Report By:

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

Report: TAB REPORT

Function: Test, Adjust, & Balance

Date: 10/17/2023

PROJECT

10-16-23 TRUE FOOD - SANTA MONICA, CA

395 SANTA MONICA PLACE

SANTA MONICA, CA 90401

Client

True Food Kitchen

4455 E Camelback Rd, Ste B100

Phoenix, AZ 85018

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[855] 682 6822

Summary:

The purpose of the visit to True Food in Santa Monica was to address hood capture issues.

Tech arrived on site and discussed the issue with the operations staff. After interviewing the staff it appears that the hood capture issue has been ongoing for at least the last 5 years. Per the staff member that has been here the longest the hoods and grease ducts were thoroughly cleaned pre 2019 and for a brief period hood capture was adequate. They are leaving the doors open to the space to help clear smoke out of the building. During heavy periods of cooking it was observed that the space gets hazy with smoke. Ceiling tiles and diffusers near the hood are stained.

While cooking was occurring hood capture was observed to be around 60-70%. A smoke test with a smoke emitter was also used and similar capture observed. The smoke primarily escapes once entering the canopy and then billows out on all sides. The airflow was read out with a velocity matrix which totaled out to 4144 CFM of exhaust which is 69% of design. There are dampers installed at the hood risers and it was confirmed that these were fully open. It was also confirmed that the riser sizes matched design.

EF-1 is running at 6 amps out of and FLA of 9 amps. The motor is set to run at 70hz out of a maximum of 75hz. Did not want to increase the speed further as the fan is already vibrating and airflow could only be increased slightly anyway. The static pressure was measured at the fan as -3.5”. After the MUA was inspected and read out the ductwork above ceiling for EF-1 was inspected. The static pressure at the clean out door immediately before the duct leaves true foods space is -1.1” which is significantly lower than what was read on the roof. There is also grease build up in the ductwork.

The remaining accessible exhaust duct run was inspected except for the second floor section of ductwork. Not all transitions are visible, but it appears there are between 6 to 8 transitions in the ductwork. There is also about a half of an inch of grease build up at one of the 90 degree transitions outside of True Foods. (see photos and sketches on the following pages).

The MUA was traversed as 3487 CFM (68% of design). Appears that the intake louver is causing restriction. The discharge of the hood is also an old style that could potentially cause capture issues when airflow is increased.

Building pressure was measured to be slightly positive.

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Recommendations/Next steps:

1. The main hood EF is 4144 CFM out of original design of 6400 CFM. The airflow is low primarily due to pressure loses from multiple 90 degree transitions (some back to back) and system effect losses. A new larger fan will likely be required, however the pressure would have to double based on fan law to achieve the original design (7” @ 6400 CFM). This pressure may not be realistic. Also the more you increase velocity in the duct, the higher the impact due to system losses is. This means that airflow may not increase as much as predicted due to these transitions. Either way, It looks like a larger fan is needed. But there may be a need to have some of the ductwork modified if we cannot overcome the back to back 90 degree transitions to get optimum performance. Recommend consulting an OEM to discuss options.
2. Grease duct is extremely dirty both in True Food space and out side of it. Recommend the ductwork be thoroughly cleaned. This buildup could be having an impact on airflow, so cleaning thoroughly may increase flow some.
3. Vertical end panels need to be installed on both ends of the hood. Mocked up cardboard to temporarily test and this improved capture.

4. The shelving and salamander above the equipment creates more adverse effects on hood performance at the cooking surface. Especially the shelving that is over equipment then continues to the left to go outside the hood. All smoke under shelving will travel left, continue out of the hood and then into space. The shelving needs to stop 12" from left end of hood and then at least partial end panel-30" wide & down 6" below the shelving in hood.

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5. HVAC system is a plenum style return and there are returns located in close proximity to the hood. They are clogged with grease right now so they are not causing any issue. But they need to be cleaned and then relocated towards the front of the kitchen at least 8 feet from the hood.

6. MUA airflow is 3487 CFM (68% of design). Part of the reason is that the intake louver appears to be clogged. Recommend cleaning (wait until after changes to exhaust

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system are addressed)

7. The MUA perforated discharge at the hood is an old style and has fairly uneven velocities. Increasing the airflow will cause velocities to get more uneven and more turbulent which could worsen hood capture issues. Recommend installing a new PSP and widening to reduce the velocities and creating a more even curtain of air. Recommend contacting a hood OEM.

