

Report By:

**National TAB
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**Report: PRLM FIELD RPT
Function: Test, Adjust, & Balance
Date: 10/31/2023**

PROJECT

Christian Bros Automotive (Waunakee, WI)

Sarah Ln at Simon Crestway

Waunakee, WI 53597

Client

Air Temperature Services
5301 Voges Road
Madison , WI 53718

Project Summary

The summary below provides a quick understanding of our scope of work and general testing procedures. 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. This project consisted of the new construction of an automotive repair shop, Christian Brothers Automotive. It included the balancing of one RTU serving the office area, two restroom exhaust fans, and two exhaust fans interlocked with louvres for relief. Enclosed in the report is further detail about these units and their performance.

RTU (Roof Top Units) w/ Diffusers

The RTU was measured at its terminal devices to establish a total flow for the unit. The 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. The RTU is controlled by a wall thermostat and was programmed by the Mechanical Contractor.

Ceiling Exhaust Fans

The ceiling exhaust fans were measured using a flow hood. If speed adjustment was provided, the fan speed was adjusted to within design tolerance. Any equipment that fell outside of this tolerance is noted throughout the report. For EF-4, louvre operation as controlled by the wall thermostat was verified.

"Attic" Relief Fan

EF-3 was scheduled to be an inline attic fan. This was changed to an upblast fan installed on the roof. Fan operation is interlocked with a Louvre in the main shop area of the building for pressure relief. This operation was verified as controlled by a wall switch beneath the louvre. The fan was measured by reading the intake air grille with a velocity grid and multiplying by the free area. The motor sheave was adjusted until the airflow was within the design requirements.

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Project: Christian Bros Automotive (Wauwaukee, WI)

System/Unit: AHU/RTU



Asset: RTU-1

AREA:101

Unit Data		
	Design	Actual
MFG	NA	TRANE
Serial Num	-	231112857L
Model Num	NA	YSC048G3RH
Configuration	VERTICAL	VERTICAL
Num OA Filters 1	-	1
OA Filter Size 1	-	26.75X11.5
Num PreFilter 1	-	2
PreFilter Size 1	-	19.5X34.625X2

Test Data		
	Design	Actual
SF CFM	1600	1596
SF RPM	-	DD
RA CFM	1460	1459
OA CFM	140	137
RL Voltage	208	213
RL Amperage	-	2.4
OA Damper Position	-	3.0VDC
Brake Horse Power	-	0.35

Motor Data		
	Design	Actual
Motor MFG	-	U.S. MOTORS
Frame	-	NL
Horsepower	1.0	1.0
Motor Rpm	-	NL
Phase	3	1
Rated Voltage	208	208
Rated Amperage	-	6.9
Service Factor	-	NL

Performance Data		
	Design	Actual
MA Plenum SP	-	-0.22"
Fan Suction SP	-	-0.40"
Fan Discharge SP	-	0.49"
Total ESP	0.8	0.71"
Fan Total SP	-	0.89"

Drive Data		
	Design	Actual
Motor Sheave Size	-	DD
Motor Bore Size	-	DD
Motor Sheave SetPt	-	SPEED TAP 4
Fan Sheave Size	-	DD
Fan Sheave Bore	-	DD
Belt CL Distance	-	DD
Num of Belts	-	DD
Belt Size	-	DD

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Project: Christian Bros Automotive (Waukegan, WI)

AHU/RTU



Diffuser Supply (GRD)

RTU-1/101

Asset							
Asset Name	Location	Type	Size	DESIGN CFM	CFM(1)	FINAL CFM	% to design
1-1	105	CSD1	10	250	244	268	107.2
1-2	102	CSD1	10	250	331	244	97.6
1-3	107	CSD2	6	50	79	50	100.0
1-4	101	CSD1	10	375	295	372	99.2
1-5	104	CSD1	10	250	390	264	105.6
1-6	103	CSD2	6	50	97	49	98.0
1-7	101	CSD`	10	375	292	349	93.1
Total				1600	1728	1596	99.75%

