory tested for leaks via high pressure nitrogen decay and helium tracer gas testing.
9. Suction line temperature sensor failure detection.
10. Preventative failure alerts through a manufacturer provided, cloud based, cellular remote monitoring system.

2.6 HEATING SYSTEM

A. The gas burner shall be an indirect-fired, push-through type, using natural gas or liquid propane gas. The inlet-supply pressure to the unit for natural gas must be 7"w.c. minimum. For liquid propane gas, the minimum inlet supply pressure to the unit must be 11" w.c.

B. Burner shall be a tubular in-shot fired design capable of using natural or LP type gas. Each burner ignition shall be of the direct-spark design with remote flame sensing at inlet of the last firing tube of the gas manifold.

C. Direct-sparking sequence shall last through the complete duration of the trial for ignition period for guaranteed light-off. Burner shall always be lit at maximum gas flow and combustion airflow for guaranteed light-off. Each burner ignition module shall have LED indicators for troubleshooting and a set of exposed prongs for testing flame indication signal.

D. All furnaces shall be controlled by an electronic Vernier-type fully modulating control system capable of achieving 80% combustion efficiency over the entire gas firing range of the unit.

E. Each furnace shall have:

1. A minimum turndown ratio of 6:1 for natural gas and 5:1 for LP gas while maintaining a constant 80% efficiency (90% for high efficiency furnace option). No cold air bypass of the heat exchanger.
2. Each furnace heat exchanger shall be a bent-tube style design made entirely of stainless steel.
3. Stainless steel Quick Seal Connection for gas connection.
4. Manifold and Input gas pressure gauges.
5. Factory piped condensate drain to exterior of cabinet.
6. A combustion flue to be installed on adjacent side as combustion intake with integrated high velocity vent cap.
7. A blocked vent safety airflow switch with high temperature silicone tubing operating off of absolute pressure measured inside of the power-vent blower housing.
8. A high temperature auto-recycling limit with a maximum non-adjustable set point.
9. A manual reset high temperature flame rollout switch with a non-adjustable set point.
10. Each furnace compartment shall have a removable post and panel that allows the furnace to be easily removed for service and maintainability.
11. A power-vent assembly for exhausting flue gases with a PSC or ECM type motor that is securely mounted and easily accessible/removable for service.
12. A 0-10"w.c. gas pressure gauge installed on the gas manifold.

2.7 Controls

A. Unit shall be outfitted with a control board to allow for full control of the entire unit.

B. Provide air flow switch on the supply fan system to sense air flow with available set of contacts for connection to BMS for airflow alerts.

C. All unit controls shall be compatible with BACnet and LonWorks based building management systems.

D. All units shall be outfitted with CASLink cloud based monitoring, which monitors every point of operation. Provides configurable automated fault alert e-mails, and remote control capabilities.

E. Integrated cellular module to provide remote connection to monitoring services to view both real time and historical unit operation. Data shall be stored a minimum of 3 years on the cloud. Data sample rate shall be a maximum of 60 seconds.

F. Temperature Control Systen

1. Low-Ambient Cooling

Fans #1, 2: Unit is factory outfitted with logic allowing for low-ambient operation of the DX system down to 0°F outdoor temperatures purely through software utilizing the standard factory modulating components.

2. Discharge Temp Control (Heating)

Unit modulates the burner flame (current supply in the case of electric heating) to accurately maintain the desired discharge temperature set point and compensate for fluctuations in entering air temperature, air volume and % of DA using heating PID controls designed specifically for the DDAS.

3. Discharge Temp Control (Cooling)

Unit modulates the compressor frequency to accurately maintain the desired discharge temperature set point and compensate for fluctuations in entering air temperature, air volume and % of DA using proprietary cooling PID controls designed specifically for the DDAS.

4. Discharge Temp Control (Heat Pump)

Fans #1, 2: Unit modulates the compressor frequency to accurately maintain the desired discharge temperature set point and compensate for fluctuations in entering air temperature, air volume and % of DA using heating PID controls designed specifically for the DDAS. Minimum and maximum discharge set points can be set to limit the temperature entering the space. When ambient temperatures drop below a user configurable minimum outdoor air temperature set point, or the unit is not able to maintain a user configurable minimum discharge temp for 5 minutes time, the heat pump will initiate its backup heat source. Initiation of backup heater operation shall ensure discharge temps are maintained prior to disabling heat pump to make sure discharge temps are never inpacted during changeover. An optional additional HMI or room thermostat can be used to determine the space temperature. In the case that no temperature sensor is available in the space, the unit will use an internal return temperature sensor. <HEATPUMP>

5. Discharge Humidity Control (Dehumidification)

Fans #1, 2: Unit modulates the compressor frequency to accurately maintain a desired evaporative coil dew point measured via a coil mounted temperature sensor between the evaporative and hot gas reheat coils. A fully modulating hot gas reheat valve shall utilize excess waste heat from the condensing section feeding the hot gas reheat coil with the precise amount of heat needed to accurately reheat the airstream in order to maintain a desired discharge temperature compensating for fluctuations in entering air temperature, air volume and % of DA using proprietary dehumidification PID controls designed specifically for the DDAS.

