Report By:

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

Report: PRELIMINARY REPORT

Function: Test, Adjust, & Balance

Date: 04/24/2024

PROJECT

DGS Ishi Conservation Camp (Paynes Creek, CA)

30500 Plum Creek Rd

Paynes Creek, CA 95811

Client

B&M Builders, Inc.

11330 Sunrise Park Drive

Suite C

Rancho Cordova, CA 95742

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Project: DGS Ishi Conservation Camp (Paynes Creek, CA)

Table Of Contents

Issue List

- EXHAUST FAN 4 UNABLE TO REACH DESIGN AIRFLOW

DGS Ishi Conservation Camp (Paynes Creek, CA)

Project Issue Information

Issue Name :	EXHAUST FAN 4 UNABLE TO REACH DESIGN AIRFLOW		
Description :	EF-4 is unable to meet design airflow. the unit is currently running at high speed at 169 cfm out of 300 cfm design. all dampers have been inspected and are 100% open, backdraft damper is operational, and no visible damage or leaks have been found. recommended to increase the size of EF-4 to compensate for the long duct run.		
Created By :	National TAB	**Assigned To :**	National TAB - Zack Eismin
Status :	Open		
Priority :	Medium	**Asset Tag :**	
Originated Date :	04/24/2024 - Zack Eismin - National TAB		

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Project: DGS Ishi Conservation Camp (Paynes Creek, CA)

System/Unit: AHU/RTU

Asset: AC-1 AREA:DINING

Unit Data		
	Design	**Actual**
MFG	NA	CARRIER
Serial Num	-	3423P36807
Model Num	NA	48FCTM12A3A5A0A9C0
Type	-	RTU
Configuration	HORIZONTAL	HORIZONTAL
Num PreFilter 1	-	1
PreFilter Size 1	-	29.5X20.5
Num Final Filter 1	-	4
Final Filter Size 1	-	20X20X2

Motor Data		
	Design	**Actual**
Motor MFG	-	NL
Frame	-	NL
Horsepower	3	NL
Motor Rpm	-	NL
Phase	3	3
Rated Voltage	208	208
Rated Amperage	12.6	12.6
Service Factor	-	NL

Test Data		
	Design	**Actual**
SF CFM	4000	4160
SF RPM	1906	1567
RA CFM	2449	2589
OA CFM	1551	1571
RL Voltage	208	208/208/209
RL Amperage	12.6	3.3/3.4/3.3
VFD Max SetPt	-	N/A
SF Motor Freq(HZ)	-	N/A
SF System SetPt	-	5.6 VDC
RA Damper Position	-	65%
OA Damper Position	-	35%
Brake Horse Power	2.41	N/A

Performance Data		
	Design	**Actual**
MA Plenum SP	-	-0.47"
Fan Suction SP	-	-0.75"
Total ESP	1.0	0.53"
Fan Total SP	1.22	0.87"

Completed By: Zack Eismin on 04/24/2024

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Project:DGS Ishi Conservation Camp (Paynes Creek, CA)

AHU/RTU

Diffuser Supply (GRD)

AC-1/DINING

Asset							
Asset Name	**Location**	**Type**	**Size**	**DESIGN CFM**	**CFM(1)**	**FINAL CFM**	**% to design**
1-1	DINING	E	16X16	500	517	510	102.0
1-2	DINING	E	16X16	500	608	522	104.4
1-3	DINING	E	16X16	500	728	539	107.8
1-4	DINING	E	16X16	500	647	521	104.2
1-5	DINING	E	16X16	500	795	548	109.6
1-6	DINING	E	16X16	500	725	538	107.6
1-7	DINING	E	16X16	500	727	506	101.2
1-8	DINING	E	16X16	500	594	476	95.2
Total				4000	5341	4160	104%

Diffuser Ret/Exh (GRD)

AC-1/DINING

Asset								
Asset Name	**Type**	**Size**	**DESIGN CFM**	**AK**	**CFM(1)**	**CFM(2)**	**FINAL CFM**	**% to design**
R1-1	I	26X26	1225	1	1297	1297	1297	105.9
R1-2	I	26X26	1225	1	1292	1292	1292	105.5
Total			2450		2589	2589	2589	105.67%

Completed By: Zack Eismin on 04/24/2024

National TAB

Project: DGS Ishi Conservation Camp (Paynes Creek, CA)

System/Unit: AHU/RTU

Asset: AC-2 AREA:102

Unit Data		
	Design	**Actual**
MFG	NA	CARRIER
Serial Num	-	3623P27694
Model Num	NA	48FCTM24AJA5A0A9C0
Type	-	RTU
Configuration	HORIZONTAL	HORIZONTAL
Num PreFilter 1	-	3
PreFilter Size 1	-	23X14.5
Num Final Filter 1	-	6
Final Filter Size 1	-	20X25X4

Motor Data		
	Design	**Actual**
Motor MFG	-	NL
Frame	-	NL
Horsepower	10	NL
Motor Rpm	-	NL
Phase	3	3
Rated Voltage	208	208
Rated Amperage	12.6	12.6
Service Factor	-	NL

Test Data		
	Design	**Actual**
SF CFM	8000	7672
SF RPM	2065	2173
RA CFM	6130	5817
OA CFM	1870	1855
RL Voltage	208	208/207/207
RL Amperage	12.6	7.7/7.8/8.0
VFD Max SetPt	-	N/A
SF Motor Freq(HZ)	-	N/A
SF System SetPt	-	8.2 VDC
RA Damper Position	-	75%
OA Damper Position	-	25%
Brake Horse Power	4.97	N/A

Performance Data		
	Design	**Actual**
MA Plenum SP	-	-0.31"
Fan Suction SP	-	-0.71"
Total ESP	1.0	0.51"
Fan Total SP	-	0.91"

Completed By: Zack Eismin on 04/24/2024

National TAB

Project:DGS Ishi Conservation Camp (Paynes Creek, CA)