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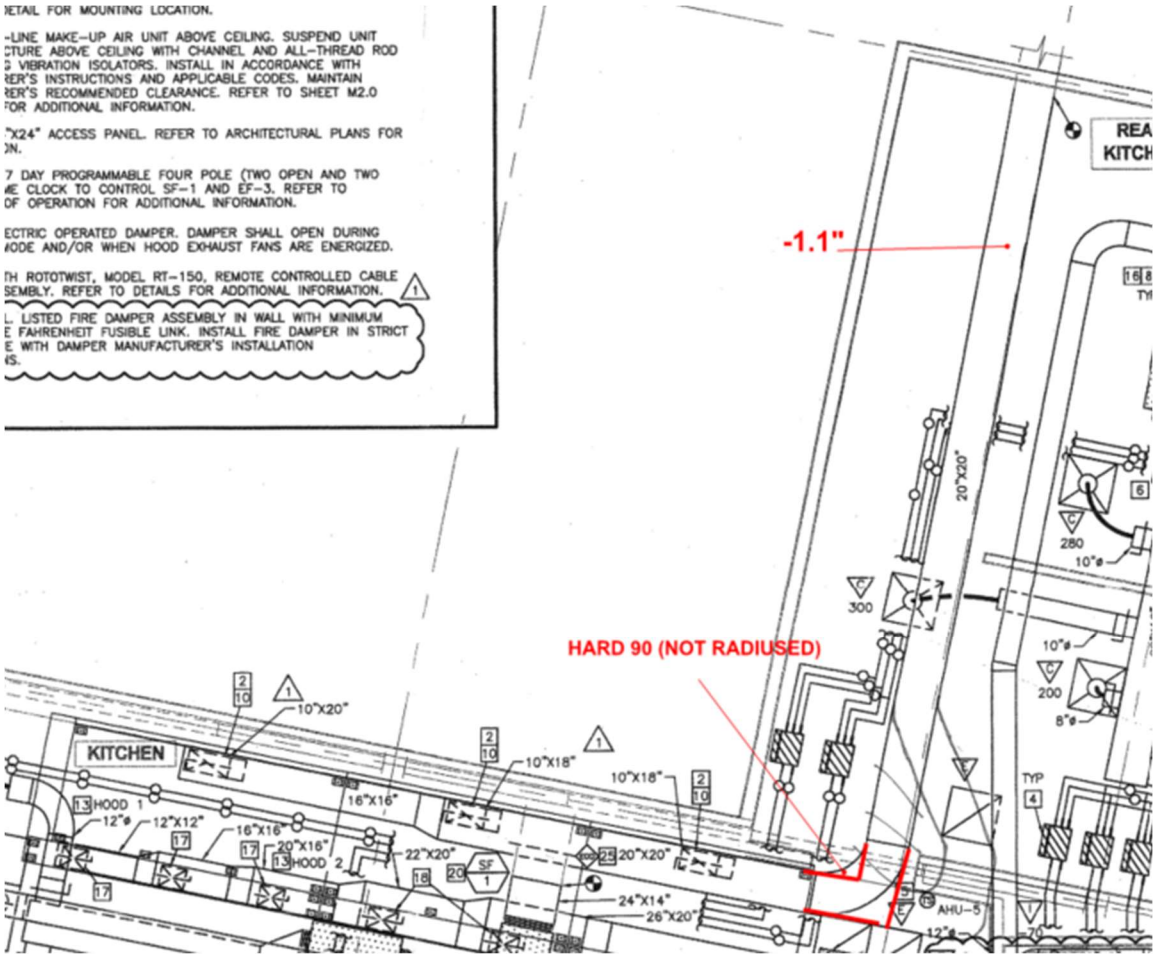
Static pressure locations / Duct sketch