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Project: Christian Bros Automotive (Wauunakee, WI)

System/Unit: FAN - Exhaust



Asset: EF3

AREA:

Unit Data		
	Design	Actual
MFG	GREENHECK	GREENHECK
Model Num	GB-180-7-1-30-X	GB-180-7-1-30-X
Serial Num	-	23264253
Type	-	DOWNBLAST
Configuration	-	VERTICAL

Test Data		
	Design	Actual
CFM	-	3652
Fan RPM	-	946
Fan Rotation	-	CW, CORRECT
Motor RPM	-	1764
RL Voltage	-	119
RL Amperage	-	NA [1]
Suction ESP	-	-0.09"
Discharge ESP	-	ATM
Total ESP	-	0.09

Motor Data		
	Design	Actual
Motor MFG	-	BALDOR RELIANCE
Frame	-	56
Horsepower	-	0.75
Motor Rpm	-	1725
Phase	-	1
Voltage (rated)	-	115
Amperage (rated)	-	10.8
Service Factor	-	1.00

Drive Data		
	Design	Actual
Motor Sheave Size	-	VP34S
Motor Bore Size	-	5/8"
Motor Sheave SetPt	-	2.5 TURNS OPEN
Fan Sheave Size	-	AK54
Fan Sheave Bore	-	3/4"
Belt CL Distance	-	7"
Num of Belts	-	1
Belt Size	-	A25

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Notes:

[1] COULD NOT ACCESS SAFELY

[2] FAN IS INTERLOCKED WITH LOUVRE IN MAIN SHOP AREA. FAN ON->LOUVRE OPEN, FAN OFF->LOUVRE CLOSED. OPERATED BY WALL SWITCH BENEATH LOUVRE. VERIFIED OPERATION.

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Project: Christian Bros Automotive (Waunakee, WI)

System/Unit: FAN - Exhaust



Asset: EF4

AREA:

Unit Data		
	Design	Actual
MFG	GREENHECK	GREENHECK
Model Num	SP-A110-QD	SP-A110-QD
Serial Num	-	NA
Type	-	CEILING

Test Data		
	Design	Actual
CFM	-	97
RL Voltage	-	119
RL Amperage	-	NA
Total ESP	-	NA

Motor Data		
	Design	Actual
Motor MFG	-	GREENHECK
Frame	-	NL
Horsepower	-	18W
Motor Rpm	-	950
Phase	-	1
Voltage (rated)	-	115
Amperage (rated)	-	0.19

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Notes:

[1] FAN IS INTERLOCKED WITH LOUVRE IN EMPLOYEE BREAK ROOM. FAN ON-> LOUVRE OPEN, FAN OFF-> LOUVRE CLOSED. VERIFIED OPERATION. CONTROLLED BY THERMOSTAT ON WALL, SET TO 75 DEGREES.

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Project: Christian Bros Automotive (Waunakee, WI)

System/Unit: FAN - Exhaust



Asset: EF-1

AREA:103

Unit Data		
	Design	Actual
MFG	NA	GREENHECK
Model Num	NA	SP-A110-QD
Serial Num	-	22226961
Type	CEILING	CEILING

Test Data		
	Design	Actual
CFM	100	95
RL Voltage	-	119
RL Amperage	-	0.12
Total ESP	0.25	NR

Motor Data		
	Design	Actual
Motor MFG	-	GREENHECK
Frame	-	NL
Horsepower	18W	18W
Motor Rpm	950	950
Phase	1	1
Voltage (rated)	115	115
Amperage (rated)	-	0.19

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Project: Christian Bros Automotive (Waunakee, WI)

System/Unit: FAN - Exhaust



Asset: EF-2

AREA:107

Unit Data		
	Design	Actual
MFG	NA	GREENHECK
Model Num	NA	SP-A110-QD
Serial Num	-	22226970
Type	CEILING	CEILING

Test Data		
	Design	Actual
CFM	100	102
RL Voltage	-	119
RL Amperage	-	0.13
Total ESP	0.25	NR