AHU/RTU

Diffuser Supply (GRD)

AC-2/102

Asset							
Asset Name	**Location**	**Type**	**Size**	**DESIGN CFM**	**CFM(1)**	**FINAL CFM**	**% to design**
2-1	105	E	16X16	500	624	548	109.6
2-2	104	F	20X20	900	830	825	91.7
2-3	102	F	20X20	900	685	816	90.7
2-4	102	F	20X20	900	851	819	91.0
2-5	102	F	20X20	900	871	863	95.9
2-6	102	E	16X16	700	727	668	95.4
2-7	110	C	9X9	200	175	187	93.5
2-8	102	F	20X20	900	705	821	91.2
2-9	102	F	20X20	900	153	829	92.1
2-10	108	A	6X6	75	302	80	106.7
2-11	103	D	12X12	350	362	368	105.1
2-12	113	E	16X16	700	802	768	109.7
2-13	109	A	6X6	75	320	80	106.7
Total				8000	7407	7672	95.9%

Diffuser Ret/Exh (GRD)

AC-2/102

Asset								
Asset Name	**Type**	**Size**	**DESIGN CFM**	**AK**	**CFM(1)**	**CFM(2)**	**FINAL CFM**	**% to design**
R2-1	C	9X9	200	1	211	211	211	105.5
R2-2	E	16X16	500	1	463	463	463	92.6
R2-3	E	16X16	700	1	634	634	634	90.6
R2-4	J	30X30	1577	1	1523	1523	1523	96.6
R2-5	J	30X30	1576	1	1465	1465	1465	93.0
R2-6	J	30X30	1577	1	1521	1521	1521	96.4
Total			6130		5817	5817	5817	94.89%

National TAB

Project: DGS Ishi Conservation Camp (Paynes Creek, CA)

System/Unit: FAN - Exhaust

Asset: EF-1 AREA:HOOD 71A

Unit Data		
	Design	**Actual**
MFG	NA	GREENHECK
Model Num	NA	CUBE-240HP-50-1-34-6
Serial Num	-	21028180
Type	CRE UPBLAST	CRE UPBLAST

Motor Data		
	Design	**Actual**
Motor MFG	-	BALDOR RELIANCE
Frame	-	184T
Horsepower	5	5
Motor Rpm	1725	1750
Phase	3	3
Voltage (rated)	208	208
Amperage (rated)	-	14.2
Service Factor	-	1.15

Drive Data		
	Design	**Actual**
Motor Sheave Size	-	2VP50
Motor Bore Size	-	1-1/8"
Motor Sheave SetPt	-	1 TURN OPEN
Fan Sheave Size	-	SDS
Fan Sheave Bore	-	1"
Belt CL Distance	-	7.5"
Num of Belts	-	2
Belt Size	-	A30

Test Data		
	Design	**Actual**
CFM	5612	5439
Fan RPM	1221	1258
RL Voltage	-	230/231/230
RL Amperage	16.7	10.2/10.0/10.1
Suction ESP	-	-1.53"
Discharge ESP	-	ATM
Total ESP	2.0	1.53"
Brake Horse Power	-	3.57

Completed By: Zack Eismin on 04/23/2024

National TAB

Project:DGS Ishi Conservation Camp (Paynes Creek, CA)

FAN - Exhaust

Diffuser Ret/Exh (GRD)

EF-1/HOOD 71A

Asset								
Asset Name	**Type**	**Size**	**DESIGN CFM**	**AK**	**CFM(1)**	**CFM(2)**	**FINAL CFM**	**% to design**
E1-1	DUCT	15X12	2154	1	2202	2202	2202	102.2
E1-2	DUCT	24X12	3458	1	3237	3237	3237	93.6
Total			5612		5439	5439	5439	96.92%

National TAB

Project: DGS Ishi Conservation Camp (Paynes Creek, CA)

System/Unit: FAN - Exhaust

Asset: EF-2 AREA:HOOD 52B

Unit Data		
	Design	**Actual**
MFG	NA	GREENHECK
Model Num	NA	CUBE-220HP-30-1-34-G
Serial Num	-	21028238
Type	CRE UPBLAST	CRE UPBLAST

Motor Data		
	Design	**Actual**
Motor MFG	-	BALDOR RELIANCE
Frame	-	182T
Horsepower	3	3
Motor Rpm	1725	1765
Phase	3	3
Voltage (rated)	208	230
Amperage (rated)	-	8.4
Service Factor	-	1.15

Drive Data		
	Design	**Actual**
Motor Sheave Size	-	1VP56
Motor Bore Size	-	1-1/8"
Motor Sheave SetPt	-	1 TURN OPEN
Fan Sheave Size	-	8"
Fan Sheave Bore	-	1"
Belt CL Distance	-	7.5"
Num of Belts	-	1
Belt Size	-	A33

Test Data		
	Design	**Actual**
CFM	4423	4193
Fan RPM	1154	1186
RL Voltage	-	230/230/231
RL Amperage	10.6	7.9/8.0/7.9
Suction ESP	-	-1.44"
Discharge ESP	-	ATM
Total ESP	2.0	1.44"
Brake Horse Power	-	2.8

Completed By: Zack Eismin on 04/23/2024

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Project:DGS Ishi Conservation Camp (Paynes Creek, CA)

FAN - Exhaust

Diffuser Ret/Exh (GRD)

EF-2/HOOD 52B

Asset								
Asset Name	**Type**	**Size**	**DESIGN CFM**	**AK**	**CFM(1)**	**CFM(2)**	**FINAL CFM**	**% to design**
E2-1	DUCT	12X8	1120	1	1023	1023	1023	91.3
E2-2	DUCT	23X12	3303	1	3170	3170	3170	96.0
Total			4423		4193	4193	4193	94.8%

National TAB

Project: DGS Ishi Conservation Camp (Paynes Creek, CA)