6. Advanced Total Unit Econonizer: The control system is outfitted standard, without need for any additional hardware, with an Advanced Total Unit Econonizer which will take maximum advantage of as much energy available in the outdoor air conditions in order to run the compressor the minimum amount required at any given incoming air conditions. If the outdoor enthalpy (temperature and relative humidity) permits, the unit will be capable of completely modulating and shutting off compressor to provide "free" cooling and dehumidification as the outdoor air conditions allow.

G. Activation Controls:

1. Activate Based on Intake (Heating)

Unit will activate heating when the intake temperature drops below the desired set point.

2. Activate Based on Intake (Cooling)

Fans #1, 2: Unit will activate cooling when the intake temperature rises above the desired set point.

3. Activate Based on Intake (Dehumidification) Fans #1, 2:

Unit will activate dehumidification when the intake conditions rise above the desired intake set point, with activation set points configured to a Dew Point, Relative Humidity or a combination of Dew Point/Relative Humidity.

4. Activate Based on Space (Heating)

Unit will activate heating when the space temperature drops below the desired set point.

5. Activate Based on Space (Cooling)

Fans #1, 2: Unit will activate cooling when the space temperature rises above the desired set point.

6. Activate Based on Space (Dehumidification) Fans #1, 2:

Unit will activate dehumidification when the space set point rises above the desired space set point, with activation set points configured to a Dew Point, Relative Humidity or a combination of Dew Point/Relative Humidity.

7. Activate Based on Both (Heating)

Unit will activate heating when the space AND intake temperature drop below the desired set point.

8. Activate Based on Both (Cooling)

Fans #1, 2: Unit will activate cooling when the space AND intake temperature rise above the desired set point.

9. Activate Based on Both (Dehumidification)

Fans #1, 2: Unit will activate dehumidification when the space and intake set point rise above the desired space and intake set point, with activation set points configured to a Dew Point, Relative Humidity or a combination of Dew Point/Relative Humidity.

10. Activate Based on Either (Heating)

Unit will activate heating when the space OR intake temperature drops below the desired set point.

11. Activate Based on Either (Cooling)

Fans #1, 2: Unit will activate cooling when the space OR intake temperature rises above the desired set point.

12. Activate Based on Either (Dehumidification)

Fans #1, 2: Unit will activate dehumidification when the space or intake set point rises above the desired space or intake set point, with activation set points configured to a Dew Point, Relative Humidity or a combination of Dew Point/Relative Humidity.

13. Activate Based on Stat (Heating)

Unit will activate heating when the space thermostat sends a 24V signal to W and G on the main control board. Unit will modulate to maintain a constant discharge heat set point.

14. Activate Based on Stat (Cooling)

Fans #1, 2: Unit will activate cooling when the space thermostat sends a 24V signal to Y and G on the main control board. Unit will modulate to maintain a constant discharge cool set point.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine areas and conditions under which packaged units are to be installed. Do not proceed with work until unsatisfactory conditions have been corrected in manner acceptable to Installer.

3.2 INSTALLATION

A. Install in accordance with manufacturer's instructions, drawings, written specifications, manufacturer's installation manual and all applicable building codes.

3.3 CONNECTIONS

A. Piping Installation requirements are specified in other Division 23 Sections. Drawings indicate the general arrangement of piping, fittings, and specialties. Install piping to allow service and maintenance.

B. Duct installation requirements are specified in other Division 23 Sections. Drawings indicate the general arrangement of ducts.

C. Electrical: Conform to applicable requirements in Division 26 Sections.

3.4 SYSTEM START-UP

A. System start up is performed by a factory trained Service Technician.

END OF SECTION 23 74 33

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KING SOOPERS #147 - FALCON(PEYTON), CO - DDAS
PEYTON, CO, 80831

DATE: 5/15/2023

DWG.#: 5990290

DRAWN BY: JAC

SCALE: 3/4" = 1'-0"

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SHEET NO. 4

EXECUTED BY: TDS
REVIEWED BY: JCL

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MERIDIAN + WOODMEN
FALCON, CO

COMMISSION NO. 519000
ISSUE DATE 05/19/2023

SHEET TITLE
HVAC DETAILS

SHEET NO.
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EXHAUST FAN INFORMATION – JOB#4050672

