Report By:

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

Report: TAB REPORT

Function: Test, Adjust, & Balance

Date: 08/14/2025

Completed By: National TAB

PROJECT

08-11-25 CULVERS ROCKWALL REVIVE

2475 Ridge Road

Rockwall, TX 75087

Client

Culvers Franchising System Inc

1240 Water Street

Prairie du Sac, WI 53578

National TAB

Project: 08-11-25 CULVERS ROCKWALL REVIVE

Table Of Contents

Section	Page #
Summary Data	3
REMARKS	5
Balance Schedule	10
Checklist Data	11
FAN - Exhaust	23
Kitchen Hood Type I	28
GRD LAYOUT	32

Project Summary

Overview

An air balance was performed at Culver's Rockwall, TX, to address hood capture issues (primarily on the grill) and comfort issues in the office. The scope of work included verification and adjustment of the kitchen and dining RTUs, make-up air (MUA) systems, and exhaust fans.

Initial Findings

- **Airflows (Initial):**
  - Grill Exhaust (KEF1): 2,390 CFM
  - Grill MUA: 1,947 CFM
  - Fryer Exhaust (KEF2): 2,004 CFM
  - Fryer MUA: 850 CFM
  - Kitchen Supply: 3,845 CFM
  - Dining Supply: 4,311 CFM
  - Building initially -1597 CFM (highly negative)
- **Mechanical Condition:**
  - Kitchen RTU belt was loose.
  - Fryer exhaust (KEF2) belt was cracked.
  - Fryer MUA PSP was clogged and restricting airflow.
- **System Conditions:**
  - Outdoor air dampers were closed and not responding to adjustment.
  - Building pressure was negative at the rear of the building.
  - Thermostats were in continuous occupancy mode.

Adjustments and Actions Completed

- The kitchen RTU belt was tightened, which corrected fan slippage and increased supply airflow significantly. Airflow increased from 3845 CFM to 6582 CFM.
- Outdoor air dampers were cracked opened to introduce outside air to both RTUs. The dampers had to be manually opened since they weren't functional.
- The fryer MUA PSP was cleaned, improving airflow to the fryer hood.
- The fryer exhaust (KEF2) fan speed was increased by adjusting the motor pulley one turn inward.
- All exhaust fans were verified for correct rotation and proper operation.
- Hood capture tests confirmed satisfactory hood capture at both the grill and fryer hoods after adjustments.
- Overall airflows after balancing:

- Kitchen Supply: 6,582 CFM
- Dining Supply: 4,680 CFM
- Grill Exhaust (KEF1): 2,390 CFM / MUA 1,947 CFM
- Fryer Exhaust (KEF2): 2,191 CFM / MUA 1,479 CFM

Outstanding Issues and Recommendations

1. **MUA Filters:** The owner stated that when the MUA filters get dirty or clogged it makes smoke capture worse and they go up to the roof to remove them. The filters are a media type filter that will accumulate dirt more frequently. Recommend these are replaced with metal mesh filters which are more typical for a MUA application and won't clog as frequently. They also need to be cleaned on a quarterly basis.
2. **RTU OA Dampers not functional:** The outside air dampers for both RTU's had to be manually set because the controls were not functional. As is, the dampers will stay open at all times even when the RTU's are not running. Recommend that these be repaired so that they open when the RTU's are in occupied mode and closed when in unoccupied.
3. **Occupancy Control:** Thermostats should be properly wired for scheduled occupancy. At minimum the wiring should be landed at the thermostat and the OCP terminal on the roof so that the dampers only open when the space is occupied and hoods are on. Ideally though, the low voltage wiring would be installed similar to new stores so that the dampers and blower operation are interlocked with the hood function.
4. **Hood End Panels:** Quarter end panels are recommended on both hoods to further improve capture.

Issue List

- MUA Filter Replacement
- Occupancy Schedule
- Recommend End Panels
- RTU'S Economizer Not Functional

08-11-25 CULVERS ROCKWALL REVIVE

Project Issue Information

Issue Name : MUA Filter Replacement
Description : Recommend replacing filter mesh.

