



CITY OF WORCESTER, MASSACHUSETTS

Administration & Finance

Purchasing Division

455 Main Street – Worcester, MA 01608

(508) 799-1220

www.worcesterma.gov



December 6, 2021

To All Bidders:

Subject: **Bid No. 7686-1-W2, HVAC Modifications – RECC / E.C.**

ADDENDUM NO. 3

To Whom It May Concern:

With reference to our bid request relative to the above subject, please refer to the attached changes/modifications/clarifications to the original bid request.

- **PLEASE SEE ATTACHED GENERAL BID CLARIFICATIONS**

Bidders are requested to acknowledge and/or include this addendum with bid. All other terms, conditions and specifications remain unchanged.

Very truly yours,

Christopher J. Gagliastro
Purchasing Director

Addendum #3

DATE: December 3, 2021
SUBJECT: Worcester RECC Modifications
Addendum #3, Addition Scope and Clarifications
W&S PROJECT #: 2190520

To be considered as part of the contract drawings and specifications and all other contract documents for the project referenced above; superseding previously issued Drawings, Specifications, Bidding Requirements, Contract Documents and Addenda, to the extent modified by this Addendum. Bidders are advised that this Addendum must be acknowledged in the appropriate space provided on the Form for General Bid.

The following items are listed in this Addendum:

- I. Spec TOC (Attached)
- II. Condensate Piping for CRAC Units
- III. Raised Floor Loading Values
- IV. Room Labels
- V. Existing Conditions Balancing Report
- VI. CRAC Cold Water Supply
- VII. Rebalancing
- VIII. VAV Box Relabeling (Attached)
- IX. VAV Control Diagram Clarifications
- X. Provide Additional Electric Reheat Coils. (SKE-1 Attached)
- XI. Column Notation Clarification

-
- I. Spec TOC
 1. A Specification Table of Contents is attached.

- II. Condensate Piping for CRAC units
 1. Existing condensate piping connecting to CRAC units shall be demolished. Main pipe being fed from all 3 units shall remain.
 2. Patch and seal existing connections that are to be demolished. Route new condensate piping from loft down into communication room and connect to existing main condensate pipe.

III. Raised Floor Loading Values

1. Design load for the raised floor in the Communications Center is 800 lbs/SF. Scissor lifts are not permitted.

IV. Room Labels

1. Relabel the loft electric room as the Utility Room. New Label to match existing. Update the as-builts accordingly.

V. Existing Conditions Balancing Report

1. The existing conditions balancing report is being provided for reference. See attached.

VI. CRAC Units Cold Water supply

1. Disconnect and modify existing cold water connections to CRAC units. Extend existing cold water connections to CRAC units in loft. Provide drip pans underneath all cold water supply piping in the Communications Center and the Utility Room.

VII. Rebalancing

1. The scope of work shall include complete building-wide, air-side, Testing and Balancing.

VIII. VAV Box Relabeling

1. Currently, the existing VAV boxes are labeled and scheduled by size. (There are multiple VAV-1s, VAV-2s etc.) Relabel the existing VAV boxes sequentially. New labels to match existing. Update as-builts as required. Revised labelling attached.

IX. VAV Control Diagram

1. The VAV control diagram has abbreviations that were not clearly defined. Below is a list of the abbreviations and their definitions:

RHC: Reheat coil

FCV: Flow Control Valve

FT: Flow Transmitter

TT: Temperature Transmitter

EMS: Energy Management System

X. Provide Additional Electric Reheat Coils (HAVC and Electrical)

1. Provide 5kW electric reheat coil ERHC-5 to VAV- 5 serving the Employee Lockers and 5 kW electric reheat coil ERHC-6 to VAV-2 serving Storage Room 10. SKE-1 is attached.

XI. Column Notation Clarification

1. The column notation from the loft to the main floor is inconsistent. The loft column C7 corresponds to the 1st floor G1.

END OF ADDENDUM #3

TABLE OF CONTENTS

<u>Division</u>	Section Number
1 GENERAL REQUIREMENTS	
Scope and Sequence of Work	010140
Construction Waste Management and Disposal	017419
Operation and Maintenance Data	017823
Demonstration and Training	017900
Alteration Project Procedures	013516
Execution	017300
Cutting, Coring and Patching	017329
Project Record Documents	017839
2 SITE WORK	
Selective Structure Demolition	024119
5 METALS	
Metal Fabrications	055000
7 THERMAL AND MOISTURE PROTECTION	
Penetration Firestopping	078413
9 FINISHES	
Painting	099000
23 MECHANICAL	
Basic HVAC Requirements	230050
Sleeves and Sleeve Seals for HVAC Piping	230517
Hangers and Supports for HVAC Piping and Equipment	230529
Vibration and Seismic Controls for HVAC	230548
Identification for HVAC Piping and Equipment	230553
Testing, Adjusting, and Balancing for HVAC	230593
Duct Insulation	230713
HVAC Piping Insulation	230719

<u>Division</u>	<u>Section Number</u>
Refrigerant Piping	232300
Ductwork and Accessories	233110
Air Terminal Units	233600
Air Diffusers, Registers and Grilles	233713
Air-To-Air Energy Recovery Equipment	237200

26 Electrical

Electrical Work – General Provisions	260050
Low-Voltage Electrical Power Conductors and Cables	260519
Grounding and Bonding for Electrical Systems	260526
Hangers and Supports for Electrical Systems	260529
Raceways and Boxes for Electrical Systems	260533
Identification for Electrical Systems	260553
Panelboards	262416
Wiring Devices	262726
Enclosed Switches and Circuit Breakers	262816

END OF SECTION



TEKON-TECHNICAL CONSULTANTS, INC.

222 INTERNATIONAL DRIVE, SUITE 165

PORTSMOUTH, NH 03801

VOICE: (603) 335-3080 FAX: (603) 427-9168

CERTIFIED TEST, ADJUST, AND BALANCE REPORT

DATE September 7, 2016

PROJECT Regional Emergency Communications Center

Address Worcester, Massachusetts

ARCHITECT Department of Public Works And Parks

Address Worcester, Massachusetts

ENGINEER BLW Engineers, Inc.

Address Littleton, Massachusetts

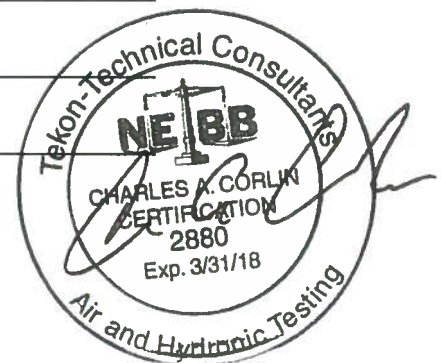
HVAC William F. Lynch Co., Inc.

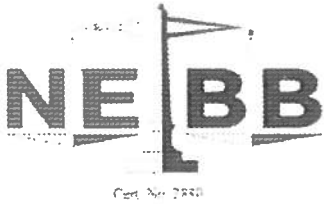
Address Worcester, Massachusetts

NEBB TAB FIRM Tekon-Technical Consultants, Inc.

Address 188 Farmington Road

Rochester, New Hampshire





CERTIFICATION

PROJECT Regional Emergency Communications Center

ADDRESS Worcester, Massachusetts

THE DATA PRESENTED IN THIS REPORT IS A RECORD OF SYSTEM MEASUREMENTS AND FINAL ADJUSTMENTS THAT HAVE BEEN OBTAINED IN ACCORDANCE WITH THE CURRENT EDITION OF THE NEBB PROCEDURAL STANDARDS FOR TESTING, ADJUSTING, AND BALANCING OF ENVIRONMENTAL SYSTEMS. ANY VARIANCES FROM DESIGN QUANTITIES, WHICH EXCEED NEBB TOLERANCES, ARE NOTED IN THE TEST-ADJUST-BALANCE REPORT PROJECT SUMMARY.