FAN UNIT NO	TAG	QTY	FAN UNIT MODEL #	MANUFACTURER	CFM	ESP	RPM	MOTOR ENCL	HP	BHP	PHASE	VOLT	FLA	DISCHARGE VELOCITY	WEIGHT (LBS)	SONES
1	EF-CC, K-0002356	1	DR12HFA	CAPTIVEAIRE	600	0.125	1467	ODP	0.180	0.1090	1	115	1.9		53	8.5
2	EF-ER, K-0002354	1	DR30HFA	CAPTIVEAIRE	750	0.150	1261	ODP	0.250	0.0900	1	115	3.8		64	7.7
3	EF-ER2 K-0002356	1	DR12HFA	CAPTIVEAIRE	600	0.125	1467	ODP	0.180	0.1090	1	115	1.9		53	8.5
4	EF-G1, PNET42845	1	DU50HFA	CAPTIVEAIRE	900	1.100	1695	TEAO-ECM	0.500	0.3920	1	115	6.3	342 FPM	82	20.1
5	EF-G2, PNET42845	1	DU50HFA	CAPTIVEAIRE	900	1.100	1695	TEAO-ECM	0.500	0.3920	1	115	6.3	342 FPM	82	20.1
6	EF-K1, PNET42845	1	DU180HFA	CAPTIVEAIRE	2800	1.500	1426	ODP,PREMIUM	2.000	1.0810	3	208	8.3	647 FPM	188	22.5
7	EF-R1, K-0002358	1	DR10HFA	CAPTIVEAIRE	150	0.125	926	ODP	0.060	0.0120	1	115	1.1		47	1.8
8	EF-R2, K-0002354	1	DR30HFA	CAPTIVEAIRE	910	0.180	1125	ODP	0.250	0.1220	1	115	3.8		64	9.3
9	EF-R3, K-0002358	1	DR10HFA	CAPTIVEAIRE	300	0.125	1299	ODP	0.060	0.0340	1	115	1.1		47	4.2
10	EF-S, K-0002354	1	DR30HFA	CAPTIVEAIRE	900	0.125	1442	ODP	0.250	0.1350	1	115	3.8		64	10

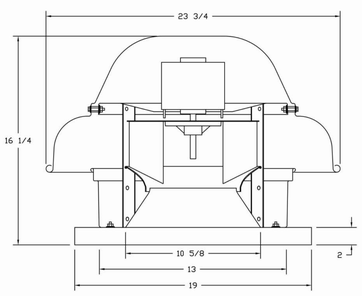
FAN OPTIONS

FAN UNIT NO	TAG	QTY	DESCRIPTION
1	EF-CC, K-0002356	1	I 12-BDD DAMPER
		1	HINGE KIT - SHIPS LOOSE FOR CURB SUPPLIED BY OTHERS
		1	2 YEAR PARTS WARRANTY
2	EF-ER, K-0002354	1	I 15-BDD DAMPER
		1	HINGE KIT - SHIPS LOOSE FOR CURB SUPPLIED BY OTHERS
		1	2 YEAR PARTS WARRANTY
3	EF-ER2 K-0002356	1	I 12-BDD DAMPER
		1	HINGE KIT - SHIPS LOOSE FOR CURB SUPPLIED BY OTHERS
		1	2 YEAR PARTS WARRANTY
4	EF-G1, PNET42845	1	GREASE BOX
		1	HINGE KIT - SHIPS LOOSE FOR CURB SUPPLIED BY OTHERS
		1	ECM WIRING PACKAGE - MANUAL OR 0-10VDC REFERENCE SPEED CONTROL -RTC- (TELCO MOTOR), CCW ROTATION
		1	2 YEAR PARTS WARRANTY
5	EF-G2, PNET42845	1	GREASE BOX
		1	HINGE KIT - SHIPS LOOSE FOR CURB SUPPLIED BY OTHERS
		1	ECM WIRING PACKAGE - MANUAL OR 0-10VDC REFERENCE SPEED CONTROL -RTC- (TELCO MOTOR), CCW ROTATION
		1	2 YEAR PARTS WARRANTY
6	EF-K1, PNET42845	1	GREASE BOX
		1	HINGE KIT - SHIPS LOOSE FOR CURB SUPPLIED BY OTHERS
		1	2 YEAR PARTS WARRANTY
7	EF-R1, K-0002358	1	I 12-BDD DAMPER
		1	HINGE KIT - SHIPS LOOSE FOR CURB SUPPLIED BY OTHERS
		1	2 YEAR PARTS WARRANTY
8	EF-R2, K-0002354	1	I 15-BDD DAMPER
		1	HINGE KIT - SHIPS LOOSE FOR CURB SUPPLIED BY OTHERS
		1	2 YEAR PARTS WARRANTY
9	EF-R3, K-0002358	1	I 12-BDD DAMPER
		1	HINGE KIT - SHIPS LOOSE FOR CURB SUPPLIED BY OTHERS
		1	2 YEAR PARTS WARRANTY
10	EF-S, K-0002354	1	I 15-BDD DAMPER
		1	HINGE KIT - SHIPS LOOSE FOR CURB SUPPLIED BY OTHERS
		1	2 YEAR PARTS WARRANTY

FAN ACCESSORIES

FAN UNIT NO	TAG	EXHAUST			SUPPLY			
		GREASE CUP	GRAVITY DAMPER	WALL MOUNT	SIDE DISCHARGE	GRAVITY DAMPER	MOTORIZED DAMPER	WALL MOUNT
1	EF-CC, K-0002356		YES					
2	EF-ER, K-0002354		YES					
3	EF-ER2 K-0002356		YES					
4	EF-G1, PNET42845	YES						
5	EF-G2, PNET42845	YES						
6	EF-K1, PNET42845	YES						
7	EF-R1, K-0002358		YES					
8	EF-R2, K-0002354		YES					
9	EF-R3, K-0002358		YES					
10	EF-S, K-0002354		YES					