Motor Data		
	Design	Actual
Motor MFG	-	GREENHECK
Frame	-	NL
Horsepower	18W	18W
Motor Rpm	950	950
Phase	1	1
Voltage (rated)	115	115
Amperage (rated)	-	0.19

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Project: Christian Bros Automotive (Waunakee, WI)

System/Unit: FAN - Supply



Asset: SF-1

AREA:108

Unit Data		
	Design	Actual
MFG	NA	NA
Model Num	NA	NA
Serial Num	-	
Type	WALL	

Motor Data		
	Design	Actual
Motor MFG	-	
Frame	-	
Horsepower	0.50	
Motor Rpm	1075	
Phase	1	
Voltage (rated)	115	
Amperage (rated)	-	
Service Factor	-	

Test Data		
	Design	Actual
CFM	6400	
RL Voltage	-	115
RL Amperage	-	
Suction ESP	-	
Discharge ESP	-	
Total ESP	-	
Brake Horse Power	-	

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Project: Christian Bros Automotive (Waunakee, WI)

System/Unit: FAN - Supply



Asset: SF-2

AREA:108

Unit Data		
	Design	Actual
MFG	NA	NA
Model Num	NA	NA
Serial Num	-	
Type	WALL	

Motor Data		
	Design	Actual
Motor MFG	-	
Frame	-	
Horsepower	0.50	
Motor Rpm	1075	
Phase	1	
Voltage (rated)	115	
Amperage (rated)	-	
Service Factor	-	

Test Data		
	Design	Actual
CFM	6400	
RL Voltage	-	115
RL Amperage	-	
Suction ESP	-	
Discharge ESP	-	
Total ESP	-	
Brake Horse Power	-	

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Project: Christian Bros Automotive (Waunakee, WI)

System/Unit: FAN - Supply



Asset: SF-3

AREA:108

Unit Data		
	Design	Actual
MFG	NA	NA
Model Num	NA	NA
Serial Num	-	
Type	WALL	

Motor Data		
	Design	Actual
Motor MFG	-	
Frame	-	
Horsepower	0.50	
Motor Rpm	1075	
Phase	1	
Voltage (rated)	115	
Amperage (rated)	-	
Service Factor	-	

Test Data		
	Design	Actual
CFM	6400	
RL Voltage	-	115
RL Amperage	-	
Suction ESP	-	
Discharge ESP	-	
Total ESP	-	
Brake Horse Power	-	

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Project: Christian Bros Automotive (Waunakee, WI)

System/Unit: FAN - Supply



Asset: SF-4

AREA:108

Unit Data		
	Design	Actual
MFG	NA	NA
Model Num	NA	NA
Serial Num	-	
Type	WALL	

Motor Data		
	Design	Actual
Motor MFG	-	
Frame	-	
Horsepower	0.50	
Motor Rpm	1075	
Phase	1	
Voltage (rated)	115	
Amperage (rated)	-	
Service Factor	-	

Test Data		
	Design	Actual
CFM	6400	
RL Voltage	-	115
RL Amperage	-	
Suction ESP	-	
Discharge ESP	-	
Total ESP	-	
Brake Horse Power	-	

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Project: Christian Bros Automotive (Waunakee, WI)