Created By :	National TAB	**Assigned To :**	National TAB - Dan Hertenstein
Status :	Open		
Priority :	Urgent	**Asset Tag :**	
Originated Date :	08/14/2025 - Cavin Van - National TAB		

Project Issue File Details

08/14/2025

08-11-25 CULVERS ROCKWALL REVIVE

Project Issue Information

Issue Name :	Occupancy Schedule		
Description :	Recommend wiring thermostats for occupancy schedule. Currently the occupancy has a jumper that causes the units to be in occupancy 24/7.		
Created By :	National TAB	**Assigned To :**	National TAB - Dan Hertenstein
Status :	Open		
Priority :	InfoOnly	**Asset Tag :**	
Originated Date :	08/14/2025 - Cavin Van - National TAB		

08-11-25 CULVERS ROCKWALL REVIVE

Project Issue Information

Issue Name : Recommend End Panels

Description : Recommend adding additional end panels to further improve hood performance.

Created By : National TAB

Assigned To : National TAB - Dan Hertenstein

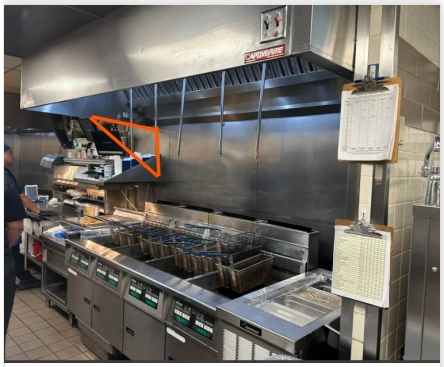
Status : Open

Priority : Medium

Asset Tag :

Originated Date : 08/14/2025 - Cavin Van - National TAB

Project Issue File Details



10/07/2025

10/07/2025

08-11-25 CULVERS ROCKWALL REVIVE

Project Issue Information

Issue Name :	RTU'S Economizer Not Functional		
Description :	Kitchen and Dining room RTU have non operational economizers, had to manually set outside air.		
Created By :	National TAB	**Assigned To :**	National TAB - Dan Hertenstein
Status :	Open		
Priority :	Medium	**Asset Tag :**	
Originated Date :	08/14/2025 - Cavin Van - National TAB		

NATIONAL TAB

AIR BALANCE SCHEDULE

UNIT	AREA SERVED	HVAC SUPPLY		HVAC RETURN		HVAC OUTDOOR		OA %		HOOD MAKE-UP		HOOD EXHAUST		GENERAL EXH.	
		DESIGN	ACTUAL	DESIGN	ACTUAL	DESIGN	ACTUAL	DESIGN	ACTUAL	DESIGN	ACTUAL	DESIGN	ACTUAL	DESIGN	ACTUAL
RTU-1	KITCHEN	5200	6177	4200	5122	1000	1055	19.2%	17.1%						
RTU-2	DINING	5200	4680	4300	3796	900	884	17.3%	18.9%						
MUA	HOODS										2797				
KEF-1	HOOD 1												2191		
KEF-2	HOOD 2												1992		
EF-1	RESTROOMS														161
TOTALS		10400	10857	8500	8918	1900	1939			0	2797	0	4183	0	161

NET BUILDING AIRFLOW CALCULATION

TOTALS	DESIGN	ACTUAL
TOTAL OA	1900	4736
TOTAL EXHAUST	0	4344
NET AIRFLOW	1900	392

DOOR TESTED	BUILDING PRESSURE MEASUREMENTS (IN. H20)
FRONT	
SIDE	
REAR	
AVERAGE	**NEUTRAL**

NOTES:

CheckList List

- STEP 1: REVIVE CHECKLIST
- TECH - STEP 2: INITIAL WALKTHROUGH
- TECH - STEP 3: UNIT DATA AND EVAL
- TECH - STEP 4: TEST, ADJUST AND BALANCE
- TECH - STEP 5: FINAL TESTS

08-11-25 CULVERS ROCKWALL REVIVE

CheckList Information

Name :	STEP 1: REVIVE CHECKLIST	**Status :**	Completed
Assigned Organization :	National TAB	**Asset :**	
Requesting Organization :	National TAB		
Created Date :	08/11/2025 - Natasha Louw - National TAB		
Completed Date :	08/14/2025 - Cavin Van - National TAB		

CheckList Item Details

INITIAL BUILDING REVIEW:

What is the initial building pressure before making any changes?

Comment:

Left side: 0.0026” Right side: 0.0026” Rear: -0.0129

Are thermostats programmed? Yes

Comment:

Are building pressure relief working properly?