FANS #1 (EF-CC, K-0002356), #3 (EF-ER2, K-0002356) - DR12HFA EXHAUST FAN



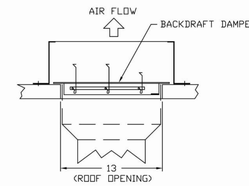
FEATURES:

- DIRECT DRIVE CONSTRUCTION (NO BELTS/PULLEYS)
- ROOF MOUNTED FANS
- UL705
- SAFETY DISCONNECT
- STANDARD BIRD SCREEN
- SPEED CONTROL

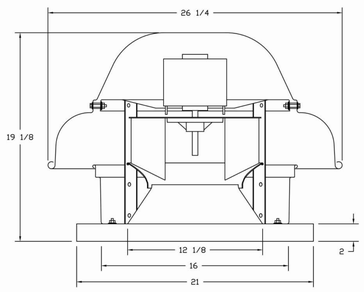
OPTIONS

I 12-BDD DAMPER.
HINGE KIT - SHIPS LOOSE FOR CURB SUPPLIED BY OTHERS.

BACKDRAFT DAMPER INSTALLATION



FANS #2 (EF-ER, K-0002354), #8 (EF-R2, K-0002354), #10 (EF-S, K-0002354) - DR30HFA EXHAUST FAN



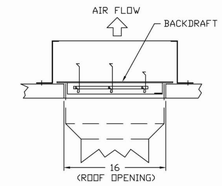
FEATURES:

- DIRECT DRIVE CONSTRUCTION (NO BELTS/PULLEYS)
- ROOF MOUNTED FANS
- UL705
- SAFETY DISCONNECT
- STANDARD BIRD SCREEN
- SPEED CONTROL

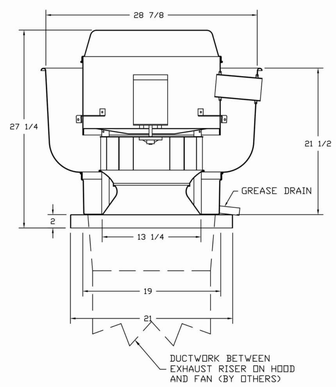
OPTIONS

I 15-BDD DAMPER.
HINGE KIT - SHIPS LOOSE FOR CURB SUPPLIED BY OTHERS.

BACKDRAFT DAMPER INSTALLATION



FANS #4 (EF-G1, PNET42845), #5 (EF-G2, PNET42845) - DU50HFA EXHAUST FAN



FEATURES:

- DIRECT DRIVE CONSTRUCTION (NO BELTS/PULLEYS)
- ROOF MOUNTED FANS
- RESTAURANT MODEL
- UL705 AND UL762 AND ULC-S645
- VARIABLE SPEED CONTROL
- INTERNAL WIRING
- WEATHERPROOF DISCONNECT
- THERMAL OVERLOAD PROTECTION (SINGLE PHASE)
- HIGH HEAT OPERATION 300°F (149°C)
- GREASE CLASSIFICATION TESTING

NORMAL TEMPERATURE TEST
EXHAUST FAN MUST OPERATE CONTINUOUSLY WHILE EXHAUSTING AIR AT 300°F (149°C) UNTIL ALL FAN PARTS HAVE REACHED THERMAL EQUILIBRIUM, AND WITHOUT ANY DETERIORATING EFFECTS TO THE FAN WHICH WOULD CAUSE UNSAFE OPERATION.

ABNORMAL FLARE-UP TEST
EXHAUST FAN MUST OPERATE CONTINUOUSLY WHILE EXHAUSTING BURNING GREASE VAPORS AT 600°F (316°C) FOR A PERIOD OF 15 MINUTES WITHOUT THE FAN BECOMING DAMAGED TO ANY EXTENT THAT COULD CAUSE AN UNSAFE CONDITION.

OPTIONS

GREASE BOX.
HINGE KIT - SHIPS LOOSE FOR CURB SUPPLIED BY OTHERS.
ECM WIRING PACKAGE - MANUAL OR 0-10VDC REFERENCE SPEED CONTROL (TELCO MOTOR), CCW ROTATION.

