Report By:

National TAB
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SUITE 4210
CINCINNATI, OH 45246

NATIONAL TAB

Comfort. Under control.

Report: TAB Report
Function: Test, Adjust, & Balance
Date: 7/13/2022

PROJECT

FIVE GUYS #2036 - MADISON, AL

100 MOON SHOT DRIVE

MADISON, AL

Client

Huntsville Burgers

National TAB

Project: FIVE GUYS #2036 - MADISON, AL

Table Of Contents

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.

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

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

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

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 of -0.02" wc to +0.02" wc and that the pressure measurement coincides with the actual and design net airflow. Any deviations from these standards are noted throughout the report.
The hood capture was tested at the perimeter of the hood and the cook top level with the equipment heat on to ensure satisfactory hood capture and containment.

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Project Issue Information

Issue Name : Diffusers on RTU1: 1-1 and 1-2 inaccessible due to obstructions below these diffusers

Description : Ceiling diffusers in office and storage room inaccessible due to location and ceiling obstruction.

Created By : National TAB **Assigned To :** National TAB - Will Turnbough

Status : Open

Originated Date : 06/02/2022 - Jacob Davidson - National TAB

Project Issue File Details

File.jpeg

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FIVE GUYS #2036 - MADISON, AL

Project Issue Information

Issue Name : EF-1 and EF-2 serving hoods are low on airflow

Description : EF-1 airflow is 1477 CFM out of design of 1837 CFM (80% of design). A larger belt is required to increase airflow further (recommend A24). EF-2 airflow is 88% of design and a larger motor pulley would be required to increase further. Recommend VP44 w/ 5/8" wc and a 4L300.

Created By : National TAB **Assigned To :** National TAB - Jacob Davidson

Status : Open

Originated Date : 07/13/2022 - Will Turnbough - National TAB

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FIVE GUYS #2036 - MADISON, AL

Project Issue Information

Issue Name : HDA1 EF not powered

Description : Unit is not powered with hood on downstairs and disconnect on upstairs. // electrician has rectified

Created By : National TAB **Assigned To :** National TAB - Will Turnbough

Status : Closed

Originated Date : 05/31/2022 - Jacob Davidson - National TAB

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FIVE GUYS #2036 - MADISON, AL

Project Issue Information

Issue Name : HDA1 noticeable vibration on wall

Description : Wall behind hood vibrates noticeably when on. Noting for information only.

Created By : National TAB **Assigned To :** National TAB - Will Turnbough

Status : Open

Originated Date : 06/02/2022 - Jacob Davidson - National TAB

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Project Issue Information

Issue Name : Kitchen diffusers meant to be 3 way but are installed as 4 way.

Description : RTU-1 Diffusers 1-5 and 1-6 are meant to be 3 way diffusers to prevent smoke capture issues. There are 4 way diffusers installed. Recommend installing as 3-way.

Created By : National TAB **Assigned To :** National TAB - Will Turnbough

Status : Open

Originated Date : 06/02/2022 - Jacob Davidson - National TAB

Project Issue File Details

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Project Issue Information

Issue Name : MUA not flush to curb

Description : MUA is not flush to curb and has air escaping through the bottom below the blower compartment. Recommend mechanical contractor to properly seat and seal the fan to the curb.

Created By : National TAB **Assigned To :** National TAB - Will Turnbough

Status : Open

Originated Date : 06/02/2022 - Jacob Davidson - National TAB

Project Issue File Details

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Project Issue Information

Issue Name : Restroom dampers inaccessible

Description : Dampers for restrooms are above hard ceiling and are not accessible to adjust. Suggest remote dampers or face dampers be installed when hard ceilings are installed.

Created By : National TAB **Assigned To :** National TAB - Will Turnbough

Status : Open

Originated Date : 06/02/2022 - Jacob Davidson - National TAB

Project Issue File Details

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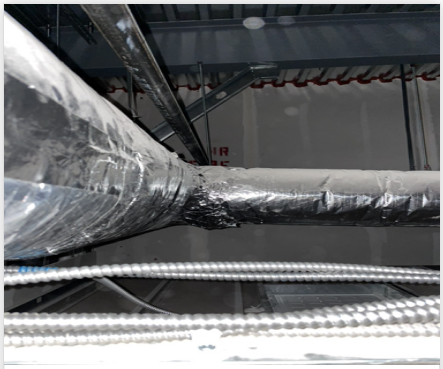

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Project Issue Information

Issue Name : RTU1 missing OA filter holder

Description : RTU1 missing metal piece that holds OA filter In place. OA filter will not stay in place as a result. Mechanical needs to install filter rack provided with the unit.

Created By : National TAB **Assigned To :** National TAB - Will Turnbough

Status : Open

Originated Date : 06/01/2022 - Jacob Davidson - National TAB

Project Issue File Details

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Project Issue Information

Issue Name : RTU3 diffuser dampers not installed

Description : Side grilles have no dampers to adjust amount of flow to each diffuser. Unit was balanced for total flow since proportional balancing was not possible.

