Report By:
United Test and Balance
7013 Flagler Rd
Nordland, WA 98358

NATIONAL TAB
Comfort. Under control.

For:
National TAB
1126 Swift St
N Kansas City, MO 64116

Report: Test, Adjust, & Balance
Date: 4/27/2022

PROJECT

BJ'S RESTAURANT BREWHOUSE - LIVE OAK, TX (LIVE OAK TOWNE CENTER)

2050 IKEA RBFCU PKWY

LIVE OAK, TX

Client

Terra Nova Industries

1607 Tice Valley Blvd

Walnut Creek, CA 94595

Comfort. Under control.

BJ'S RESTAURANT BREWHOUSE - LIVE OAK, TX (LIVE OAK TOWNE CENTER)

CheckList Information

Name : Remarks

Status : NotSubmitted

Assigned Organization : National TAB

Asset :

Requesting Organization : National TAB

CheckList Item Details

PRIORITY (HIGH/LOW/INFO ONLY)	
HIGH	RTU3 is operating at 121% of design and is not responding to adjustment at the speed controller. Recommend mechanical contractor contact the manufacturer.
LOW	Diffuser 9 (Cookline) on RTU-5 is high on flow and no damper was found to reduce airflow. Diffuser 1 in the kitchen vestibule is high on airflow and is not fully closing. Recommend repair.
LOW	RTU-4 is missing a number of balancing dampers. The airflow to the diffusers could not be balanced. Recommend installing
LOW	EF-7 is shown on the plans to have a stat in the managers office but none could be found.
HIGH	TF-1 does not have a thermostat installed in the AV room. No controls found to turn the fan on for testing.
HIGH	EF-8 CO2 controls are not complete. Unable to test the fan.
LOW	RTU-1 outside air mesh filter is not installed. The part is on back order from Trane.
LOW	EF-6 (Public restroom) balancing dampers are not installed and airflow could not be balanced between the grilles.

LOW	RTU-1 outside air controls must be adjusted through the touch screen. Analog inputs on the outside air controller are not accepted to program. This is not ideal due to read/write data loss typical to the Trane units. Outside air was successfully set but recommend contacting the manufacturer to see if the settings can be set through potentiometer so that the damper settings are not accidently reset on the controller in the future.

Report Summary/Remarks

PROJECT: BJ's Brewhouse
LOCATION: Live Oak, TX

DATE: 4/26/2022
CONTACT: Armon Scott

Scope of Work

Preface

The summary below provides a quick understanding of how well your HVAC systems balanced in respect to the design criteria. The summary concludes with a quick understanding of your building environment and possible suggestions for each of your systems after testing has been performed. 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. Our focus is 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. Also, enclosed are pictures of building assets and items listed below that will provide your team with more insight.

Facility Identification and TAB Requirements

The mechanical equipment to be tested, adjusted, and balanced includes: All Rooftop Units (RTUs), All Exhaust Fans (EF), All Make Up Air Units (MUA), All Kitchen Hoods, and all associated air devices.

System Posturing & Remarks

Air Apparatuses

Each of the RTUs were measured at their terminal devices utilizing a flow hood. The sum of these readings is equal to the total flow for that particular unit. The total flow of each HP was then adjusted to +/-10% of the specified design. Each terminal diffuser was balanced to within +/-10% of the engineer□s design volume utilizing the provided hand damper located at the takeoff of the main & branch trunk line(s). Any equipment that fell outside of this tolerance is noted throughout the report.RTU's in the dining were balanced for total flow only.

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 +/-10% of the engineers design flow. 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 +/-10% of design criteria. Any EF's or MUA's that fell outside of this tolerance is noted throughout the report.

General Exhaust Fans

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 +/-10% of design. Each terminal device was balanced to within +/-10% of the design volume using the installed volume dampers. Any equipment that fell outside of this tolerance is noted throughout the report.

Final Building Test

After completing the test and balance, the final building pressure was recorded on the Building Summary form. This pressure falls within the recommended tolerances by the International Mechanical Code of +0.02” W.C. to -0.02” W.C. The building is designed for a net positive pressure and this measurement coincides with that requirement.

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	BAR	6050	6433	4650	5166	1400	1267	23.1%	19.7%						
RTU-2	DINING	6000	5873	4600	4585	1400	1288	23.3%	21.9%						
RTU-3	DINING	4000	4842	3000	3883	1000	959	25.0%	19.8%						
RTU-4	KITCHEN	4300	3983	3300	2952	1000	1031	23.3%	25.9%						
RTU-5	KITCHEN	6000	6596	5000	5537	1000	1059	16.7%	16.1%						
MUA-1	COOKLINE									7592	7986				
EF-1	PIZZA											1894	1884		
EF-2	MAIN RIGHT											3375	3525		
EF-3	MAIN LEFT											1950	1929		
EF-4	PREP											1800	1774		
EF-5	DISH											1900	1932		
EF-6	RESTROOM											510	542		
EF-7	KITCHEN VEST											400	363		
EF-8	BEER COOLER											380	0		
TF-1	DATA ROOM													400	0
TOTALS		26350	27727	20550	22123	5800	5604			7592	7986	12209	11949	400	0

NET BUILDING AIRFLOW CALCULATION

TOTALS	DESIGN	ACTUAL
TOTAL OA	13392	13590
TOTAL EXHAUST	12609	11949
NET AIRFLOW	783	1641

DOOR TESTED	BUILDING PRESSURE MEASUREMENTS (IN. H20)
FRONT	0.003
SIDE	0.005
REAR	0.004
AVERAGE	**0.004**

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:

RTU1

RTU2

RTU3

RTU4

RTU5

EF1

EF2

EF3

EF4

EF5

EF6

EF7

EF8

MAU1

Project Checklist

PROJECT: BJ's Brewhouse
LOCATION: Live Oak, TX

DATE: 4/26/2022
CONTACT: Armon Scott

SYSTEM/UNIT: Project Checklist

Tested By: Armon Scott
Date: 4/20/2022

Inspection Data - Project Checklist

	Verification	Response	Notes	By	Date/Time
1	All diffusers and grilles are installed and match design?	Yes		AS	4/20/22 12:00
2	All hood filters installed and accounted for?	Yes		AS	4/20/22 11:59
3	Hoods are wired and have power?	Yes		AS	4/20/22 11:59
4	Hood is free of alarms?	Yes		AS	4/20/22 11:59
5	Thermostats have power?	Yes		AS	4/20/22 11:59
6	Have trades/general contractor been notified about any issues and are they created on FaciliBuild?	Yes		AS	4/20/22 11:59

General - Project Checklist

	Verification	Response	Notes	By	Date/Time
1	Is space free of drafting?	Yes		AS	4/20/22 11:59
2	Is space comfortable in all areas?	Yes		AS	4/20/22 11:59
3	Is the space free of ventilation noise?	Yes		AS	4/20/22 11:59

Air Apparatus

PROJECT: BJ's Brewhouse
LOCATION: Live Oak, TX

DATE: 4/26/2022
CONTACT: Armon Scott

SYSTEM/UNIT: RTU-01

Tested By: Armon Scott
Date: 4/22/2022

Inspection Data - RTU-01

	Verification	Response	Notes	By	Date/Time
1	IS ECONOMIZER BLANK PLATE INSTALLED BELOW THE OUTDOOR AIR FILTERS? (IF NO, REMOVE THE PIECE FROM UNDERNEATH THE COIL FILTER BANK AND INSTALL) Trane only (N/A = not applicable)	NA		AS	4/20/22 15:04
2	Economizers are assembled and functional?	Yes		AS	4/20/22 15:06
3	DCV Max damper opening position is set to minimum?	Yes		AS	4/20/22 15:07
4	Free cooling enthalpy set point set for lowest setting (Typically "D")	Yes		AS	4/20/22 15:08
5	Is the motor operating below the motor FLA rating?	Yes		AS	4/20/22 15:09
6	Belts are Tight?	Yes		AS	4/20/22 15:09
7	If direct drive unit is the speed controller working.	NA		AS	4/20/22 15:09
8	Gas piping is installed and valves are in on position?	Yes		AS	4/20/22 15:09
9	Unit free of noticeable noise and vibration?	Yes		AS	4/20/22 15:09

Log:

RTU-01	4/20/2022	Armon Scott	Outside air mesh filter is not installed. Part is on backorder from Trane.
RTU-01	4/20/2022	Armon Scott	Economizer settings must be adjusted through touch screen. Analog inputs on outside air controller are not accepted to program, this is not ideal due to read/write data loss typical to the Trane units.

Air Apparatus

PROJECT: BJ's Brewhouse
LOCATION: Live Oak, TX

DATE: 4/26/2022
CONTACT: Armon Scott

SYSTEM/UNIT: RTU-02

Tested By: Armon Scott
Date: 4/22/2022

Inspection Data - RTU-02

	Verification	Response	Notes	By	Date/Time
1	IS ECONOMIZER BLANK PLATE INSTALLED BELOW THE OUTDOOR AIR FILTERS? (IF NO, REMOVE THE PIECE FROM UNDERNEATH THE COIL FILTER BANK AND INSTALL) Trane only (N/A = not applicable)	Yes		AS	4/20/22 15:59
2	Economizers are assembled and functional?	Yes		AS	4/20/22 15:59
3	DCV Max damper opening position is set to minimum?	Yes		AS	4/20/22 15:59
4	Free cooling enthalpy set point set for lowest setting (Typically "D")	Yes		AS	4/20/22 15:59
5	Is the motor operating below the motor FLA rating?	NA		AS	4/20/22 15:59
6	Belts are Tight?	Yes		AS	4/20/22 15:59
7	If direct drive unit is the speed controller working.	NA		AS	4/20/22 15:59
8	Gas piping is installed and valves are in on position?	Yes		AS	4/20/22 15:09
9	Unit free of noticeable noise and vibration?	Yes		AS	4/20/22 15:59

Air Apparatus

PROJECT: BJ's Brewhouse
LOCATION: Live Oak, TX

DATE: 4/26/2022
CONTACT: Armon Scott

SYSTEM/UNIT: RTU-03

Tested By: Armon Scott
Date: 4/20/2022

Inspection Data - RTU-03

	Verification	Response	Notes	By	Date/Time
1	IS ECONOMIZER BLANK PLATE INSTALLED BELOW THE OUTDOOR AIR FILTERS? (IF NO, REMOVE THE PIECE FROM UNDERNEATH THE COIL FILTER BANK AND INSTALL) Trane only (N/A = not applicable)	Yes		AS	4/20/22 16:32
2	Economizers are assembled and functional?	Yes		AS	4/20/22 16:32
3	DCV Max damper opening position is set to minimum?	Yes		AS	4/20/22 16:34
4	Free cooling enthalpy set point set for lowest setting (Typically "D")	Yes		AS	4/20/22 16:34
5	Is the motor operating below the motor FLA rating?	Yes		AS	4/20/22 16:34
6	Belts are Tight?	NA		AS	4/19/22 0:16
7	If direct drive unit is the speed controller working.	No		AS	4/20/22 16:34
8	Gas piping is installed and valves are in on position?	Yes		AS	4/20/22 16:34
9	Unit free of noticeable noise and vibration?	Yes		AS	4/20/22 16:34

Log:

RTU-03	4/19/2022	Armon Scott	Unit is operating at 121% of design and is not responding to the speed controller SCR.

Air Apparatus

PROJECT: BJ's Brewhouse
LOCATION: Live Oak, TX

DATE: 4/26/2022
CONTACT: Armon Scott

SYSTEM/UNIT: RTU-04

Tested By: Armon Scott
Date: 4/20/2022

Inspection Data - RTU-04

	Verification	Response	Notes	By	Date/Time
1	IS ECONOMIZER BLANK PLATE INSTALLED BELOW THE OUTDOOR AIR FILTERS? (IF NO, REMOVE THE PIECE FROM UNDERNEATH THE COIL FILTER BANK AND INSTALL) Trane only (N/A = not applicable)	Yes		AS	4/20/22 17:39
2	Economizers are assembled and functional?	Yes		AS	4/20/22 17:39
3	DCV Max damper opening position is set to minimum?	Yes		AS	4/20/22 17:39
4	Free cooling enthalpy set point set for lowest setting (Typically "D")	Yes		AS	4/20/22 17:39
5	Is the motor operating below the motor FLA rating?	Yes		AS	4/20/22 17:39
6	Belts are Tight?	Yes		AS	4/20/22 17:47
7	If direct drive unit is the speed controller working.	NA		AS	4/20/22 17:51
8	Gas piping is installed and valves are in on position?	Yes		AS	4/20/22 17:51
9	Unit free of noticeable noise and vibration?	Yes		AS	4/20/22 17:48

Air Apparatus

PROJECT: BJ's Brewhouse
LOCATION: Live Oak, TX

DATE: 4/26/2022
CONTACT: Armon Scott

SYSTEM/UNIT: RTU-05

Tested By: Armon Scott
Date: 4/20/2022

Inspection Data - RTU-05

	Verification	Response	Notes	By	Date/Time
1	IS ECONOMIZER BLANK PLATE INSTALLED BELOW THE OUTDOOR AIR FILTERS? (IF NO, REMOVE THE PIECE FROM UNDERNEATH THE COIL FILTER BANK AND INSTALL) Trane only (N/A = not applicable)	Yes		AS	4/20/22 18:46
2	Economizers are assembled and functional?	Yes		AS	4/20/22 18:46
3	DCV Max damper opening position is set to minimum?	Yes		AS	4/20/22 18:46
4	Free cooling enthalpy set point set for lowest setting (Typically "D")	Yes		AS	4/20/22 18:46
5	Is the motor operating below the motor FLA rating?	Yes		AS	4/20/22 18:46
6	Belts are Tight?	Yes		AS	4/20/22 18:46
7	If direct drive unit is the speed controller working.	Yes		AS	4/20/22 18:46
8	Gas piping is installed and valves are in on position?	Yes		AS	4/20/22 18:46
9	Unit free of noticeable noise and vibration?	Yes		AS	4/20/22 18:46

