

Report By:

National TAB
1329 E. KEMPER ROAD
SUITE 4210
CINCINNATI, OH 45246



Report: TAB REPORT
Function: Test, Adjust, & Balance
Date: 10/07/2025
Completed By: National TAB

PROJECT
09-29-25 QT #0541 DES MOINES, IA

2428 HUBBELL AVE.

DES MOINES, IA

Client

QUIKTRIP
4705 SOUTH 129TH EAST AVENUE
TULSA, OK 74134

National TAB

Project: 09-29-25 QT #0541 DES MOINES, IA

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Project: 09-29-25 QT #0541 DES MOINES, IA
Function: Test, Adjust, & Balance

Project Summary

Project Summary

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

RTU's (Roof Top Units) w/ Diffusers

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

Kitchen Exhaust Hood & Associated Fans

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

General Exhaust Fans w/ Grilles

The general exhaust fans were measured by reading each air device with a flow hood. The total airflow for each fan is equivalent to the sum of these readings. Fan speed was then adjusted so that the airflow was within tolerance of design. Each terminal device was balanced to within tolerance of the design volume using the installed volume dampers. Any equipment that fell outside of this tolerance is noted throughout the report.

Final Building Tests

After completing the test and balance the final building pressure was measured. It was confirmed that the building pressure fell within acceptable tolerances and that the pressure measurement coincides with the actual and design net airflow. Any deviations from these standards are noted throughout the report. The hood capture was tested at the perimeter of the hood and the cook top level with the equipment heat on to ensure satisfactory hood capture and containment.

Issue List

- Building Controls Not All functional.
- EF-3: Electrical / Controls Conduit
- Exhaust Hood: End panels, Grease Cups, lights.
- RTUs: In need of Cleaning

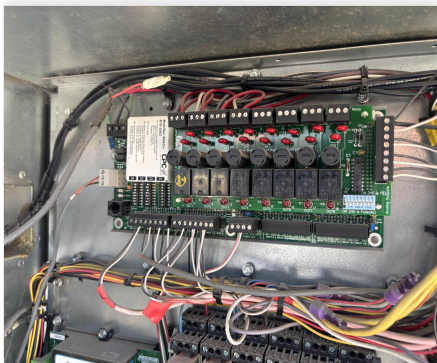


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Project Issue Information

Issue Name : Building Controls Not All functional.
Description : RTU-3 is not connected to the Emerson system and not operating. The Emerson board in the unit does not have power. It was balanced in hand mode. EF-3 is not visible in the Emerson system and is not functioning normally. Recommend review of wiring and submittals.
Created By : National TAB **Assigned To :** National TAB - Brianna Biggs
Status : Open
Priority : High **Asset Tag :**
Originated Date : 10/03/2025 - Michael McDonnell - National TAB

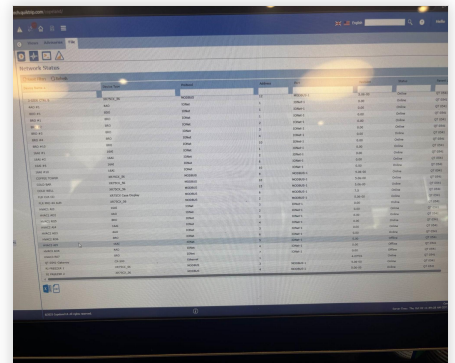
Project Issue File Details



10/03/2025



10/03/2025



10/03/2025



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Project Issue Information

Issue Name : EF-3: Electrical / Controls Conduit
Description : EF-3 conduit for controls is not long enough for fan to be completely tilted back without risking damage. Recommend it is lengthened. Also, grease cup is screwed through to fan base, requiring removal to tilt fan back. Recommend this is corrected.
Created By : National TAB **Assigned To :** National TAB - Michael McDonnell
Status : Open
Priority : Medium **Asset Tag :**
Originated Date : 10/03/2025 - Michael McDonnell - National TAB