Created By : National TAB **Assigned To :** National TAB - Will Turnbough

Status : Open

Originated Date : 06/01/2022 - Jacob Davidson - National TAB

Project Issue File Details

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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	3000	3233	2500	2731	500	502	16.7%	15.5%						
RTU-2	DINING	3000	3077	2500	2560	500	517	16.7%	16.8%						
RTU-3	DINING	4000	3890	3200	3094	800	796	20.0%	20.5%						
MUA-1	COOKLINE									2390	2540				
EF-1	HOOD1A											1837	1477		
EF-2	HOOD1B											1837	1633		
EF-3	MENS RR													150	163
EF-4	WOMENSRR													150	161
TOTALS		10000	10200	8200	8385	1800	1815			2390	2540	3674	3110	300	324

NET BUILDING AIRFLOW CALCULATION

TOTALS	DESIGN	ACTUAL
TOTAL OA	4190	4355
TOTAL EXHAUST	3974	3434
NET AIRFLOW	216	921

DOOR TESTED	BUILDING PRESSURE MEASUREMENTS (IN. H20)
FRONT	0.021
SIDE	
REAR	0.028
AVERAGE	**0.0245**

FINAL CHECKS

ACTUAL NET AIRFLOW COINCIDES WITH DESIGN: ✓

MEASURED PRESSURES COINCIDES WITH ACTUAL NET AIRFLOW: ✓

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

NOTES:

Hoods are underperforming and are sped up to the max.

STORE FRONT

EF1

Connected to HD1A

EF2

Connected to HD1B

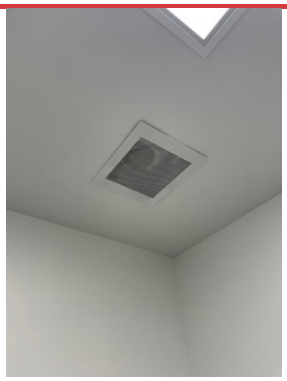
RTU1 KITCHEN

RTU2 DINING

RTU3 DINING

MUA

ROOFTOP



EF3 MENS RR

EF4 LADIES RR

HDA1 GRIDDLE

HDB1 FRYER

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FIVE GUYS #2036 - MADISON, AL

CheckList Information

Name :	TECH - STEP 1: INITIAL WALKTHROUGH	**Status :**	NotSubmitted
Assigned Organization :	National TAB	**Asset :**	
Requesting Organization :	National TAB		

CheckList Item Details

INITIAL SITE WALKTHROUGH

All diffusers and grilles are installed and match design?	3 extra diffusers installed in front of the hoods on RTU1

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All hood filters installed and accounted for?	Yes
Hoods are wired and have power?	Yes
Hood is free of alarms?	Yes
Thermostats have power?	Yes
Have trades/general contractor been notified about any issues and are they created on FaciliBuild?	Yes

Notes/Comments :

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FIVE GUYS #2036 - MADISON, AL

CheckList Information

Name :	TECH - STEP 2: UNIT DATA AND EVAL	**Status :**	NotSubmitted
Assigned Organization :	National TAB	**Asset :**	
Requesting Organization :	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?	YES
DCV Max damper opening position is set to minimum?	YES
Free cooling enthalpy set point set for lowest setting (Typically "D")	ES5 ALL RTUS
Motors are all operating below the FLA rating?	Yes
Are belts tight?	YES
If direct drive unit is the speed controller working.	NA
Is gas piping installed and valves turned on?	Piping installed but not on

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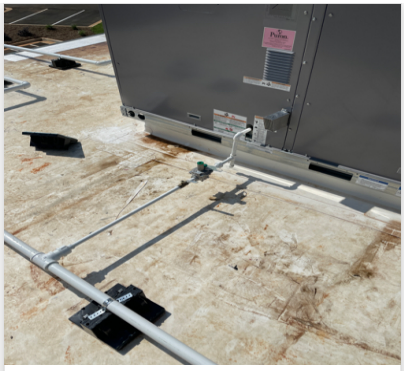

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Unit free of noticeable noise and vibration	YES
EF's	
Rotation is correct?	YES
Belts are tight?	YES
Grease cup installed on hood fan?	YES
Hinge kit installed installed on hood fan?	YES
Lean fan back. Is grease duct installation adequate and is duct ran all the way to the base of the fan?	YES
Flex conduit is long enough so that fan can be completely tilted back?	YES
There is no major leakage around base of fan?	YES
Is the motor operating below the motor FLA rating?	
For restroom fan(s) is the back draft damper installed and can it fully open?	NA
Unit free of noticeable noise and vibration?	EF2 VIBRATES
MUA	
Rotation is correct?	YES
Gas piping is installed and valves are in on position?	INSTALLED, NOT ON.
Heater tested and is functional?	CANNOT TEST
Internal motorized damper is fully opening?	YES
Motor is operating below the FLA rating?	YES
Unit free of noticeable noise and vibration?	YES
HOODS	
Kitchen equipment installed in proper places?	YES
Can kitchen equipment be turned on for final smoke test?	YES
DOCUMENTATION	
Have trades/general contractor been notified about any issues and are they created on FaciliBuild?	YES

Notes/Comments :

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FIVE GUYS #2036 - MADISON, AL