Fan

PROJECT: BJ's Brewhouse
LOCATION: Live Oak, TX

DATE: 4/26/2022
CONTACT: Armon Scott

SYSTEM/UNIT: EF-01
AREA: Pizza

Tested By: Armon Scott
Date: 4/22/2022

Inspection Data - EF-01

	Verification	Response	Notes	By	Date/Time
1	Fan Rotation is Correct?	Yes		AS	4/19/22 2:11
2	Belts are Tight?	NA		AS	4/19/22 2:12
3	Internal motorized damper is fully opening?	NA		AS	4/19/22 2:12
4	Motor is operating below the FLA rating?	Yes		AS	4/19/22 2:12
5	Unit free of noticeable noise and vibration?	Yes		AS	4/19/22 2:12
6	There is no major leakage around base of fan?	No		AS	4/19/22 2:12
7	Is the motor operating below the motor FLA rating?	Yes		AS	4/19/22 2:12

HVAC Units / Fans - EF-01

	Verification	Response	Notes	By	Date/Time
1	Grease cup is installed on hood fan?	Yes		AS	4/20/22 18:57
2	Hinge kit installed on hood fan.	Yes		AS	4/20/22 18:57
3	Lean fan back. Is grease duct installation adequate and is duct ran all the way to the base of the fan?	Yes		AS	4/20/22 18:58
4	Flex conduit is long enough so that fan can be completely tilted back?	Yes		AS	4/20/22 18:58

Fan

PROJECT: BJ's Brewhouse
LOCATION: Live Oak, TX

DATE: 4/26/2022
CONTACT: Armon Scott

SYSTEM/UNIT: EF-02
AREA: Main Right

Tested By: Armon Scott
Date: 4/22/2022

Inspection Data - EF-02

	Verification	Response	Notes	By	Date/Time
1	Fan Rotation is Correct?	Yes		AS	4/20/22 19:09
2	Belts are Tight?	NA		AS	4/20/22 19:09
3	Internal motorized damper is fully opening?	NA		AS	4/20/22 19:09
4	Motor is operating below the FLA rating?	Yes		AS	4/20/22 19:09
5	Unit free of noticeable noise and vibration?	Yes		AS	4/20/22 19:09
6	There is no major leakage around base of fan?	Yes		AS	4/20/22 19:09
7	Is the motor operating below the motor FLA rating?	Yes		AS	4/22/22 10:18

HVAC Units / Fans - EF-02

	Verification	Response	Notes	By	Date/Time
1	Grease cup is installed on hood fan?	Yes		AS	4/20/22 19:10
2	Hinge kit installed on hood fan.	No		AS	4/20/22 19:10
3	Lean fan back. Is grease duct installation adequate and is duct ran all the way to the base of the fan?	No		AS	4/20/22 19:11
4	Flex conduit is long enough so that fan can be completely tilted back?	No		AS	4/20/22 19:11

Fan

PROJECT: BJ's Brewhouse
LOCATION: Live Oak, TX

DATE: 4/26/2022
CONTACT: Armon Scott

SYSTEM/UNIT: EF-03
AREA: Main Left

Tested By: Armon Scott
Date: 4/22/2022

Inspection Data - EF-03

	Verification	Response	Notes	By	Date/Time
1	Fan Rotation is Correct?	Yes		AS	4/19/22 2:11
2	Belts are Tight?	NA		AS	4/19/22 2:12
3	Internal motorized damper is fully opening?	NA		AS	4/19/22 2:12
4	Motor is operating below the FLA rating?	Yes		AS	4/19/22 2:12
5	Unit free of noticeable noise and vibration?	Yes		AS	4/19/22 2:12
6	There is no major leakage around base of fan?	No		AS	4/19/22 2:12
7	Is the motor operating below the motor FLA rating?	Yes		AS	4/19/22 2:12

HVAC Units / Fans - EF-03

	Verification	Response	Notes	By	Date/Time
1	Grease cup is installed on hood fan?	Yes		AS	4/20/22 19:14
2	Hinge kit installed on hood fan.	Yes		AS	4/20/22 19:14
3	Lean fan back. Is grease duct installation adequate and is duct ran all the way to the base of the fan?	Yes		AS	4/20/22 19:14
4	Flex conduit is long enough so that fan can be completely tilted back?	Yes		AS	4/20/22 19:14

Fan

PROJECT: BJ's Brewhouse
LOCATION: Live Oak, TX

DATE: 4/26/2022
CONTACT: Armon Scott

SYSTEM/UNIT: EF-04
AREA: Prep

Tested By: Armon Scott
Date: 4/21/2022

Inspection Data - EF-04

	Verification	Response	Notes	By	Date/Time
1	Fan Rotation is Correct?	Yes		AS	4/20/22 19:03
2	Belts are Tight?	NA		AS	4/20/22 19:03
3	Internal motorized damper is fully opening?	NA		AS	4/20/22 19:03
4	Motor is operating below the FLA rating?	Yes		AS	4/21/22 4:18
5	Unit free of noticeable noise and vibration?	Yes		AS	4/20/22 19:03
6	There is no major leakage around base of fan?	Yes		AS	4/20/22 19:03
7	Is the motor operating below the motor FLA rating?	Yes		AS	4/21/22 4:18

HVAC Units / Fans - EF-04

	Verification	Response	Notes	By	Date/Time
1	Grease cup is installed on hood fan?	Yes		AS	4/20/22 19:03
2	Hinge kit installed on hood fan.	Yes		AS	4/20/22 19:03
3	Lean fan back. Is grease duct installation adequate and is duct ran all the way to the base of the fan?	Yes		AS	4/20/22 19:03
4	Flex conduit is long enough so that fan can be completely tilted back?	Yes		AS	4/20/22 19:03

Fan

PROJECT: BJ's Brewhouse
LOCATION: Live Oak, TX

DATE: 4/26/2022
CONTACT: Armon Scott

SYSTEM/UNIT: EF-05
AREA: Dish

Tested By: Armon Scott
Date: 4/22/2022

Inspection Data - EF-05

	Verification	Response	Notes	By	Date/Time
1	Fan Rotation is Correct?	Yes		AS	4/21/22 1:45
2	Belts are Tight?	NA		AS	4/21/22 1:45
3	Internal motorized damper is fully opening?	NA		AS	4/21/22 1:45
4	Motor is operating below the FLA rating?	NA		AS	4/21/22 2:11
5	Unit free of noticeable noise and vibration?	Yes		AS	4/21/22 1:45
6	There is no major leakage around base of fan?	Yes		AS	4/21/22 1:45
7	Is the motor operating below the motor FLA rating?	NA		AS	4/21/22 2:11
8	Back draft damper installed and can it fully open?	NA		AS	4/21/22 2:08

HVAC Units / Fans - EF-05

	Verification	Response	Notes	By	Date/Time
1	Grease cup is installed on hood fan?	No		AS	4/21/22 2:08
2	Hinge kit installed on hood fan.	No		AS	4/21/22 2:08
3	Lean fan back. Is grease duct installation adequate and is duct ran all the way to the base of the fan?	NA		AS	4/21/22 2:08
4	Flex conduit is long enough so that fan can be completely tilted back?	NA		AS	4/21/22 2:08

Fan

PROJECT: BJ's Brewhouse
LOCATION: Live Oak, TX

DATE: 4/26/2022
CONTACT: Armon Scott

SYSTEM/UNIT: EF-06
AREA: Public Restroom

Tested By: Armon Scott
Date: 4/22/2022

Inspection Data - EF-06

	Verification	Response	Notes	By	Date/Time
1	Fan Rotation is Correct?	Yes		AS	4/22/22 10:37
2	Belts are Tight?	NA		AS	4/22/22 10:37
3	Internal motorized damper is fully opening?	NA		AS	4/22/22 10:37
4	Motor is operating below the FLA rating?	Yes		AS	4/22/22 10:37
5	Unit free of noticeable noise and vibration?	Yes		AS	4/22/22 10:38
6	There is no major leakage around base of fan?	Yes		AS	4/22/22 10:38
7	Is the motor operating below the motor FLA rating?	Yes		AS	4/22/22 10:38
8	Back draft damper installed and can it fully open?	Yes		AS	4/22/22 10:38

Log:				
	EF-06	4/22/2022	Armon Scott	There were no dampers installed on the inlets to proportion the airflow. The unisex restroom is underperforming and the other inlets need to be closed to force the air into that grille.

Fan

PROJECT: BJ's Brewhouse
LOCATION: Live Oak, TX

DATE: 4/26/2022
CONTACT: Armon Scott

SYSTEM/UNIT: EF-07
AREA: Kitchen Vest

Tested By: Armon Scott
Date: 4/20/2022

Inspection Data - EF-07

	Verification	Response	Notes	By	Date/Time
1	Fan Rotation is Correct?	Yes		AS	4/20/22 23:35
2	Belts are Tight?	NA		AS	4/20/22 23:35
3	Internal motorized damper is fully opening?	NA		AS	4/20/22 23:25
4	Motor is operating below the FLA rating?	NA		AS	4/20/22 23:25
5	Unit free of noticeable noise and vibration?	Yes		AS	4/20/22 23:25
6	There is no major leakage around base of fan?	Yes		AS	4/20/22 23:25
7	Is the motor operating below the motor FLA rating?	NA		AS	4/20/22 23:25
8	Back draft damper installed and can it fully open?	Yes		AS	4/20/22 23:34

Log:				
	EF-07	4/20/2022	Armon Scott	Unable to locate Honeywell tstat. Per plans should be located in managers office.

Fan

PROJECT: BJ's Brewhouse
LOCATION: Live Oak, TX

DATE: 4/26/2022
CONTACT: Armon Scott

SYSTEM/UNIT: EF-08
AREA: Beer Cooler

Tested By: Armon Scott
Date: 4/22/2022

Inspection Data - EF-08

	Verification	Response	Notes	By	Date/Time
1	Fan Rotation is Correct?				
2	Belts are Tight?				
3	Internal motorized damper is fully opening?				
4	Motor is operating below the FLA rating?				
5	Unit free of noticeable noise and vibration?				
6	There is no major leakage around base of fan?				
7	Is the motor operating below the motor FLA rating?				
8	Back draft damper installed and can it fully open?				

Log:

EF-08	4/22/2022	Armon Scott	Fan CO2 controls are not yet complete. Unable to test fan.

Fan

PROJECT: BJ's Brewhouse
LOCATION: Live Oak, TX

DATE: 4/26/2022
CONTACT: Armon Scott

SYSTEM/UNIT: MAU-01

Tested By: Armon Scott
Date: 4/21/2022

Inspection Data - MAU-01

	Verification	Response	Notes	By	Date/Time
1	Fan Rotation is Correct?	Yes		AS	4/21/22 0:50
2	Belts are Tight?	Yes		AS	4/21/22 0:50
3	Internal motorized damper is fully opening?	Yes		AS	4/21/22 0:50
4	Motor is operating below the FLA rating?	Yes		AS	4/21/22 2:40
5	Unit free of noticeable noise and vibration?	Yes		AS	4/21/22 0:51
6	There is no major leakage around base of fan?	Yes		AS	4/21/22 0:51
7	Is the motor operating below the motor FLA rating?	Yes		AS	4/21/22 2:40

Heat Exchangers - MAU-01

	Verification	Response	Notes	By	Date/Time
1	Gas piping is installed and valves are in on position?	Yes		AS	4/21/22 0:51
2	Heater tested and is functional?	Yes		AS	4/21/22 2:28
3	Heater Operates?	Yes		AS	4/21/22 2:28
4	Flame Status?	Yes		AS	4/21/22 2:29
5	Inlet Air Temp SetPt (Design 55)	55		WC	4/26/22 8:17
6	Discharge Air Temp SetPt (Design 60)	60		WC	4/26/22 8:17
7	Air Flow Switch Sp Actual	-0.38		AS	4/21/22 2:42

Fan

PROJECT: BJ's Brewhouse
LOCATION: Live Oak, TX

DATE: 4/26/2022
CONTACT: Armon Scott

SYSTEM/UNIT: TF-01
AREA: Data Rm

Tested By: Armon Scott
Date: 4/22/2022

Inspection Data - TF-01

	Verification	Response	Notes	By	Date/Time
1	Fan Rotation is Correct?				
2	Belts are Tight?				
3	Internal motorized damper is fully opening?				
4	Motor is operating below the FLA rating?				
5	Unit free of noticeable noise and vibration?				
6	There is no major leakage around base of fan?				
7	Is the motor operating below the motor FLA rating?				
8	Back draft damper installed and can it fully open?				

Log:

TF-01	4/22/2022	Armon Scott	Fan thermostat is not installed in AV room. No controls to start.