Comment:

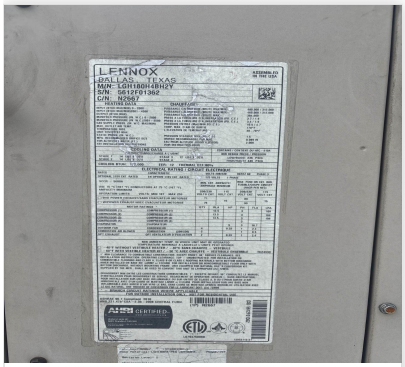
Yes

INITIAL AIRFLOWS:

SUPPLY RTU-1

Comment:

3845 CFM



08/13/2025

08/13/2025

OA RTU-1

Comment:

Initially closed

SUPPLY RTU-2

Comment:

4311 CFM

OA RTU-2

Comment:

Initially closed

SUPPLY RTU-3

Comment:

N/A

OA RTU-3

Comment:

N/A

EF-1

Comment:

GRILL initial airflow: 2390 CFM

EF-2

Comment:

FRYER initial airflow: 2004

EF-3

Comment:

Not working

EF-4

Comment:

N/A

MAU-1

Comment:

Initial airflow: 2390 CFM

08-11-25 CULVERS ROCKWALL REVIVE

CheckList Information

Name :	TECH - STEP 2: INITIAL WALKTHROUGH	**Status :**	Completed
Assigned Organization :	National TAB	**Asset :**	
Requesting Organization :	National TAB		
Created Date :	08/11/2025 - Natasha Louw - National TAB		
Completed Date :	08/14/2025 - Cavin Van - National TAB		

CheckList Item Details

INITIAL SITE WALKTHROUGH

All diffusers and grilles are installed and match design?	Yes
Comment:	
All hood filters installed and accounted for?	Yes
Comment:	
Hoods are wired and have power?	Yes
Comment:	
Hood is free of alarms?	Yes
Comment:	
Thermostats have power?	Yes
Comment:	

Have trades/general contractor been notified about any issues and are they created on FaciliBuild?

Comment:

N/A

08-11-25 CULVERS ROCKWALL REVIVE

CheckList Information

Name :	TECH - STEP 3: UNIT DATA AND EVAL	**Status :**	Completed
Assigned Organization :	National TAB	**Asset :**	
Requesting Organization :	National TAB		
Created Date :	08/11/2025 - Natasha Louw - National TAB		
Completed Date :	08/14/2025 - Cavin Van - National TAB		

CheckList Item Details

UNIT DATA AND EVALUATION WHILE GATHERING UNIT DATA CHECK THE FOLLOWING:

RTU's/AHU's

Economizers are assembled and functional?	No
Comment:	
DCV Max damper opening position is set to minimum?	N/A
Comment:	
Free cooling enthalpy set point set for lowest setting (Typically "D")	Yes
Comment:	
Motors are all operating below the FLA rating?	Yes
Comment:	

Are belts tight?

Comment:

No, Kitchen RTU is not tight and Fryer KEF2 has a cracked belt.

If direct drive unit is the speed controller working.

Comment:

Not able to find speed controller for KEF1.

Is gas piping installed and valves turned on?	Yes

Comment:

Unit free of noticeable noise and vibration	Yes

Comment:

EF's

Rotation is correct?	Yes

Comment:

Belts are tight?

Comment:

Grease cup installed on hood fan?	Yes

Comment:

Hinge kit installed installed on hood fan?	No

Comment:

Kitchen exhaust fan serving the grill does not have a hinge kit installed.

Lean fan back. Is grease duct installation adequate and is duct ran all the way to the base of the fan?	Yes

Comment:

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

Comment:

There is no major leakage around base of fan?	Yes

Comment:

Is the motor operating below the motor FLA rating?	Yes

Comment:	
For restroom fan(s) is the back draft damper installed and can it fully open?	Yes
Comment:	
Unit free of noticeable noise and vibration?	Yes
Comment:	
MUA	
Rotation is correct?	Yes
Comment:	
Gas piping is installed and valves are in on position?	N/A
Comment:	
Heater tested and is functional?	N/A
Comment:	
Internal motorized damper is fully opening?	N/A
Comment:	
Motor is operating below the FLA rating?	Yes
Comment:	
Unit free of noticeable noise and vibration?	Yes
Comment:	
HOODS	
Kitchen equipment installed in proper places?	Yes
Comment:	
Can kitchen equipment be turned on for final smoke test?	Yes
Comment:	

DOCUMENTATION	
Have trades/general contractor been notified about any issues and are they created on FaciliBuild?	N/A
Comment:	