REVISIONS

	DESCRIPTION	DATE:
1		
2		
3		
4		

CAPTIVE-AIRE

National Accounts

4641 Paragon Park Rd. ,Raleigh, NC. 27616 PHONE: (919) 882-2410 FAX: (919) 227-5948 EMAIL: rog15@captiveaire.com

www.captiveaire.com

KING SOOPERS #147 - FALCON (PEYTON), CO

PEYTON, CO, 80831

DATE: 11/6/2019

DWG.#: 4050672

DRAWN BY: JAC

SCALE: 3/4" = 1'-0"

MASTER DRAWING

SHEET NO. 2

EXECUTED BY: MLM
REVIEWED BY: DMH

CINCINNATI 600 Vine Street suite 2210 Cincinnati, OH 45202 P 513.271.8080
DENVER 1675 Broadway suite 2480 Denver, CO 80202 P 800.469.4949
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DATE	ISSUE
11/21/2019	90% OWNER REVIEW
10/04/2021	ISSUED FOR BID

#	DATE	REVISION
1	10/25/2021	ADDENDUM NO. 2
2	05/04/2023	BULLETIN NO. 10
3	05/19/2023	BULLETIN NO. 11
4	01/05/2024	BULLETIN NO. 14

PROJECT TITLE
KING SOOPERS
KS147

MERIDIAN + WOODMEN
FALCON, CO

COMMISSION NO. 519000
ISSUE DATE 10/04/2021
SHEET TITLE
HVAC DETAILS

SHEET NO.
M5.3

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5/19/2023 11:24:57 AM

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KING Soopers

DATE	ISSUE
11/21/2019	90% OWNER REVIEW
10/04/2021	ISSUED FOR BID

#	DATE	REVISION
1	10/25/2021	ADDENDUM NO. 2
2	05/19/2023	BULLETIN NO. 11

PROJECT TITLE
KING SOOPERS
KS147

MERIDIAN + WOODMEN
FALCON, CO

COMMISSION NO. 519000
ISSUE DATE 10/04/2021

SHEET TITLE
HVAC DETAILS

SHEET NO.
M5.7

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11/21/2019	90% OWNER REVIEW
10/04/2021	ISSUED FOR BID

#	DATE	REVISION
1	10/25/2021	ADDENDUM NO. 2
2	05/19/2023	BULLETIN NO. 11

PROJECT TITLE
KING SOOPERS
KS147

MERIDIAN + WOODMEN
FALCON, CO

COMMISSION NO. 519000
ISSUE DATE 10/04/2021
SHEET TITLE
HVAC DETAILS

SHEET NO.
M5.6

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Double T Balancing Company, LLC
5910 S. University Blvd.
C-18, #354
Greenwood Village, CO 80121
303-660-0620
NEBB Certified Testing & Balancing

TEST, ADJUST & BALANCE REPORT

DATE
7/5/2024

PROJECT
1441 - King Soopers - Falcon - DOAS 2
Meridian & Woodman
Falcon, CO 80831

ARCHITECT

DESIGN ENGINEER

CONTRACTED BY
National Tab
1329 E. Kemper Rd, STE4210
Cincinnati, OH 45246

TAB FIRM
Double T Balancing Company
5910 S. University Blvd.
Greenwood Village, CO 80121
(303) 660-0620

DOUBLE T BALANCING COMPANY, LLC
5910 S. University Blvd.
C-18, #354
Greenwood Village, CO 80121
Phone: 303-660-0620

NEBB CERTIFIED TESTING & BALANCING

CERTIFICATION PAGE

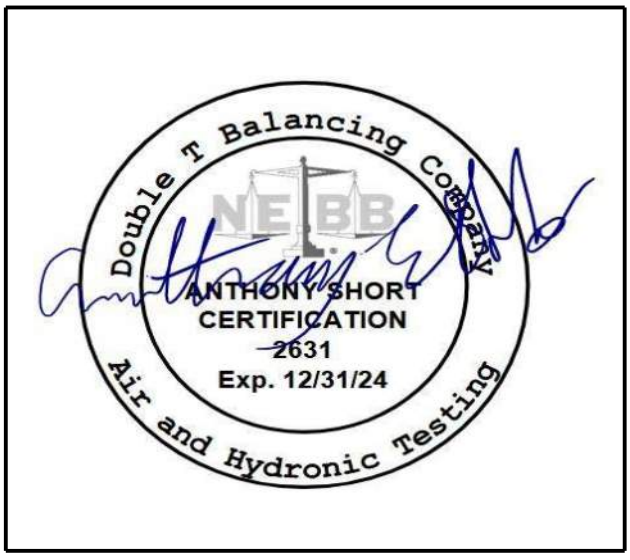
PROJECT NAME: 1441 - King Soopers - Falcon - DOAS 2
ADDRESS: Meridian & Woodman
Falcon, CO 80831

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 Double T Balancing Company
REG NO. 2631 CERTIFIED BY Tony Short DATE 7/8/2024

SUBMITTED & CERTIFIED BY:

NEBB TAB FIRM Double T Balancing Company
TAB PROFESSIONAL Owner
REG NO. 2631
CERTIFICATION EXPIRATION DATE 12/31/2024



DOUBLE T BALANCING COMPANY, LLC
5910 S. University Blvd.
C-18, #354
Greenwood Village, CO 80121
Phone: 303-660-0620