System/Unit: FAN - Exhaust

Asset: EF-3 AREA:ROOF - DISHWASHER

Unit Data		
	Design	**Actual**
MFG	NA	GREENHECK
Model Num	NA	CUE-100HP-5-VG-1-19-6
Serial Num	-	21028252
Type	CRE UPBLAST	CRE UPBLAST

Test Data		
	Design	**Actual**
CFM	600	652
RL Voltage	-	115
RL Amperage	-	5.48
Total ESP	1.0	1.1"

Motor Data		
	Design	**Actual**
Motor MFG	-	VARI-GREEN
Frame	-	NL
Horsepower	0.5	0.5
Motor Rpm	2500	2500
Phase	1	1
Voltage (rated)	115	115
Amperage (rated)	-	6.6
Service Factor	-	NL

Completed By: Zack Eismin on 04/23/2024

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Project: DGS Ishi Conservation Camp (Paynes Creek, CA)

System/Unit: FAN - Exhaust

Asset: EF-4 AREA:109

Unit Data		
	Design	**Actual**
MFG	NA	GREENHECK
Model Num	NA	CSP-A510-QD
Serial Num	-	21510107
Type	INLINE	INLINE

Test Data		
	Design	**Actual**
CFM	300	169
RL Voltage	-	115
RL Amperage	-	3.3
Total ESP	0.517	0.25"

Motor Data		
	Design	**Actual**
Motor MFG	-	NL
Frame	-	NL
Horsepower	179W	NL
Motor Rpm	1070	1070
Phase	1	1
Voltage (rated)	115	115
Amperage (rated)	-	3.3
Service Factor	-	NL

Completed By: Zack Eismin on 04/24/2024

Notes:
UNIT IS RUNNING AT FULL SPEED AND IS AT 169 CFM OUT OF 300 CFM DESIGN.

Written By: Zack Eismin on 04/24/2024

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Project:DGS Ishi Conservation Camp (Paynes Creek, CA)

FAN - Exhaust

Diffuser Ret/Exh (GRD)

EF-4/109

Asset								
Asset Name	**Type**	**Size**	**DESIGN CFM**	**AK**	**CFM(1)**	**CFM(2)**	**FINAL CFM**	**% to design**
E4-1	B	8X8	100	1	55	55	55	55.0
E4-2	B	8X8	100	1	55	55	55	55.0
E4-3	B	8X8	100	1	59	59	59	59.0
Total			300		169	169	169	56.33%

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Project: DGS Ishi Conservation Camp (Paynes Creek, CA)

System/Unit: FAN - Exhaust

Asset: EF-5 AREA:104

Unit Data		
	Design	**Actual**
MFG	NA	GREENHECK
Model Num	NA	CSP-A510-QD
Serial Num	-	21510101
Type	INLINE	INLINE

Test Data		
	Design	**Actual**
CFM	300	306
RL Voltage	-	115
RL Amperage	-	3.3
Total ESP	0.517	0.41"

Motor Data		
	Design	**Actual**
Motor MFG	-	NL
Frame	-	NL
Horsepower	179W	NL
Motor Rpm	1070	1070
Phase	1	1
Voltage (rated)	115	115
Amperage (rated)	-	3.3
Service Factor	-	NL

Completed By: Zack Eismin on 04/23/2024

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Project:DGS Ishi Conservation Camp (Paynes Creek, CA)

FAN - Exhaust

Diffuser Ret/Exh (GRD)

EF-5/104

Asset								
Asset Name	**Type**	**Size**	**DESIGN CFM**	**AK**	**CFM(1)**	**CFM(2)**	**FINAL CFM**	**% to design**
E5-1	D	12X12	300	1	306	306	306	102.0
Total			300		306	306	306	102%

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Project: DGS Ishi Conservation Camp (Paynes Creek, CA)

System/Unit: FAN - Exhaust

Asset: EF-6 AREA:106A

Unit Data		
	Design	**Actual**
MFG	NA	GREENHECK
Model Num	NA	CSP-A410-QD
Serial Num	-	21483637
Type	INLINE	INLINE

Test Data		
	Design	**Actual**
CFM	340	307
RL Voltage	-	115
RL Amperage	-	1.5
Total ESP	0.321	0.21"

Motor Data		
	Design	**Actual**
Motor MFG	-	NL
Frame	-	NL
Horsepower	122W	NL
Motor Rpm	1000	1000
Phase	1	1
Voltage (rated)	115	115
Amperage (rated)	-	1.7
Service Factor	-	NL

Completed By: Zack Eismin on 04/23/2024

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Project: DGS Ishi Conservation Camp (Paynes Creek, CA)

System/Unit: FAN - Supply

Asset: MUA-1 AREA:102 - HOOD 71A

Unit Data		
	Design	**Actual**
MFG	NA	GREENHECK
Model Num	NA	IGX-P127-H32-MF-S
Serial Num	-	21583750
Type	GAS FIRED	GAS FIRED
Configuration	HORIZONTAL	HORIZONTAL
Num Filters Size 1	-	2/6
Filter Size 1	-	20X20X2/16X20X2

Test Data		
	Design	**Actual**
CFM	7914	7923
SF RPM	1215	1195
RL Voltage	-	228/228/228
RL Amperage	-	22.51/22.41/22.5
Suction ESP	-	ATM
Discharge ESP	-	NA
Total ESP	1.5	NA
Brake Horse Power	-	7.5

Motor Data		
	Design	**Actual**
Motor MFG	-	BALDOR RELIANCE
Frame	-	254T
Horsepower	7.5	7.5
Motor Rpm	1180	1180
Phase	3	3
Voltage (rated)	208	230/460
Amperage (rated)	-	22.8/11.4
Service Factor	-	1.15

Completed By: Zack Eismin on 04/24/2024

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Project:DGS Ishi Conservation Camp (Paynes Creek, CA)

FAN - Supply

Diffuser Supply (GRD)