CheckList Information

Name :	TECH - STEP 3: TEST, ADJUST AND BALANCE	**Status :**	NotSubmitted
Assigned Organization :	National TAB	**Asset :**	
Requesting Organization :	National TAB		

CheckList Item Details

TEST, ADJUST, AND BALANCE ALL EQUIPMENT:

DURING TESTING MAKE NOTE OF THE FOLLOWING:

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

Notes/Comments :

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FIVE GUYS #2036 - MADISON, AL

CheckList Information

Name :	TECH - STEP 4: FINAL TESTS	**Status :**	NotSubmitted
Assigned Organization :	National TAB	**Asset :**	
Requesting Organization :	National TAB		

CheckList Item Details

FINAL TESTS	
HOOD CAPTURE TEST	
List equipment turned on for testing	UNABLE TO TURN ON EQUIPMENT
List smoke candle type used	45 SECOND SMOKE EMITTER
Smoke test capture - Perimeter of hood	100%
Smoke test capture - Top of cooking surface	100%
WITNESS	
Date test was completed	06/03/2022
TAB tech name / Firm	JACOB DAVIDSON/ NATIONAL TAB
Site super name / Firm	JON HARRISON / JS BUILDING
Owner representative name / Firm (if Applicable)	NA
Building pressure at front & back doors (All Systems On)	FRONT 0.021" REAR 0.028"
ADDITIONAL	
Do actual net building airflow, design net building airflow, and pressure coincide? If not why? (All three should either be positive or negative)	NO, HOODS NEED TO BE SPED UP IN ORDER TO GET PROPER AIRFLOW, BUT EF1 NEEDS A BIGGER BELT TO BE SPED UP AND EF2 NEEDS A NEW PULLEY TO BE SPED UP
Thermostats are programmed?	YES

Notes/Comments :

National TAB

Project: FIVE GUYS #2036 - MADISON, AL

System/Unit: AHU/RTU

Asset: RTU1 AREA:KITCHEN

Unit Data		
	Design	**Actual**
MFG	EXISTING	CARRIER
Serial Num	-	5021P92879
Model Num	NA	48HCDE08A3M5A6F2G0
Type	-	RTU
Configuration	-	VERTICAL
Num OA Filters 1	-	1
OA Filter Size 1	-	19.5X35
Num Final Filter 1	-	4
Final Filter Size 1	-	20X20X2

Motor Data		
	Design	**Actual**
Motor MFG	-	MARATHON
Frame	-	56HZ
Horsepower	-	NL
Motor Rpm	-	1735
Phase	-	3
Rated Voltage	-	230/460
Rated Amperage	-	9.5/4.6

Drive Data		
	Design	**Actual**
Motor Sheave Size	-	5"
Motor Bore Size	-	7/8"
Motor Sheave SetPt	-	4 TURNS OUT
Fan Sheave Size	-	7.5"
Fan Sheave Bore	-	1"
Belt CL Distance	-	16.75"
Num of Belts	-	1
Belt Size	-	AX49
Belt Alignment	-	VERIFIED

Test Data		
	Design	**Actual**
SF CFM	3000	3233
SF RPM	-	903
RA CFM	2700	2731
OA CFM	300	502
RL Voltage	-	215/215/216
RL Amperage	-	4.7/5.1/5.2
SF Rotation	-	CCW
RA Damper Position	-	26% HIGH/36% LOW
Min OA Damper Position	-	4.15V HIGH/ 4.9V LOW
Min OA Damper Type	-	ECONOMIZER
OA Enthalpy Setpt	-	ES5

Performance Data		
	Design	**Actual**
MA Plenum SP	-	-0.29"
Fan Suction SP	-	-0.47"
Fan Discharge SP	-	0.34"
Total ESP	-	0.63"
Fan Total SP	-	0.81"

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

Completed By: Jacob Davidson

Notes:3 diffusers added to the kitchen in front of hoods. Diffusers are not on schedule and are causing hood capture issues. Closed diffusers and kept kitchen at design

Diffuser Supply (GRD)

RTU1/KITCHEN

Asset							
SGRD1	Location	Type	Size	DESIGN CFM	AK	CFM(1)	CFM(2)
	OFFICE	CD	8"	130	1	133	185
	FINAL CFM	% to design					
	174	133.8					
SGRD2	Location	Type	Size	DESIGN CFM	AK	CFM(1)	CFM(2)
	STORAGE	CD	6"	110	1	102	198
	FINAL CFM	% to design					
	198	180.0					
SGRD3	Location	Type	Size	DESIGN CFM	AK	CFM(1)	CFM(2)
	BOH	CD	12"	485	1	288	329
	FINAL CFM	% to design					
	332	68.5					
SGRD4	Location	Type	Size	DESIGN CFM	AK	CFM(1)	CFM(2)
	PREP AREA	CD	12"	485	1	240	413
	FINAL CFM	% to design					
	431	88.9					
SGRD5	Location	Type	Size	DESIGN CFM	AK	CFM(1)	CFM(2)
	COOKLINE	CD	14"	705	1	419	694
	FINAL CFM	% to design					
	697	98.9					
SGRD6	Location	Type	Size	DESIGN CFM	AK	CFM(1)	CFM(2)
	COOKLINE	CD	14"	705	1	439	678
	FINAL CFM	% to design					
	672	95.3					
SGRD7	Location	Type	Size	DESIGN CFM	AK	CFM(1)	CFM(2)
	HALLWAY	CD	6"	100	1	76	106
	FINAL CFM	% to design					
	109	109.0					
SGRD8	Location	Type	Size	DESIGN CFM	AK	CFM(1)	CFM(2)
	WOMENS RESTRO OM	CD1	6"	140	1	70	111
	FINAL CFM	% to design					
	123	87.9					
SGRD9	Location	Type	Size	DESIGN CFM	AK	CFM(1)	CFM(2)
	MENS RESTROOM	CD1	6"	140	1	85	138
	FINAL CFM	% to design					
	138	98.6					
SGRD10	Location	Type	Size	DESIGN CFM	AK	CFM(1)	CFM(2)
	COOKLINE	CD	14"	0	1	578	101
	FINAL CFM	% to design					
	148	-					
SGRD11	Location	Type	Size	DESIGN CFM	AK	CFM(1)	CFM(2)
	COOKLINE	CD	14"	0	1	404	110
	FINAL CFM	% to design					