THE AIR DISTRIBUTION SYSTEMS HAVE BEEN TESTED & BALANCED AND FINAL ADJUSTMENTS HAVE BEEN MADE IN ACCORDANCE WITH NEBB "PROCEDURAL STANDARDS FOR TESTING, ADJUSTING, BALANCING OF ENVIRONMENTAL SYSTEMS" AND THE PROJECT SPECIFICATIONS.

NEBB TAB FIRM: TEKON-TECHNICAL CONSULTANTS, INC.

REG. NO. 2880

CERTIFIED BY: CHARLES A. CORLIN

(Air TAB Supervisor)

DATE: 09/07/16

THE HYDRONIC DISTRIBUTION SYSTEMS HAVE BEEN TESTED & BALANCED AND FINAL ADJUSTMENTS HAVE BEEN MADE IN ACCORDANCE WITH NEBB "PROCEDURAL STANDARDS FOR TESTING, ADJUSTING, BALANCING OF ENVIRONMENTAL SYSTEMS" AND THE PROJECT SPECIFICATIONS.

NEBB TAB FIRM: N.A.

REG. NO. 2880

CERTIFIED BY:

(Hydronic TAB Supervisor)

DATE: 09/07/16

SUBMITTED AND CERTIFIED BY:

NEBB TAB FIRM: TEKON-TECHNICAL CONSULTANTS, INC

TAB SUPERVISOR: CHARLES A. CORLIN

REG. NO. 2880

SIGNATURE:

CERTIFICATION EXPIRATION DATE: March 31, 2018



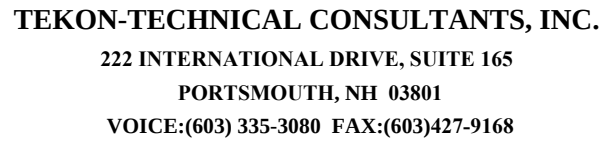


TABLE OF CONTENTS

National Environmental Balancing Bureau



TEKON-TECHNICAL CONSULTANTS, INC.

222 INTERNATIONAL DRIVE, SUITE 165

PORTSMOUTH, NH 03801

VOICE:(603) 335-3080 FAX:(603)427-9168

REPORT SUMMARY / REMARKS

PROJECT NAME:	Regional Emergency Communications Center	SHEET:	A
PROJECT LOCATION:	Worcester, Massachusetts	DATE:	09/07/16

- SF-2 (EOC Closet):

This is a Fantech fan serving the EOC Closet. The system has been balanced to design parameters with the exception of the following.

- Total airflow for the fan is 152% of design. There is no speed switch or dampers installed for this system. See sheet 15.

- SF-2 (Comm. Ctr.):

This is a Fantech fan serving the Comm. Center and Tele/Elec space. The system has been balanced to design parameters with the exception of the following.

- Total airflow for the fan is 135% of design. There is no speed switch or dampers installed for this system. See sheet 15.
- The fan is installed backwards. In the current configuration, the fan is exhausting air from under the floor and blowing it into the Comm. Ctr.



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222 INTERNATIONAL DRIVE, SUITE 165

PORTSMOUTH, NH 03801

VOICE:(603) 335-3080 FAX:(603)427-9168

FAN TEST SHEET

PROJECT NAME:		Regional Emergency Communications Center						SHEET:		1
PROJECT LOCATION:		Worcester, Massachusetts						DATE:		09/07/16
NAME PLATE DATA										
FAN NUMBER	RTU-1									
MANUFACTURER	Trane									
MODEL & SIZE	YDC420									
LOCATION	Roof									
SERVICE	Building									
OPERATING CONDITIONS										
DATA DESCRIPTION	DESIGN	ACTUAL	DESIGN	ACTUAL	DESIGN	ACTUAL	DESIGN	ACTUAL	DESIGN	ACTUAL
TOTAL CFM	12000	11345								
RGD CFM	13210	-								
RETURN CFM	9000	7409								
EXHAUST CFM	-	-								
OUTSIDE AIR CFM	3000	3936								
FAN RPM	805	862								
DIRECTION	CCW	CCW								
SUCTION S.P. (InWC)		0.92								
DISCHARGE S.P. (InWC)		1.72								
TOTAL S.P. (InWC)	3.00	2.64								
MOTOR RPM	1765	1616								
MOTOR HP	15.00	15.00								
MOTOR BHP	11.21	8.79								
		10.30								
AMPERAGE	17.70	10.40								
		10.40								
VOLTAGE	480	486								
OUTSIDE AIR TEMP.	-	76.4°	-		-		-		-	
RETURN AIR TEMP.	-	71.5°	-		-		-		-	
MIXED AIR TEMP.	-	73.2°	-		-		-		-	
DISCHARGE AIR TEMP.	-	57.6°	-		-		-		-	
VFD SETTING	55.7 Hz									
MOTOR SHEAVE	7-3/8"ODx1-5/8"									
SHEAVE POSITION	Fixed									
FAN SHEAVE	BK160x1-7/16"									
BELT SIZE / # / C-C	BX103 / 1 / 35"		/ /		/ /		/ /		/ /	



TEKON-TECHNICAL CONSULTANTS, INC.

222 INTERNATIONAL DRIVE, SUITE 165

PORTSMOUTH, NH 03801

VOICE:(603) 335-3080 FAX:(603)427-9168

DIFFUSER & GRILLE TEST SHEET

PROJECT NAME: Regional Emergency Communications Ctr. - Worcester, MA							SHEET: 3		
SYSTEM NUMBER: RTU-1							DATE: 09/07/16		
MANUFACTURER: Krueger									
LOCATION	CODE #	TYPE	SIZE	FLOW FACTOR	DESIGN CFM	DESIGN VELOCITY	ACTUAL VELOCITY	ACTUAL CFM	REMARK CODE
RTU-1 Supply									
Size 10	VAV-3-2	S.P.=0.52"	Max CFM=855	Min CFM=425	Address=103			Mult=1.01	
14A-E0C	1	A2	24x24-8"	1.00	280	280	FH	284	A
14A-E0C	2	A2	24x24-8"	1.00	280	280	FH	294	B
14A-E0C	3	A2	24x24-8"	1.00	295	295	FH	300	B
			VAV-3-2 Total		855			878	
Size 14	VAV-4-1	S.P.=0.62"	Max CFM=1645	Min CFM=540	Address=107			Mult=1.08	
14A-E0C	4	A2	24x24-8"	1.00	295	295	FH	304	A[1]
14A-E0C	5	A2	24x24-8"	1.00	235	235	FH	239	B
14A-E0C	6	A2	24x24-8"	1.00	230	230	FH	244	B
14A-E0C	7	A2	24x24-8"	1.00	295	295	FH	276	A
14A-E0C	8	A2	24x24-8"	1.00	295	295	FH	315	B
14A-E0C	9	A2	24x24-8"	1.00	295	295	FH	293	A
			VAV-4-1 Total		1645			1671	
Size 10	VAV-3-1	S.P.=0.94"	Max CFM=705	Min CFM=330	Address=112			Mult=1.05	
11 Office	10	A1	24x24-6"	1.00	235	235	FH	232	A
12 Office	11	A1	24x24-6"	1.00	235	235	FH	238	B
13 Office	12	A1	24x24-6"	1.00	235	235	FH	239	B
			VAV-3-1 Total		705			709	
			RTU-1 Supply Subtotal		3205				

[1] Code #4 is connected to VAV-4-1, shown on VAV-3-2 on plan H2.1.