08-11-25 CULVERS ROCKWALL REVIVE

CheckList Information

Name :	TECH - STEP 4: TEST, ADJUST AND BALANCE	**Status :**	Completed
Assigned Organization :	National TAB	**Asset :**	
Requesting Organization :	National TAB		
Created Date :	08/11/2025 - Natasha Louw - National TAB		
Completed Date :	08/14/2025 - Cavin Van - National TAB		

CheckList Item Details

TEST, ADJUST, AND BALANCE ALL EQUIPMENT:

DURING TESTING MAKE NOTE OF THE FOLLOWING:

Is space free of drafting?	Yes
Comment:	
Is space comfortable in all areas?	Yes
Comment:	
Is the space free of ventilation noise?	Yes
Comment:	

If deviations from design were necessary to resolve 1-3 what were they? Otherwise put "NA".

Comment:

NA

08-11-25 CULVERS ROCKWALL REVIVE

CheckList Information

Name :	TECH - STEP 5: FINAL TESTS	**Status :**	Completed
Assigned Organization :	National TAB	**Asset :**	
Requesting Organization :	National TAB		
Created Date :	08/11/2025 - Natasha Louw - National TAB		
Completed Date :	08/14/2025 - Cavin Van - National TAB		

CheckList Item Details

FINAL TESTS

HOOD CAPTURE TEST

List equipment turned on for testing

Comment:

List smoke candle type used

Comment:

N/A

Smoke test capture - Perimeter of hood

Comment:

100%

- Open IMG_0251_799475480.mov
08/14/2025
- Open IMG_0250_2003130743.mov
08/14/2025

Smoke test capture - Top of cooking surface

Comment:

100%

WITNESS

Date test was completed	08/14/2025

Comment:

TAB tech name / Firm

Comment:

CAVIN VAN / NATIONAL TAB

Site super name / Firm

Comment:

BECKY LAPP / CULVERS

Owner representative name / Firm (if Applicable)

Comment:

Building pressure at front & back doors (All Systems On)

Comment:

Yes

ADDITIONAL

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

Comment:

Yes

Thermostats are programmed?	Yes

Comment:

National TAB

Project: 08-11-25 CULVERS ROCKWALL REVIVE

System/Unit: FAN - Exhaust

Asset: EF1 AREA:RESTROOM

Unit Data		
	Design	**Actual**
MFG	NA	NA
Model Num	NA	NA
Serial Num	-	16377001
Type	-	DOWNBLAST
Configuration	-	VERTICAL

Motor Data		
	Design	**Actual**
Motor MFG	-	FASCO
Frame	-	N/A
Horsepower	-	0.014
Motor Rpm	-	1500
Phase	-	N/A
Voltage (rated)	-	115
Amperage (rated)	-	0.7
Service Factor	-	N/A

Test Data		
	Design	**Actual**
CFM	-	161
Fan RPM	-	NA
Fan Rotation	-	CW
Motor RPM	-	NA
System SetPt	-	NA
RL Voltage	-	NA
RL Amperage	-	0.74/0.78
Total ESP	-	0.006
Fan Inlet SP	-	0.006
Fan Discharge SP	-	ATM

Completed By: Cavin Van on 08/14/2025

Unit Data - PHOTO LOG

08/14/2025

National TAB

Project: 08-11-25 CULVERS ROCKWALL REVIVE

System/Unit: FAN - Exhaust

Asset: KEF1 AREA:KITCHEN

Unit Data		
	Design	**Actual**
MFG	NA	CAPTIVE AIRE
Model Num	NA	DU180HFA
Serial Num	-	4745772
Type	-	UPBLAST
Configuration	-	VERTICAL

Motor Data		
	Design	**Actual**
Motor MFG	-	TECO
Frame	-	145T
Horsepower	-	1
Motor Rpm	-	1150
Phase	-	3
Voltage (rated)	-	230
Amperage (rated)	-	3.44
Service Factor	-	1.15

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

Test Data		
	Design	**Actual**
CFM	-	2191
Fan RPM	-	NA
Fan Rotation	-	CCW
Motor RPM	-	NA
RL Voltage	-	203/205/202
RL Amperage	-	3.4/3.18/3.24
Suction ESP	-	NA
Discharge ESP	-	ATM
Total ESP	-	NA