MUA-1/102 - HOOD 71A

Asset							
Asset Name	**Location**	**Type**	**Size**	**DESIGN CFM**	**CFM(1)**	**FINAL CFM**	**% to design**
M1-1	102 - HOOD 52A	DUCT	12X10	896	903	903	100.8
M1-2	102 - HOOD 52B	DUCT	28X12	2536	2549	2549	100.5
M1-3	102 - HOOD 71B	DUCT	20X12	1723	1740	1740	101.0
M1-4	102 - HOOD 71A	DUCT	32X12	2759	2731	2731	99.0
Total				7914	7923	7923	100.11%

National TAB

Project: DGS Ishi Conservation Camp (Paynes Creek, CA)

System/Unit: Kitchen Hood Type I

Asset: 52A1 AREA:102

Unit Data		
	Design	**Actual**
MFG	NA	HALTON
Model Num	NA	KVE
Job / Serial Num	-	118163-292
Type	TYPE I CANOPY	TYPE I CANOPY
Hood length	67	67"
Hood Width	63	63"
Supply Plenum Type	-	N/A
Supply Plenum Width	-	N/A
Supply Plenum Length	-	N/A

Test Data Exhaust		
	Design	**Actual**
Filter Type	KSA	KSA
Filter Size 1	20X13	20X13
Filter Qty 1	3	3
CFM	1120	1023

Cooking Equipment		
	Design	**Actual**
Item 1	-	WARMER
Item 2	-	FRYER

Test Data Supply		
	Design	**Actual**
CFM	896	903

Completed By: Zack Eismin on 04/24/2024

Notes:
TAB PORT EXHAUST SP DESIGN 0.40"
TAB PORT EXHAUST SP ACTUAL 0.37"
TAB PORT SUPPLY SP DESIGN 0.25"
TAB PORT SUPPLY SP ACTUAL 0.254"

Written By: Zack Eismin on 04/24/2024

National TAB

Project: DGS Ishi Conservation Camp (Paynes Creek, CA)

System/Unit: Kitchen Hood Type I

Asset: 52B1 AREA:102

Unit Data		
	Design	**Actual**
MFG	NA	HALTON
Model Num	NA	KVE
Job / Serial Num	-	118163-346
Type	TYPE I CANOPY	TYPE I CANOPY
Hood length	114	114
Hood Width	63	63
Supply Plenum Type	-	N/A
Supply Plenum Width	-	N/A
Supply Plenum Length	-	N/A

Test Data Exhaust		
	Design	**Actual**
Filter Type	KSA	KSA
Filter Size 1	20X16	20X16
Filter Size 2	11X16	11X16
Filter Qty 1	5	5
Filter Qty 2	1	1
CFM	3303	3170

Cooking Equipment		
	Design	**Actual**
Item 1	-	BOILER
Item 2	-	OVEN

Test Data Supply		
	Design	**Actual**
CFM	2536	2549

Completed By: Zack Eismin on 04/24/2024

Notes:
TAB PORT EXHAUST SP DESIGN 0.40"
TAB PORT EXHAUST SP ACTUAL 0.37"
TAB PORT SUPPLY SP DESIGN 0.25"
TAB PORT SUPPLY SP ACTUAL 0.252"

Written By: Zack Eismin on 04/24/2024

National TAB

Project: DGS Ishi Conservation Camp (Paynes Creek, CA)

System/Unit: Kitchen Hood Type I

Asset: 71A1 AREA:102

Unit Data		
	Design	**Actual**
MFG	NA	HALTON
Model Num	NA	KVE
Job / Serial Num	-	118163-406
Type	TYPE I CANOPY	TYPE I CANOPY
Hood length	124	124
Hood Width	59	59

Test Data Exhaust		
	Design	**Actual**
Filter Type	KSA	KSA
Filter Size 1	20X16	20X16
Filter Qty 1	6	6
CFM	3458	3237

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

Test Data Supply		
	Design	**Actual**
CFM	2759	2731

Completed By: Zack Eismin on 04/24/2024

Notes:
TAB PORT EXHAUST SP DESIGN 0.47"
TAB PORT EXHAUST SP ACTUAL 0.44"
TAB PORT SUPPLY SP DESIGN 0.25"
TAB PORT SUPPLY SP ACTUAL 0.256"

Written By: Zack Eismin on 04/24/2024

National TAB

Project: DGS Ishi Conservation Camp (Paynes Creek, CA)

System/Unit: Kitchen Hood Type I

Asset: 71B1 AREA:102

Unit Data		
	Design	**Actual**
MFG	NA	HALTON
Model Num	NA	KVE
Job / Serial Num	-	118163-492
Type	TYPE I CANOPY	TYPE I CANOPY
Hood length	82	82"
Hood Width	59	59"
Supply Plenum Type	-	N/A
Supply Plenum Width	-	N/A
Supply Plenum Length	-	N/A

Test Data Exhaust		
	Design	**Actual**
Filter Type	KSA	KSA
Filter Size 1	20X16	20X16
Filter Qty 1	4	4
CFM	2154	2202

Cooking Equipment		
	Design	**Actual**
Item 1	-	WARMER
Item 2	-	OVEN

Test Data Supply		
	Design	**Actual**
CFM	1723	1740

Completed By: Zack Eismin on 04/24/2024

Notes:
TAB PORT EXHAUST SP DESIGN 0.44"
TAB PORT EXHAUST SP ACTUAL 0.45"
TAB PORT SUPPLY SP DESIGN 0.25"
TAB PORT SUPPLY SP ACTUAL 0.255"