Air Apparatus

PROJECT: BJ's Brewhouse
LOCATION: Live Oak, TX

DATE: 4/26/2022
CONTACT: Armon Scott

SYSTEM/UNIT: RTU-01

Tested By: Armon Scott
Date: 4/22/2022

Design Airflow (CFM)	
Design Total	6000
Design Grille Total	6050
Design Return	4600
Design Min O/A	1400

Unit Design Data	
Submittal Make	Lennox
Submittal Model #	YHD180G3RHD
Submittal Airflow	Not Provided
Sched./Sub. Volts	208
Sched./Sub. Phase	3
Sched./Sub. HP	Not Listed
Submittal BHP	3.47
Filter MERV Rating (Sched/Sub)	Not Listed

Design Static Pressures (in wg)	
Design Ext SP	1
Submittal Total SP	Not Provided
Submittal Clg Coil Δ SP	-

Filter Data	
Condition	Partially Loaded
Filter Type	Pleated
MERV Rating	8
Filter Size Set 1 (in)	16/20/2
# Filters Set 1	4
Filter Size Set 2 (in)	20/20/2
# Filters Set 2	8

Motor Nameplate Data	
Motor Make	Marathon
Motor Frame	56HZ
Motor HP	5.00
Motor RPM	3450
Motor Volts	208
Motor Phase	3

Final Airflow (CFM)	
Actual Total CFM	6433
Actual Grille Total CFM	-
Actual Return Air CFM	5166
Actual Min O/A CFM	1267
Fan CFM Test Method	Coil Face - Velgrid/ADM
OA Method/Instrument	Face Velocity/RVA
OA Ak (sq ft)	6.667
OA Damper Position	5% Open / 15% Open
RA Damper Position	95% Open

Unit Data	
Make (tag)	Trane
Model # (tag)	YHD180G3RHD4PJS
Serial # (tag)	220810895D
Location	Roof
Unit Discharge	Downblast
Cooling Coil Location	Unit / Drawthru
Coil Area (sq ft)	28.8
Clg Coil Vel (FPM)	223
Fan Service	Supply
Fan Type	Centrifugal (FC)
Fan Discharge	Downblast
Fan Arrangement	DWDI

Fan Design Data	
Submittal Motor RPM	Not Provided
Submittal Fan RPM	-

Fan Data	
Actual Fan RPM/Speed	793
Actual Motor RPM	3409

Electrical Data	
Measurement Method	V/A Meter
Motor Volts 1	208
Motor Volts 2	208

Air Apparatus

PROJECT: BJ's Brewhouse
LOCATION: Live Oak, TX

DATE: 4/26/2022
CONTACT: Armon Scott

SYSTEM/UNIT: RTU-01

Tested By: Armon Scott
Date: 4/22/2022

Motor Nameplate Data	
Motor Amps	13.4
Motor S.F.	1.15
Motor % PF	85
Motor % Eff.	Not Listed
Other Motor Data	-

Drive Data	
Drive Type	Belt Drive
Sheave Type	Variable
Fan Sheave Make	Not Listed
Fan Shv Mod# or Size (in)	12
Fan Sheave Bore (in)	1 3/16
Motor Sheave Make	Not Listed
Mtr Shv Mod# or Size (in)	3.5
Motor Sheave Bore (in)	7/8
VP Range	2 1/2 Turns Open
Center Distance (in)	22.0
No of Belts	1
Belt Make	Continental
Belt Size	BX71
Other Data	-

Electrical Data	
Motor Volts 3	208
Motor Amps 1	13.5
Motor Amps 2	-
Motor Amps 3	-
Operating HZ	60.00
Approx. BHP	5.0
Corr. Nameplate Amps	13.4
Starter Data	Not Applicable
VFD Reference	-

Air Apparatus

PROJECT: BJ's Brewhouse
LOCATION: Live Oak, TX

DATE: 4/26/2022
CONTACT: Armon Scott

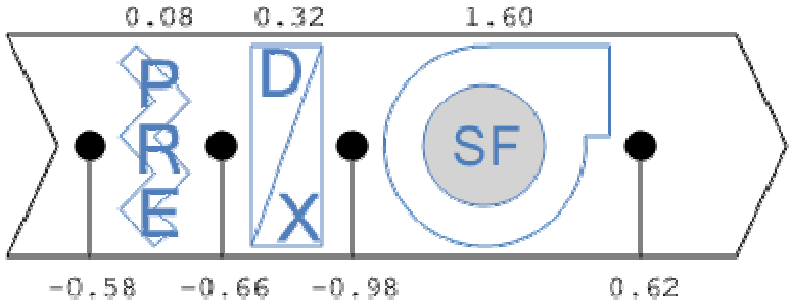
SYSTEM/UNIT: RTU-01

Tested By: Armon Scott
Date: 4/22/2022

SYSTEM/UNIT: RTU-01/Static Profile

Tested By: Armon Scott
Date: 4/20/2022

Static Pressure Profile



RTU-01 Supply Outlet Summary

System/Unit	Area Served	Type	Size / Area (in)	Design CFM	Prelim CFM	Final CFM	% Final	Instrument	Ak	Open (sq ft)	Final FPM
S-01	108 Women	CD	8	150	146	146	97	Flow Hood	1.000	1.000	146
S-02	109 Men	CD	8	150	136	136	91	Flow Hood	1.000	1.000	136
S-03*	107 RR Vest	CD	6	100	34	34	34	Flow Hood	1.000	1.000	34
S-04	102 Bar	CD	8	250	-	-		Not In Scope	-	-	
S-05	102 Bar	CD	8	250	-	-		-	-	-	
S-06	102 Bar	CD	8	250	-	-		-	-	-	
S-07	102 Bar	CD	8	250	-	-		-	-	-	
S-08	102 Bar	CD	8	250	-	-		-	-	-	
S-09	102 Bar	CD	8	250	-	-		-	-	-	
S-10	102 Bar	SW	14	350	-	-		-	-	-	
S-11	102 Bar	SW	14	350	-	-		-	-	-	
S-12	102 Bar	SW	14	350	-	-		-	-	-	
S-13	102 Bar	SW	14	350	-	-		-	-	-	
S-14	102 Bar	SW	14	400	-	-		-	-	-	
S-15	102 Bar	SW	14	400	-	-		-	-	-	
S-16	102 Bar	SW	14	400	-	-		-	-	-	
S-17	102 Bar	SW	14	300	-	-		-	-	-	
S-18	102 Bar	SW	14	300	-	-		-	-	-	
S-19	102 Bar	SW	14	300	-	-		-	-	-	
S-20	102 Bar	SW	14	300	-	-		-	-	-	
S-21	102 Bar	SW	14	350	-	-		-	-	-	
	Totals:	**-**	**-**	**6050**	**316**	**316**	**5**	**-**	**-**	**-**	**-**

Log:

RTU-01/S-03	Outlet is operating at 34% of design with the damper full open. Unable to increase airflow without balancing the bar area.

Air Apparatus

PROJECT: BJ's Brewhouse
LOCATION: Live Oak, TX

DATE: 4/26/2022
CONTACT: Armon Scott

SYSTEM/UNIT: RTU-02

Tested By: Armon Scott
Date: 4/22/2022

Design Airflow (CFM)	
Design Total	6000
Design Grille Total	6000
Design Return	4600
Design Min O/A	1400

Unit Design Data	
Submittal Make	Trane
Submittal Model #	YHD180G3RHD
Submittal Airflow	Not Provided
Sched./Sub. Volts	208
Sched./Sub. Phase	3
Sched./Sub. HP	Not Listed
Submittal BHP	3.47
Filter MERV Rating (Sched/Sub)	Not Listed

Design Static Pressures (in wg)	
Design Ext SP	1
Submittal Total SP	Not Provided
Submittal Clg Coil Δ SP	-

Filter Data	
Condition	Partially Loaded
Filter Type	Pleated
MERV Rating	8
Filter Size Set 1 (in)	16/20/2
# Filters Set 1	4
Filter Size Set 2 (in)	20/20/2
# Filters Set 2	8

Motor Nameplate Data	
Motor Make	Marathon
Motor Frame	56HZ
Motor HP	5.00
Motor RPM	3450
Motor Volts	208
Motor Phase	3

Final Airflow (CFM)	
Actual Total CFM	5873
Actual Grille Total CFM	-
Actual Return Air CFM	4585
Actual Min O/A CFM	1288
Fan CFM Test Method	Coil Face - Velgrid/ADM
OA Method/Instrument	Face Velocity/RVA
OA Ak (sq ft)	4.667
OA Damper Position	15% Open / 30% Open
RA Damper Position	85% Open

Unit Data	
Make (tag)	Trane
Model # (tag)	YHD180G3RHD4PJS
Serial # (tag)	220810896D
Location	Roof
Unit Discharge	Downblast
Cooling Coil Location	Unit / Drawthru
Coil Area (sq ft)	28.8
Clg Coil Vel (FPM)	204
Fan Service	Supply
Fan Type	Centrifugal (FC)
Fan Discharge	Downblast
Fan Arrangement	DWDI

Fan Design Data	
Submittal Motor RPM	Not Provided
Submittal Fan RPM	-

Fan Data	
Actual Fan RPM/Speed	803
Actual Motor RPM	3485

Electrical Data	
Measurement Method	V/A Meter
Motor Volts 1	208
Motor Volts 2	208

Air Apparatus

PROJECT: BJ's Brewhouse
LOCATION: Live Oak, TX

DATE: 4/26/2022
CONTACT: Armon Scott

SYSTEM/UNIT: RTU-02

Tested By: Armon Scott
Date: 4/22/2022

Motor Nameplate Data	
Motor Amps	13.4
Motor S.F.	1.15
Motor % PF	85
Motor % Eff.	Not Listed
Other Motor Data	-

Drive Data	
Drive Type	Belt Drive
Sheave Type	Variable
Fan Sheave Make	Not Listed
Fan Shv Mod# or Size (in)	12
Fan Sheave Bore (in)	1 3/16
Motor Sheave Make	Not Listed
Mtr Shv Mod# or Size (in)	3.5
Motor Sheave Bore (in)	7/8
VP Range	2 1/2 Turns Open
Center Distance (in)	22.0
No of Belts	1
Belt Make	Continental
Belt Size	BX71
Other Data	-

Electrical Data	
Motor Volts 3	208
Motor Amps 1	No Access to Measure
Motor Amps 2	-
Motor Amps 3	.
Operating HZ	60.00
Approx. BHP	
Corr. Nameplate Amps	13.4
Starter Data	Not Applicable
VFD Reference	-

Air Apparatus

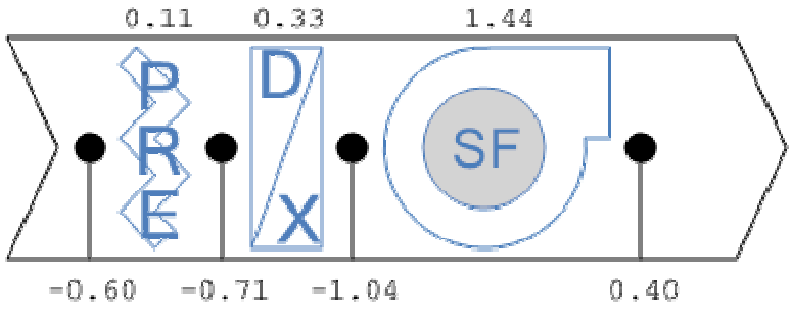
PROJECT: BJ's Brewhouse
LOCATION: Live Oak, TX

DATE: 4/26/2022
CONTACT: Armon Scott

SYSTEM/UNIT: RTU-02/Static Profile

Tested By: Armon Scott
Date: 4/20/2022

Static Pressure Profile



RTU-02 Supply Outlet Summary

System/Unit	Area Served	Type	Size / Area (in)	Design CFM	Prelim CFM	Final CFM	% Final	Instrument	Ak	Open (sq ft)	Final FPM
S-01	104 Dining2	SW	16	300	-	-		Not In Scope	-	-	
S-02	104 Dining2	SW	16	300	-	-		-	-	-	
S-03	104 Dining2	SW	16	300	-	-		-	-	-	
S-04	104 Dining2	SW	16	300	-	-		-	-	-	
S-05	104 Dining2	SW	16	300	-	-		-	-	-	
S-06	104 Dining2	SW	16	300	-	-		-	-	-	
S-07	104 Dining2	SW	16	300	-	-		-	-	-	
S-08	104 Dining2	SW	16	300	-	-		-	-	-	
S-09	104 Dining2	SW	16	300	-	-		-	-	-	
S-10	104 Dining2	SW	16	300	-	-		-	-	-	
S-11	104 Dining2	SW	16	300	-	-		-	-	-	
S-12	104 Dining2	SW	16	300	-	-		-	-	-	
S-13	104 Dining2	SW	16	300	-	-		-	-	-	
S-14	104 Dining2	SW	16	300	-	-		-	-	-	
S-15	104 Dining2	SW	16	300	-	-		-	-	-	
S-16	104 Dining2	SW	16	300	-	-		-	-	-	
S-17	100 Lobby	SW	12	600	-	-		-	-	-	
S-18	100 Lobby	SW	12	600	-	-		-	-	-	
	Totals:	**-**	**-**	**6000**	**0**	**0**	**0**	**-**	**-**	**-**	**-**

Air Apparatus

PROJECT: BJ's Brewhouse
LOCATION: Live Oak, TX

DATE: 4/26/2022
CONTACT: Armon Scott

SYSTEM/UNIT: RTU-03

Tested By: Armon Scott
Date: 4/20/2022

Design Airflow (CFM)	
Design Total	4000
Design Grille Total	4000
Design Return	3000
Design Min O/A	1000

Unit Design Data	
Submittal Make	Trane
Submittal Model #	YHC120F3RMA
Submittal Airflow	Not Provided
Sched./Sub. Volts	208
Sched./Sub. Phase	3
Sched./Sub. HP	Not Listed
Submittal BHP	2.75
Filter MERV Rating (Sched/Sub)	Not Listed

Design Static Pressures (in wg)	
Design Ext SP	1
Submittal Total SP	Not Provided
Submittal Clg Coil Δ SP	-

Filter Data	
Condition	Partially Loaded
Filter Type	Pleated
MERV Rating	8
Filter Size Set 1 (in)	20/20/2
# Filters Set 1	4
Filter Size Set 2 (in)	-
# Filters Set 2	-

Motor Nameplate Data	
Motor Make	No Access - Embedded Motor
Motor Frame	-
Motor HP	2.75
Motor RPM	-
Motor Volts	208
Motor Phase	3

Final Airflow (CFM)	
Actual Total CFM	4842
Actual Grille Total CFM	-
Actual Return Air CFM	3883
Actual Min O/A CFM	959
Fan CFM Test Method	Coil Face - Velgrid/ADM
OA Method/Instrument	Face Velocity/RVA
OA Ak (sq ft)	4.320
OA Damper Position	25% Open / 40% Open
RA Damper Position	75% Open