Project Issue File Details



10/03/2025



10/03/2025



10/03/2025



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Project Issue Information

Issue Name : Exhaust Hood: End panels, Grease Cups, lights.
Description : Hood quarter end panels and grease cups are not yet installed. Hood HMI was connected to board by NTAB to control hood, but is not installed. Also, hood HMI button does not turn hood lights on or off. Recommend review.
Created By : National TAB **Assigned To :** National TAB - Michael McDonnell
Status : Open
Priority : Medium **Asset Tag :**
Originated Date : 10/03/2025 - Michael McDonnell - National TAB

Project Issue File Details



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Project Issue Information

Issue Name : RTUs: In need of Cleaning
Description : Recommend RTU final filters are changed, they are dated 7/1 and dirty. RTU coils, evap and condenser, are also in need of cleaning.
Created By : National TAB **Assigned To :** National TAB - Brianna Biggs
Status : Open
Priority : Medium **Asset Tag :**
Originated Date : 10/03/2025 - Michael McDonnell - National TAB

Project Issue File Details



10/03/2025



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AIR BALANCE SCHEDULE

UNIT	AREA SERVED	HOOD ON OA		HOOD OFF OA		HOOD ON EXHAUST		HOOD OFF EXHAUST	
		DESIGN	ACTUAL	DESIGN	ACTUAL	DESIGN	ACTUAL	DESIGN	ACTUAL
RTU 1	SALES	800	839	350	378				
RTU-2	SALES	800	843	350	364				
RTU-3	BOH/KITCHEN	800	852	350	348				
EF-1	WOMEN'S RR					225	232	225	232
EF-2	MEN'S RR					525	565	525	565
EF-3	HOOD					1350	1431	0	0
TOTALS		2400	2534	1050	1090	2100	2228	750	797

HOODS ON

NET AIRFLOW CALCULATION

TOTALS	DESIGN	ACTUAL
TOTAL OA	2400	2534
TOTAL EXHAUST	2100	2228
NET AIRFLOW	300	306

DOOR TESTED	BUILDING PRESSURE MEASUREMENTS
FRONT	0.002
SIDE	0.003
REAR	0.002
AVERAGE	0.0023

HOODS OFF

NET AIRFLOW CALCULATION

TOTALS	DESIGN	ACTUAL
TOTAL OA	1050	1090
TOTAL EXHAUST	750	797
NET AIRFLOW	300	293

DOOR TESTED	BUILDING PRESSURE MEASUREMENTS
FRONT	0.002
SIDE	0.002
REAR	0.001
AVERAGE	0.0017

NOTES:

[1] EMERSON CONTROLS NOT FULLY FUNCTIONAL

CheckList List

- 01: RTU's/AHU's
- 02: Exhaust Fans
- 03: Hoods
- 04: Final Tests



09-29-25 QT #0541 DES MOINES, IA

CheckList Information

Name : 01: RTU's/AHU's **Status :** Completed
Assigned Organization : National TAB **Asset :**
Requesting Organization : National TAB
Created Date : 09/04/2025 - Trinity Dodds - National TAB
Completed Date : 10/07/2025 - Michael McDonnell - National TAB

CheckList Item Details

RTU's/AHU's

Evaporator coils are clean? Fail

Comment:

In need of cleaning.



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Condenser coils are clean? Pass

Comment:

Gas piping is installed and valves are turned on? N/A

Comment:

Unit free of noticeable noise and vibration

Pass

Comment:



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CheckList Information

Name : 02: Exhaust Fans **Status :** Completed

Assigned Organization : National TAB **Asset :**

Requesting Organization : National TAB

Created Date : 09/04/2025 - Trinity Dodds - National TAB

Completed Date : 10/07/2025 - Michael McDonnell - National TAB

CheckList Item Details

EF's

Hinge kit installed installed on hood fan? Pass

Comment:

Flex conduit is long enough so that fan can be completely tilted back? Fail

Comment:

Conduit is run incorrectly and needs to be lengthened.



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No major leakage around the fan base Pass

Comment:

Unit is free of noise and vibration

Pass

Comment:

Notes/Comments :

Installation of fan and all control wiring was incomplete at time of TAB. Control wiring was run down ceiling hatch to balance fan.