	137	-					
SGRD12	**Location**	**Type**	**Size**	**DESIGN CFM**	**AK**	**CFM(1)**	**CFM(2)**
	COOKLINE	CD	14"	0	1	458	116
	FINAL CFM	**% to design**					
	74	-					

Completed By:Brianna Biggs on

Asset	Notes
RTU1	3 diffusers added to the kitchen in front of hoods. Diffusers are not on schedule and are causing hood capture issues. Closed diffusers and kept kitchen at design
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Project: FIVE GUYS #2036 - MADISON, AL

System/Unit: AHU/RTU

Asset: RTU2 AREA:DINING

Unit Data		
	Design	**Actual**
MFG	EXISTING	CARRIER
Serial Num	-	5021P92881
Model Num	NA	48HCDE08A3M5A6F2G0
Type	-	RTU
Configuration	-	VERTICAL
Num OA Filters 1	-	1
OA Filter Size 1	-	19.5X35
Num Final Filter 1	-	4
Final Filter Size 1	-	20X20X2

Motor Data		
	Design	**Actual**
Motor MFG	-	MARATHON
Frame	-	56HZ
Horsepower	-	NL
Motor Rpm	-	1757
Phase	-	3
Rated Voltage	-	230/460
Rated Amperage	-	9.2/4.6

Drive Data		
	Design	**Actual**
Motor Sheave Size	-	5"
Motor Bore Size	-	7/8"
Motor Sheave SetPt	-	4 TURNS OUT
Fan Sheave Size	-	7.5"
Fan Sheave Bore	-	1"
Belt CL Distance	-	16.75"
Num of Belts	-	1
Belt Size	-	AX49
Belt Alignment	-	VERIFIED

Test Data		
	Design	**Actual**
SF CFM	3000	3077
SF RPM	-	913
RA CFM	2700	2560
OA CFM	300	517
RL Voltage	-	212/212/212
RL Amperage	-	4.6/4.7/4.1
SF Rotation	-	CCW
RA Damper Position	-	26% HIGH/38% LOW
Min OA Damper Position	-	4.15V HIGH/5.15V LOW
Min OA Damper Type	-	ECONOMIZER
OA Enthalpy Setpt	-	ES5

Performance Data		
	Design	**Actual**
MA Plenum SP	-	-0.63"
Fan Suction SP	-	-0.97"
Fan Discharge SP	-	0.95"
Total ESP	-	1.58"
Fan Total SP	-	1.92"

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

Completed By: Jacob Davidson

Notes:

Asset	Notes

National TAB

Project: FIVE GUYS #2036 - MADISON, AL

System/Unit: AHU/RTU

Asset: RTU3 AREA:DINING

Unit Data		
	Design	**Actual**
MFG	EXISTING	CARRIER
Serial Num	-	5021P93015
Model Num	NA	48HCDE11A3M5A6F2G0
Type	-	RTU
Configuration	-	VERTICAL
Num OA Filters 1	-	1
OA Filter Size 1	-	19.5X35
Num Final Filter 1	-	4
Final Filter Size 1	-	20X20X2

Motor Data		
	Design	**Actual**
Motor MFG	-	MARATHON
Frame	-	145TZ
Horsepower	-	NL
Motor Rpm	-	1745
Phase	-	3
Rated Voltage	-	230/460
Rated Amperage	-	14/7

Drive Data		
	Design	**Actual**
Motor Sheave Size	-	1VP65
Motor Bore Size	-	7/8"
Motor Sheave SetPt	-	5 TURNS OUT
Fan Sheave Size	-	AK84
Fan Sheave Bore	-	1"
Belt CL Distance	-	17.5"
Num of Belts	-	1
Belt Size	-	AX54
Belt Alignment	-	VERIFIED

Test Data		
	Design	**Actual**
SF CFM	4000	3890
SF RPM	-	1003
RA CFM	3200	3094
OA CFM	800	796
RL Voltage	-	212/212/213
RL Amperage	-	7.9/8.5/8.9
SF Rotation	-	CCW
RA Damper Position	-	4.3V HIGH/5.15V LOW
Min OA Damper Position	-	28% HIGH/35% LOW
Min OA Damper Type	-	ECONOMIZER
OA Enthalpy Setpt	-	ES5