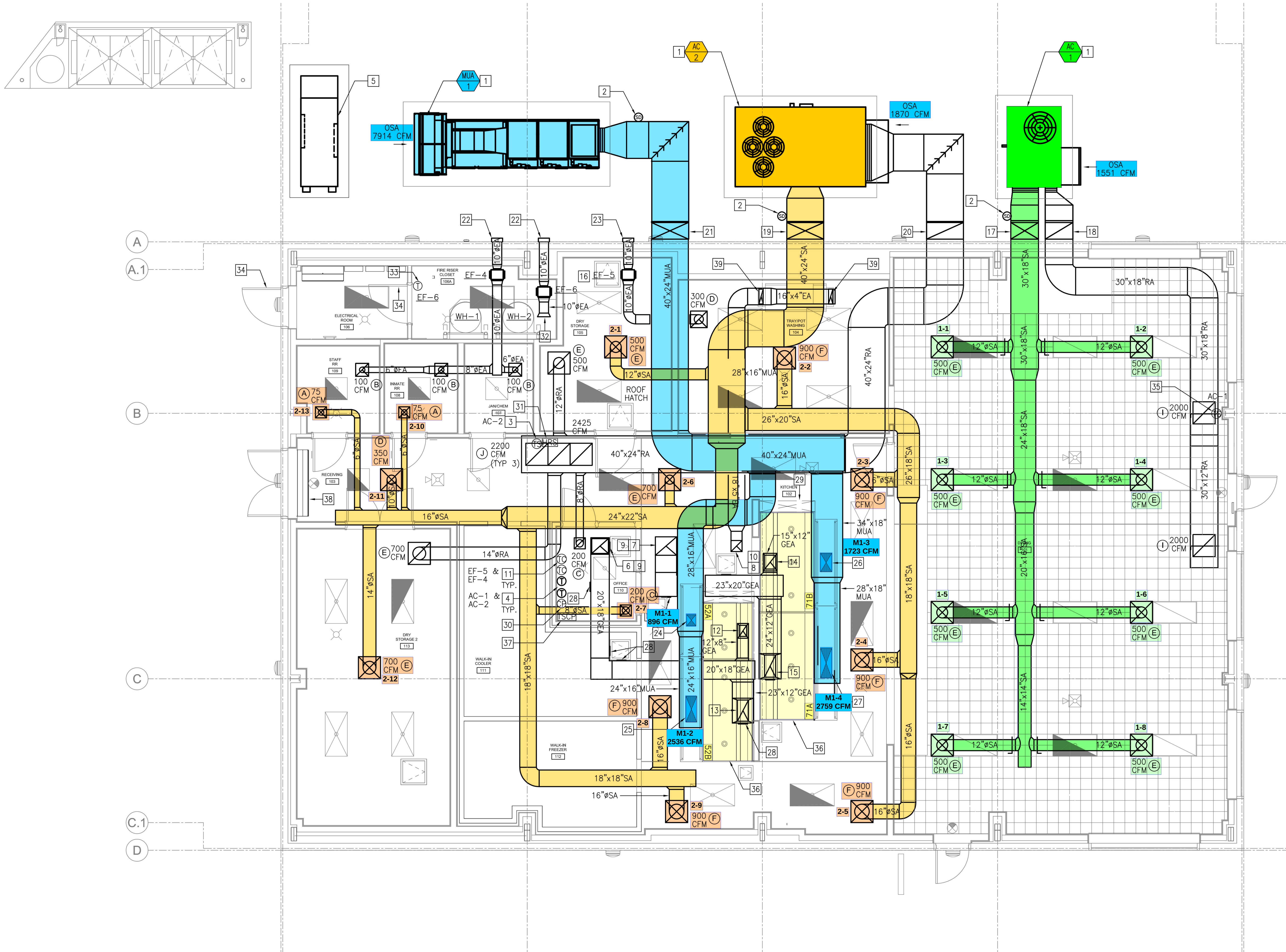
Written By: Zack Eismin on 04/24/2024

NEW WORK KEYNOTES (CONT.):

38. AIR CURTAIN FOR REFERENCE ONLY. SEE KITCHEN PLAN K2.1 FOR MORE INFORMATION.
39. 16"X4" STAINLESS STEEL DUCT DOWN TO DISH MACHINE VENT COLLAR. TRANSITION AS REQUIRED TO FIT DISH MACHINE VENT COLLAR.

NEW WORK KEYNOTES:

1. ANCHOR NEW HVAC UNIT TO CONCRETE PAD.
2. INSTALL NEW SMOKE DETECTOR IN UNIT'S SUPPLY AIR DUCTWORK. SMOKE DETECTOR SHALL SHUTDOWN UNIT UPON DETECTION OF SMOKE. PROVIDE WITH WEATHER COVER.
3. ZONE TEMPERATURE SENSOR MOUNTED 72" ABOVE FINISH FLOOR. PROVIDE VENTED ENCLOSURE WITH LOCKABLE COVERS
4. PROGRAMMABLE THERMOSTAT. MOUNT TOP OF THERMOSTAT 48" AFF. PROVIDE WITH LOCKABLE COVERS.
5. REFRIGERATION EQUIPMENT. FOR REFERENCE ONLY. SEE K5.1 AND K5.2 FOR MORE INFORMATION.
6. 20"X18" GREASE EXHAUST DUCT UP TO EF-2. SEE SHEET M3.1 FOR CONTINUATION. SEE GENERAL NOTE 1 THIS SHEET FOR SLOPE REQUIREMENT.
7. 23"X20" GREASE EXHAUST DUCT UP TO EF-1. SEE SHEET M3.1 FOR CONTINUATION. SEE GENERAL NOTE 1 THIS SHEET FOR SLOPE REQUIREMENT.
8. 12"X12" EXHAUST DUCT UP TO EF-3. SEE SHEET M3.1 FOR CONTINUATION.
9. GREASE EXHAUST AIR DUCT WRAPPED IN 2-HOUR RATED GREASE DUCT WRAP BY 3M MANUFACTURER OR EQUAL. CSFM LISTING NUMBER 2440-0941:112. INSTALL IN ACCORDANCE WITH MANUFACTURER'S INSTALLATION GUIDELINES.
10. EXHAUST DUCT FROM DISHWASHER HOOD COLLAR ALL WAY TO EF-3 EXHAUST OPENING SHALL BE MADE OF STAINLESS STEEL DUE TO MOISTURE. SLOPE EXHAUST DUCT AT 1% TOWARDS DISHWASHER EXHAUST HOOD COLLAR.
11. TIME CLOCK MOUNTED ON THE WALL. MOUNT TOP OF TIME CLOCK AT 48"A.F.F. PROVIDE WITH LOCKABLE COVERS.
12. 12"X8" GREASE EXHAUST AIR DUCT DOWN TO HOOD COLLAR OPENING OF HOOD 52A. PROVIDE REQUIRED TRANSITION TO FIT HOOD COLLAR OPENING.
13. 23"X12" GREASE EXHAUST AIR DUCT DOWN TO HOOD COLLAR OPENING OF HOOD 52B. PROVIDE REQUIRED TRANSITION TO FIT HOOD COLLAR OPENING.
14. 24"X12" GREASE EXHAUST AIR DUCT DOWN TO HOOD COLLAR OPENING OF HOOD 71A. PROVIDE REQUIRED TRANSITION TO FIT HOOD COLLAR OPENING.
15. 15"X12" GREASE EXHAUST AIR DUCT DOWN TO HOOD COLLAR OPENING OF HOOD 71B. PROVIDE REQUIRED TRANSITION TO FIT HOOD COLLAR OPENING.
16. PROVIDE 20"X20" SECURITY ACCESS DOOR WITH LOCKING DEVICE TO SERVICE THE EXHAUST FAN.
17. 30"X18" SUPPLY AIR DUCT FROM AC-1 UP AGAINST THE WALL TO ABOVE THE CEILING HEIGHT. SEE 2/A4.1 KEYNOTE 23.03 FOR REFERENCE. PROVIDE WITH EXTERNAL DUCT INSULATION.
18. 30"X18" RETURN AIR DUCT FROM AC-1 UP AGAINST THE WALL TO ABOVE THE CEILING HEIGHT. SEE 2/A4.1 KEYNOTE 23.03 FOR REFERENCE. PROVIDE WITH EXTERNAL DUCT INSULATION.
19. 40"X24" SUPPLY AIR DUCT FROM AC-2 UP AGAINST THE WALL TO ABOVE THE CEILING HEIGHT. SEE 2/A4.1 KEYNOTE 23.03 FOR REFERENCE. PROVIDE WITH EXTERNAL DUCT INSULATION.
20. 40"X24" RETURN AIR DUCT FROM AC-2 UP AGAINST THE WALL TO ABOVE THE CEILING HEIGHT. SEE 2/A4.1 KEYNOTE 23.03 FOR REFERENCE. PROVIDE WITH EXTERNAL DUCT INSULATION.
21. 40"X24" MAKE UP AIR DUCT FROM MUA-1 UP AGAINST THE WALL TO ABOVE THE CEILING HEIGHT. SEE 2/A4.1 KEYNOTE 23.03 FOR REFERENCE. PROVIDE WITH EXTERNAL DUCT INSULATION.
22. 12"X10" EXHAUST WALL LOUVER INSTALLED ABOVE THE CEILING FOR EF-4 AND EF-6. PROVIDE WITH BIRDSCREEN ON THE OUTSIDE OF THE LOUVER.
23. 12"X10" EXHAUST WALL LOUVER INSTALLED ABOVE THE CEILING FOR EF-5. PROVIDE WITH BIRDSCREEN ON THE OUTSIDE OF THE LOUVER.
24. 12"X10" MUA DUCT DOWN TO HOOD 52A MUA PLENUM OPENING. PROVIDE WITH MANUAL VOLUME DAMPER TO BE BALANCED TO 896 CFM.
25. 28"X12" MUA DUCT DOWN TO HOOD 52B MUA PLENUM OPENING. PROVIDE WITH MANUAL VOLUME DAMPER TO BE BALANCED TO 2536 CFM.
26. 20"X12" MUA DUCT DOWN TO HOOD 71B MUA PLENUM OPENING. PROVIDE WITH MANUAL VOLUME DAMPER TO BE BALANCED TO 1723 CFM.
27. 32"X12" MUA DUCT DOWN TO HOOD 71A MUA PLENUM OPENING. PROVIDE WITH MANUAL VOLUME DAMPER TO BE BALANCED TO 2759 CFM.
28. PROVIDE AND INSTALL 14"X14" CLEAN OUT ACCESS.
29. LOCATION OF VFD CABINET ENCLOSURE FOR REFERENCE ONLY. SEE KITCHEN PLAN K6.4 FOR MORE INFORMATION.
30. MARVEL CONTROL PANEL FOR REFERENCE ONLY. SEE KITCHEN K2.2 ITEM 17, K2.1 FOR EXACT LOCATION, AND K6.4 FOR MORE INFORMATION AND RECOMMENDED MOUNTING HEIGHT.
31. HOOD ROOM TEMPERATURE SENSOR PROVIDED BY HOOD MANUFACTURER AND INSTALLED WIRED BY CONTROLS/ELECTRICAL CONTRACTOR. SEE SPACE TEMPERATURE SENSOR DETAIL ON K6.4 FOR MORE INFORMATION AND RECOMMENDED MOUNTING HEIGHT. PROVIDE WITH LOCKABLE COVERS.
32. OPEN END EXHAUST AIR DUCT. PROVIDE WITH 12"X10" BELL MOUTH OPENING WITH BIRD SCREEN.
33. THERMOSTAT FOR EF-6. MOUNT TOP OF THERMOSTAT AT 48" ABOVE FINISH FLOOR. PROVIDE WITH LOCKABLE COVERS.
34. LOUVERED DOORS. SEE ARCHITECTURAL PLAN FOR SIZE AND LOCATION. PROVIDE BIRDSCREEN ON THE EXTERIOR AND INTERIOR SIDE OF THE LOUVERS.
35. ZONE TEMPERATURE SENSOR MOUNTED 80" ABOVE FINISH FLOOR. PROVIDE VENTED ENCLOSURE WITH LOCKABLE COVERS
36. SEE 2/M2.2 FOR HOOD VENTILATION SYSTEM SEQUENCE OF OPERATION. REFER TO KITCHEN PLAN K6.4 FOR MARVEL CONTROL PANEL DIAGRAM AND INFORMATION
37. MAKE UP AIR UNIT (MUA-1) REMOTE CONTROL PANEL. REFER TO MANUFACTURER'S INSTALLATION GUIDELINES FOR WIRING DIAGRAM. MOUNT BOTTOM OF CONTROL PANEL AT 48" A.F.F. PROVIDE WITH LOCKABLE COVERS.