NEBB CERTIFIED TESTING & BALANCING

INSTRUMENT CALIBRATION LIST

INSTRUMENT	MANUFACTURER	MODEL / SERIAL #	CALIBRATION DATE	CALIBRATION DUE DATE
Flowhood Meter	Shortridge Instruments	ADM-860 / M97246	7/26/2023	7/26/2024
True RMS Meter	Fluke	325 / 44160325WS	7/26/2023	7/26/2024

Certificate of Accredited and Traceable Calibration

LAERIE Calibration & Metrology Services	Laerie, Inc. Issues this Certificate of Calibration to:	**Certificate Number: 123483.4408**
	Double T Balancing	Customer Purchase Order:
	609 W Littelton Blvd #212 Littleton, CO 80120	Calibration Type: **CAL-2 NEBB**

For Asset: **M05784**

This calibration is traceable to the international system of units(SI), through National Institute of Standards and Technology (NIST).
Hutchinson's method is used including Guard Banding and TUR Strategy, False-Accept Risk normal distribution and 95% confidence level typical with coverage factor of 2.
Double T Balancing : accepts and understands measurement uncertainties and risk assessment in all measurements involved in calibration.

Manufacturer	Model	Serial Number	Description	Calibrated	Int. MTh's	Re-Cal
Shortridge Instruments, Inc.	ADM-860C	M05784	Airdata Multimeter	25-Jul-2023	12	**25-Jul-2024**

C-Procedure	Environmental	As-Received Physical Condition(s)
LAP : NEBB 2023	73.4°F ±9°F, 40 to 65%RH	1) AS-Received Annual maintenance performed, nominal exterior cosmetic wear, exterior cleaned where possible, initial inspection PASS.
Calibration Event:		

2FL: NEBB Compliant Calibration performed published data no adjustments required or performed.

Primary References Traceability Number Used in Calibration

REF	Projected Re-Cal.	Description	REF	Projected Re-Cal.	Description
T10014	6/2024	Temp Scanner Module			
5338	9/2024	PRT Probe			
10014	9/2024	Pressure Calibrator			

Comments:

www.laerie.com

Laboratory Altitude: 5,063.25 Ft.

56 Gateway Circle Berthoud, Colorado 80513
877-532-7990 970-532-7990

Veridical Review By:
L. E. Armfield CEO/President

Procedure Executed by:
JRN

TCC 2021-18C

CALIBRATION LOCATION: Laerie Inc. Laboratory

LAERIE
Calibration & Metrology Services

Environmental:73.4 °F±(9°F) RH(40 to 65)%

UUC Manufacturer:	Shortridge Instruments	Calibration Event:	**FOUND-LEFT**		Calibration Performance Report for:
Model:	ADM-860C	Description:	Temperature/Pressure Meter/Probe		
S/N:	M05784	ID:	**M05784/M12386-TP**	Eng. / Metrologist:	
CAL-DATE:	**7/25/2023**	CAL-DUE:	***7/25/2024***		

Calibration Performed:	% of range	REF inH_2O	Min inH_2O	UUC Ind inH_2O	Max inH_2O	Compilation			
Pressure Accuracy ±2% R ± .001 inH_20	**0.00**	**0.000**	**-0.001**	0.0000	**0.001**	**Calibrated**			
	20.00	**10.000**	**9.799**	10.009	**10.201**	**Calibrated**			
	50.00	**25.000**	**24.499**	25.003	**25.501**	**Calibrated**			
	80.00	**40.000**	**39.199**	40.004	**40.801**	**Calibrated**			

Calibration Performed:	% of range	REF	MIN	UUC	MAX	Compilation			
Temperature Accuracy 0 to 200 °F ±.5 % R + 2F	**20.00**	**40.0104 °F**	**37.81 °F**	39.7 °F	**42.21 °F**	**Calibrated**			
	50.00	**99.9486 °F**	**97.45 °F**	99.5 °F	**102.45 °F**	**Calibrated**			
	80.00	**159.9606 °F**	**157.16 °F**	159.5 °F	**162.76 °F**	**Calibrated**			

Calibration Performed:		REF	MIN	UUC	MAX	Compilation			
Absolute Pressure ±2% R ± .1 inHg		**25.030 inHg**	**24.429 inHg**	25.100 inHg	**25.631 inHg**	**Calibrated**			
	Absolute pressure is not specified by NEBB. This information is for information only								

LAERIE
Calibration & Metrology Services
56 Gateway Circle
Berthoud, Colorado 80513
Office: 970-532-7990
TF: 1-877-532-7990 Fax: 970-532-7992
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LAERIE
Calibration & Metrology Services

Environmental:73.4 °F±(9°F) RH(40 to 65)%

Certificate of Accredited and Traceable Calibration

LAERIE Calibration & Metrology Services	Laerie, Inc. Issues this Certificate of Calibration to:	**Certificate Number: 44610.6157**
	Double T Balancing	Customer Purchase Order:
	609 W Littelton Blvd #212 Littleton, CO 80120	Calibration Type: **CAL-2 NEBB**

For Asset: **44160325WS**

This calibration is traceable to the international system of units(SI), through National Institute of Standards and Technology (NIST).
Hutchinson's method is used including Guard Banding and TUR Strategy, False-Accept Risk normal distribution and 95% confidence level typical with coverage factor of 2.