Performance Data		
	Design	**Actual**
MA Plenum SP	-	0.34"
Fan Suction SP	-	-0.76"
Fan Discharge SP	-	0.27"
Total ESP	-	0.61"
Fan Total SP	-	1.03"

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

Completed By: Jacob Davidson

Notes:

Diffuser Supply (GRD)

RTU3/DINING

Asset							
SGRD1	Location	Type	Size	DESIGN CFM	AK	VEL(1)	CFM(1)
	DINING	SR	30X6	500	0.614	685	876
	VEL(2)	CFM(2)	FINAL CFM	% to design			
	421	538	538	107.6			
SGRD2	Location	Type	Size	DESIGN CFM	AK	VEL(1)	CFM(1)
	DINING	SR	30X6	500	0.614	541	692
	VEL(2)	CFM(2)	FINAL CFM	% to design			
	332	425	425	85.0			
SGRD3	Location	Type	Size	DESIGN CFM	AK	VEL(1)	CFM(1)
	DINING	SR	30X6	500	0.614	655	838
	VEL(2)	CFM(2)	FINAL CFM	% to design			
	403	514	514	102.8			
SGRD4	Location	Type	Size	DESIGN CFM	AK	VEL(1)	CFM(1)
	DINING	SR	30X6	500	0.614	724	926
	VEL(2)	CFM(2)	FINAL CFM	% to design			
	445	568	568	113.6			
SGRD5	Location	Type	Size	DESIGN CFM	AK	VEL(1)	CFM(1)
	DINING	SR	30X6	500	0.614	728	931
	VEL(2)	CFM(2)	FINAL CFM	% to design			
	447	571	571	114.2			
SGRD6	Location	Type	Size	DESIGN CFM	AK	VEL(1)	CFM(1)
	DINING	SR	30X6	500	0.614	720	921
	VEL(2)	CFM(2)	FINAL CFM	% to design			
	442		565	113.0			
SGRD7	Location	Type	Size	DESIGN CFM	AK	VEL(1)	CFM(1)
	DINING	SR	30X6	500	0.614	448	573
	VEL(2)	CFM(2)	FINAL CFM	% to design			
	275	352	352	70.4			
SGRD8	Location	Type	Size	DESIGN CFM	AK	VEL(1)	CFM(1)
	DINING	SR	30X6	500	0.614	455	582
	VEL(2)	CFM(2)	FINAL CFM	% to design			
	280	357	357	71.4			

Completed By:Brianna Biggs on

Asset	Notes

National TAB

Project: FIVE GUYS #2036 - MADISON, AL

System/Unit: FAN - Supply

Asset: MAU1 AREA:COOKLINE

Unit Data		
	Design	**Actual**
MFG	ABSOLUT-AIRE	ABSOLUT-AIRE
Model Num	V2-HOXDXP	V2-HOMDXP
Serial Num	-	35409
Type	MUA	MUA
Configuration	HORIZONTAL	VERTICAL

Motor Data		
	Design	**Actual**
Motor MFG	-	TECO WESTINGHOUSE
Frame	-	145T
Horsepower	2	2
Motor Rpm	-	1740
Phase	3	3
Voltage (rated)	208	230/460
Amperage (rated)	-	5.56/2.78
Service Factor	-	1.15

Drive Data		
	Design	**Actual**
Motor Sheave Size	-	1VP40B
Motor Bore Size	-	7/8"
Fan Sheave Size	-	AK39
Fan Sheave Bore	-	3/4"
Belt CL Distance	-	14.5"
Num of Belts	-	1
Belt Size	-	AX37
Belt Alignment Verified	-	VERIFIED

Gas Heat		
	Design	**Actual**
Heater Operates (y/n)	-	NO
Flame Status (pass/fail)	-	FAIL
Inlet Air Temp SetPt	-	NA
Discharge Air Temp SetPt	-	NA
Air Flow Switch SP Actual	-	NA

Test Data		
	Design	**Actual**
CFM	2390	2540
SF RPM	-	1380
Motor RPM	-	1690
RL Voltage	-	213/213/213
RL Amperage	-	5.5/5.5/5.5
Total ESP	-	NA
Fan Discharge SP	-	NA

General		
	Design	**Actual**
Fan Rotation Correct	-	YES

Completed By: Jacob Davidson

Notes:2 18X18 OA FILTERS 2 18X22.75 OA FILTERS

Asset	Notes

National TAB

Project: FIVE GUYS #2036 - MADISON, AL

System/Unit: FAN - Exhaust

Asset: EF1 AREA:HOOD1A

Unit Data		
	Design	**Actual**
MFG	MARSHALL	MARSHALL
Model Num	G1530	G1530
Serial Num	-	35409
Type	UPBLAST	UTILITY
Configuration	VERTICAL	VERTICAL

Motor Data		
	Design	**Actual**
Motor MFG	-	[1]
Frame	-	[1]
Horsepower	-	3 [1]
Motor Rpm	-	1787
Phase	-	3 [1]
Voltage (rated)	-	208-230/460 [1]
Amperage (rated)	-	9.0-8.6/4.5 [1]
Service Factor	-	[1]