Date :10/07/2025



09-29-25 QT #0541 DES MOINES, IA

CheckList Information

Name : 03: Hoods **Status :** Completed

Assigned Organization : National TAB **Asset :**

Requesting Organization : National TAB

Created Date : 09/04/2025 - Trinity Dodds - National TAB

Completed Date : 10/07/2025 - Michael McDonnell - National TAB

CheckList Item Details

HOODS

Hood is free of alarms? Pass

Comment:

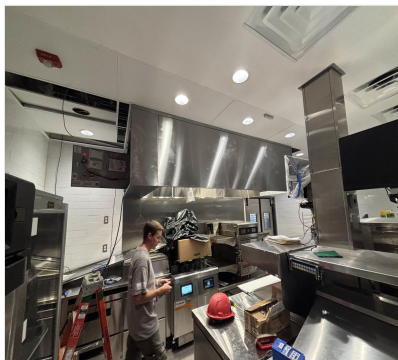
Hood is free of damage? Pass

Comment:

End panels are installed per prototype? Fail

Comment:

End Panels were not installed at the time of TAB.



10/07/2025

Notes/Comments :

HMI was not installed at the time of TAB.

Date :10/07/2025



09-29-25 QT #0541 DES MOINES, IA

CheckList Information

Name : 04: Final Tests **Status :** Completed

Assigned Organization : National TAB **Asset :**

Requesting Organization : National TAB

Created Date : 09/04/2025 - Trinity Dodds - National TAB

Completed Date : 10/07/2025 - Michael McDonnell - National TAB

CheckList Item Details

FINAL CHECKS

HOOD CAPTURE TEST

List kitchen equipment turned on for testing

Comment:

None

List smoke candle type used

Comment:

45 second smoke emitter

Smoke test capture % - Perimeter of hood

Comment:

95%

Smoke test capture % - Top of cooking surface

Comment:

95%

WITNESS

Date test was completed

10/03/2025

Comment:

TAB tech name / Firm

Comment:

Michael McDonnell

Site super name / Firm

Comment:

Jackie Jackson

Owner representative name / Firm (if Applicable)

Comment:

NA

BUILDING PRESSURE

Do actual net building airflow, design net building airflow, and pressure coincide? If not why? (All three should either be positive or negative)

Pass

Comment:

Notes/Comments :

Hood installation incomplete at time of TAB. TAB able to get fan running. Hood tested cold, without end panels.

Date :10/07/2025



National TAB

Project: 09-29-25 QT #0541 DES MOINES, IA

System/Unit: AHU/RTU

Asset: RT-1

AREA:SALES FLOOR

Unit Data		
	Design	Actual
MFG	NA	AAON
Serial Num	-	201509-ANEK12639
Model Num	NA	RN-013-8-0-EAOA-152
Num OA Filters 1	-	1
OA Filter Size 1	-	45X22
Num Final Filter 1	-	4
Final Filter Size 1	-	20X24X2

Motor Data		
	Design	Actual
Motor MFG	-	NL
Horsepower	-	3.0
Motor Rpm	-	1760
Phase	-	3
Rated Voltage	-	208
Rated Amperage	-	10.6

Test Data		
	Design	Actual
SF CFM	4200	4205
SF RPM	-	1267
OA CFM (Hoods On)	800	839
OA CFM (Hoods Off)	350	378
RL Voltage	-	132.6 @
RL Amperage	-	9.1 @ VFD
VFD Max SetPt	-	43.2 HZ
VFD Min SetPt	-	24.0 HZ
OA Damper Position (Hoods On)	-	MARKED (46% ON EMERSON)
OA Damper Position (Hoods Off)	-	MARKED (27% ON EMERSON)

Performance Data		
	Design	Actual
MA Plenum SP	-	-0.50"
Fan Suction SP	-	-0.80"
Fan Discharge SP	-	0.53"
Total ESP	-	1.03"
Fan Total SP	-	1.33"

General	
	Actual
Fan Rotation Correct	YES
Unit Filters Clean	NO
Condensate Drain Installed	YES

Completed By: Michael McDonnell on 10/07/2025

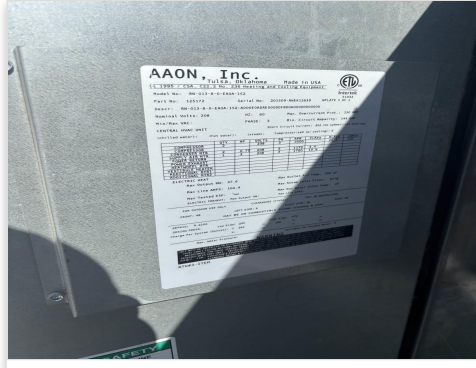
Notes:
RTU balanced for total flow and diffusers balanced for comfort.