Unit Data	
Make (tag)	Trane
Model # (tag)	YHC120F3RMA4PJ4
Serial # (tag)	220711380L
Location	Roof
Unit Discharge	Downblast
Cooling Coil Location	Unit / Drawthru
Coil Area (sq ft)	16.1
Clg Coil Vel (FPM)	301
Fan Service	Supply
Fan Type	Centrifugal (FC)
Fan Discharge	Downblast
Fan Arrangement	DWDI

Fan Design Data	
Submittal Motor RPM	Not Provided
Submittal Fan RPM	-

Fan Data	
Actual Fan RPM/Speed	High
Actual Motor RPM	Not Accessible

Electrical Data	
Measurement Method	V/A Meter
Motor Volts 1	209
Motor Volts 2	209

Air Apparatus

PROJECT: BJ's Brewhouse
LOCATION: Live Oak, TX

DATE: 4/26/2022
CONTACT: Armon Scott

SYSTEM/UNIT: RTU-03

Tested By: Armon Scott
Date: 4/20/2022

Motor Nameplate Data	
Motor Amps	7.3
Motor S.F.	-
Motor % PF	-
Motor % Eff.	-
Other Motor Data	-

Drive Data	
Drive Type	Direct Drive
Sheave Type	-
Fan Sheave Make	-
Fan Shv Mod# or Size (in)	-
Fan Sheave Bore (in)	-
Motor Sheave Make	-
Mtr Shv Mod# or Size (in)	-
Motor Sheave Bore (in)	-
VP Range	-
Center Distance (in)	-
No of Belts	-
Belt Make	-
Belt Size	-
Other Data	-

Electrical Data	
Motor Volts 3	209
Motor Amps 1	2.9
Motor Amps 2	2.9
Motor Amps 3	2.9
Operating HZ	60.00
Approx. BHP	1.1
Corr. Nameplate Amps	7.3
Starter Data	Not Applicable
VFD Reference	Not Applicable

Air Apparatus

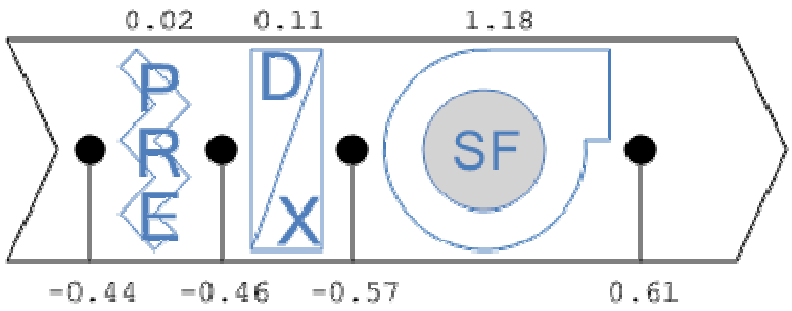
PROJECT: BJ's Brewhouse
LOCATION: Live Oak, TX

DATE: 4/26/2022
CONTACT: Armon Scott

SYSTEM/UNIT: RTU-03/Static Profile

Tested By: Armon Scott
Date: 4/20/2022

Static Pressure Profile



RTU-03 Supply Outlet Summary

System/Unit	Area Served	Type	Size / Area (in)	Design CFM	Prelim CFM	Final CFM	% Final	Instrument	Ak	Open (sq ft)	Final FPM
S-01*	106 Takeout	CD	8	150	85	85	57	Flow Hood	1.000	1.000	85
S-02	105 Dining3	SW	14	350	-	-		Not In Scope	-	-	
S-03	105 Dining3	SW	14	350	-	-		-	-	-	
S-04	105 Dining3	SW	14	350	-	-		-	-	-	
S-05	105 Dining3	SW	14	350	-	-		-	-	-	
S-06	105 Dining3	SW	14	400	-	-		-	-	-	
S-07	105 Dining3	SW	14	400	-	-		-	-	-	
S-08	105 Dining3	SW	14	350	-	-		-	-	-	
S-09	105 Dining3	SW	14	350	-	-		-	-	-	
S-10	105 Dining3	SW	14	350	-	-		-	-	-	
S-11	105 Dining3	SW	14	350	-	-		-	-	-	
S-12	105 Dining3	SW	14	250	-	-		-	-	-	
	Totals:	**-**	**-**	**4000**	**85**	**85**	**2**	**-**	**-**	**-**	**-**

Log:

RTU-03/S-01	Outlet is operating at 57% of design, serves the same area as the other outlets on the system. Unit was set for total.

Air Apparatus

PROJECT: BJ's Brewhouse
LOCATION: Live Oak, TX

DATE: 4/26/2022
CONTACT: Armon Scott

SYSTEM/UNIT: RTU-04

Tested By: Armon Scott
Date: 4/20/2022

Design Airflow (CFM)	
Design Total	4300
Design Grille Total	4300
Design Return	3300
Design Min O/A	1000

Unit Design Data	
Submittal Make	Trane
Submittal Model #	YHD150G3RHD
Submittal Airflow	Not Provided
Sched./Sub. Volts	208
Sched./Sub. Phase	3
Sched./Sub. HP	Not Listed
Submittal BHP	3.19
Filter MERV Rating (Sched/Sub)	Not Listed

Design Static Pressures (in wg)	
Design Ext SP	1
Submittal Total SP	Not Provided
Submittal Clg Coil Δ SP	-

Filter Data	
Condition	Partially Loaded
Filter Type	Pleated
MERV Rating	8
Filter Size Set 1 (in)	20/20/2
# Filters Set 1	4
Filter Size Set 2 (in)	20/25/2
# Filters Set 2	4

Motor Nameplate Data	
Motor Make	Marathon
Motor Frame	56HZ
Motor HP	3.00
Motor RPM	1725
Motor Volts	208
Motor Phase	3

Final Airflow (CFM)	
Actual Total CFM	3983
Actual Grille Total CFM	3983
Actual Return Air CFM	2952
Actual Min O/A CFM	1031
Fan CFM Test Method	Supply Outlet Total
OA Method/Instrument	Face Velocity/RVA
OA Ak (sq ft)	4.667
OA Damper Position	15% Open / 28% Open
RA Damper Position	85% Open

Unit Data	
Make (tag)	Trane
Model # (tag)	YHD150G3RDHD4PJR
Serial # (tag)	220810897D
Location	Roof
Unit Discharge	Downblast
Cooling Coil Location	Unit / Drawthru
Coil Area (sq ft)	25.0
Clg Coil Vel (FPM)	159
Fan Service	Supply
Fan Type	Centrifugal (FC)
Fan Discharge	Downblast
Fan Arrangement	DWDI

Fan Design Data	
Submittal Motor RPM	Not Provided
Submittal Fan RPM	-

Fan Data	
Actual Fan RPM/Speed	582
Actual Motor RPM	1755

Electrical Data	
Measurement Method	V/A Meter
Motor Volts 1	209
Motor Volts 2	208

Air Apparatus

PROJECT: BJ's Brewhouse
LOCATION: Live Oak, TX

DATE: 4/26/2022
CONTACT: Armon Scott

SYSTEM/UNIT: RTU-04

Tested By: Armon Scott
Date: 4/20/2022

Motor Nameplate Data	
Motor Amps	9.4
Motor S.F.	1.5
Motor % PF	71
Motor % Eff.	-
Other Motor Data	-

Drive Data	
Drive Type	Belt Drive
Sheave Type	Variable
Fan Sheave Make	Browning
Fan Shv Mod# or Size (in)	BK110
Fan Sheave Bore (in)	1 3/16
Motor Sheave Make	Not Listed
Mtr Shv Mod# or Size (in)	3.5
Motor Sheave Bore (in)	7/8
VP Range	2 1/2 Turns Open
Center Distance (in)	22.0
No of Belts	1
Belt Make	Continental
Belt Size	BX68
Other Data	Idler Tension Pulley

Electrical Data	
Motor Volts 3	209
Motor Amps 1	3.7
Motor Amps 2	3.5
Motor Amps 3	-
Operating HZ	60.00
Approx. BHP	1.2
Corr. Nameplate Amps	9.4
Starter Data	Not Applicable
VFD Reference	-

Air Apparatus

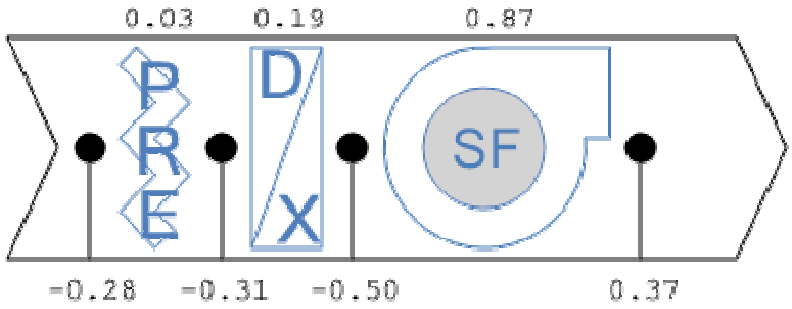
PROJECT: BJ's Brewhouse
LOCATION: Live Oak, TX

DATE: 4/26/2022
CONTACT: Armon Scott

SYSTEM/UNIT: RTU-04/Static Profile

Tested By: Armon Scott
Date: 4/20/2022

Static Pressure Profile



RTU-04 Supply Outlet Summary

System/Unit	Area Served	Type	Size / Area (in)	Design CFM	Prelim CFM	Final CFM	% Final	Instrument	Ak	Open (sq ft)	Final FPM
S-01	111 Kitchen	CD	12	460	426	471	102	Flow Hood	1.000	1.000	471
S-02	111 Kitchen	CD	12	460	577	503	109	Flow Hood	1.000	1.000	503
S-03*	111 Kitchen	CD	12	550	514	546	99	Flow Hood	1.000	1.000	546
S-04*	111 Kitchen	CD	12	550	548	578	105	Flow Hood	1.000	1.000	578
S-05*	111 Kitchen	CD	12	550	455	474	86	Flow Hood	1.000	1.000	474
S-06*	111 Kitchen	CD	12	550	370	387	70	Flow Hood	1.000	1.000	387
S-07*	111 Kitchen	CD	12	550	472	455	83	Flow Hood	1.000	1.000	455
S-08	117 Ice	CD	10	330	303	297	90	Flow Hood	1.000	1.000	297
S-09	118 Office	CD	10	300	272	272	91	Flow Hood	1.000	1.000	272
	Totals:	-	-	**4300**	**3937**	**3983**	**93**	-	-	-	-

Log:

RTU-04/S-03	4/20/2022	Armon Scott	Unable to locate the damper.
RTU-04/S-04	4/20/2022	Armon Scott	Unable to locate the damper.
RTU-04/S-05	4/20/2022	Armon Scott	Unable to locate the damper.
RTU-04/S-06	4/20/2022	Armon Scott	Unable to locate the damper.
RTU-04/S-07	4/20/2022	Armon Scott	Unable to locate the damper.

Air Apparatus

PROJECT: BJ's Brewhouse
LOCATION: Live Oak, TX

DATE: 4/26/2022
CONTACT: Armon Scott

SYSTEM/UNIT: RTU-05

Tested By: Armon Scott
Date: 4/20/2022

Design Airflow (CFM)	
Design Total	6000
Design Grille Total	6000
Design Return	5000
Design Min O/A	1000

Unit Design Data	
Submittal Make	Trane
Submittal Model #	YHD180G3RLD
Submittal Airflow	Not Provided
Sched./Sub. Volts	208
Sched./Sub. Phase	3
Sched./Sub. HP	Not Listed
Submittal BHP	3.47
Filter MERV Rating (Sched/Sub)	Not Listed

Design Static Pressures (in wg)	
Design Ext SP	1
Submittal Total SP	Not Provided
Submittal Clg Coil Δ SP	-

Filter Data	
Condition	Partially Loaded
Filter Type	Pleated
MERV Rating	8
Filter Size Set 1 (in)	20/20/2
# Filters Set 1	4
Filter Size Set 2 (in)	20/20/2
# Filters Set 2	8

Motor Nameplate Data	
Motor Make	Marathon
Motor Frame	56HZ
Motor HP	5.00
Motor RPM	3450
Motor Volts	208
Motor Phase	3

Final Airflow (CFM)	
Actual Total CFM	6596
Actual Grille Total CFM	6596
Actual Return Air CFM	5537
Actual Min O/A CFM	1059
Fan CFM Test Method	Supply Outlet Total
OA Method/Instrument	Face Velocity/RVA
OA Ak (sq ft)	4.667
OA Damper Position	20% Open / 35% Open
RA Damper Position	80% Open

Unit Data	
Make (tag)	Trane
Model # (tag)	YHD180G3RHD4PJS
Serial # (tag)	220810896D
Location	Roof
Unit Discharge	Downblast
Cooling Coil Location	Unit / Drawthru
Coil Area (sq ft)	28.8
Clg Coil Vel (FPM)	229
Fan Service	Supply
Fan Type	Centrifugal (FC)
Fan Discharge	Downblast
Fan Arrangement	DWDI

Fan Design Data	
Submittal Motor RPM	Not Provided
Submittal Fan RPM	-

Fan Data	
Actual Fan RPM/Speed	752
Actual Motor RPM	3371

Electrical Data	
Measurement Method	V/A Meter
Motor Volts 1	210
Motor Volts 2	210

Air Apparatus

PROJECT: BJ's Brewhouse
LOCATION: Live Oak, TX

DATE: 4/26/2022
CONTACT: Armon Scott

SYSTEM/UNIT: RTU-05

Tested By: Armon Scott
Date: 4/20/2022

Motor Nameplate Data	
Motor Amps	13.4
Motor S.F.	1.15
Motor % PF	85
Motor % Eff.	Not Listed
Other Motor Data	-