Drive Data		
	Design	**Actual**
Motor Sheave Size	-	5"
Motor Bore Size	-	1 1/8"
Motor Sheave SetPt	-	4 TURNS OUT
Fan Sheave Size	-	4"
Fan Sheave Bore	-	1 3/16"
Belt CL Distance	-	6.75"
Num of Belts	-	1
Belt Size	-	A23

Test Data		
	Design	**Actual**
CFM	1837	1477
Fan RPM	-	1823
Fan Rotation	-	CW
Motor RPM	-	1787
RL Voltage	-	NOT SAFE
RL Amperage	-	3.9/3.9/3.9
Suction ESP	-	UTO
Discharge ESP	-	UTO
Total ESP	-	UTO

Completed By: Jacob Davidson

Notes:[1] MOTOR LABEL NOT ACCESSIBLE. UNIT DATA TAKEN FROM LABEL MOTOR CANNOT BE SPED UP ANYMORE WITH CURRENT BELT.

Asset	Notes

National TAB

Project: FIVE GUYS #2036 - MADISON, AL

System/Unit: FAN - Exhaust

Asset: EF2 AREA:HOOD1B

Unit Data		
	Design	**Actual**
MFG	TWIN CITY	TWIN CITY
Model Num	BCRUR-160	BCRUR160B
Serial Num	-	C16-000000177118
Type	UPBLAST	UPBLAST
Configuration	VERTICAL	VERTICAL

Test Data		
	Design	**Actual**
CFM	1837	1633
Fan RPM	-	1249
Fan Rotation	-	CW
Motor RPM	-	1717
RL Voltage	-	NOT SAFE
RL Amperage	-	9.0
Suction ESP	-	0.82"
Discharge ESP	-	ATM
Total ESP	-	0.82"

Motor Data		
	Design	**Actual**
Motor MFG	-	MARATHON
Frame	-	56
Horsepower	-	3/4
Motor Rpm	-	1725
Phase	-	1
Voltage (rated)	-	115/208-230
Amperage (rated)	-	10.0/5.2-5.0
Service Factor	-	1.25

Drive Data		
	Design	**Actual**
Motor Sheave Size	-	3.75"
Motor Bore Size	-	5/8"
Motor Sheave SetPt	-	0 TURNS OUT
Fan Sheave Size	-	AK51
Fan Sheave Bore	-	3/4"
Belt CL Distance	-	5"
Num of Belts	-	1
Belt Size	-	4L290

Completed By: Jacob Davidson

Notes:MOTOR NEEDS A NEW PULLEY IN ORDER TO INCREASE SPEED FURTHER

Asset	Notes

National TAB

Project: FIVE GUYS #2036 - MADISON, AL

System/Unit: FAN - Exhaust

Asset: EF3 AREA:MENS RR

Unit Data		
	Design	**Actual**
MFG	GREENHECK	GREENHECK
Model Num	SP-190	GEMINI 160 SONEBUSTER
Serial Num	-	NONE
Type	CEILING	CEILING
Configuration	VERTICAL	VERTICAL

Motor Data		
	Design	**Actual**
Motor MFG	-	QUEACE
Frame	-	NL
Horsepower	47W	16W
Motor Rpm	-	1100
Phase	1	1
Voltage (rated)	120	115
Amperage (rated)	-	0.51/0.44
Service Factor	-	1

Test Data		
	Design	**Actual**
CFM	150	163
Fan RPM	-	1100
Fan Rotation	-	CCW
Motor RPM	-	1100
System SetPt	-	HIGH
RL Voltage	-	NOT SAFE
RL Amperage	-	0.47
Total ESP	0.25"	UTO
Fan Inlet SP	-	UTO
Fan Discharge SP	-	UTO

Completed By: Jacob Davidson

Notes:TWO SPEED HARD CEILING MOUNTED FAN

Asset	Notes

National TAB

Project: FIVE GUYS #2036 - MADISON, AL

System/Unit: FAN - Exhaust

Asset: EF4 AREA:WOMENS RR

Unit Data		
	Design	**Actual**
MFG	GREENHECK	GREENHECK
Model Num	SP-190	GEMINI 160 SONEBUSTER
Serial Num	-	NONE
Type	CEILING VERTICAL	CEILING
Configuration	-	VERTICAL

Motor Data		
	Design	**Actual**
Motor MFG	-	QUEACE
Frame	-	NL
Horsepower	47W	16W
Motor Rpm	-	1100
Phase	1	1
Voltage (rated)	120	115
Amperage (rated)	-	0.51/0.44
Service Factor	-	1

Test Data		
	Design	**Actual**
CFM	150	161
Fan RPM	-	1100
Fan Rotation	-	CCW
Motor RPM	-	1100
System SetPt	-	HIGH
RL Voltage	-	NOT SAFE
RL Amperage	-	0.44
Total ESP	0.25"	UTO
Fan Inlet SP	-	UTO
Fan Discharge SP	-	UTO