Double T Balancing : accepts and understands measurement uncertainties and risk assessment in all measurements involved in calibration.

Manufacturer	Model	Serial Number	Description	Calibrated	Int. MTh's	Re-Cal
Fluke	325	44160325WS	True RMS Clamp Meter	26-Jul-2023	12	**26-Jul-2024**

C-Procedure	Environmental	As-Received Physical Condition(s)
MPS/LAP	73.4°F ±9°F, 40 to 65%RH	1) AS-Received Annual maintenance performed, nominal exterior cosmetic wear, exterior cleaned where possible, initial inspection PASS.
Calibration Event:		

2FL: NEBB Compliant Calibration performed published data no adjustments required or performed.

Primary References Traceability Number Used in Calibration

REF	Projected Re-Cal.	Description	REF	Projected Re-Cal.	Description
9707	9/2023	50 Current Loop			
T0C22	4/2024	Calibrator			

Comments:

www.laerie.com

Laboratory Altitude: 5,063.25 Ft.

56 Gateway Circle Berthoud, Colorado 80513
877-532-7990 970-532-7990

Veridical Review By:
L. E. Armfield CEO/President

TCC 2021-18C

Procedure Executed by:
JRN

CALIBRATION LOCATION: Laerie Inc. Laboratory

LAERIE
Calibration & Metrology Services

Environmental:73.4 °F±(9°F) RH(40 to 65)%

UUC Manufacturer: Southwire		Calibration Event:	**FOUND-LEFT**		Calibration Performance Report for:
Model: 21550T		Description: DMM - Clamp meter			**Double T Balancing**
S/N: 44160325WS	ID:	**44160325WS**		Eng. / Metrologist:	
CAL-DATE: **7/26/2023**	CAL-DUE:	***7/26/2024***		**JRN**	

Calibration Performed:		Range	REF	Min	UUC Ind	Max	Compilation	
AS-FOUND AC Volts Accuracy 60 Hz RANGE 0-600 VAC		**20.0 %**	**120 VAC**	**117.1 VAC**	119.9 VAC	**122.9 VAC**	**Calibrated**	
		50.0 %	**300 VAC**	**293.5 VAC**	299.8 VAC	**306.5 VAC**	**Calibrated**	
		80.0 %	**480 VAC**	**469.9 VAC**	479.9 VAC	**490.1 VAC**	**Calibrated**	

Calibration Performed:		Range	REF AAC	Min AAC	UUC Ind AAC	Max AAC	Compilation	Calibrator Setting for 50 Turn Coil
AS-FOUND AC Current Accuracy 60 Hz RANGE 0-100 AMPS		**20.0 %**	**20.000 AAC**	**19.6 AAC**	20.09 AAC	**20.5 AAC**	**Calibrated**	**0.4000 AAC**
		50.0 %	**50.000 AAC**	**48.5 AAC**	50.2 AAC	**51.5 AAC**	**Calibrated**	**1.0000 AAC**
		80.0 %	**80.000 AAC**	**77.9 AAC**	80.4 AAC	**82.1 AAC**	**Calibrated**	**1.6000 AAC**

LAERIE
Calibration & Metrology Services
56 Gateway Circle
Berthoud, Colorado 80513
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TF: 1-877-532-7990 Fax: 970-532-7992
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5910 S. University Blvd.
C-18, #354
Greenwood Village, CO 80121
Phone: 303-660-0620

NEBB CERTIFIED TESTING & BALANCING

ABBREVIATIONS LIST

ABBREVIATIONS	
AHU	AIR HANDLING UNIT
AMP	AMPERAGE
AFMS	AIR FLOW MONITORING STATION
ATM	ATMOSPHERE
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
D.D.	DIRECT DRIVE
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
NPSH	NET POSITIVE SUCTION HEAD
NPSHA	NPSH AVAILABLE
NPSHR	NPSH REQUIRED
OA	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

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Project Summary

Project: King Soopers - Falcon - DOAS 2

Item No.	Device	Description	Page Number
	DOAS-2	*Initially running at 140% of design. Unit controller is locked out at 50 HZ, cannot set VFD to 35 HZ to achieve design CFM.*	