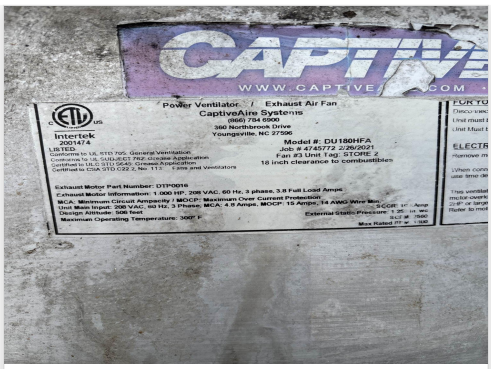
Completed By: Cavin Van on 08/14/2025

Notes:
GRIDDLE
Unable to lean fan back to get static pressure

Written By: Cavin Van on 08/14/2025

Unit Data - PHOTO LOG

08/13/2025



08/13/2025

National TAB

Project: 08-11-25 CULVERS ROCKWALL REVIVE

System/Unit: FAN - Exhaust

Asset: KEF2 AREA:KITCHEN

Unit Data		
	Design	**Actual**
MFG	NA	CARRIER
Model Num	NA	DU50HFA
Serial Num	-	206140
Type	-	UPBLAST
Configuration	-	VERTICAL

Motor Data		
	Design	**Actual**
Motor MFG	-	A.O SMITH
Frame	-	56
Horsepower	-	0.5
Motor Rpm	-	1725
Phase	-	3
Voltage (rated)	-	230
Amperage (rated)	-	2.6
Service Factor	-	1.25

Drive Data	
	Actual
Motor Sheave Size	4”
Motor Bore Size	0.75”
Motor Sheave SetPt	NA
Fan Sheave Size	5.5”
Fan Sheave Bore	0.75”
Belt CL Distance	5.5
Num of Belts	1
Belt Size	TRUFLEX 250 4L250

Test Data		
	Design	**Actual**
CFM	-	1992
Fan RPM	-	1234
Fan Rotation	-	CCW
Motor RPM	-	1747
RL Voltage	-	204
RL Amperage	-	1.85
Suction ESP	-	-0.61”
Discharge ESP	-	ATM
Total ESP	-	0.61”

Completed By: Cavin Van on 08/14/2025

Notes:
FRYER

Written By: Cavin Van on 08/14/2025

Unit Data - PHOTO LOG

08/13/2025

National TAB

Project: 08-11-25 CULVERS ROCKWALL REVIVE

System/Unit: Kitchen Hood Type I

Asset: HD1 AREA:KITCHEN

Unit Data		
	Design	**Actual**
MFG	NA	NA
Model Num	NA	NA
Job / Serial Num	-	N/A
Type	-	CANOPY
Hood length	-	184”
Hood Width	-	48”
Supply Plenum Type	-	PSP
Supply Plenum Width	-	184"
Supply Plenum Length	-	12"

Test Data Exhaust		
	Design	**Actual**
Filter Size 1	-	16X16
Filter Qty 1	-	5
Filter AK factor size 1	-	1.66
Filter Total AK Area	-	8.3
Filter1 FPM	-	232
Filter2 FPM	-	295
Filter3 FPM	-	286
Filter4 FPM	-	260
Filter5 FPM	-	249
Filter Ave FPM(corr)	-	264
CFM	-	2191

Cooking Equipment	
	Actual
Item 1	WARMER
Item 2	GRILL

Test Data Supply		
	Design	**Actual**
CFM	-	1947

Completed By: Cavin Van on 08/14/2025

Notes:
Grill
MUA 12”

Written By: Cavin Van on 08/13/2025

Unit Data - PHOTO LOG

08/14/2025

National TAB

Project: 08-11-25 CULVERS ROCKWALL REVIVE

System/Unit: Kitchen Hood Type I

Asset: HD2 AREA:KITCHEN

Unit Data		
	Design	**Actual**
MFG	NA	NA
Model Num	NA	NA
Job / Serial Num	-	N/A
Hood length	-	111”
Supply Plenum Type	-	PSP
Supply Plenum Width	-	16"
Supply Plenum Length	-	114"

Test Data Exhaust		
	Design	**Actual**
Filter Size 1	-	16X16
Filter Size 2	-	16X20
Filter Qty 1	-	2
Filter Qty 2	-	4
Filter AK factor size 1	-	1.66
Filters AK factor size 2	-	2.10
Filter Total AK Area	-	11.72
Filter1 FPM	-	162
Filter2 FPM	-	164
Filter3 FPM	-	194
Filter4 FPM	-	205
Filter5 FPM	-	150
Filter6 FPM	-	149
Filter Ave FPM(corr)	-	170
CFM	-	1992