Completed By: Jacob Davidson

Notes:TWO SPEED HARD CEILING MOUNTED FAN

Asset	Notes

National TAB

Project: FIVE GUYS #2036 - MADISON, AL

System/Unit: Kitchen Hood Type I

Asset: HD-A1 AREA:GRIDDLE

Unit Data		
	Design	**Actual**
MFG	MARSHAL AIR	MARSHAL AIR
Model Num	GA	GA-108-MUA
Job / Serial Num	-	0322EL00781
Type	TYPE I LOW PRXIMITY	TYPE I LOW PROXIMITY
Hood length	108"	108"
Hood Width	33"	33"

Test Data Exhaust		
	Design	**Actual**
Filter Type	BAFFLE	BAFFLE
Filter Size 1	16x16	16X16
Filter Qty 1	6	6
Filter AK factor size 1	1.62	1.62
Filter Total AK Area	9.72	9.72
Filter1 FPM	-	134
Filter2 FPM	-	133
Filter3 FPM	-	147
Filter4 FPM	-	167
Filter5 FPM	-	159
Filter6 FPM	-	177
Filter Ave FPM(corr)	-	152
CFM	1837	1477

Cooking Equipment		
	Design	**Actual**
Item 1	-	GRIDDLE

Test Data Supply		
	Design	**Actual**
CFM	1195	1270

Performance Data		
	Design	**Actual**
Exh-Supply Net CFM	642	207
Smoke Generation Type	-	45 SECOND SMOKE EMITTER
Cooking Equip Heat On	-	NO
Hood Capture %	-	100%
End Panels Installed (Y/N)	-	YES

General		
	Design	**Actual**
Tech Witness	-	JACOB DAVIDSON

Completed By: Jacob Davidson

Notes:LEFT HOOD GC NOT AVAILABLE AS WITNESS

Asset	Notes

National TAB

Project: FIVE GUYS #2036 - MADISON, AL

System/Unit: Kitchen Hood Type I

Asset: HD-B1 AREA:FRYER

Unit Data		
	Design	**Actual**
MFG	MARSHAL AIR	MARSHAL AIR
Model Num	GA	GA-108-MUA
Job / Serial Num	-	022EL00781
Type	TYPE I LOW PROXIMIT	TYPE I LOW PROXIMITY
Hood length	108"	108"
Hood Width	33"	33"

Test Data Exhaust		
	Design	**Actual**
Filter Type	BAFFLE	BAFFLE
Filter Size 1	16X16	16X16
Filter Qty 1	6	6
Filter AK factor size 1	1.62	1.62
Filter Total AK Area	9.72	9.72
Filter1 FPM	-	173
Filter2 FPM	-	164
Filter3 FPM	-	171
Filter4 FPM	-	184
Filter5 FPM	-	152
Filter6 FPM	-	166
Filter Ave FPM(corr)	-	168
CFM	1837	1633

Cooking Equipment		
	Design	**Actual**
Item 1	-	FRYER

Test Data Supply		
	Design	**Actual**
CFM	1195	1270

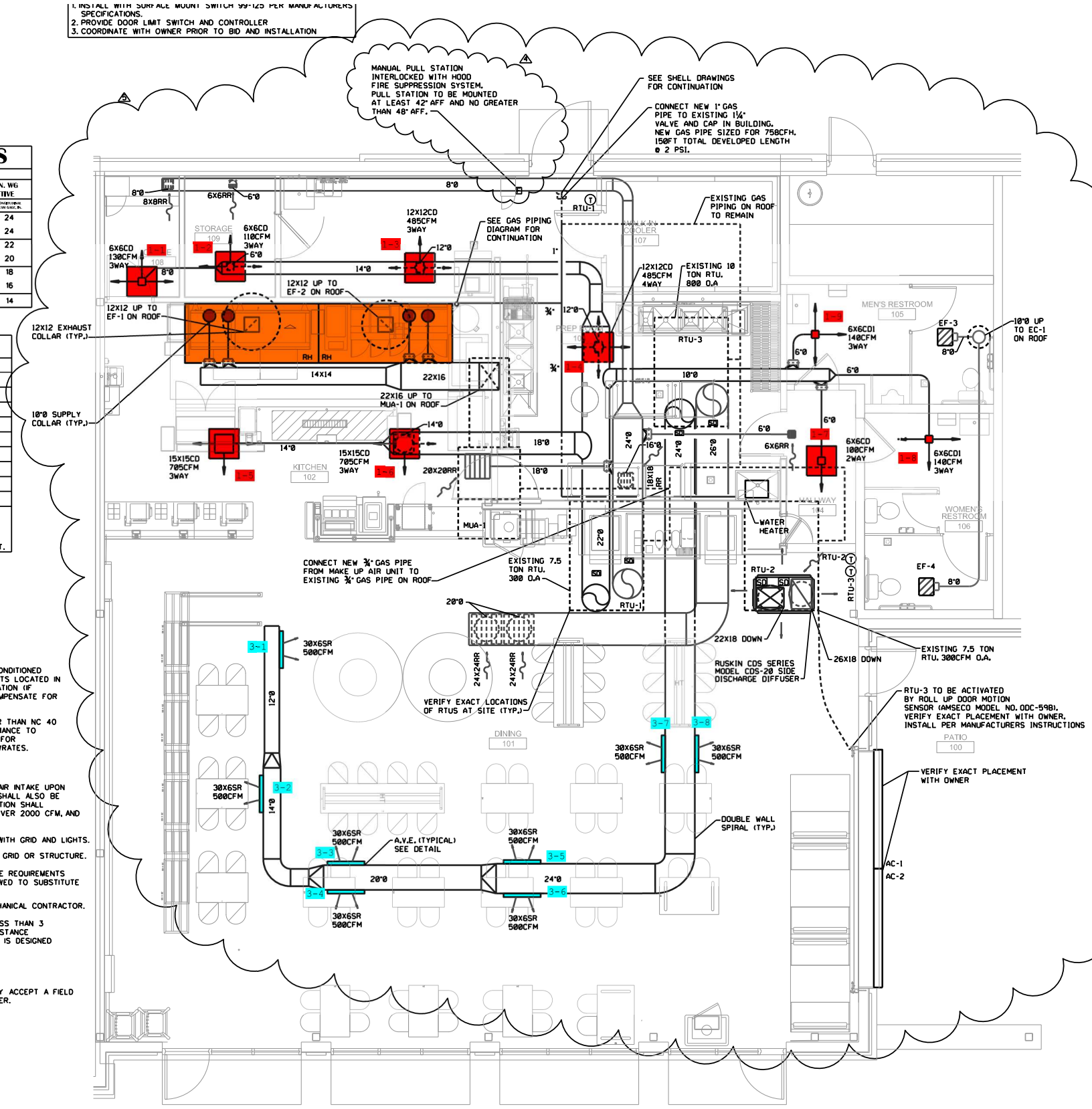
Performance Data		
	Design	**Actual**
Exh-Supply Net CFM	642	363
Smoke Generation Type	-	45 SECOND SMOKE EMITTER
Cooking Equip Heat On	-	NO
Hood Capture %	-	100%
End Panels Installed (Y/N)	-	YES