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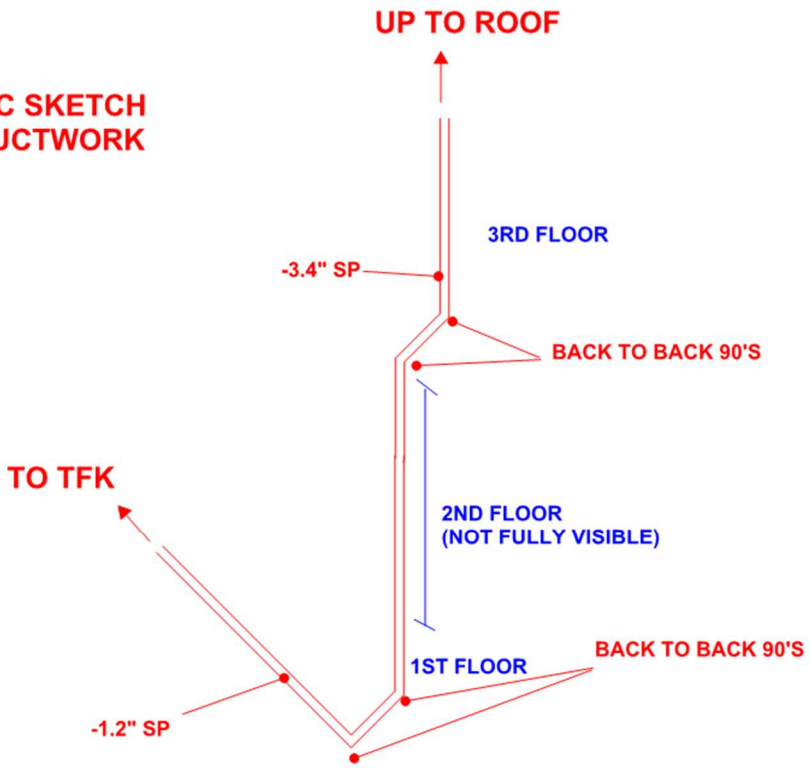
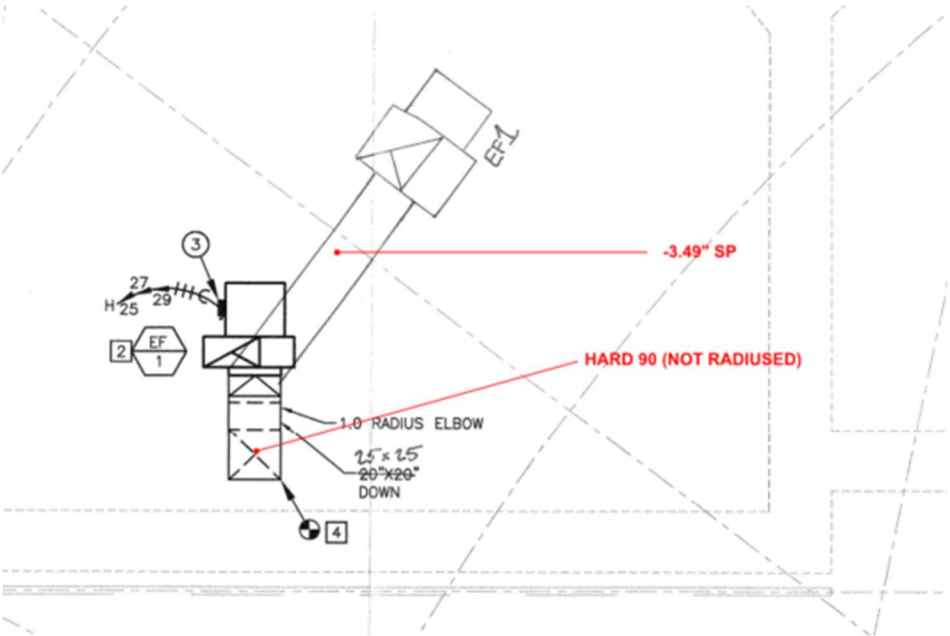
VERTICAL ISOMETRIC SKETCH OF MALL GREASE DUCTWORK





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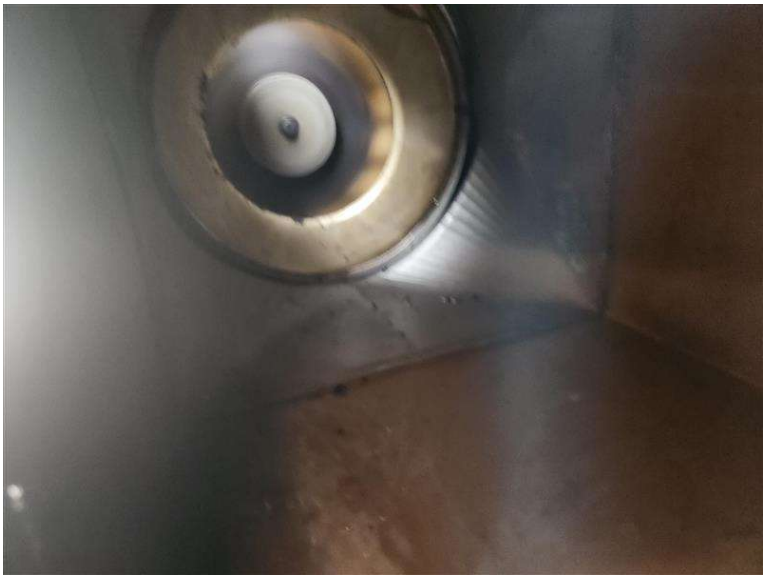
Pictures