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DIFFUSER & GRILLE TEST SHEET

PROJECT NAME: Regional Emergency Communications Ctr. - Worcester, MA							SHEET: 4			
SYSTEM NUMBER: RTU-1							DATE: 09/07/16			
MANUFACTURER: Krueger										
LOCATION	CODE #	TYPE	SIZE	FLOW FACTOR	DESIGN CFM	DESIGN VELOCITY	ACTUAL VELOCITY	ACTUAL CFM	REMARK CODE	
RTU-1 Supply Subtotal					3205					
Size 8	VAV-2-1		S.P.=0.76" Max CFM=580 Min CFM=300 Address=109 Mult=1.07							
10 Storage	13	B1	12x8"	0.40	290	725	730	292	G	
10 Storage	14	B1	12x8"	0.40	290	725	725	290	H	
VAV-2-1 Total					580			582		
Size 8	VAV-2-2		S.P.=0.64" Max CFM=420 Min CFM=200 Address=110 Mult=0.95							
09 Director	15	A3	24x24-10"	1.00	420	420	FH	421	A	
VAV-2-2 Total					420			421		
Size 6	VAV-1-1		S.P.=0.73" Max CFM=305 Min CFM=120 Address=102 Mult=1.00							
15 Conf.	16	A2	24x24-8"	1.00	305	305	FH	310	A	
VAV-1-1 Total					305			310		
Size 10	VAV-3-3		S.P.=0.94 Max CFM=695 Min CFM=330 Address=104 Mult=1.04							
16B Office	17	A1	24x24-6"	1.00	240	240	FH	239	B	
16D Office	18	A1	24x24-6"	1.00	240	240	FH	240	A	
16C Office	19	A1	24x24-6"	1.00	215	215	FH	219	B	
VAV-3-3 Total					695			698		
RTU-1 Supply Subtotal					5205					



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VOICE:(603) 335-3080 FAX:(603)427-9168

DIFFUSER & GRILLE TEST SHEET

PROJECT NAME: Regional Emergency Communications Ctr. - Worcester, MA							SHEET: 5			
SYSTEM NUMBER: RTU-1							DATE: 09/07/16			
MANUFACTURER: Krueger										
LOCATION	CODE #	TYPE	SIZE	FLOW FACTOR	DESIGN CFM	DESIGN VELOCITY	ACTUAL VELOCITY	ACTUAL CFM	REMARK CODE	
RTU-1 Supply Subtotal					5205					
Size 10	VAV-3-4	S.P.=0.85"		CFM=1150	Address=114			Mult=0.90		
CRAC-3	20	DUCT	10"	0.55	345	627	685	377	B[1]	
CRAC-2	21	DUCT	10"	0.55	345	627	676	372	B[1]	
CRAC-1	22	DUCT	10"	0.55	345	627	612	337	A[1]	
VAV-3-4 Total					1035			1086		
Corridor	23	A2	24x24-8"	1.00	400	400	FH	380	B	
Corridor	24	A2	24x24-8"	1.00	400	400	FH	390	B	
VAV-3-7 Total					1040			1058		
Size 10	VAV-3-7	S.P.=0.54"		Max CFM=1040	Min CFM=395	Address=106		Mult=1.09		
06 Briefing	25	A2	24x24-8"	1.00	260	260	FH	260	A	
06 Briefing	26	A2	24x24-8"	1.00	260	260	FH	268	B	
06 Briefing	27	A2	24x24-8"	1.00	260	260	FH	263	B	
06 Briefing	28	A2	24x24-8"	1.00	260	260	FH	267	B	
VAV-3-7 Total					1040			1058		
Size 10	VAV-3-6	S.P.=0.26"		Max CFM=710	Min CFM=510	Address=113		Mult=1.00		
07 Lunch	29	B1	12x8"	0.40	355	888	875	350	G	
07 Lunch	30	B1	12x8"	0.40	355	888	900	360	H	
VAV-3-6 Total					710			710		
RTU-1 Supply Subtotal					8790					

[1] Airflow measured by duct traverse.



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PORTSMOUTH, NH 03801

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DUCT TRAVERSE TEST SHEET

PROJECT NAME: Regional Emergency Communications Center		SHEET: 6																		
PROJECT LOCATION: Worcester, Massachusetts		DATE: 09/07/16																		
System Identifier: VAV-3-4	Static Pressure: 0.56"																			
Traverse Number: VAV-3-4-1	Location: Corridor																			
Duct Size: 10"	Flow Factor: 0.55																			
Design Velocity: 1882	Actual Velocity: 1839																			
Design CFM: 1035	Actual CFM: 1011																			
<table border="1"> <thead> <tr> <th>1</th> <th>2</th> </tr> </thead> <tbody> <tr><td>2137</td><td>1239</td></tr> <tr><td>2062</td><td>1167</td></tr> <tr><td>1660</td><td>1038</td></tr> <tr><td>1346</td><td>1194</td></tr> <tr><td>1318</td><td>2027</td></tr> <tr><td>1914</td><td>2563</td></tr> <tr><td>2229</td><td>2629</td></tr> <tr><td>2304</td><td>2601</td></tr> </tbody> </table>			1	2	2137	1239	2062	1167	1660	1038	1346	1194	1318	2027	1914	2563	2229	2629	2304	2601
1	2																			
2137	1239																			
2062	1167																			
1660	1038																			
1346	1194																			
1318	2027																			
1914	2563																			
2229	2629																			
2304	2601																			
Average Velocity = 1839 Feet Per Minute Codes Served: 20-22																				
System Identifier: RTU-1 Supply	Static Pressure: -0.03"																			
Traverse Number: VAV-3-4 CRAC-1	Location: Comm. Center																			
Duct Size: 10"	Flow Factor: 0.55																			
Design Velocity: 627	Actual Velocity: 685																			
Design CFM: 345	Actual CFM: 377																			
<table border="1"> <thead> <tr> <th>1</th> <th>2</th> </tr> </thead> <tbody> <tr><td>1268</td><td>406</td></tr> <tr><td>1394</td><td>443</td></tr> <tr><td>1091</td><td>568</td></tr> <tr><td>1034</td><td>308</td></tr> <tr><td>0</td><td>1142</td></tr> <tr><td>0</td><td>1250</td></tr> <tr><td>0</td><td>1372</td></tr> <tr><td>0</td><td>679</td></tr> </tbody> </table>			1	2	1268	406	1394	443	1091	568	1034	308	0	1142	0	1250	0	1372	0	679
1	2																			
1268	406																			
1394	443																			
1091	568																			
1034	308																			
0	1142																			
0	1250																			
0	1372																			
0	679																			
Average Velocity = 685 Feet Per Minute Codes Served: 20																				