Cooking Equipment	
	Actual
Item 1	FRYER

Test Data Supply		
	Design	**Actual**
CFM	-	1479

Completed By: Cavin Van on 08/14/2025

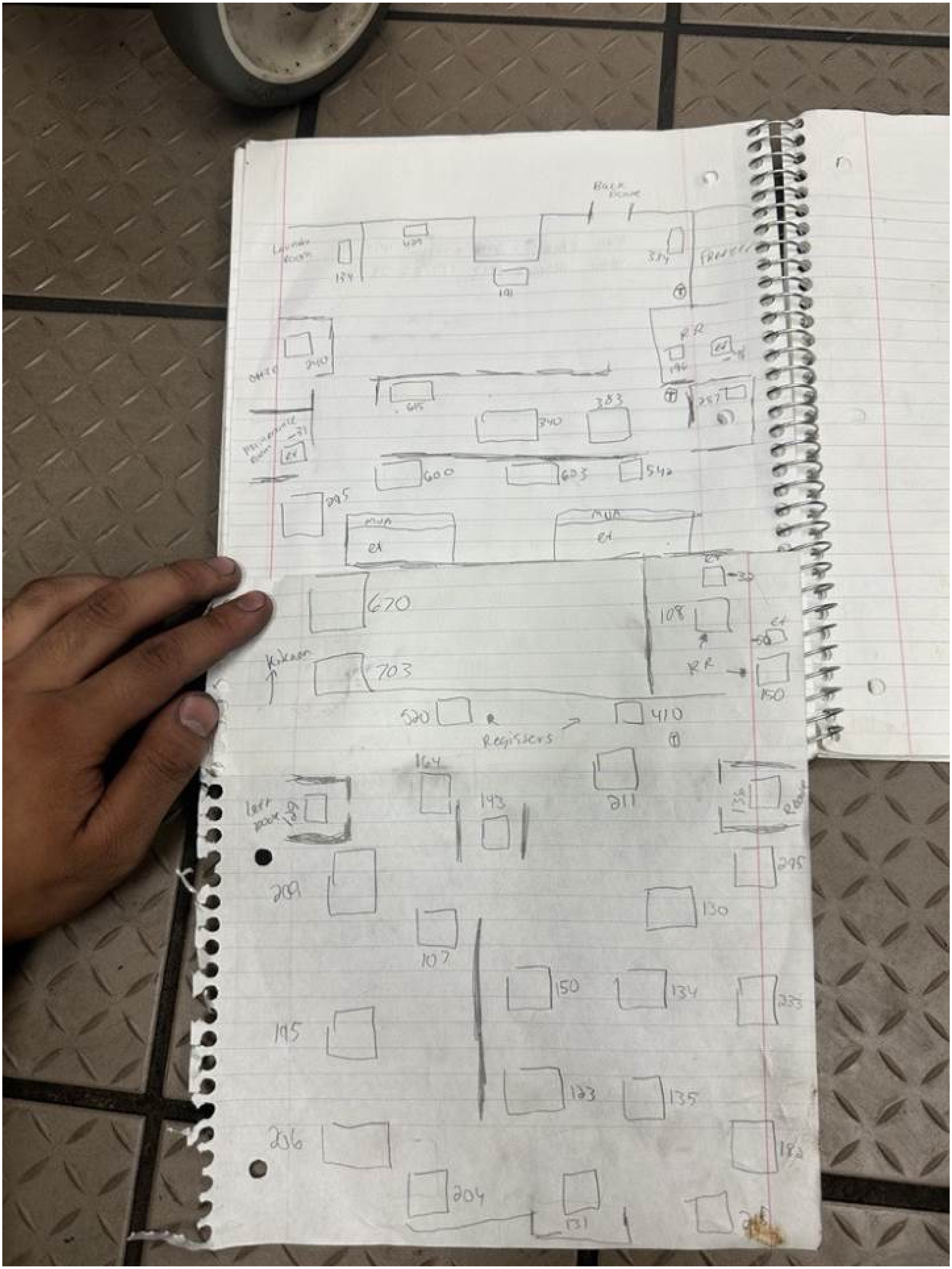
Notes:
FRYER
MUA WIDTH: 16”

Written By: Cavin Van on 08/13/2025

Unit Data - PHOTO LOG

08/14/2025

08/14/2025



FaciliBuild make it easy