Roof top grease duct/exhaust fan:

Fan inlet is clear and unrestricted



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Ductwork at roof towards the 90 is unrestricted:

3rd floor back to back 90's:

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3rd floor inside the 90's

1st floor looking upwards:

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1st floor back to back 90's

1st floor inside the duct. Pools of grease

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Duct inside True Food space:

At hood riser:

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Hood pictures:

National TAB

Project: 10-16-23 TRUE FOOD - SANTA MONICA, CA

System/Unit: FAN - Exhaust

Asset: EF1 AREA:HOODS 1.2,3

Unit Data		
	Design	**Actual**
MFG	CAPTIVEAIRE	CAPTIVEAIRE
Model Num	BI22CARM	USB124DD-RM
Serial Num	-	2785643
Type	UTILITY	UTILITY
Configuration	HORIZONTAL	HORIZONTAL

Motor Data		
	Design	**Actual**
Motor MFG	-	MARATHON
Frame	-	NA
Horsepower	5	7.5
Motor Rpm	-	1180
Phase	3	3
Voltage (rated)	460	460
Amperage (rated)	-	9.6
Service Factor	-	NL

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

Test Data		
	Design	**Actual**
CFM	6400	4144
Fan RPM	1390	70HZ
Fan Rotation	-	CCW
Motor RPM	-	70HZ
RL Voltage	-	465/467/466
RL Amperage	-	6.2/6.3/6.0
Suction ESP	-	-3.49"
Discharge ESP	-	ATM
Total ESP	2.5"	3.49"

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Project: 10-16-23 TRUE FOOD - SANTA MONICA, CA

System/Unit: FAN - Supply

Asset: MAU1 AREA:COOKLINE

Unit Data		
	Design	**Actual**
MFG	CAPTIVEAIRE	CAPTIVEAIRE
Model Num	INLINE3-G18	INLINE3-G18
Serial Num	-	1236964
Type	MAU	MUA
Configuration	HORIZONTAL	HORIZONTAL

Motor Data		
	Design	**Actual**
Motor MFG	-	HSSA
Frame	-	56HZ
Horsepower	3	2
Motor Rpm	-	1740
Phase	3	3
Voltage (rated)	460	460
Amperage (rated)	-	2.8
Service Factor	-	1.15

Drive Data		
	Design	**Actual**
Motor Sheave Size	-	4"
Motor Bore Size	-	7/8"
Fan Sheave Size	-	9"
Fan Sheave Bore	-	1-3/16"
Belt CL Distance	-	19.5"
Num of Belts	-	2
Belt Size	-	BX56
Belt Alignment Verified	-	VERIFIED

Gas Heat		
	Design	**Actual**
Heater Operates (y/n)	-	N/A
Flame Status (pass/fail)	-	N/A
Inlet Air Temp SetPt	55	N/A
Discharge Air Temp SetPt	60	N/A
Air Flow Switch SP Actual	-	N/A

Test Data		
	Design	**Actual**
CFM	5120	3487
SF RPM	700	699
Motor RPM	-	1755
RL Voltage	-	NA
RL Amperage	-	NA
Total ESP	-	1.06"
Fan Discharge SP	-	0.35"

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

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Project: 10-16-23 TRUE FOOD - SANTA MONICA, CA

System/Unit: Kitchen Hood Type I

Asset: HD1 AREA:

Unit Data		
	Design	**Actual**
MFG	NA	NL
Model Num	NA	NL
Job / Serial Num	-	NL
Type	-	TYPE I CANOPY
Hood length	-	126"
Hood Width	-	60"
Supply Plenum Type	-	PERFORATED
Supply Plenum Width	-	10"
Supply Plenum Length	-	126"

Test Data Exhaust		
	Design	**Actual**
Filter Type	-	BAFFLED
Filter Size 1	-	16X25
Filter Size 2	-	16X20
Filter Qty 1	-	1
Filter Qty 2	-	5
Filter AK factor size 1	-	2.66
Filters AK factor size 2	-	2.08
Filter Total AK Area	-	13.06
Filter1 FPM	-	125
Filter2 FPM	-	129
Filter3 FPM	-	153
Filter4 FPM	-	194
Filter5 FPM	-	141
Filter6 FPM	-	128
Filter7 FPM	-	115
Filter Ave FPM(corr)	-	140
CFM	-	1828

Cooking Equipment		
	Design	**Actual**
Item 1	-	GRILL
Item 2	-	FLAT TOP GRILL
Item 3	-	
Item 4	-	
Item 5	-	