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DUCT TRAVERSE TEST SHEET

PROJECT NAME: Regional Emergency Communications Center		SHEET: 7																		
PROJECT LOCATION: Worcester, Massachusetts		DATE: 09/07/16																		
System Identifier:	RTU-1 Supply	Static Pressure: -0.066"																		
Traverse Number:	VAV-3-4 CRAC-2	Location: Corridor																		
Duct Size:	10"	Flow Factor: 0.55																		
Design Velocity:	627	Actual Velocity: 676																		
Design CFM:	345	Actual CFM: 372																		
<table border="1"> <thead> <tr> <th>1</th> <th>2</th> </tr> </thead> <tbody> <tr><td>636</td><td>637</td></tr> <tr><td>703</td><td>670</td></tr> <tr><td>693</td><td>705</td></tr> <tr><td>701</td><td>662</td></tr> <tr><td>645</td><td>683</td></tr> <tr><td>685</td><td>711</td></tr> <tr><td>707</td><td>685</td></tr> <tr><td>697</td><td>601</td></tr> </tbody> </table>			1	2	636	637	703	670	693	705	701	662	645	683	685	711	707	685	697	601
1	2																			
636	637																			
703	670																			
693	705																			
701	662																			
645	683																			
685	711																			
707	685																			
697	601																			
Average Velocity = 676 Feet Per Minute Codes Served: 21																				
System Identifier:	RTU-1 Supply	Static Pressure: -0.066"																		
Traverse Number:	VAV-3-4 CRAC-3	Location: Comm. Center																		
Duct Size:	10"	Flow Factor: 0.55																		
Design Velocity:	627	Actual Velocity: 612																		
Design CFM:	345	Actual CFM: 337																		
<table border="1"> <thead> <tr> <th>1</th> <th>2</th> </tr> </thead> <tbody> <tr><td>945</td><td>752</td></tr> <tr><td>835</td><td>804</td></tr> <tr><td>895</td><td>715</td></tr> <tr><td>652</td><td>648</td></tr> <tr><td>336</td><td>630</td></tr> <tr><td>317</td><td>593</td></tr> <tr><td>193</td><td>559</td></tr> <tr><td>376</td><td>540</td></tr> </tbody> </table>			1	2	945	752	835	804	895	715	652	648	336	630	317	593	193	559	376	540
1	2																			
945	752																			
835	804																			
895	715																			
652	648																			
336	630																			
317	593																			
193	559																			
376	540																			
Average Velocity = 612 Feet Per Minute Codes Served: 22																				



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DIFFUSER & GRILLE TEST SHEET

[illegible]



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DIFFUSER & GRILLE TEST SHEET

[illegible]



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FAN TEST SHEET

PROJECT NAME: Regional Emergency Communications Center						SHEET: 11		
PROJECT LOCATION: Worcester, Massachusetts						DATE: 09/07/16		
NAME PLATE DATA								
FAN NUMBER	CRAC-1		CRAC-2		CRAC-3			
MANUFACTURER	Liebert		Liebert		Liebert			
MODEL & SIZE	15602YG3		15602YG3		15602YG3			
LOCATION	Comm. Center		Comm. Center		Comm. Center			
SERVICE	Comm. Center		Comm. Center		Comm. Center			
OPERATING CONDITIONS								
DATA DESCRIPTION	DESIGN	ACTUAL	DESIGN	ACTUAL	DESIGN	ACTUAL	DESIGN	ACTUAL
TOTAL CFM	1250	[1]	1250	[1]	1250	[1]		
RGD CFM	1260	1263	1260	1272	1260	1321		
RETURN CFM	1250	1263	1250	1272	1250	1321		
EXHAUST CFM	-	-	-	-	-	-		
OUTSIDE AIR CFM	-	-	-	-	-	-		
FAN RPM		1650		1746		1656		
DIRECTION	CW	CW	CW	CW	CW	CW		
SUCTION S.P. (InWC)		0.12		0.11		0.17		
DISCHARGE S.P. (InWC)		0.14		0.17		0.18		
TOTAL S.P. (InWC)	0.75(e)	0.26	0.75(e)	0.28	0.75(e)	0.35		
MOTOR RPM	3450	3538		3523		3544		
MOTOR HP	1.50	1.50	1.50	1.50	1.50	1.50		
MOTOR BHP		0.76		0.87		0.89		
		1.20		1.30		1.40		
AMPERAGE	2.30	1.20	2.30	1.40	2.30	1.30		
		1.10		1.30		1.40		
VOLTAGE	460	485	460	485	460	485		
OUTSIDE AIR TEMP.	-	-	-	-	-	-	-	
RETURN AIR TEMP.	-	72.7°	-	67.8°	-	69.1°	-	
MIXED AIR TEMP.	-	-	-	-	-	-	-	
DISCHARGE AIR TEMP.	-	76.4°	-	68.8°	-	53.2°	-	
VFD SETTING	N.A.		N.A.		N.A.			
MOTOR SHEAVE	1VP44x7/8"		1VP44x7/8"		1VP44x7/8"			
SHEAVE POSITION	AK69Hx3/4"		AK69Hx3/4"		AK69Hx3/4"			
FAN SHEAVE	ASAP		4 Turns Open		ASAP			
BELT SIZE / # / C-C	A42 / 1 / 14"		A42 / 1 / 13-3/4"		A42 / 1 / 14"		/ /	

[1] No suitable location for traverse.



TEKON-TECHNICAL CONSULTANTS, INC.

222 INTERNATIONAL DRIVE, SUITE 165

PORTSMOUTH, NH 03801

VOICE:(603) 335-3080 FAX:(603)427-9168

FAN TEST SHEET

PROJECT NAME:		Regional Emergency Communications Center					SHEET:		13
PROJECT LOCATION:		Worcester, Massachusetts					DATE:		09/07/16
NAME PLATE DATA									
FAN NUMBER	TEF-1	SF-2 (EOC Closet)		SF-2 (Comm. Ctr.)					
MANUFACTURER	Twin City	Fantech		Fantech					
MODEL & SIZE	DCRD120B1	FG 4xL		FG 4xL					
LOCATION	Roof	EOC Closet		Chase					
SERVICE	General Exhaust	Under Floor		Comm. Center/Elect.					
OPERATING CONDITIONS									
DATA DESCRIPTION	DESIGN	ACTUAL	DESIGN	ACTUAL	DESIGN	ACTUAL	DESIGN	ACTUAL	
TOTAL CFM	970	[1]	100	[1]	100	[1]			
RGD CFM	945	961	100	152	100	135			
RETURN CFM	-	-	-	-	-	-			
EXHAUST CFM	970	961	100	152	100	135			
OUTSIDE AIR CFM	-	-	-	-	-	-			
FAN RPM	Direct Drive			1760	Direct Drive				
DIRECTION	CCW	CCW	CW	CW	CW	CW			
SUCTION S.P. (InWC)		0.33		0.00		0.16			
DISCHARGE S.P. (InWC)		0.00		0.15		0.06			
TOTAL S.P. (InWC)	0.50	0.33	0.25	0.15	0.25	0.22			
MOTOR RPM	1725	1733		1760		1760			
MOTOR HP	0.33	0.33		0.09		0.09			
MOTOR BHP		0.31		0.05		0.08			
AMPERAGE	4.20	3.90	0.58	0.30	0.58	0.50			
VOLTAGE	115	120	120	121	120	120			
OUTSIDE AIR TEMP.	-		-		-		-		
RETURN AIR TEMP.	-		-		-		-		
MIXED AIR TEMP.	-		-		-		-		
DISCHARGE AIR TEMP.	-		-		-		-		
VFD SETTING	N.A.		N.A.		N.A.				
MOTOR SHEAVE	Direct Drive		Direct Drive		Direct Drive				
SHEAVE POSITION	Direct Drive		Direct Drive		Direct Drive				
FAN SHEAVE	Direct Drive		Direct Drive		Direct Drive				
BELT SIZE / # / C-C	Direct Drive		Direct Drive		Direct Drive		/ /		

[1] No suitable location for traverse.