Written By: Michael McDonnell on 10/07/2025

Unit Data - PHOTO LOG



10/07/2025



10/07/2025



National TAB

Project: 09-29-25 QT #0541 DES MOINES, IA

System/Unit: AHU/RTU

Asset: RT-2

AREA:SALES FLOOR

Unit Data		
	Design	Actual
MFG	NA	AAON
Serial Num	-	201509-ANEK12637
Model Num	NA	RN-013-8-0-EAOA-152
Num OA Filters 1	-	1
OA Filter Size 1	-	45X22
Num Final Filter 1	-	4
Final Filter Size 1	-	20X24X2

Motor Data		
	Design	Actual
Motor MFG	-	NL
Horsepower	-	3.0
Motor Rpm	-	1760
Phase	-	3
Rated Voltage	-	208
Rated Amperage	-	10.6

Test Data		
	Design	Actual
SF CFM	4200	4174
SF RPM	-	1208
OA CFM (Hoods On)	800	843
OA CFM (Hoods Off)	350	364
RL Voltage	-	133.5 @ VFD
RL Amperage	-	8.57 @ VFD
VFD Max SetPt	-	41.4 HZ
VFD Min SetPt	-	24.0 HZ
OA Damper Position (Hoods On)	-	MARKED (46% ON EMERSON)
OA Damper Position (Hoods Off)	-	MARKED (26% ON EMERSON)

Performance Data		
	Design	Actual
MA Plenum SP	-	-0.62"
Fan Suction SP	-	-0.83"
Fan Discharge SP	-	0.55"
Total ESP	-	1.17"
Fan Total SP	-	1.38"

General	
	Actual
Fan Rotation Correct	YES
Unit Filters Clean	NO
Condensate Drain Installed	YES

Completed By: Michael McDonnell on 10/07/2025

Notes:
RTU balanced for total flow and diffusers balanced for comfort

Written By: Michael McDonnell on 10/07/2025



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Project: 09-29-25 QT #0541 DES MOINES, IA

System/Unit: AHU/RTU

Asset: RT-3

AREA:BOH/KITCHEN

Unit Data		
	Design	Actual
MFG	NA	AAON
Serial Num	-	201509-ANEK12638
Model Num	NA	RN-013-8-0-EAOA-152
Num OA Filters 1	-	1
OA Filter Size 1	-	45X22
Num Final Filter 1	-	4
Final Filter Size 1	-	20X24X2

Motor Data		
	Design	Actual
Motor MFG	-	NL
Horsepower	-	3.0
Motor Rpm	-	1760
Phase	-	3
Rated Voltage	-	208
Rated Amperage	-	10.6

Test Data		
	Design	Actual
SF CFM	4200	4182
SF RPM	-	1278
OA CFM (Hoods On)	800	852
OA CFM (Hoods Off)	350	348
RL Voltage	-	134.6 @ VFD
RL Amperage	-	9.2 @ VFD
VFD Max SetPt	-	43.6 HZ
VFD Min SetPt	-	24.0 HZ
OA Damper Position (Hoods On)	-	3.25" MARKED
OA Damper Position (Hoods Off)	-	1.5" MARKED

Performance Data		
	Design	Actual
MA Plenum SP	-	-0.64"
Fan Suction SP	-	-0.90"
Fan Discharge SP	-	0.56"
Total ESP	-	1.20"
Fan Total SP	-	1.46"

General	
	Actual
Fan Rotation Correct	YES
Unit Filters Clean	NO
Condensate Drain Installed	YES

Completed By: Michael McDonnell on 10/07/2025

Notes:

[1] UNIT WAS NOT CONNECTED WITH CONTROLS AT TIME OF TAB. BALANCED IN LOCAL (HAND) MODE.