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AIR APPARATUS TEST REPORT

PROJECT NAME:	1441 - King Soopers - Falcon - DOAS 2						
EQUIPMENT / SYSTEM:	DOAS-2						
UNIT INFORMATION							
		DESIGN			***ACTUAL***		
MANUFACTURER		Captive Aire			Captive Aire		
MODEL #		CASRTU3-I.400-22-12.5T			CASRTU3-I.500-22-12.5T		
SERIAL #					5990290		
LOCATION / SERVICE							
FAN INFORMATION							
		DESIGN			***ACTUAL***		
Total Airflow (CFM)		4,515			6,337		
Total of Terminals (CFM)		4,515			6,337		
Return Airflow (CFM)							
Outside Airflow (CFM)		4,515			6,337		
Total Static Pressure (in. w.g.)					0.97		
External Static Pressure (in. w.g.)		0.50			0.27		
Fan Speed (RPM / Setpoint)		1,547			D.D. / 50 HZ		
VFD Speed (Hz)					50 HZ		
OA Damper Postion (% Open)					open		
MOTOR INFORMATION							
		DESIGN / NAMEPLATE			***ACTUAL***		
Manufacturer / Frame - Nameplate					Ziehl-ABEGG		
Horse Power (HP)		5.00			5		
Brake Horse Power (BHP)					5.85		
Volts	Phase	460	3		485	488	487
Full Load Amps		7.20			7.42	6.60	7.55
Corrected Nameplate Amps		-			6.81		
Motor Speed (RPM / Setting)					D.D. / 50 HZ		
Service Factor		-			n/g		
Current Overload Size/Setting		-			50 HZ		
FILTER INFORMATION							
DESIGN (MERV Rating)		***BANK #1 Style/Size(Qty)***			***BANK #2 Style/Size(Qty)***		
n/g		(8) 20x25x2					

Technician(s): Curtis Tunink Date: 7/5/2024

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RECTANGLE DUCT TRAVERSE TEST REPORT

PROJECT NAME:	1441 - King Soopers - Falcon - DOAS 2											
EQUIPMENT / SYSTEM:	DOAS-2 - Total Air											
DUCT TRAVERSE INFORMATION												
Duct Zone:	DOAS-2				Required CFM:	4515		Required FPM:	454			
Duct Size:	45.5	X	31.5	WxH"	Area:	9.95		Static Pressure:	-0.09 in.w.g.			
Instrument:	Velgrid		Corr Factor	1	Altitude:	5280 FT		Temperature:	n/a			
DUCT TRAVERSE MEASUREMENTS												
Velocity Total (FPM):	7,640		Velocity Average (FPM):	637		Actual Airflow (CFM):	**6,337**					

POS	1	2	3	4	5	6	7	8	9	10	11	Distance Height
1	297	292	538	391								5.3
2	571	627	772	804								15.8
3	712	783	906	947								26.3
4												36.8
5												47.3
6												57.8
7												68.3
8												78.8
9												89.3
10												99.8
11												110.3
Distance Width	5.7	17.1	28.4	39.8	51.2	62.6	73.9	85.3	96.7	108.1	119.4	Inches
Totals	1580	1702	2216	2142	0	0	0	0	0	0	0	

Comments: Unit controller is locked out at 50 hz. Cannot set VFD to 35 HZ to achieve design CFM.

Technician(s): Curtis Tunink Date: 7/5/2024

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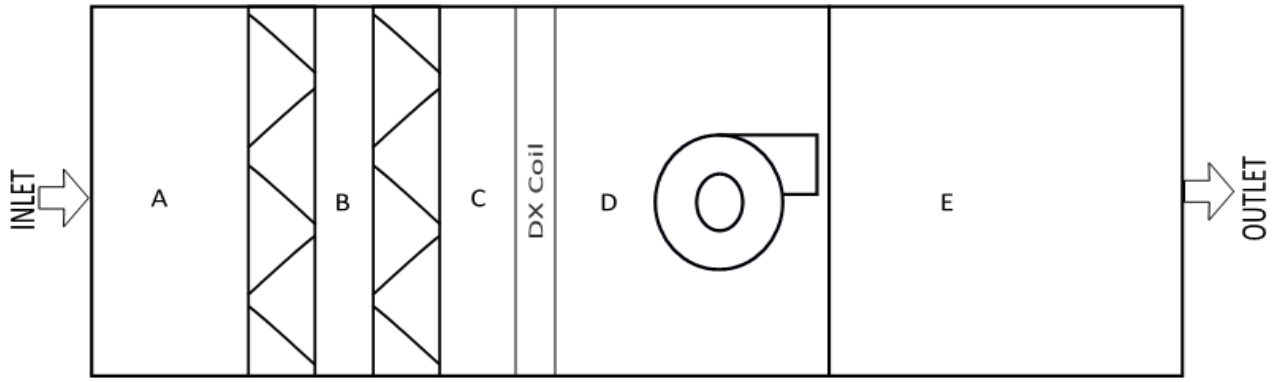
STATIC PRESSURE PROFILE

PROJECT NAME:	1441 - King Soopers - Falcon - DOAS 2
EQUIPMENT / SYSTEM:	DOAS-2 - Statics

SYSTEM INFORMATION	
Static Pressure Profile Setup:	FilFilCoilFanDis
Design Airflow (CFM)	4515
Measured Airflow (CFM)	6337



	ESP:	0.27					TSP:	0.97		
STATIC PRESSURE READINGS (in. w.g.)										
Location	**A**	**B**	**C**	**D**	**E**	**F**	**G**	**H**	**I**	**J**	**K**
Supply	-0.09	-0.24	-0.34	-0.79	0.18						

Comments: _____

_____

_____

Technician(s): Curtis Tunink Date: 7/5/24