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222 INTERNATIONAL DRIVE, SUITE 165

PORTSMOUTH, NH 03801

VOICE:(603) 335-3080 FAX:(603)427-9168

DIFFUSER & GRILLE TEST SHEET

[illegible]



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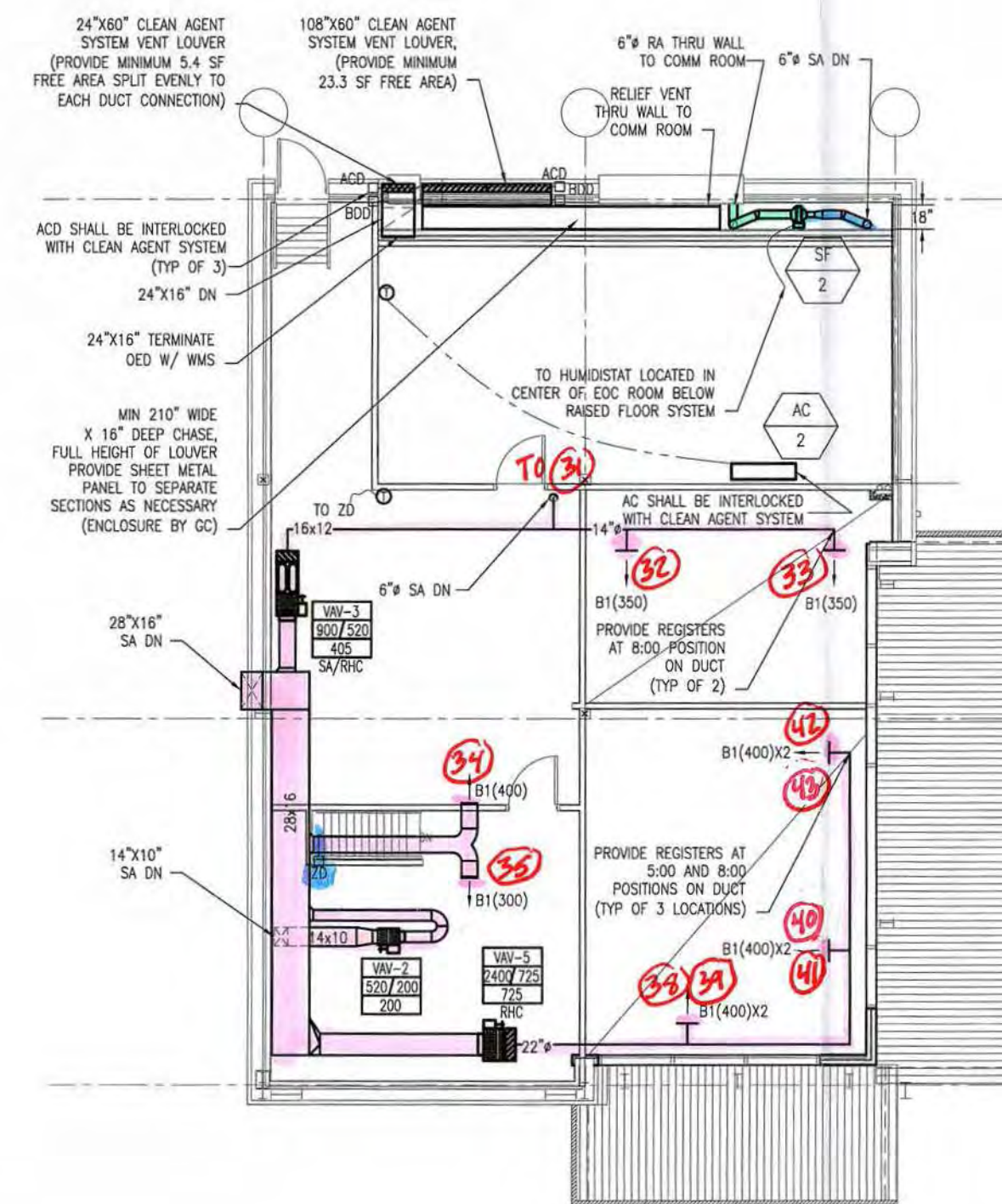
222 INTERNATIONAL DRIVE, SUITE 165