GENERAL NOTES:

1. GREASE DUCTS SHALL BE INSTALLED WITH NOT LESS THAN 2% SLOPE ON HORIZONTAL RUNS UP TO 75 FEET AND NOT LESS THAN 1% SLOPE ON HORIZONTAL RUNS MORE THAN 75 FEET. PER 2019 CMC SECTION 510.3.
2. LISTED GREASE DUCT SHALL BE INSTALLED IN ACCORDANCE WITH THE TERMS OF THE LISTING AND MANUFACTURER'S INSTALLATION INSTRUCTION.
3. FOR EXHAUST HOOD EQUIPMENT SCHEDULE, DETAILS, HOOD CONTROL PANEL, HOOD EQUIPMENT VFD, MECHANICAL GAS VALVE, AND WIRING DIAGRAM INFORMATION SEE KITCHEN PLAN SHEETS K6.2 THRU K6.4

1 MECHANICAL FLOOR PLAN
SCALE: 0 1 2 4 FEET 8
1/4" = 1'-0"

IDENTIFICATION STAMP
DIV. OF THE STATE ARCHITECT
APP: 02-118457 INC:
REVIEWED FOR
SS ☐ FLS ☐ ACS ☑
DATE: 02/11/2021

OFFICE OF THE STATE FIRE MARSHAL
APPROVED FIRE AND PANIC ONLY
Approval of this plan does not authorize or approve any omission or deviation from applicable regulations. Final approval is subject to field inspection. One set of approved plans shall be available on the project site at all times.

State of California
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IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE

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ENGINEERS • ARCHITECTS • PLANNERS
JCCA #18011

REGISTERED PROFESSIONAL ENGINEER TIMOTHY P. KELLY M. 25452 MECHANICAL STATE OF CALIFORNIA
01/08/21

Issue

No.	Date	Description
1	02/08/2019	DESIGN DEVELOPMENT
2	11/19/2019	90% WORKING DRAWINGS
3	04/10/2020	95% WORKING DRAWINGS
4	06/01/2020	100% WORKING DRAWINGS AHJ REVIEW
5	08/25/2020	AHJ RESUBMITTAL
6	01/05/2021	SFM RESUBMITTAL

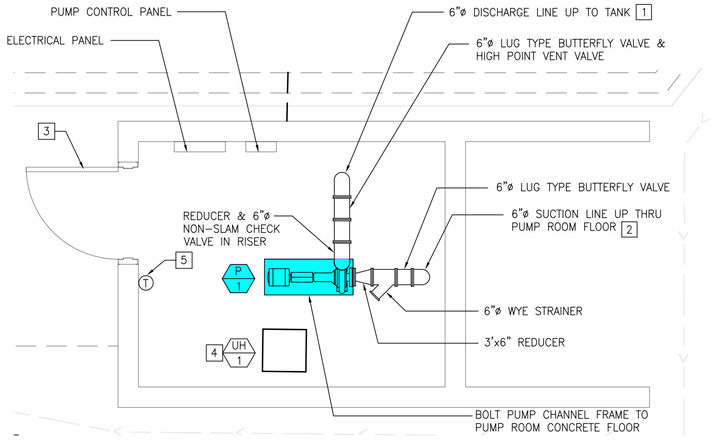
Project
ISHI CONSERVATION CAMP, REPLACE KITCHEN
000000000004673

Supervisor	Designed	Drawn	Checked

File Date: 01/08/2021
Vault File Number: -

Sheet Title
MECHANICAL FLOOR PLAN

DSA Building Number: ---
Work Order: -
Reference North
Sheet Scale: As Noted
Sheet Number: M2.1



1 ENLARGED MECHANICAL PUMP HOUSE FLOOR PLAN

SCALE: 0 1 2 3 FEET 4
1/2" = 1'-0"

N

NEW WORK KEYNOTES:

1. FOR CONTINUATION AND CONNECTION TO 6"ø FIRE WATER FOR THE DISCHARGE PUMP, SEE CIVIL SHEET C4.1A, C4.4, AND C8.1.
2. FOR CONTINUATION AND CONNECTION TO 6"ø FIRE WATER FOR THE SUCTION PUMP, SEE CIVIL SHEET C4.1A AND C4.4.
3. HI/LO LOUVERED DOOR. SEE ARCHITECTURAL FOR SIZE. PROVIDE BIRDSCREEN ON THE EXTERIOR AND INTERIOS SIDE OF THE LOUVERS.
4. PROVIDE AND INSTALL ELECTRIC UNIT HEATER (UH-1). REFER TO ARCHITECTURAL DETAIL 8/A8.3 FOR MOUNTING REQUIREMENT PRIOR TO INSTALLATION.
5. THERMOSTAT MOUNTED ON THE WALL. INSTALL TOP OF THERMOSTAT 48" ABOVE FINISH FLOOR. PROVIDE WITH LOCKING COVERS.