General		
	Design	**Actual**
Tech Witness	-	JACOB DAVIDSON

Completed By: Jacob Davidson

Notes:RIGHT HOOD GC NOT AVAILABLE AS WITNESS

Asset	Notes


1. INSTALL WITH SURFACE MOUNT SWITCH 99-125 PER MANUFACTURERS SPECIFICATIONS.
2. PROVIDE DOOR LIMIT SWITCH AND CONTROLLER
3. COORDINATE WITH OWNER PRIOR TO BID AND INSTALLATION
MANUAL PULL STATION INTERLOCKED WITH HOOD FIRE SUPPRESSION SYSTEM. PULL STATION TO BE MOUNTED AT LEAST 42" AFF AND NO GREATER THAN 48" AFF.
SEE SHELL DRAWINGS FOR CONTINUATION
CONNECT NEW 1" GAS PIPE TO EXISTING 1¼" VALVE AND CAP IN BUILDING. NEW GAS PIPE SIZED FOR 758CFH. 150FT TOTAL DEVELOPED LENGTH @ 2 PSI.
EXISTING GAS PIPING ON ROOF TO REMAIN
SEE GAS PIPING DIAGRAM FOR CONTINUATION
12X12 EXHAUST COLLAR (TYP.)
10"Ø SUPPLY COLLAR (TYP.)
12X12 UP TO EF-1 ON ROOF
12X12 UP TO EF-2 ON ROOF
22X16 UP TO MUA-1 ON ROOF
CONNECT NEW ¾" GAS PIPE FROM MAKE UP AIR UNIT TO EXISTING ¾" GAS PIPE ON ROOF
EXISTING 7.5 TON RTU. 300 O.A
EXISTING 10 TON RTU. 800 O.A
RTU-1
RTU-2
RTU-3
MUA-1
WATER HEATER
EF-1
EF-2
EF-3
EF-4
10"Ø UP TO EC-1 ON ROOF
RUSKIN CDS SERIES MODEL CDS-20 SIDE DISCHARGE DIFFUSER
22X18 DOWN
26X18 DOWN
EXISTING 7.5 TON RTU. 300CFM O.A.
RTU-3 TO BE ACTIVATED BY ROLL UP DOOR MOTION SENSOR (AMSECO MODEL NO. ODC-598). VERIFY EXACT PLACEMENT WITH OWNER. INSTALL PER MANUFACTURERS INSTRUCTIONS
VERIFY EXACT PLACEMENT WITH OWNER
DOUBLE WALL SPIRAL (TYP.)
VERIFY EXACT LOCATIONS OF RTUS AT SITE (TYP.)
A.V.E. (TYPICAL) SEE DETAIL
AC-1
AC-2
STORAGE 109
KITCHEN 102
DINING 101
COOLER 107
MEN'S RESTROOM 105
WOMEN'S RESTROOM 106
PATIO 100
6X6RR
8X8RR
6X6CD 130CFM 3WAY
6X6CD 110CFM 3WAY
12X12CD 485CFM 3WAY
12X12CD 485CFM 4WAY
15X15CD 705CFM 3WAY
20X20RR
24X24RR
18X18 RR
6X6CD1 140CFM 3WAY
6X6CD 100CFM 2WAY
6X6RR
30X6SR 500CFM
14X14
22X16