Test Data Supply		
	Design	**Actual**
Total AK Area	-	9.4
Kv factor (Vel)	-	0.89
Num of Readings	-	12
Reading1 FPM	-	60
Reading2 FPM	-	104
Reading3 FPM	-	68
Reading4 FPM	-	51
Reading5 FPM	-	29
Reading6 FPM	-	128
Reading7 FPM	-	99
Reading8 FPM	-	74
Reading9 FPM	-	118
Reading10 FPM	-	144
Reading11 FPM	-	178
Reading12 FPM	-	152
Ave FPM(corr)	-	100.4
CFM	-	840

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Project: 10-16-23 TRUE FOOD - SANTA MONICA, CA

System/Unit: Kitchen Hood Type I

Asset: HD2 AREA:

Unit Data		
	Design	**Actual**
MFG	NA	NL
Model Num	NA	NL
Job / Serial Num	-	NL
Type	-	TYPE I CANOPY
Hood length	-	121"
Hood Width	-	60"
Supply Plenum Type	-	PERFORATED
Supply Plenum Width	-	10"
Supply Plenum Length	-	121"

Test Data Exhaust		
	Design	**Actual**
Filter Type	-	BAFFLED
Filter Size 1	-	16X16
Filter Size 2	-	16X20
Filter Qty 1	-	2
Filter Qty 2	-	4
Filter AK factor size 1	-	1.62
Filters AK factor size 2	-	2.08
Filter Total AK Area	-	11.56
Filter1 FPM	-	129
Filter2 FPM	-	129
Filter3 FPM	-	130
Filter4 FPM	-	140
Filter5 FPM	-	109
Filter6 FPM	-	96
Filter Ave FPM(corr)	-	122
CFM	-	1410

Cooking Equipment		
	Design	**Actual**
Item 1	-	STOVE RANGE
Item 2	-	SMALL BURNER
Item 3	-	WOK BURNER
Item 4	-	
Item 5	-	

Test Data Supply		
	Design	**Actual**
Total AK Area	-	7.2
Kv factor (Vel)	-	0.89
Num of Readings	-	12
Reading1 FPM	-	72
Reading2 FPM	-	25
Reading3 FPM	-	57
Reading4 FPM	-	175
Reading5 FPM	-	122
Reading6 FPM	-	91
Reading7 FPM	-	136
Reading8 FPM	-	156
Reading9 FPM	-	71
Reading10 FPM	-	289
Reading11 FPM	-	98
Reading12 FPM	-	170
Ave FPM(corr)	-	122
CFM	-	782

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National TAB

Project: 10-16-23 TRUE FOOD - SANTA MONICA, CA

System/Unit: Kitchen Hood Type I

Asset: HD3 AREA:

Unit Data		
	Design	**Actual**
MFG	NA	NL
Model Num	NA	NL
Job / Serial Num	-	NL
Type	-	TYPE I CANOPY
Hood length	-	108"
Hood Width	-	60"
Supply Plenum Type	-	PERFORATED
Supply Plenum Width	-	10"
Supply Plenum Length	-	108"

Test Data Exhaust		
	Design	**Actual**
Filter Type	-	BAFFLED
Filter Size 1	-	16X16
Filter Size 2	-	16X20
Filter Qty 1	-	5
Filter Qty 2	-	1
Filter AK factor size 1	-	1.62
Filters AK factor size 2	-	2.08
Filter Total AK Area	-	10.18
Filter1 FPM	-	93
Filter2 FPM	-	80
Filter3 FPM	-	98
Filter4 FPM	-	79
Filter5 FPM	-	90
Filter6 FPM	-	95
Filter Ave FPM(corr)	-	89
CFM	-	906

Cooking Equipment		
	Design	**Actual**
Item 1	-	PIZZA OVEN
Item 2	-	STOVE RANGE
Item 3	-	
Item 4	-	
Item 5	-	

Test Data Supply		
	Design	**Actual**
Total AK Area	-	7.2
Kv factor (Vel)	-	0.89
Num of Readings	-	12
Reading1 FPM	-	101
Reading2 FPM	-	128
Reading3 FPM	-	159
Reading4 FPM	-	98
Reading5 FPM	-	142
Reading6 FPM	-	132
Reading7 FPM	-	106
Reading8 FPM	-	145
Reading9 FPM	-	179
Reading10 FPM	-	157
Reading11 FPM	-	158
Reading12 FPM	-	139
Ave FPM(corr)	-	137
CFM	-	880

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