Drive Data	
Drive Type	Belt Drive
Sheave Type	Variable
Fan Sheave Make	Not Listed
Fan Shv Mod# or Size (in)	12
Fan Sheave Bore (in)	1 3/16
Motor Sheave Make	Not Listed
Mtr Shv Mod# or Size (in)	3.5
Motor Sheave Bore (in)	7/8
VP Range	4 Turns Open
Center Distance (in)	22.0
No of Belts	1
Belt Make	Continental
Belt Size	BX71
Other Data	-

Electrical Data	
Motor Volts 3	209
Motor Amps 1	9.3
Motor Amps 2	-
Motor Amps 3	-
Operating HZ	60.00
Approx. BHP	3.5
Corr. Nameplate Amps	13.3
Starter Data	Not Applicable
VFD Reference	-

Air Apparatus

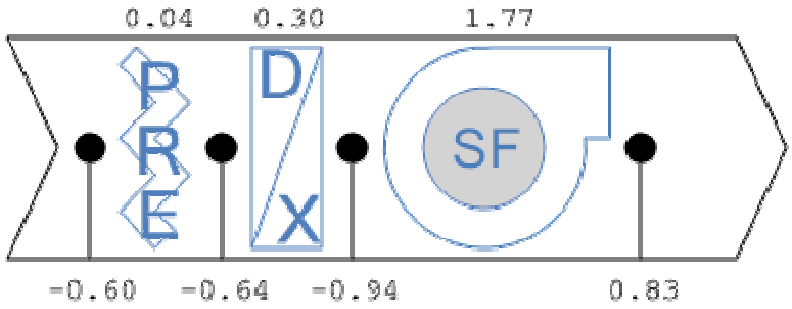
PROJECT: BJ's Brewhouse
LOCATION: Live Oak, TX

DATE: 4/26/2022
CONTACT: Armon Scott

SYSTEM/UNIT: RTU-05/Static Profile

Tested By: Armon Scott
Date: 4/20/2022

Static Pressure Profile



RTU-05 Supply Outlet Summary

System/Unit	Area Served	Type	Size / Area (in)	Design CFM	Prelim CFM	Final CFM	% Final	Instrument	Ak	Open (sq ft)	Final FPM
S-01*	124 Kit Vest	CD	8	150	162	253	169	Flow Hood	1.000	1.000	253
S-02	116 Lockers	CD	12	550	460	583	106	Flow Hood	1.000	1.000	583
S-03	122 Can Wash	CD	10	350	175	381	109	Flow Hood	1.000	1.000	381
S-04	115 Storage	CD	12	550	328	601	109	Flow Hood	1.000	1.000	601
S-05	113 Prep Area	CD	12	550	375	606	110	Flow Hood	1.000	1.000	606
S-06	113 Prep Area	CD	14	600	608	608	101	Flow Hood	1.000	1.000	608
S-07	113 Prep Area	CD	14	600	396	601	100	Flow Hood	1.000	1.000	601
S-08	113 Prep Area	CD	14	650	479	661	102	Flow Hood	1.000	1.000	661
S-09*	112 Cook Line	CD	12	500	705	718	144	Flow Hood	1.000	1.000	718
S-10	112 Cook Line	CD	12	500	888	532	106	Flow Hood	1.000	1.000	532
S-11	112 Cook Line	CD	12	500	1065	522	104	Flow Hood	1.000	1.000	522
S-12	112 Cook Line	CD	12	500	817	530	106	Flow Hood	1.000	1.000	530
	Totals:	**-**	**-**	**6000**	**6458**	**6596**	**110**	**-**	**-**	**-**	**-**

Log:

RTU-05/S-01	4/20/2022	Armon Scott	Outlet is operating at 169% of design. The damper is broken and not fully closing.
RTU-05/S-09	4/20/2022	Armon Scott	Outlet is operating at 144% of design. Unable to locate the damper.

Fan

PROJECT: BJ's Brewhouse
LOCATION: Live Oak, TX

DATE: 4/26/2022
CONTACT: Armon Scott

SYSTEM/UNIT: EF-01
AREA: Pizza

Tested By: Armon Scott
Date: 4/22/2022

Design Airflow (CFM)	
Design Airflow	1894
Design Grille Airflow	Not Applicable

Unit Design Data	
Submittal Make	CaptiveAire
Submittal Model #	DU85HFA
Submittal Airflow	1894
Sched./Sub. Volts	115
Sched./Sub. Phase	1
Sched./Sub. HP	.75
Submittal BHP	0.4030

Design Static Pressures (in wg)	
Design External SP	.75
Submittal Total SP	Not Provided

Motor Nameplate Data	
Motor Make (tag)	Telco Green
Motor Frame (tag)	Not Listed
Motor HP (tag)	3/4
Motor RPM (tag)	1800
Motor Volts (tag)	115
Motor Phase (tag)	1
Motor Amps (tag)	8.9
Motor S.F. (tag)	Not Listed
Mtr % PF (tag)	-
Mtr % Eff. (tag)	-
Other Motor Data	-

Drive Data	
Drive Type	Direct Drive
Sheave Type	-
Fan Sheave Make	-
Fan Shv Mod# or Size (in)	-
Fan Sheave Bore (in.)	-
Motor Sheave Make	-

Final Airflow (CFM)	
Actual Airflow	1884
Actual Grille Airflow	Not Applicable
Fan CFM Test Method	Inlet Total
Test Method Ak (sq ft)	12.480

Unit Data	
Make (tag)	Captive Aire
Model # (tag)	DU85HFA
Serial # (tag)	4869110
Unit Location	Roof
Unit Discharge	Upblast
Fan Service	Exhaust
Fan Type	Centrifugal (BI)
Fan Discharge	Upblast
Fan Arrangement	SWSI

Fan Design Data	
Submittal Motor RPM	Not Listed
Submittal Fan RPM	1279

Fan Data	
Actual Fan RPM/Speed	Not Accessible
Actual Motor RPM	-
Speed Cont. Position	61%

Electrical Data	
Measurement Method	Not Accessible
Motor Volts 1	-
Motor Volts 2	-
Motor Volts 3	-
Motor Amps 1	-
Motor Amps 2	-
Motor Amps 3	-
Operating HZ	60.0
Starter Data	Not Applicable
Approx. BHP	

Drive Data	
Mtr Shv Mod# or Size (in)	-
Motor Sheave Bore (in.)	-
VP Range	-
Center Distance (in.)	-
No of Belts	-
Belt Make	-
Belt Size	-
Other Data	-

Electrical Data
Corr. Nameplate Amps

Fan

PROJECT: BJ's Brewhouse
LOCATION: Live Oak, TX

DATE: 4/26/2022
CONTACT: Armon Scott

SYSTEM/UNIT: EF-01/HD-01

Tested By: Armon Scott
Date: 4/22/2022

Design Airflow (CFM)	
Design Exhaust CFM	1894

Final Airflow (CFM)	
Actual Exhaust CFM	1885

Kitchen Hood Information	
Service	Oven
Manufacturer	Captive-Aire
Model Number	7824 ND-2
Serial Number	4869110
Test Method	Filters

Supplemental Data	
Space Offset Temp Riser 1	15
Space Offset Temp Riser 2	15
Riser Temp F (idle) Riser 1	Not Applicable
Riser Temp F (idle) Riser 2	-
Ambient Room Temp	66.9
100% override functional	Yes

EF-01/HD-01 Exhaust Filter Summary

System/Unit	Size	Type	Ak	Reading 2	Reading 1	FPM	Instrument	CFM
Filter-01	16x20	Baffle	2.08	116	116	116	Velgrid	241
Filter-02	16x20	Baffle	2.08	140	140	140	Velgrid	291
Filter-03	16x20	Baffle	2.08	173	173	173	Velgrid	360
Filter-04	16x20	Baffle	2.08	182	182	182	Velgrid	379
Filter-05	16x20	Baffle	2.08	137	137	137	Velgrid	285
Filter-06	16x20	Baffle	2.08	158	158	158	Velgrid	329
Totals:	**-**	**-**	**12.48**	**-**	**-**	**-**	**-**	**1884**

Fan

PROJECT: BJ's Brewhouse
LOCATION: Live Oak, TX

DATE: 4/26/2022
CONTACT: Armon Scott

SYSTEM/UNIT: EF-02
AREA: Main Right

Tested By: Armon Scott
Date: 4/22/2022

Design Airflow (CFM)	
Design Airflow	3375
Design Grille Airflow	Not Applicable

Unit Design Data	
Submittal Make	CaptiveAire
Submittal Model #	DU180HFA
Submittal Airflow	3375
Sched./Sub. Volts	208
Sched./Sub. Phase	3
Sched./Sub. HP	3
Submittal BHP	1.7030

Design Static Pressures (in wg)	
Design External SP	1.35
Submittal Total SP	Not Provided

Motor Nameplate Data	
Motor Make (tag)	TECO Westinghouse
Motor Frame (tag)	182T
Motor HP (tag)	3
Motor RPM (tag)	1755
Motor Volts (tag)	480
Motor Phase (tag)	3
Motor Amps (tag)	4.3
Motor S.F. (tag)	1.15
Mtr % PF (tag)	-
Mtr % Eff. (tag)	89.5
Other Motor Data	-

Drive Data	
Drive Type	Direct Drive
Sheave Type	-
Fan Sheave Make	-
Fan Shv Mod# or Size (in)	-
Fan Sheave Bore (in.)	-
Motor Sheave Make	-

Final Airflow (CFM)	
Actual Airflow	3525
Actual Grille Airflow	Not Applicable
Fan CFM Test Method	Inlet Total
Test Method Ak (sq ft)	18.720

Unit Data	
Make (tag)	Captive Aire
Model # (tag)	DU180HFA
Serial # (tag)	4869110
Unit Location	Roof
Unit Discharge	Upblast
Fan Service	Exhaust
Fan Type	Centrifugal (BI)
Fan Discharge	Upblast
Fan Arrangement	SWSI

Fan Design Data	
Submittal Motor RPM	Not Listed
Submittal Fan RPM	1347

Fan Data	
Actual Fan RPM/Speed	Not Accessible
Actual Motor RPM	-
Speed Cont. Position	55%

Electrical Data	
Measurement Method	VFD Display
Motor Volts 1	No Safe Access
Motor Volts 2	-
Motor Volts 3	-
Motor Amps 1	No Safe Access
Motor Amps 2	-
Motor Amps 3	-
Operating HZ	46.1
Starter Data	Not Applicable
Approx. BHP	

Drive Data	
Mtr Shv Mod# or Size (in)	-
Motor Sheave Bore (in.)	-
VP Range	-
Center Distance (in.)	-
No of Belts	-
Belt Make	-
Belt Size	-
Other Data	-

Electrical Data
Corr. Nameplate Amps

Fan

PROJECT: BJ's Brewhouse
LOCATION: Live Oak, TX

DATE: 4/26/2022
CONTACT: Armon Scott

SYSTEM/UNIT: EF-02/HD-02

Tested By: Armon Scott
Date: 4/22/2022

Design Airflow (CFM)	
Design Exhaust CFM	3375

Final Airflow (CFM)	
Actual Exhaust CFM	3525

Kitchen Hood Information	
Service	Cooking Surface
Manufacturer	Captive-Aire
Model Number	5424 ND-2
Serial Number	4869110
Test Method	Filters

Supplemental Data	
Space Offset Temp Riser 1	15
Space Offset Temp Riser 2	15
Riser Temp F (idle) Riser 1	Not Applicable
Riser Temp F (idle) Riser 2	-
Ambient Room Temp	66.5
100% override functional	Yes

EF-02/HD-02 Exhaust Filter Summary

System/Unit	Size	Type	Ak	Reading 2	Reading 1	FPM	Instrument	CFM
Filter-01	16x20	Baffle	2.08	146	146	146	Velgrid	304
Filter-02	16x20	Baffle	2.08	169	169	169	Velgrid	352
Filter-03	16x20	Baffle	2.08	192	192	192	Velgrid	399
Filter-04	16x20	Baffle	2.08	225	225	225	Velgrid	468
Filter-05	16x20	Baffle	2.08	217	217	217	Velgrid	451
Filter-06	16x20	Baffle	2.08	194	194	194	Velgrid	404
Filter-07	16x20	Baffle	2.08	186	186	186	Velgrid	387
Filter-08	16x20	Baffle	2.08	183	183	183	Velgrid	381
Filter-09	16x20	Baffle	2.08	182	182	182	Velgrid	379
Totals:	**-**	**-**	**18.72**	**-**	**-**	**-**	**-**	**3524**

Fan

PROJECT: BJ's Brewhouse
LOCATION: Live Oak, TX

DATE: 4/26/2022
CONTACT: Armon Scott

SYSTEM/UNIT: EF-03
AREA: Main Left

Tested By: Armon Scott
Date: 4/22/2022

Design Airflow (CFM)	
Design Airflow	1950
Design Grille Airflow	Not Applicable

Unit Design Data	
Submittal Make	CaptiveAire
Submittal Model #	DU85HFA
Submittal Airflow	1950
Sched./Sub. Volts	115
Sched./Sub. Phase	1
Sched./Sub. HP	.75
Submittal BHP	.422

Design Static Pressures (in wg)	
Design External SP	.75
Submittal Total SP	Not Provided

Motor Nameplate Data	
Motor Make (tag)	Telco Green
Motor Frame (tag)	Not Listed
Motor HP (tag)	3/4
Motor RPM (tag)	1800
Motor Volts (tag)	115
Motor Phase (tag)	1
Motor Amps (tag)	8.9
Motor S.F. (tag)	Not Listed
Mtr % PF (tag)	-
Mtr % Eff. (tag)	-
Other Motor Data	-

Drive Data	
Drive Type	Direct Drive
Sheave Type	-
Fan Sheave Make	-
Fan Shv Mod# or Size (in)	-
Fan Sheave Bore (in.)	-
Motor Sheave Make	-