Written By: Michael McDonnell on 10/07/2025



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Project:09-29-25 QT #0541 DES MOINES, IA

AHU/RTU

Diffuser Supply (GRD)

RT-3/BOH/KITCHEN

Asset									
Asset Name	Location	Type	Size	DESIGN CFM	AK	CFM(1)	CFM(2)	FINAL CFM	% to design
SGRD1	SUPPORT SERVICE	SI	12"	800	1.0	972	983	773	96.6
SGRD2	SUPPORT SERVICE	SI	12"	800	1.0	511	551	778	97.3
SGRD3	SUPPORT SERVICE	SI	12"	800	1.0	786	847	807	100.9
SGRD4	SUPPORT SERVICE	SI	12"	800	1.0	608	638	801	100.1
SGRD5	DOCK	ES	12"	750	1.0	790	844	762	101.6
SGRD6	WORKROOM	ES	8"	250	1.0	379	405	261	104.4
Total				4200		4046	4268	4182	99.57%

Completed By: Michael McDonnell on 10/07/2025

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Project: 09-29-25 QT #0541 DES MOINES, IA

System/Unit: FAN - Exhaust



Asset: EF1

AREA:WOMENS RESTROOM

Unit Data		
	Design	Actual
MFG	NA	COOK
Model Num	NA	90 ACEH
Serial Num	-	282SF88842-00/0000701
Type	-	CRE DOWNBLAST
Configuration	-	VERTICAL

Test Data		
	Design	Actual
CFM	225	232
Fan RPM	-	DD
Fan Rotation	-	CORRECT
Motor RPM	-	DD
System SetPt	-	SPEED CONTROLLER MINIMIZED AND MARKED
RL Voltage	-	119
RL Amperage	-	1.62
Total ESP	-	0.17"
Fan Inlet SP	-	-0.17"
Fan Discharge SP	-	ATM

Motor Data		
	Design	Actual
Motor MFG	-	U.S. MOTORS
Frame	-	48Y
Horsepower	-	1/8
Motor Rpm	-	1600
Phase	-	1
Voltage (rated)	-	115
Amperage (rated)	-	1.7

Completed By: Michael McDonnell on 10/07/2025

Unit Data - PHOTO LOG



10/07/2025



10/07/2025

National TAB

Project: 09-29-25 QT #0541 DES MOINES, IA
System/Unit: FAN - Exhaust



Asset: EF2

AREA:MENS RESTROOM

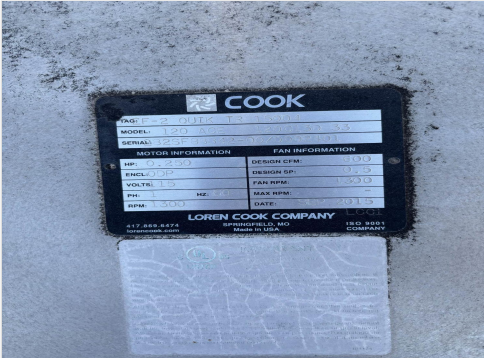
Unit Data		
	Design	Actual
MFG	NA	COOK
Model Num	NA	120 ACE
Serial Num	-	282SF88842-00/0002401
Type	-	CRE DOWNBLAST
Configuration	-	VERTICAL

Test Data		
	Design	Actual
CFM	525	565
Fan RPM	-	DD
Fan Rotation	-	CORRECT
Motor RPM	-	DD
System SetPt	-	SPEED CONTROLLER MINIMIZED AND MARKED
RL Voltage	-	121
RL Amperage	-	2.4
Total ESP	-	0.21"
Fan Inlet SP	-	-0.21"
Fan Discharge SP	-	ATM