PORTSMOUTH, NH 03801

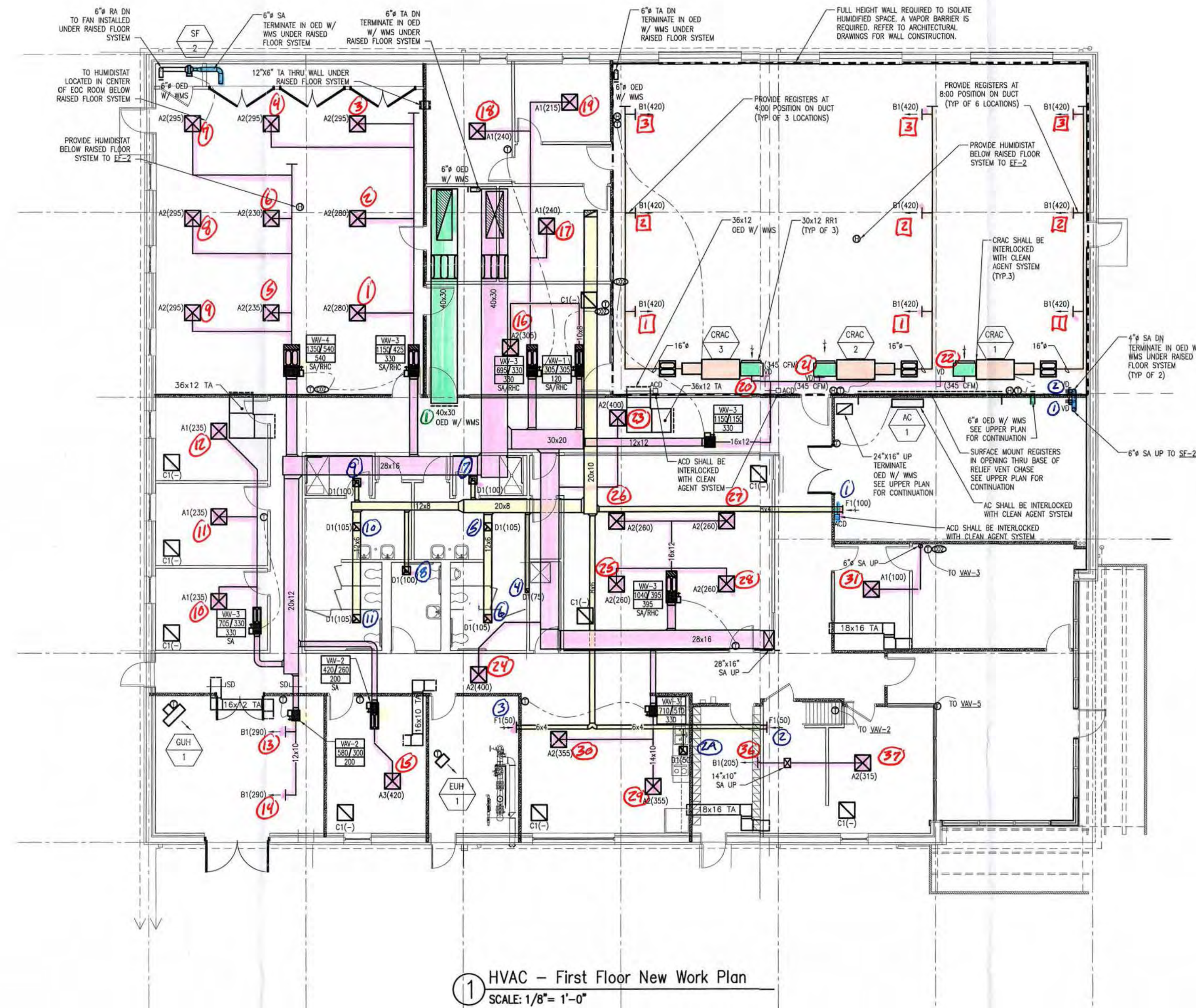
VOICE:(603) 335-3080 FAX:(603)427-9168

DIFFUSER & GRILLE TEST SHEET

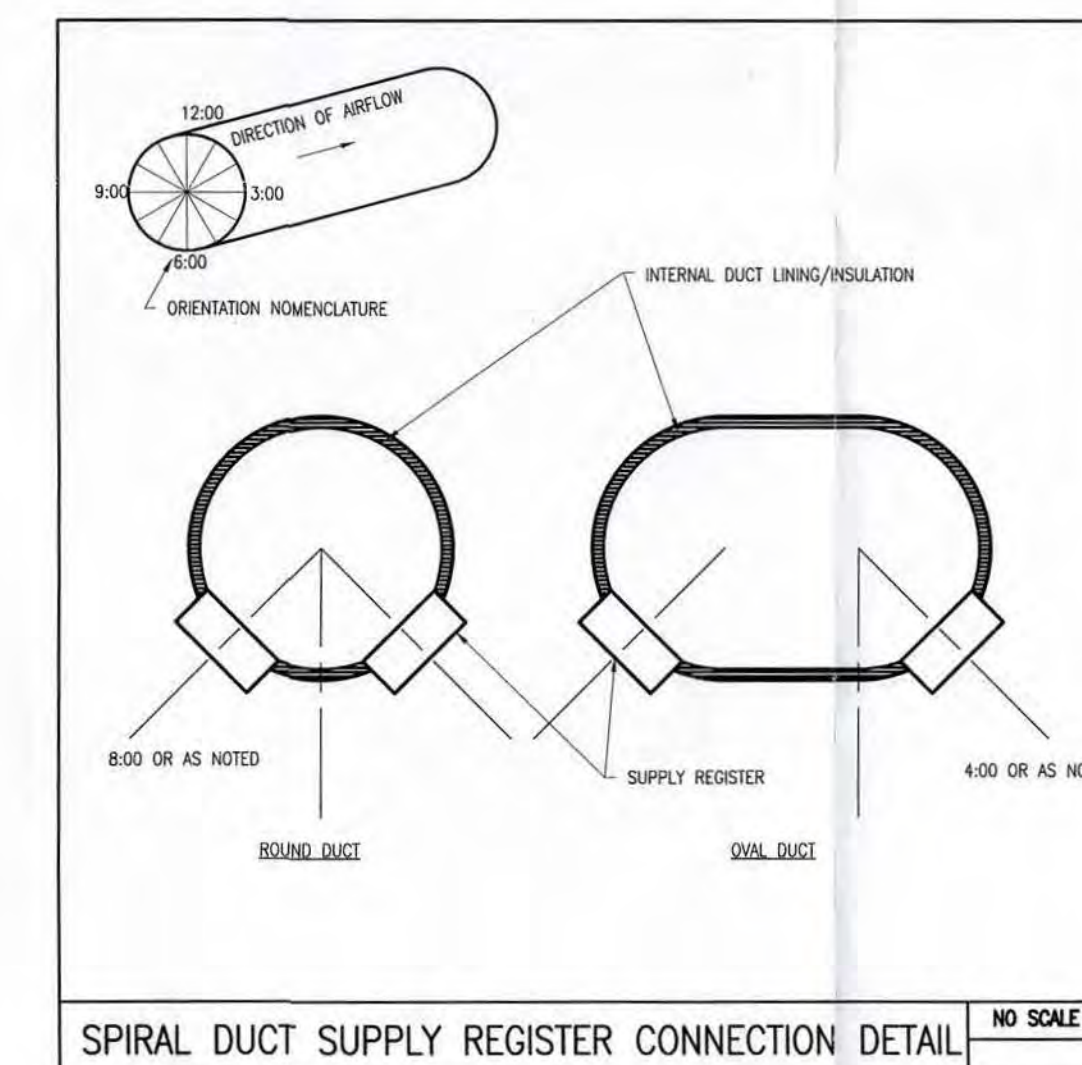
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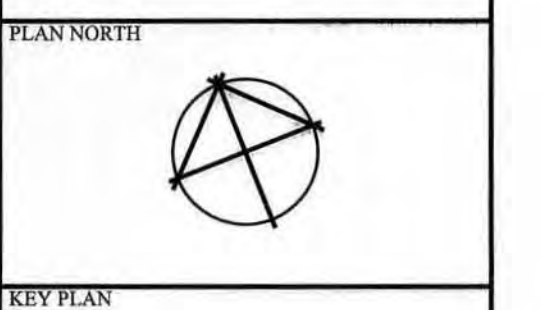
② HVAC - Upper Floor New Work Plan
SCALE: 1/8" = 1'-0"



① HVAC - First Floor New Work Plan
SCALE: 1/8" = 1'-0"



REVISIONS
SKH -02 12-17-15



ENGINEER

BLW

BLW Engineers, Inc.
311 Great Road, Post Office Box 1551
Littleton, Massachusetts 01460
t: 978.486.4301 e: 978.428.0067
www.blwengineers.com

HWC * Electrical * Plumbing * Fire Protection

ARCHITECT

ARCHITECT

DEPARTMENT OF
PUBLIC WORKS AND PARKS
Architectural Services Division
50 Skyline Drive, Worcester MA 01605

OWNER

CITY OF WORCESTER

DEPARTMENT OF PUBLIC
WORKS
AND PARKS
20 East Worcester Street
Worcester, MA 01604

PROJECT TITLE

REGIONAL EMERGENCY
COMMUNICATIONS CENTER
2 Coppage Drive
Worcester, MA 01603

DRAWING NAME

HVAC
LEVEL 1
FLOOR PLAN

DATE

DEC 11, 2014

SHEET NUMBER

H2.1



TEKON-TECHNICAL CONSULTANTS, INC.

222 INTERNATIONAL DRIVE, SUITE 165

PORTSMOUTH, NH 03801

VOICE:(603) 335-3080 FAX:(603)427-9168

REMARK CODE SHEET

- A. VOLUME CONTROL DAMPER OPEN
- B. VOLUME CONTROL DAMPER ADJUSTED
- C. SPLITTER DAMPER OPEN
- D. SPLITTER DAMPER ADJUSTED
- E. DIFFUSER DAMPER OPEN
- F. DIFFUSER DAMPER ADJUSTED
- G. REGISTER OR GRILLE DAMPER OPEN
- H. REGISTER OR GRILLE DAMPER ADJUSTED
- I. NO VOLUME DAMPER
- J. NO SPLITTER DAMPER
- K. NO DIFFUSER DAMPER
- L. NO REGISTER OR GRILLE DAMPER
- M. DIFFUSER, REGISTER OR GRILLE MISSING
- N. DIFFUSER, REGISTER OR GRILLE NOT INSTALLED
- O. INDUCTION UNIT DAMPER OPEN
- P. INDUCTION UNIT DAMPER ADJUSTED
- Q. INDUCTION UNIT DAMPER INOPERATIVE
- R. HIGH PRESSURE MIXING BOX ADJUSTED TOWARD OPEN POSITION
- S. HIGH PRESSURE MIXING BOX ADJUSTED TOWARD CLOSED POSITION
- T. BALANCING VALVE OPEN
- U. BALANCING VALVE ADJUSTED
- V. DIFFUSER, REGISTER OR GRILLE NOISY; ALL AVAILABLE ADJUSTMENTS HAVE BEEN MADE TO CORRECT THE CONDITION. ADDITIONAL DAMPERS OR SOUND LININGS ARE REQUIRED TO CORRECT THE CONDITION
- Z. DAMPER POSITION LEFT AS FOUND
- ASAP AS SLOW AS POSSIBLE
- AFAP AS FAST AS POSSIBLE
- C-C SHAFT CENTER DISTANCE
- C/S CIRCUIT SETTER
- EVAV EXISTING VAV
- FH READING TAKEN WITH FLOW HOOD
- I.A. INACCESSIBLE
- LVR LOUVER
- N.A. NOT APPLICABLE
- N.S. REQUIRED INFORMATION IS NOT STATED ON NAMEPLATE OR BLUEPRINTS
- OED OPEN END DUCT
- PT READING TAKEN BY DUCT TRAVERSE
- RGD REGISTER, GRILLE & DIFFUSER
- RVA READING TAKEN WITH ROTATING VANE AMENOMETER
- VC READING TAKEN WITH DIRECT MEASURING VELOCICALC
- WMS WIRE MESH SCREEN