Final Airflow (CFM)	
Actual Airflow	1929
Actual Grille Airflow	Not Applicable
Fan CFM Test Method	Inlet Total
Test Method Ak (sq ft)	14.560

Unit Data	
Make (tag)	Captive Aire
Model # (tag)	DU85HFA
Serial # (tag)	4869110
Unit Location	Roof
Unit Discharge	Upblast
Fan Service	Exhaust
Fan Type	Centrifugal (BI)
Fan Discharge	Upblast
Fan Arrangement	SWSI

Fan Design Data	
Submittal Motor RPM	Not Listed
Submittal Fan RPM	1298

Fan Data	
Actual Fan RPM/Speed	Not Accessible
Actual Motor RPM	-
Speed Cont. Position	60%

Electrical Data	
Measurement Method	Not Accessible
Motor Volts 1	-
Motor Volts 2	-
Motor Volts 3	-
Motor Amps 1	-
Motor Amps 2	-
Motor Amps 3	-
Operating HZ	60.0
Starter Data	Not Applicable
Approx. BHP	

Drive Data	
Mtr Shv Mod# or Size (in)	-
Motor Sheave Bore (in.)	-
VP Range	-
Center Distance (in.)	-
No of Belts	-
Belt Make	-
Belt Size	-
Other Data	-

Electrical Data	
Corr. Nameplate Amps	

Fan

PROJECT: BJ's Brewhouse
LOCATION: Live Oak, TX

DATE: 4/26/2022
CONTACT: Armon Scott

SYSTEM/UNIT: EF-03/HD-03

Tested By: Armon Scott
Date: 4/22/2022

Design Airflow (CFM)	
Design Exhaust CFM	1950

Final Airflow (CFM)	
Actual Exhaust CFM	1929

Kitchen Hood Information	
Service	Fryer
Manufacturer	Captive-Aire
Model Number	5424 ND-2
Serial Number	4869110
Test Method	Filters

Supplemental Data	
Space Offset Temp Riser 1	15
Space Offset Temp Riser 2	-
Riser Temp F (idle) Riser 1	Not Applicable
Riser Temp F (idle) Riser 2	-
Ambient Room Temp	66.5
100% override functional	Yes

EF-03/HD-03 Exhaust Filter Summary

System/Unit	Size	Type	Ak	Reading 2	Reading 1	FPM	Instrument	CFM
Filter-01	16x20	Baffle	2.08	108	108	108	Velgrid	225
Filter-02	16x20	Baffle	2.08	124	124	124	Velgrid	258
Filter-03	16x20	Baffle	2.08	144	144	144	Velgrid	300
Filter-04	16x20	Baffle	2.08	162	162	162	Velgrid	337
Filter-05	16x20	Baffle	2.08	138	138	138	Velgrid	287
Filter-06	16x20	Baffle	2.08	138	138	138	Velgrid	287
Filter-07	16x20	Baffle	2.08	113	113	113	Velgrid	235
Totals:	**-**	**-**	**14.56**	**-**	**-**	**-**	**-**	**1928**

Fan

PROJECT: BJ's Brewhouse
LOCATION: Live Oak, TX

DATE: 4/26/2022
CONTACT: Armon Scott

SYSTEM/UNIT: EF-04
AREA: Prep

Tested By: Armon Scott
Date: 4/21/2022

Design Airflow (CFM)	
Design Airflow	1800
Design Grille Airflow	Not Applicable

Unit Design Data	
Submittal Make	CaptiveAire
Submittal Model #	DU85HFA
Submittal Airflow	1800
Sched./Sub. Volts	115
Sched./Sub. Phase	1
Sched./Sub. HP	.75
Submittal BHP	.318

Design Static Pressures (in wg)	
Design External SP	.6
Submittal Total SP	Not Provided

Motor Nameplate Data	
Motor Make (tag)	Telco Green
Motor Frame (tag)	Not Listed
Motor HP (tag)	3/4
Motor RPM (tag)	1800
Motor Volts (tag)	115
Motor Phase (tag)	1
Motor Amps (tag)	8.9
Motor S.F. (tag)	Not Listed
Mtr % PF (tag)	-
Mtr % Eff. (tag)	-
Other Motor Data	-

Drive Data	
Drive Type	Direct Drive
Sheave Type	-
Fan Sheave Make	-
Fan Shv Mod# or Size (in)	-
Fan Sheave Bore (in.)	-
Motor Sheave Make	-

Final Airflow (CFM)	
Actual Airflow	1774
Actual Grille Airflow	-
Fan CFM Test Method	Inlet Total
Test Method Ak (sq ft)	16.640

Unit Data	
Make (tag)	Captive Aire
Model # (tag)	DU85HFA
Serial # (tag)	4869110
Unit Location	Roof
Unit Discharge	Upblast
Fan Service	Exhaust
Fan Type	Centrifugal (BI)
Fan Discharge	Upblast
Fan Arrangement	SWSI

Fan Design Data	
Submittal Motor RPM	Not Listed
Submittal Fan RPM	1182

Fan Data	
Actual Fan RPM/Speed	Not Accessible
Actual Motor RPM	-
Speed Cont. Position	50%

Electrical Data	
Measurement Method	Not Accessible
Motor Volts 1	-
Motor Volts 2	-
Motor Volts 3	-
Motor Amps 1	-
Motor Amps 2	-
Motor Amps 3	-
Operating HZ	60.0
Starter Data	Not Applicable
Approx. BHP	

Drive Data	
Mtr Shv Mod# or Size (in)	-
Motor Sheave Bore (in.)	-
VP Range	-
Center Distance (in.)	-
No of Belts	-
Belt Make	-
Belt Size	-
Other Data	-

Electrical Data
Corr. Nameplate Amps

Fan

PROJECT: BJ's Brewhouse
LOCATION: Live Oak, TX

DATE: 4/26/2022
CONTACT: Armon Scott

SYSTEM/UNIT: EF-04/HD-04

Tested By: Armon Scott
Date: 4/22/2022

Design Airflow (CFM)	
Design Exhaust CFM	1800

Final Airflow (CFM)	
Actual Exhaust CFM	1774

Kitchen Hood Information	
Service	Cooking Surface
Manufacturer	Captive-Aire
Model Number	5424 ND-2
Serial Number	4869110
Test Method	Filters

Supplemental Data	
Space Offset Temp Riser 1	15
Space Offset Temp Riser 2	-
Riser Temp F (idle) Riser 1	Not Applicable
Riser Temp F (idle) Riser 2	-
Ambient Room Temp	66.5
100% override functional	Yes

EF-04/HD-04 Exhaust Filter Summary

System/Unit	Size	Type	Ak	Reading 2	Reading 1	FPM	Instrument	CFM
Filter-01	16x20	Baffle	2.08	89	89	89	Velgrid	185
Filter-02	16x20	Baffle	2.08	96	96	96	Velgrid	200
Filter-03	16x20	Baffle	2.08	124	124	124	Velgrid	258
Filter-04	16x20	Baffle	2.08	132	132	132	Velgrid	275
Filter-05	16x20	Baffle	2.08	135	135	135	Velgrid	281
Filter-06	16x20	Baffle	2.08	106	106	106	Velgrid	220
Filter-07	16x20	Baffle	2.08	93	93	93	Velgrid	193
Filter-08	16x20	Baffle	2.08	78	78	78	Velgrid	162
Totals:	-	-	**16.64**	-	-	-	-	**1774**

Fan

PROJECT: BJ's Brewhouse
LOCATION: Live Oak, TX

DATE: 4/26/2022
CONTACT: Armon Scott

SYSTEM/UNIT: EF-05
AREA: Dish

Tested By: Armon Scott
Date: 4/22/2022

Design Airflow (CFM)	
Design Airflow	1900
Design Grille Airflow	Not Applicable

Unit Design Data	
Submittal Make	CaptiveAire
Submittal Model #	DU85HFA
Submittal Airflow	1900
Sched./Sub. Volts	115
Sched./Sub. Phase	1
Sched./Sub. HP	.75
Submittal BHP	.279

Design Static Pressures (in wg)	
Design External SP	.4
Submittal Total SP	Not Provided

Motor Nameplate Data	
Motor Make (tag)	HSSA
Motor Frame (tag)	48Y
Motor HP (tag)	1
Motor RPM (tag)	1625
Motor Volts (tag)	115
Motor Phase (tag)	1
Motor Amps (tag)	7.2
Motor S.F. (tag)	1
Mtr % PF (tag)	Not Listed
Mtr % Eff. (tag)	-
Other Motor Data	-

Drive Data	
Drive Type	Direct Drive
Sheave Type	-
Fan Sheave Make	-
Fan Shv Mod# or Size (in)	-
Fan Sheave Bore (in.)	-
Motor Sheave Make	-

Drive Data	
Mtr Shv Mod# or Size (in)	-
Motor Sheave Bore (in.)	-
VP Range	-
Center Distance (in.)	-
No of Belts	-
Belt Make	-
Belt Size	-
Other Data	-

Final Airflow (CFM)	
Actual Airflow	1932
Actual Grille Airflow	-
Fan CFM Test Method	See Kitchen Hood Sheet
Test Method Ak (sq ft)	14.580

Unit Data	
Make (tag)	Captive Aire
Model # (tag)	DU85HFA
Serial # (tag)	4869110
Unit Location	Roof
Unit Discharge	Upblast
Fan Service	Exhaust
Fan Type	Centrifugal (BI)
Fan Discharge	Upblast
Fan Arrangement	SWSI

Fan Design Data	
Submittal Motor RPM	Not Listed
Submittal Fan RPM	1128

Fan Data	
Actual Fan RPM/Speed	Not Accessible
Actual Motor RPM	-
Speed Cont. Position	Low

Electrical Data	
Measurement Method	Not Accessible
Motor Volts 1	-
Motor Volts 2	-
Motor Volts 3	-
Motor Amps 1	-
Motor Amps 2	-
Motor Amps 3	-
Operating HZ	60.0
Starter Data	Not Applicable
Approx. BHP	

Electrical Data
Corr. Nameplate Amps

Fan

PROJECT: BJ's Brewhouse
LOCATION: Live Oak, TX

DATE: 4/26/2022
CONTACT: Armon Scott

SYSTEM/UNIT: EF-05/HD-05

Tested By: Armon Scott
Date: 4/22/2022

Design Airflow (CFM)	
Design Exhaust CFM	1900

Final Airflow (CFM)	
Actual Exhaust CFM	1932

Kitchen Hood Information	
Service	Dishwasher
Manufacturer	Captive Aire
Model Number	4824 ND-2
Serial Number	4869110
Test Method	Filters

EF-05/HD-05 Exhaust Filter Summary

System/Unit	Size	Type	Ak	Reading 2	Reading 1	FPM	Instrument	CFM
Filter-01	16x16	Baffle	1.62	115	115	115	Velgrid	186
Filter-02	16x16	Baffle	1.62	119	119	119	Velgrid	193
Filter-03	16x16	Baffle	1.62	131	131	131	Velgrid	212
Filter-04	16x16	Baffle	1.62	139	139	139	Velgrid	225
Filter-05	16x16	Baffle	1.62	127	127	127	Velgrid	206
Filter-06	16x16	Baffle	1.62	138	138	138	Velgrid	224
Filter-07	16x16	Baffle	1.62	125	125	125	Velgrid	203
Filter-08	16x16	Baffle	1.62	174	174	174	Velgrid	282
Filter-09	16x16	Baffle	1.62	124	124	124	Velgrid	201
Totals:	-	-	**14.58**	-	-	-	-	**1931**

Fan

PROJECT: BJ's Brewhouse
LOCATION: Live Oak, TX

DATE: 4/26/2022
CONTACT: Armon Scott

SYSTEM/UNIT: EF-06
AREA: Public Restroom

Tested By: Armon Scott
Date: 4/22/2022

Design Airflow (CFM)	
Design Airflow	510
Design Grille Airflow	510

Unit Design Data	
Submittal Make	CaptiveAire
Submittal Model #	DR30HFA
Submittal Airflow	510
Sched./Sub. Volts	115
Sched./Sub. Phase	1
Sched./Sub. HP	.25
Submittal BHP	.0770

Design Static Pressures (in wg)	
Design External SP	.4
Submittal Total SP	Not Provided

Motor Nameplate Data	
Motor Make (tag)	HSSA
Motor Frame (tag)	48Y
Motor HP (tag)	1/3
Motor RPM (tag)	1625
Motor Volts (tag)	115
Motor Phase (tag)	1
Motor Amps (tag)	3.8
Motor S.F. (tag)	1
Mtr % PF (tag)	Not Listed
Mtr % Eff. (tag)	-
Other Motor Data	-

Drive Data	
Drive Type	Direct Drive
Sheave Type	-
Fan Sheave Make	-
Fan Shv Mod# or Size (in)	-
Fan Sheave Bore (in.)	-
Motor Sheave Make	-

Drive Data	
Mtr Shv Mod# or Size (in)	-
Motor Sheave Bore (in.)	-
VP Range	-
Center Distance (in.)	-
No of Belts	-
Belt Make	-
Belt Size	-
Other Data	-

Final Airflow (CFM)	
Actual Airflow	542
Actual Grille Airflow	542
Fan CFM Test Method	Inlet Total
Test Method Ak (sq ft)	Not Applicable

Unit Data	
Make (tag)	Captive Aire
Model # (tag)	DR30HFA
Serial # (tag)	4869110
Unit Location	Roof
Unit Discharge	Upblast
Fan Service	Exhaust
Fan Type	Centrifugal (BI)
Fan Discharge	Upblast
Fan Arrangement	SWSI

Fan Design Data	
Submittal Motor RPM	Not Listed
Submittal Fan RPM	1109

Fan Data	
Actual Fan RPM/Speed	Not Accessible
Actual Motor RPM	-
Speed Cont. Position	Low