System/Unit: FAN - Supply



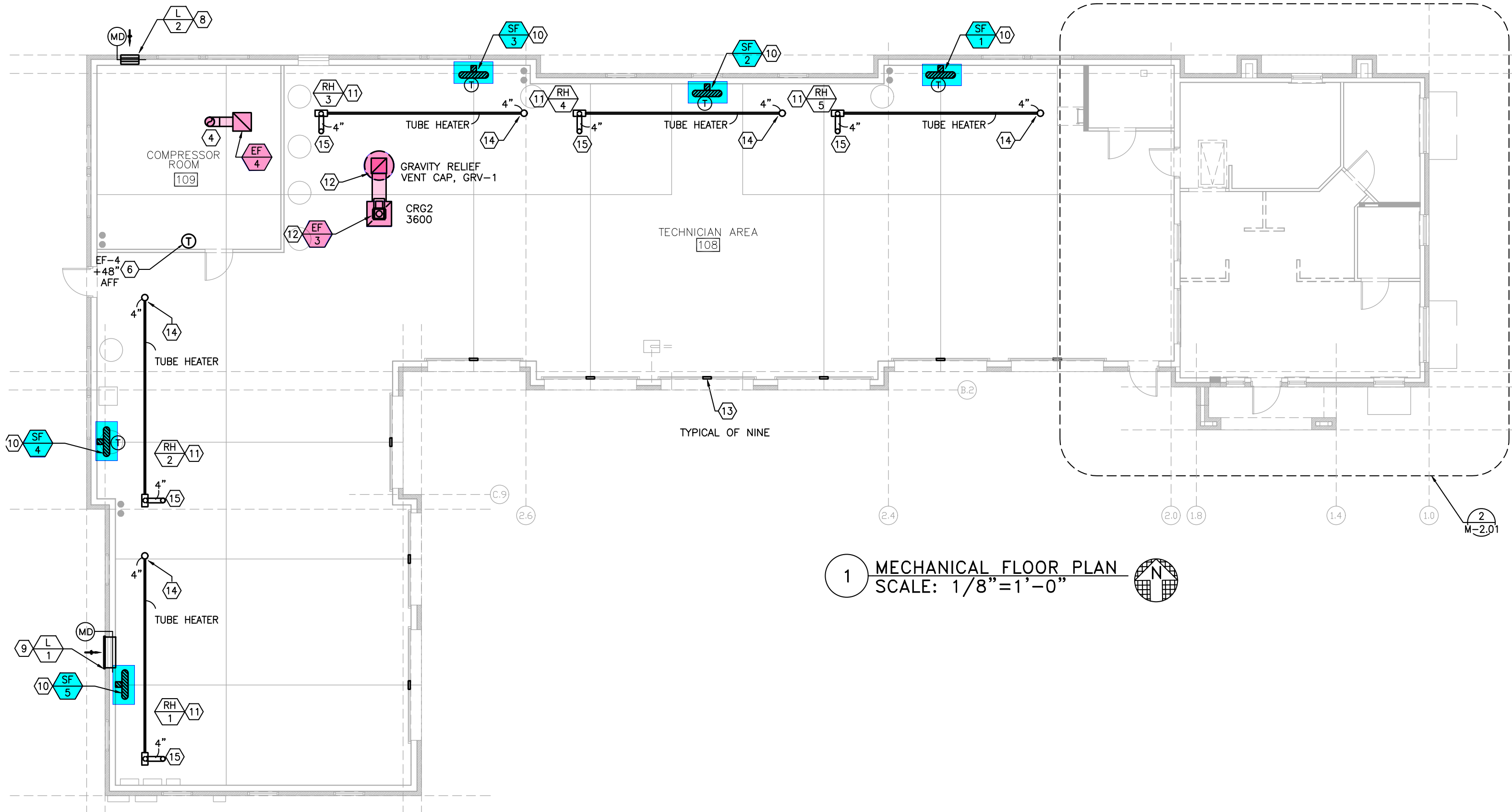
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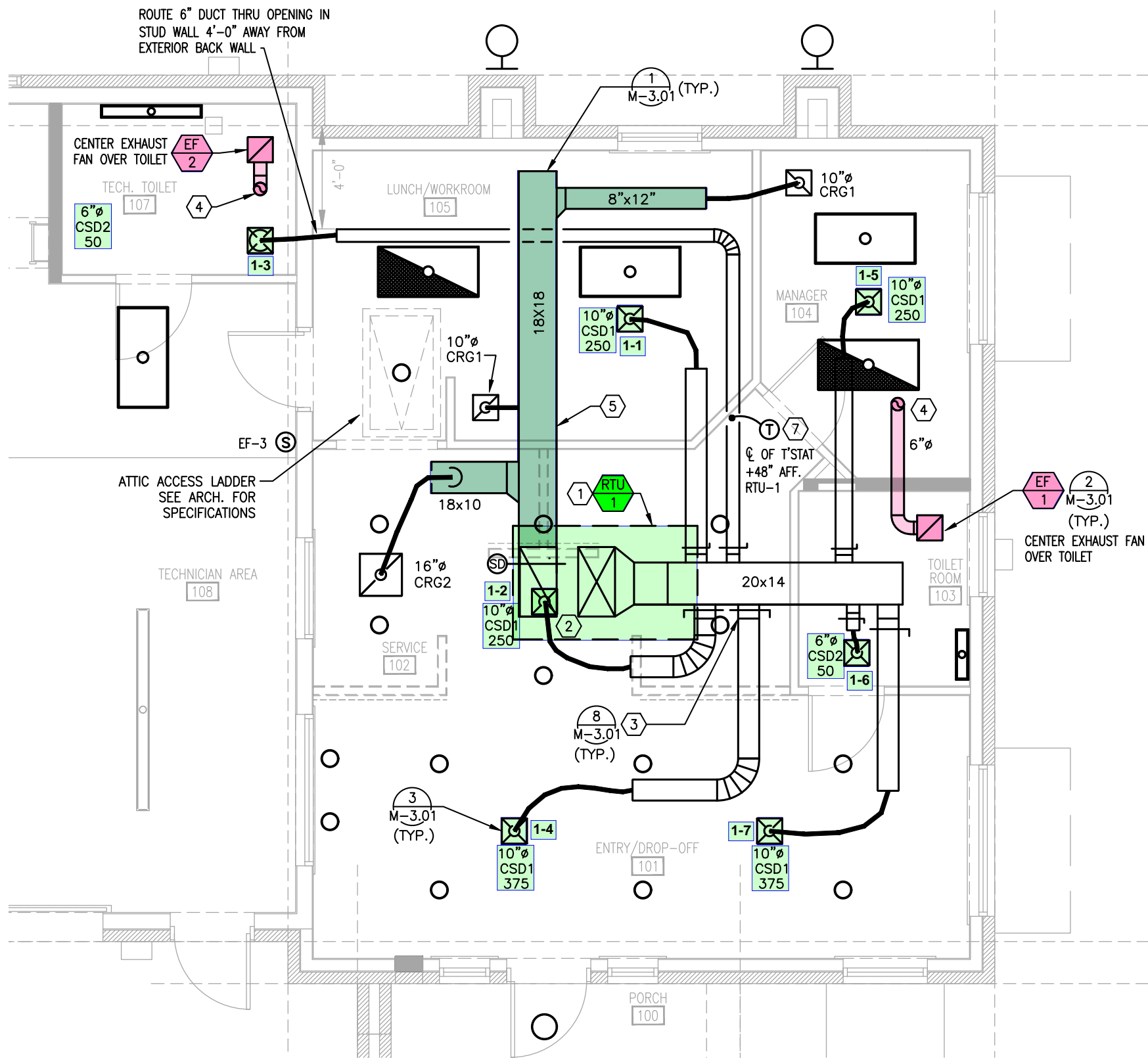
AREA:108

Unit Data		
	Design	Actual
MFG	NA	NA
Model Num	NA	NA
Serial Num	-	
Type	WALL	

Motor Data		
	Design	Actual
Motor MFG	-	
Frame	-	
Horsepower	0.50	
Motor Rpm	1075	
Phase	1	
Voltage (rated)	115	
Amperage (rated)	-	
Service Factor	-	

Test Data		
	Design	Actual
CFM	64	
RL Voltage	-	115
RL Amperage	-	
Suction ESP	-	
Discharge ESP	-	
Total ESP	-	
Brake Horse Power	-	





2 ENLARGED OFFICE MECHANICAL FLOOR PLAN
 SCALE: 1/4"=1'-0"