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222 INTERNATIONAL DRIVE, SUITE 165

PORTSMOUTH, NH 03801

VOICE:(603) 335-3080 FAX:(603)427-9168

INSTRUMENT LIST

EQUIPMENT TYPE	MODEL NUMBER	SERIAL NUMBER	CALIBRATION DATE	CODE KEY
Alnor EBT Balometer	EBT-721	90738024	04/08/16	1
Alnor EBT Balometer	EBT-721	90830064	02/11/16	2
Alnor EBT Balometer	EBT-721	91014018	11/25/15	3
Alnor EBT Balometer	EBT-731	731318031	09/17/15	4
Alnor EBT Balometer	EBT-731	731329019	09/17/15	5
Fluke Multimeter	179	20510566	09/24/15	6
Fluke Multimeter	179	21200435	07/20/16	7
Fluke Multimeter	179	24540091	06/09/16	8
Fluke Multimeter	179	24540138	10/30/15	9
Fluke Multimeter	179	24430555	09/17/15	10
Fluke Multimeter	179	23810396	06/14/16	11
Fluke Multimeter	179	18850486	02/11/16	12
Fluke Multimeter	75	50440130	02/11/16	13
Fluke Multimeter	73 III	79100101	06/27/16	14
Fluke Multimeter	115	16770045	09/11/15	15
Fuji Ultrasonic Flowmeter	FSCS	A1F5570T	10/16/15	16
Fuji Ultrasonic Flowmeter	FSCS	A2K7262T	10/30/15	17
HydroData Multimeter	HDM-250	W98149	06/14/16	18
HydroData Multimeter	HDM-250	W97009	06/09/16	19
HydroData Multimeter	HDM-250	W97020	11/06/15	20
HydroData Multimeter	HDM-300	W16022	03/15/16	21
HydroData Multimeter	HDM-250	W04011	07/06/16	22
HydroData Multimeter	HDM-250	W12119	04/06/15	23 *
HydroData Multimeter	HDM-250	W13050	07/20/16	24
Hydronic Manometer	HM 650	70439291	02/11/16	25
Ashcroft Compound Guage	45-1279-SS-04L	4270219	10/19/15	26
Airdata Multimeter Kit	ADM-870C	M01984	10/02/15	27
Airdata Multimeter Kit	ADM-870C	M97006	10/14/15	28
Airdata Multimeter Kit	ADM-870C	M00826	10/14/15	29
Airdata Multimeter Kit	ADM-870C	M971051	10/26/15	30
Airdata Multimeter Kit	ADM-870C	M01255	06/09/16	31
Airdata Multimeter Kit	ADM-870C	M02616	11/16/15	32
Airdata Multimeter Kit	ADM-870C	M03455	07/20/16	33
Airdata Multimeter Kit	ADM-870C	M05079	04/01/16	34
Airdata Multimeter Kit	ADM-870C	M08453	10/02/15	35
Airdata Multimeter Kit	ADM-870C	M13308	09/11/15	36
Fluke Clamp On Transformer	i200	TTCI-025	02/06/15	37 *
Fluke Clamp On Transformer	i200	TTCI-028	09/24/15	38
Fluke Clamp On Transformer	i200	TTCI-027	06/29/16	39

* Not in current use.



TEKON-TECHNICAL CONSULTANTS, INC.

222 INTERNATIONAL DRIVE, SUITE 165

PORTSMOUTH, NH 03801

VOICE:(603) 335-3080 FAX:(603)427-9168

INSTRUMENT LIST

EQUIPMENT TYPE	MODEL NUMBER	SERIAL NUMBER	CALIBRATION DATE	CODE KEY
Fluke Clamp On Transformer	i200	TTCI-055	06/09/16	40
Fluke Clamp On Transformer	i200	TTCI-059	09/17/15	41
Fluke Clamp On Transformer	i200	TTCI-041	06/14/16	42
Fluke Clamp On Transformer	i200	TTCI-052	09/18/15	43
Fluke Clamp On Transformer	i200	TTCI-039	07/20/16	44
Fluke Clamp On Transformer	i200	TTCI-014	02/11/16	45
Slack Tube Manometer	1187	TEK-305	N.A.	46
Alnor 3' Probe	6070P	N.A.	N.A.	47
12" Pitot Tube	155	N.A.	N.A.	48
18" Pitot Tube	142	N.A.	N.A.	49
24" Pitot Tube	136	N.A.	N.A.	50
36" Pitot Tube	124	N.A.	N.A.	51
48" Pitot Tube	112	N.A.	N.A.	52
60" Pitot Tube	100	N.A.	N.A.	53
Hand Tachometer	DT-205B	49703149	N.A.	54
Hand Tachometer	DT-205B	C03A0472	N.A.	55
Hand Tachometer	DT-205L	C15B0730	N.A.	56
Hand Tachometer	461995	H254016	02/26/15	58 *
Hand Tachometer	461995	H259099	09/17/15	59
Hand Tachometer	461995	H259098	04/17/15	60 *
Hand Tachometer	461995	Q591003	09/18/15	61
Hand Tachometer	461995	Q388237	09/11/15	62
Quest Sound Level Meter	2700-300/20	HUC070027	12/08/15	63
Quest Octave Band Analyzer	OB-300	HV4020002	12/08/15	64
Vibration Meter	VI-100	QH3070022	10/27/15	65
Quest Calibrator	QC-20	QF4020007	12/08/15	66
Air Duct Leakage Tester	Dayton-4C330-10"	N.A.	**	67
Air Duct Leakage Tester	Dayton-4C330-7"	N.A.	**	68
Air Duct Leakage Tester	Cadillac-4"	N.A.	**	69
Oakton Thermo Hygrometer	35612	9013402	10/26/15	70
Testo Anemometer	417	02492264	06/27/16	71
Davis RVA - Digital	LCA 6000	A18368	07/20/16	73
TSI/Alnor RVA - Digital	RVA801	A03440	07/28/15	74 *
TSI/Alnor RVA - Digital	RVA801	A03653	02/02/16	75
LabStrobe	STB 100-F	22671-0503	01/27/16	76
LabStrobe	STB 100-F	22227-0511	01/27/16	77
LabStrobe	STB 100-F	22671-0505	08/03/16	78
LabStrobe	STB 100-F	22777-0508	03/02/16	79
LabStrobe	STB 100-F	22777-0509	03/02/16	80

* Not in current use.