Electrical Data	
Measurement Method	Not Accessible
Motor Volts 1	-
Motor Volts 2	-
Motor Volts 3	-
Motor Amps 1	-
Motor Amps 2	-
Motor Amps 3	-
Operating HZ	60.0
Starter Data	Not Applicable
Approx. BHP	

Electrical Data
Corr. Nameplate Amps

Fan

PROJECT: BJ's Brewhouse
LOCATION: Live Oak, TX

DATE: 4/26/2022
CONTACT: Armon Scott

EF-06 Exhaust Inlet Summary

System/Unit	Area Served	Type	Size inches	Design CFM	Prelim CFM	Final CFM	% Final	Instrument	Ak	Open (sq ft)	Final FPM
E-01	108 Women	CD	8	120	183	138	115	Flow Hood	1.000	1.000	138
E-02	108 Women	CD	8	120	187	125	104	Flow Hood	1.000	1.000	125
E-03	109 Men	CD	8	100	231	139	139	Flow Hood	1.000	1.000	139
E-04	109 Men	CD	8	100	138	113	113	Flow Hood	1.000	1.000	113
E-05	110 Unisex	CD	6	70	61	27	39	Flow Hood	1.000	1.000	27
	Totals:	**-**	**-**	**510**	**800**	**542**	**106**	**-**	**-**	**-**	**-**

Fan

PROJECT: BJ's Brewhouse
LOCATION: Live Oak, TX

DATE: 4/26/2022
CONTACT: Armon Scott

SYSTEM/UNIT: EF-07
AREA: Kitchen Vest

Tested By: Armon Scott
Date: 4/20/2022

Design Airflow (CFM)	
Design Airflow	400
Design Grille Airflow	400

Unit Design Data	
Submittal Make	CaptiveAire
Submittal Model #	DR10HFA
Submittal Airflow	400
Sched./Sub. Volts	115
Sched./Sub. Phase	1
Sched./Sub. HP	.166
Submittal BHP	.0640

Design Static Pressures (in wg)	
Design External SP	.25
Submittal Total SP	Not Provided

Motor Nameplate Data	
Motor Make (tag)	Telco Green
Motor Frame (tag)	Not Listed
Motor HP (tag)	1/6
Motor RPM (tag)	1855
Motor Volts (tag)	115
Motor Phase (tag)	1
Motor Amps (tag)	Not Listed
Motor S.F. (tag)	-
Mtr % PF (tag)	-
Mtr % Eff. (tag)	-
Other Motor Data	-

Drive Data	
Drive Type	Direct Drive
Sheave Type	-
Fan Sheave Make	-
Fan Shv Mod# or Size (in)	-
Fan Sheave Bore (in.)	-
Motor Sheave Make	-

Drive Data	
Mtr Shv Mod# or Size (in)	-
Motor Sheave Bore (in.)	-
VP Range	-
Center Distance (in.)	-
No of Belts	-
Belt Make	-
Belt Size	-
Other Data	-

Final Airflow (CFM)	
Actual Airflow	363
Actual Grille Airflow	363
Fan CFM Test Method	Inlet Total
Test Method Ak (sq ft)	1.000

Unit Data	
Make (tag)	Captive Aire
Model # (tag)	DRHFA10
Serial # (tag)	4869110
Unit Location	Roof
Unit Discharge	Downblast
Fan Service	Exhaust
Fan Type	Centrifugal (BI)
Fan Discharge	Downblast
Fan Arrangement	SWSI

Fan Design Data	
Submittal Motor RPM	Not Listed
Submittal Fan RPM	1449

Fan Data	
Actual Fan RPM/Speed	1855
Actual Motor RPM	1855
Speed Cont. Position	96%

Electrical Data	
Measurement Method	Not Accessible
Motor Volts 1	-
Motor Volts 2	-
Motor Volts 3	-
Motor Amps 1	-
Motor Amps 2	-
Motor Amps 3	-
Operating HZ	60.0
Starter Data	Not Applicable
Approx. BHP	

Electrical Data
Corr. Nameplate Amps

EF-07 Exhaust Inlet Summary

System/Unit	Area Served	Type	Size inches	Design CFM	Prelim CFM	Final CFM	% Final	Instrument	Ak	Open (sq ft)	Final FPM
E-01	124 Kit Vest	CD	10	400	252	363	91	Flow Hood	1.000	1.000	363
	Totals:	**-**	**-**	**400**	**252**	**363**	**91**	**-**	**-**	**-**	**-**

Fan

PROJECT: BJ's Brewhouse
LOCATION: Live Oak, TX

DATE: 4/26/2022
CONTACT: Armon Scott

SYSTEM/UNIT: EF-08
AREA: Beer Cooler

Tested By: Armon Scott
Date: 4/22/2022

Design Airflow (CFM)	
Design Airflow	380
Design Grille Airflow	380

Unit Design Data	
Submittal Make	CaptiveAire
Submittal Model #	DR12HFA
Submittal Airflow	380
Sched./Sub. Volts	115
Sched./Sub. Phase	1
Sched./Sub. HP	.18
Submittal BHP	.091

Design Static Pressures (in wg)	
Design External SP	.4
Submittal Total SP	Not Provided

Motor Nameplate Data	
Motor Make (tag)	HSSA
Motor Frame (tag)	42Y
Motor HP (tag)	1/6
Motor RPM (tag)	1625
Motor Volts (tag)	115
Motor Phase (tag)	1
Motor Amps (tag)	1.9
Motor S.F. (tag)	-
Mtr % PF (tag)	Not Listed
Mtr % Eff. (tag)	-
Other Motor Data	-

Drive Data	
Drive Type	Direct Drive
Sheave Type	-
Fan Sheave Make	-
Fan Shv Mod# or Size (in)	-
Fan Sheave Bore (in.)	-
Motor Sheave Make	-

Final Airflow (CFM)	
Actual Airflow	
Actual Grille Airflow	
Fan CFM Test Method	
Test Method Ak (sq ft)	

Unit Data	
Make (tag)	Captive Aire
Model # (tag)	DRHFA12
Serial # (tag)	4869110
Unit Location	Mech Room
Unit Discharge	Downblast
Fan Service	Exhaust
Fan Type	Centrifugal (BI)
Fan Discharge	Downblast
Fan Arrangement	SWSI

Fan Design Data	
Submittal Motor RPM	Not Listed
Submittal Fan RPM	1279

Fan Data	
Actual Fan RPM/Speed	
Actual Motor RPM	
Speed Cont. Position	

Electrical Data	
Measurement Method	
Motor Volts 1	
Motor Volts 2	
Motor Volts 3	
Motor Amps 1	
Motor Amps 2	
Motor Amps 3	
Operating HZ	
Starter Data	
Approx. BHP	

Drive Data	
Mtr Shv Mod# or Size (in)	-
Motor Sheave Bore (in.)	-
VP Range	-
Center Distance (in.)	-
No of Belts	-
Belt Make	-
Belt Size	-
Other Data	-

Electrical Data	
Corr. Nameplate Amps	

EF-08 Exhaust Inlet Summary

System/Unit	Area Served	Type	Size inches	Design CFM	Prelim CFM	Final CFM	% Final	Instrument	Ak	Open (sq ft)	Final FPM
E-01	121 Beer Cooler	CD	NL	380				Flow Hood	1.000	1.000	
	Totals:	-	-	**380**	**0**	**0**	**0**	-	-	-	-

Fan

PROJECT: BJ's Brewhouse
LOCATION: Live Oak, TX

DATE: 4/26/2022
CONTACT: Armon Scott

SYSTEM/UNIT: MAU-01

Tested By: Armon Scott
Date: 4/21/2022

Design Airflow (CFM)	
Design Airflow	7592
Design Grille Airflow	Not Applicable

Unit Design Data	
Submittal Make	CaptiveAire
Submittal Model #	A4.D.1000-920-MPU
Submittal Airflow	7592
Sched./Sub. Volts	208
Sched./Sub. Phase	3
Sched./Sub. HP	5
Submittal BHP	3.2060

Design Static Pressures (in wg)	
Design External SP	.5
Submittal Total SP	Not Provided

Motor Nameplate Data	
Motor Make (tag)	TECO Westinghouse
Motor Frame (tag)	184T
Motor HP (tag)	5
Motor RPM (tag)	1750
Motor Volts (tag)	230
Motor Phase (tag)	3
Motor Amps (tag)	6.8
Motor S.F. (tag)	1.15
Mtr % PF (tag)	89.5
Mtr % Eff. (tag)	87.5
Other Motor Data	-

Drive Data	
Drive Type	Belt Drive
Sheave Type	Variable
Fan Sheave Make	PRP
Fan Shv Mod# or Size (in)	2BK100
Fan Sheave Bore (in.)	-
Motor Sheave Make	PRP

Drive Data	
Mtr Shv Mod# or Size (in)	2VP42
Motor Sheave Bore (in.)	1 1/8
VP Range	2 1/2 Turns Open
Center Distance (in.)	28.5
No of Belts	2
Belt Make	Bando
Belt Size	BX75
Other Data	-

Final Airflow (CFM)	
Actual Airflow	7986
Actual Grille Airflow	Not Applicable
Fan CFM Test Method	Inlet Total
Test Method Ak (sq ft)	-

Unit Data	
Make (tag)	Captive Aire
Model # (tag)	A4-D.1000-920-MPU
Serial # (tag)	4869110
Unit Location	Roof
Unit Discharge	Downblast
Fan Service	Make-Up Air
Fan Type	Centrifugal (BI)
Fan Discharge	Downblast
Fan Arrangement	DWDI

Fan Design Data	
Submittal Motor RPM	Not Listed
Submittal Fan RPM	643

Fan Data	
Actual Fan RPM/Speed	588
Actual Motor RPM	1522
Speed Cont. Position	Not Applicable

Electrical Data	
Measurement Method	VFD Display
Motor Volts 1	168
Motor Volts 2	-
Motor Volts 3	-
Motor Amps 1	5.9
Motor Amps 2	-
Motor Amps 3	-
Operating HZ	53.0
Starter Data	Not Applicable
Approx. BHP	3.17

Electrical Data	
Corr. Nameplate Amps	9.3

Fan

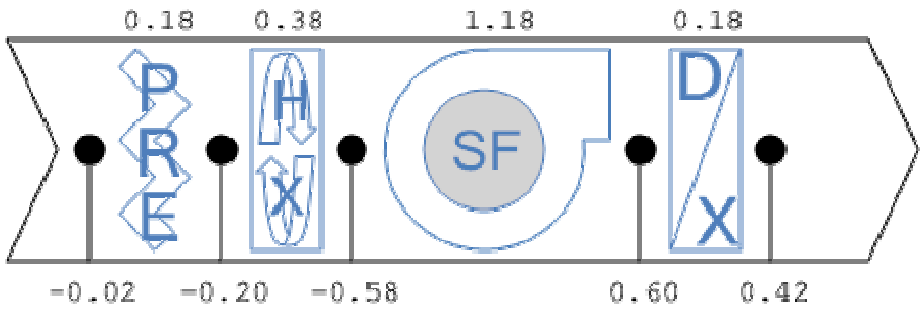
PROJECT: BJ's Brewhouse
LOCATION: Live Oak, TX

DATE: 4/26/2022
CONTACT: Armon Scott

SYSTEM/UNIT: MAU-01/Static Profile

Tested By: Armon Scott
Date: 4/21/2022

Static Pressure Profile



SYSTEM/UNIT: MAU-01/HD-01

Tested By: Armon Scott
Date: 4/19/2022

Design Airflow (CFM)	
Des. Make-up Air	1534

Final Airflow (CFM)	
Act. Make-up Air	1574

Kitchen Hood Information	
Manufacturer	Captive Aire
Test Method	Perforated Supply

Test Data	
PSP Length (in)	99
PSP Width (in)	16"
Correction Factor	0.90
Total MA Ak (sq ft)	9.90
Avg. MA Velocity (FPM)	159

SYSTEM/UNIT: MAU-01/HD-02

Tested By: Armon Scott
Date: 4/19/2022

Design Airflow (CFM)	
Des. Make-up Air	2362

Final Airflow (CFM)	
Act. Make-up Air	2088

Kitchen Hood Information	
Manufacturer	Captive Aire
Test Method	Perforated Supply

Test Data	
PSP Length (in)	144
PSP Width (in)	16
Correction Factor	16 inch - Corr.=0.9
Total MA Ak (sq ft)	14.40
Avg. MA Velocity (FPM)	145

Fan

PROJECT: BJ's Brewhouse
LOCATION: Live Oak, TX

DATE: 4/26/2022
CONTACT: Armon Scott

SYSTEM/UNIT: MAU-01/HD-03

Tested By: Armon Scott
Date: 4/19/2022

Design Airflow (CFM)	
Des. Make-up Air	1950

Final Airflow (CFM)	
Act. Make-up Air	2288

Kitchen Hood Information	
Manufacturer	Captive Aire
Test Method	Perforated Supply

Test Data	
PSP Length (in)	133
PSP Width (in)	16
Correction Factor	16 inch - Corr.=0.9
Total MA Ak (sq ft)	13.30
Avg. MA Velocity (FPM)	172

SYSTEM/UNIT: MAU-01/HD-04

Tested By: Armon Scott
Date: 4/19/2022

Design Airflow (CFM)	
Des. Make-up Air	1746

Final Airflow (CFM)	
Act. Make-up Air	2036

Kitchen Hood Information	
Manufacturer	Captive Aire
Test Method	Perforated Supply

Test Data	
PSP Length (in)	141
PSP Width (in)	14
Correction Factor	14 inch - Corr.=0.9
Total MA Ak (sq ft)	12.34
Avg. MA Velocity (FPM)	165