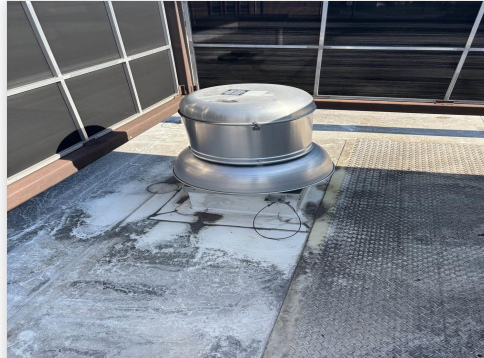
Motor Data		
	Design	Actual
Motor MFG	-	QUEACE
Frame	-	48Y
Horsepower	-	1/4
Motor Rpm	-	1550
Phase	-	1
Voltage (rated)	-	115
Amperage (rated)	-	3.3
Service Factor	-	NL

Completed By: Michael McDonnell on 10/07/2025

Unit Data - PHOTO LOG



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National TAB
 Project:09-29-25 QT #0541 DES MOINES, IA
FAN - Exhaust



Diffuser Ret/Exh (GRD)

EF2/MENS RESTROOM

Asset									
Asset Name	Location	Type	Size	DESIGN CFM	AK	CFM(1)	CFM(2)	FINAL CFM	% to design
EGRD1	SUPPORT SERVICE	RI	8"	150	1.0	192	162	162	108.0
EGRD2	MENS RR	EE	16X7	375	1.0	396	403	403	107.5
Total				525		588	565	565	107.62%

Completed By: Michael McDonnell on 10/07/2025



National TAB

Project: 09-29-25 QT #0541 DES MOINES, IA

System/Unit: FAN - Exhaust

Asset: EF3

AREA: KITCHEN HOOD

Unit Data		
	Design	Actual
MFG	NA	CAPTIVEAIRE
Model Num	NA	DU50HFA
Serial Num	-	7606494
Type	UPBLAST	CRE UPBLAST
Configuration	VERTICAL	VERTICAL

Test Data		
	Design	Actual
CFM	1350	1431
Fan RPM	-	1207
Fan Rotation	-	CCW, CORRECT
Motor RPM	-	1207
System SetPt	-	64% (51.8 HZ @ HMI)
RL Voltage	-	208.1
RL Amperage	-	2.24
Total ESP	-	0.42"
Fan Inlet SP	-	-0.42"
Fan Discharge SP	-	ATM

Motor Data		
	Design	Actual
Motor MFG	-	TELCO GREEN
Horsepower	1/2	0.5
Motor Rpm	-	1800
Phase	-	1
Voltage (rated)	-	208
Amperage (rated)	-	3.8

Completed By: Michael McDonnell on 10/07/2025

Notes:
[1] FAN NOT VISIBLE ON CONTROLS SYSTEM AT TIME OF TAB.

Written By: Michael McDonnell on 10/07/2025

Unit Data - PHOTO LOG



10/07/2025



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National TAB

Project: 09-29-25 QT #0541 DES MOINES, IA

System/Unit: Kitchen Hood Type I



Asset: HD1

AREA:GRIDDLE

Unit Data		
	Design	Actual
MFG	CAPTIVEAIRE	CAPTIVEAIRE
Model Num	6030 ND-2-F	6030 ND-2-F
Job / Serial Num	-	7606494
Type	-	TYPE I
Hood length	-	108"
Hood Width	-	60"

Test Data Exhaust		
	Design	Actual
Filter Type	-	CAPTRATE SOLO
Filter Size 1	-	16X20
Filter Qty 1	-	6
Filter AK factor size 1	-	2.08
Filter Total AK Area	-	12.48
Filter1 FPM	-	115
Filter2 FPM	-	112
Filter3 FPM	-	128
Filter4 FPM	-	117
Filter5 FPM	-	111
Filter6 FPM	-	102
Filter Ave FPM(corr)	-	114.7
CFM	1350	1431

Cooking Equipment	
	Actual
Item 1	FRYER
Item 2	OVEN

Completed By: Michael McDonnell on 10/07/2025

Notes:

- [1] HMI NOT INSTALLED AT TIME OF TAB.
- [2] END PANELS NOT INSTALLED AT TIME OF TAB.

Written By: Michael McDonnell on 10/07/2025

Unit Data - PHOTO LOG



10/07/2025