GENERAL NOTES:

1. CONTRACTOR SHALL PREPARE AND SUBMIT SEQUENCE OF OPERATION SUBMITTAL COMPLETE WITH PUMP CONTROL PANEL, WIRING DIAGRAM AND COMPONENTS FOR A COMPLETE OPERATIONAL SYSTEM OF THE PUMP SYSTEM FOR APPROVAL.
2. REFER TO CIVIL PLAN C8.1 FOR TANK DETAIL INFORMATION FOR REFERENCE.
3. REFER TO CIVIL PLAN 7/C8.2 FOR SEQUENCE OF OPERATION OF PUMP.
4. CONTROL CONTRACTOR TO PUT A SUBMITTAL TOGETHER FOR REVIEW OF WIRING DIAGRAM FOR THE OPERATION OF PUMP (P-1). PROVIDE THE REQUIRED COMPONENTS AND CONNECTION FOR PUMP TO OPERATE BASED ON WATER SENSOR LEVEL ON 7/C8.2.

SEQUENCE OF OPERATION FOR EF-3 :

1. DISH MACHINE CONTROL BOX: INTERLOCK WITH EF-3.
2. THE EXHAUST FAN (EF-3) WILL RUN WHEN ENABLED VIA INTERLOCK WHEN THE DISH MACHINE IS OPERATING.
3. INTERLOCK EXHAUST FAN THROUGH THE DISH MACHINE CONTROL BOX. THE CONTROL BOX HAS A DEDICATED EXTERNAL VENTILATION CONTACTOR FOR INTERLOCK CONNECTION. SEE DISH MACHINE WIRING DIAGRAM PROVIDED WITH THE EQUIPMENT FOR INTERLOCK REQUIREMENTS.

M.A.R.V.E.L. Sequence of Operations

Overview

A sequence of operations is a series of steps required to perform a given task. The DCV system uses the following sequence of operations to control the exhaust hood operation.

Sequence of Operations

Startup & Shutdown

Operation Step	Details

Startup	• Turns exhaust system on.
	• Can be started by:
	  • 24/7 pre-programmed schedule.
	  • The building management system or via an internet connection remotely.
	  • Using a locally mounted on/off switch.
	  • Reaching a pre-determined IR Index or duct temperature level.
	  • Pressing the override button.
	• After startup, enters Idle mode.
	• **Minimum Run Time**. A hood that becomes active will always run the exhaust fan for a minimum of 15 minutes before shutting the exhaust fan down. This is done prevent the possibility of an exhaust fan being forced to start and stop frequently.

Shutdown	• Turns system off. • Can be shutdown by any of the parameters listed in the Startup step (above) except the override button.
Idle Mode	• System starts up in Idle mode (after startup). • Pending **until** signs of cooking activity sensed from IRIS™ sensor(s). • Minimal exhaust flow captures any appliance-generated heat. Default is 40% of design air flow or as adjusted to meet requirements. • After idle mode, enters Cooking.
Vent Mode	• Vent Mode is enabled when a hood or hoods are in Cook Mode and the design exhaust airflow of that hood(s) does not reach the minimum turn down of the system's exhaust fan. • In Vent Mode previously designated Relief Hoods' dampers will open to allow the exhaust fan to operate at its minimum turn down rate to avoid damage to the fan motor. • The relief hood(s) exhaust airflow will make up the difference between the active hood exhaust cfm and the cfm required to meet the exhaust fan's minimum turn down set point.
Cooking Mode	• System moves into cooking mode when an IRIS™ sensor detects cooking activities under the hood. • Exhaust fan speed increased to design air flow and balancing dampers (if present) adjusts the airflow in the hood to design level to assure sufficient capture and containment. • Air flow in the hood is maintained for a predetermined cooking time before returning to the Idle mode. **NOTE:** If during this time more cooking activities are detected, the cooking timer will be restarted.

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Operation Step	Details
Override Mode	• Used to override pre programmed operation. • Two modes: 1. Press and hold for 1 second to accelerate the exhaust rate to 100% of the design air flow for a pre programmed period of time (default 5 minutes). 2. Press and hold for 3 seconds to accelerate the exhaust rate to 100% of the design air flow for a pre programmed period of time (default 1 hour.) Starts the hood if it has been overridden by a schedule or an 'off' state.
Fire Mode	• If a fire signal is detected in the kitchen, the system triggers a fire alarm and stops the make-up air fan. • The exhaust fan will either stop or continue running depending on the local fire code requirements.
Off Mode	• Exhaust and make-up air fans stop when no appliances are operating (e.g., turned off and cooled down).
Airflow Reporting and Replacement Air Control	• System continuously monitors exhaust airflow at each hood and generates a signal 0 to 10 V proportional to total exhaust airflow as fraction of total design. 0 V - system is off; 7 V - system operates at 70% of design airflow, etc. This signal is used to control Replacement air to maintain building pressurization.

Alarm and Fault Conditions	• System constantly monitors various parameters.
	If any unusual or abnormal condition is detected, an alarm is activated.
	• An alarm indicator can include:
	  • Indication on HMI (Touch Screen).
	  • Email or text message sent to a computer or a mobile device, pager, visual display on a computer screen or through a SCADA interface.

GENERAL NOTES:

1. REFER TO KEYNOTE 36 ON M2.1 FOR REFERENCE.

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3 DISH MACHINE VENTILATION SYSTEM SEQUENCE OF OPERATIONS

SCALE: NO SCALE

2 HOOD VENTILATION SYSTEM SEQUENCE OF OPERATIONS

SCALE: NO SCALE

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20-0404
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State of California
Department of General Services
Real Estate Services Division
DGS
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Project Management Development Branch
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Jonathan Pike
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0 1/2 1
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JCCA #18011

REGISTERED PROFESSIONAL ENGINEER
TIMOTHY P. KELLY
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Project
ISHI CONSERVATION CAMP, REPLACE KITCHEN
000000000004673

Supervisor	Designed	Drawn	Checked

File Date	Vault File Number
01/08/2021	-

Sheet Title
ENLARGED MECHANICAL PUMPHOUSE PLAN

DSA Building Number	Work Order
---	-

Reference North	Sheet Scale
	As Noted
	Sheet Number
	M2.2