Fan

PROJECT: BJ's Brewhouse
LOCATION: Live Oak, TX

DATE: 4/26/2022
CONTACT: Armon Scott

SYSTEM/UNIT: TF-01
AREA: Data Rm

Tested By: Armon Scott
Date: 4/22/2022

Design Airflow (CFM)	
Design Airflow	400
Design Grille Airflow	Not Applicable

Unit Design Data	
Submittal Make	CaptiveAire
Submittal Model #	CFA 500CA
Submittal Airflow	400
Sched./Sub. Volts	115
Sched./Sub. Phase	1
Sched./Sub. HP	.31
Submittal BHP	.1880

Design Static Pressures (in wg)	
Design External SP	.25
Submittal Total SP	Not Provided

Motor Nameplate Data	
Motor Make (tag)	Broad-Ocean
Motor Frame (tag)	Not Listed
Motor HP (tag)	-
Motor RPM (tag)	815
Motor Volts (tag)	120
Motor Phase (tag)	1
Motor Amps (tag)	1.7
Motor S.F. (tag)	Not Listed
Mtr % PF (tag)	-
Mtr % Eff. (tag)	-
Other Motor Data	-

Drive Data	
Drive Type	Direct Drive
Sheave Type	-
Fan Sheave Make	-
Fan Shv Mod# or Size (in)	-
Fan Sheave Bore (in.)	-
Motor Sheave Make	-
Mtr Shv Mod# or Size (in)	-
Motor Sheave Bore (in.)	-
VP Range	-
Center Distance (in.)	-
No of Belts	-
Belt Make	-
Belt Size	-
Other Data	-

Final Airflow (CFM)	
Actual Airflow	
Actual Grille Airflow	
Fan CFM Test Method	
Test Method Ak (sq ft)	

Unit Data	
Make (tag)	Not accessible
Model # (tag)	-
Serial # (tag)	-
Unit Location	Ceiling
Unit Discharge	Horizontal
Fan Service	Transfer Air
Fan Type	Centrifugal (FC)
Fan Discharge	Horizontal
Fan Arrangement	DWDI

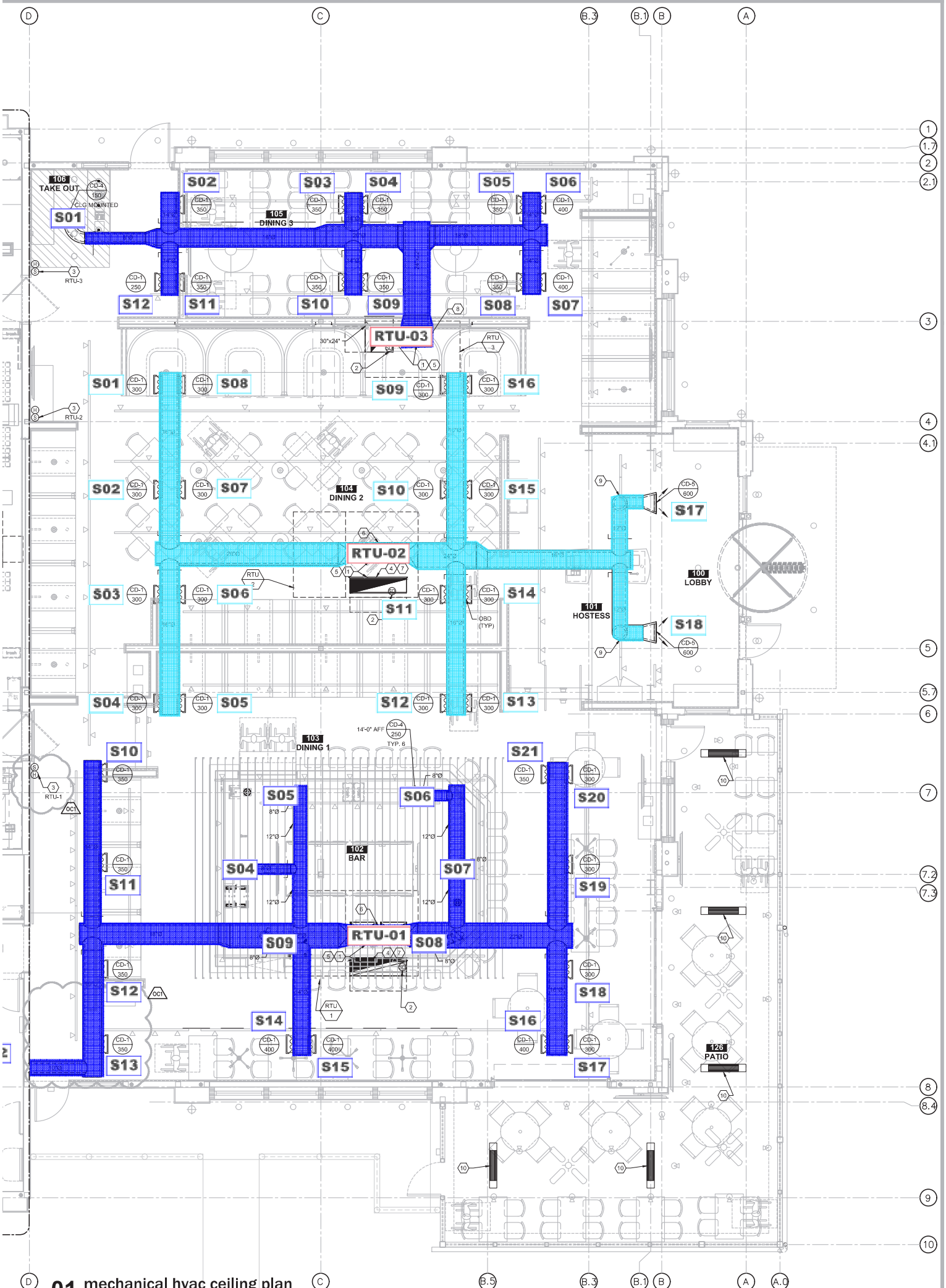
Fan Design Data	
Submittal Motor RPM	Not Listed
Submittal Fan RPM	691

Fan Data	
Actual Fan RPM/Speed	
Actual Motor RPM	
Speed Cont. Position	

Electrical Data	
Measurement Method	
Motor Volts 1	
Motor Volts 2	
Motor Volts 3	
Motor Amps 1	
Motor Amps 2	
Motor Amps 3	
Operating HZ	
Starter Data	
Approx. BHP	
Corr. Nameplate Amps	

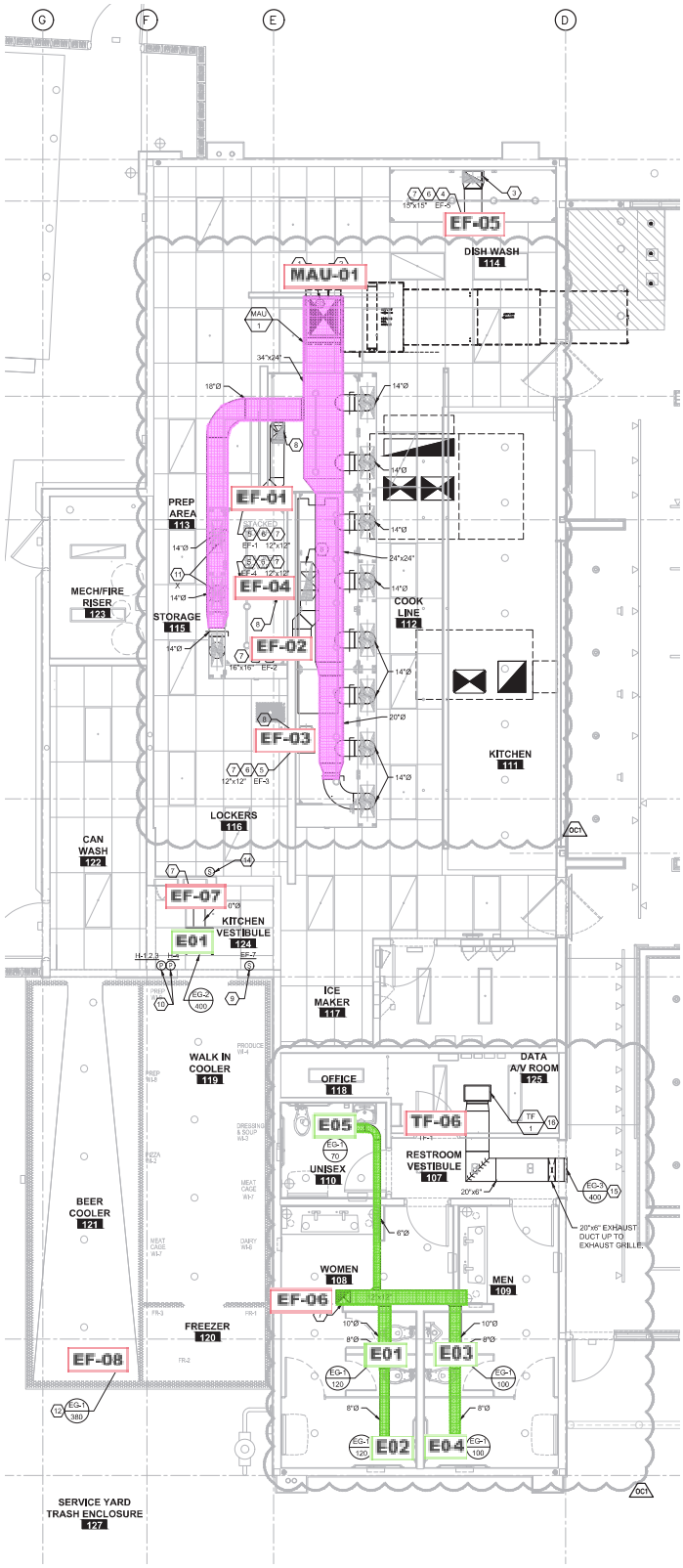
TF-01 Exhaust Inlet Summary

System/Unit	Type	Size inches	Design CFM	Prelim CFM	Final CFM	% Final	Instrument	Ak	Open (sq ft)	Final FPM
E-01							Flow Hood	1.000	1.000	
Totals:	-	-	0	0	0	0	-	-	-	-

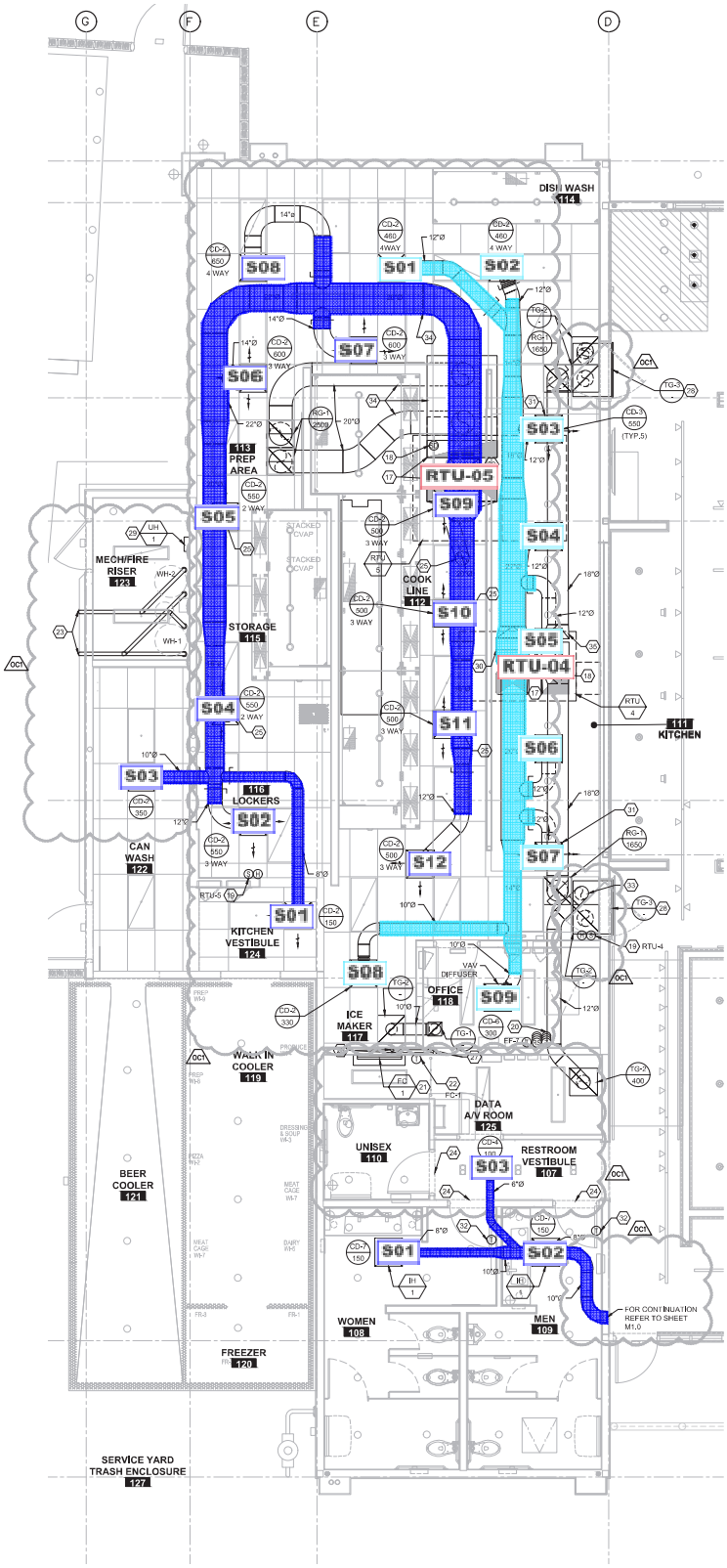


01 mechanical hvac ceiling plan

SCALE |1/4" = 1'-0"



01 mechanical partial floor plan - kitchen exhaust & makeup
SCALE | 1/4" = 1'-0"



02 mechanical partial floor plan - kitchen supply & return
SCALE | 1/4" = 1'-0"