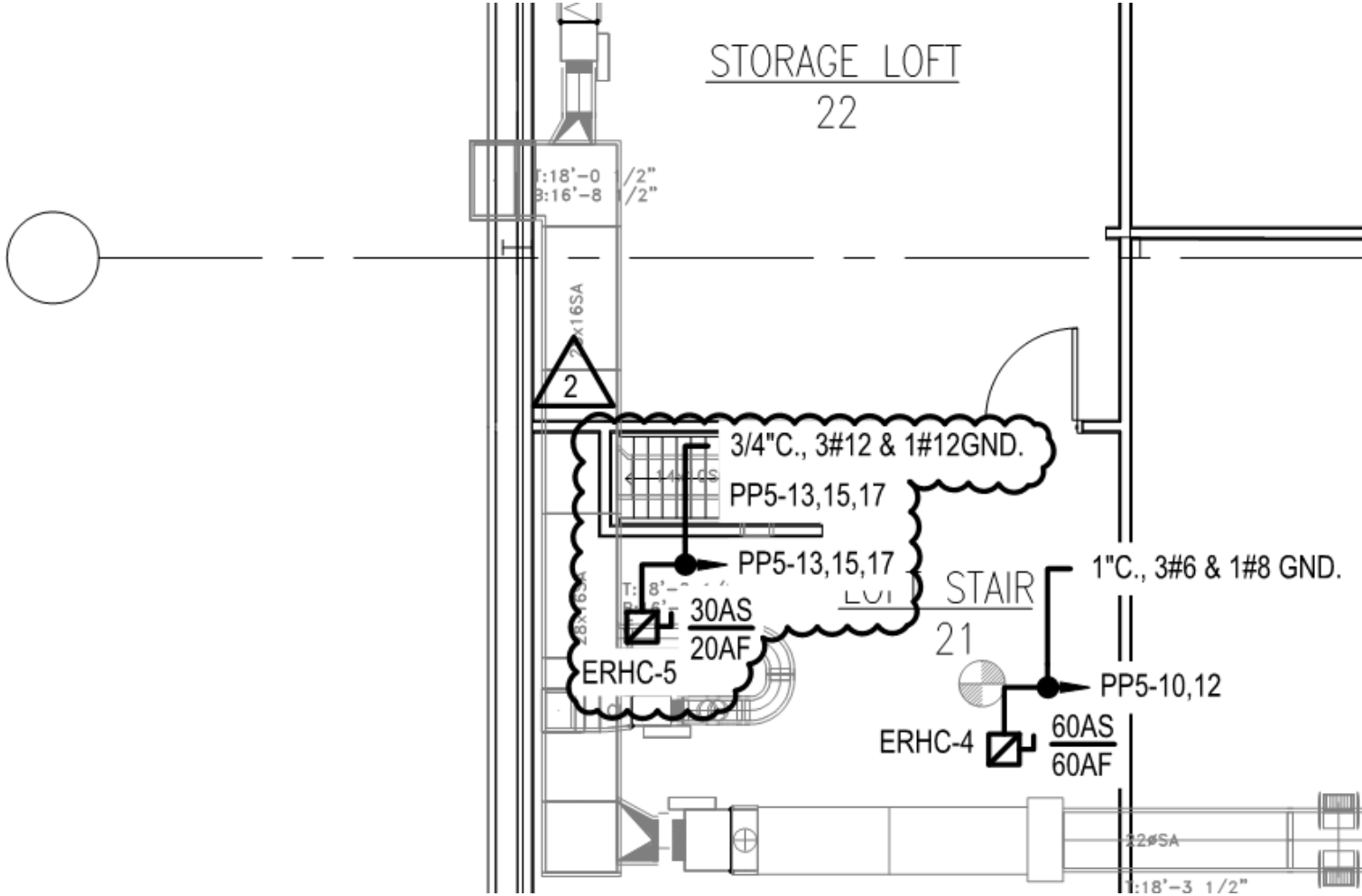
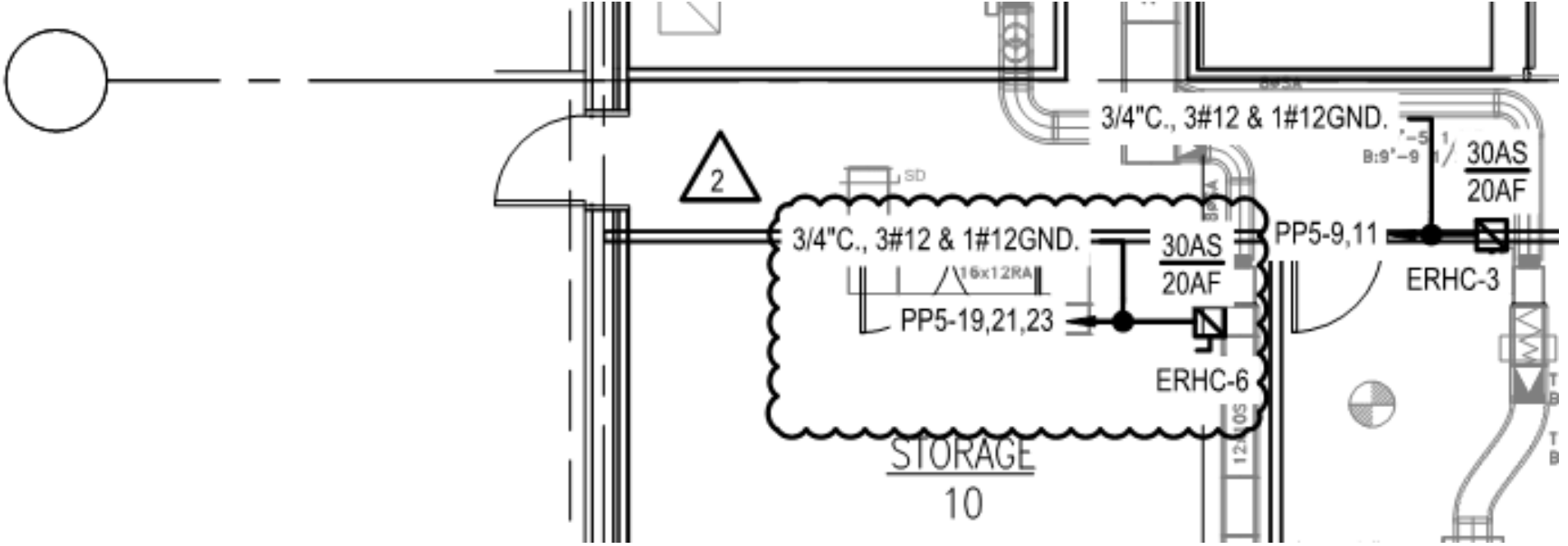
** Fixed orifice, one time calibration.

WORCESTER RECC RELABELED VAV SCHEDULE

All equipment by Krueger

<u>EQUIPMENT NAME</u>	<u>SERVICE</u>
VAV-1	OFFICE 16B
VAV-2	OFFICES 11-13
VAV-3	DIRECTOR 09
VAV-4	ENTRY 01E
VAV-5	STORAGE 10
VAV-6	LUNCH ROOM 07
VAV-7	LOCKERS/ADMIN 02
VAV-8	LOFT
VAV-9	BRIEFING ROOM
VAV-10	OPERATIONS & TRAINING 14A
VAV-11	OPERATIONS & TRAINING 14A
VAV-12	OFFICES 16C&D
VAV-13	CONFERENCE ROOM 15

PANELBOARD SCHEDULE										
DESIGNATION: PP5		S.C. RATING: 10,000		A RMS SYSTEM		REMARKS: NEW PANEL				
LOCATION: ELEC. LOFT		SERVICE: 208/120V,3Ø,4W								
RATING: 250 AMPS		MOUNTING: SURFACE								
MAIN: 250 AMP MLO										
CKT. NO.	LOAD DESIGNATION	BREAKER		PHASE			BREAKER		LOAD DESIGNATION	CKT. NO.
		TRIP	POLE	A	B	C	POLE	TRIP		
1	-	-						-	-	2
3	EHRC-1 (3kW REHEAT COIL)	20						20	EHRC-2 (5kW REHEAT COIL)	4
5	-	-						-	-	6
7	-	-						-	-	8
9	EHRC-3 (4kW REHEAT COIL)	20						60	EHRC-4 (16kW REHEAT COIL)	10
11	-	-						-	-	12
13	EHRC-5 (5kW REHEAT COIL)	20						20	SPARE	14
15	EHRC-5 (5kW REHEAT COIL)	20						20	SPARE	16
17	EHRC-5 (5kW REHEAT COIL)	20						20	SPARE	18
19	EHRC-6 (5kW REHEAT COIL)	20						20	SPARE	20
21	EHRC-6 (5kW REHEAT COIL)	20						20	SPARE	22
23	EHRC-6 (5kW REHEAT COIL)	20						20	SPARE	24
25	SPARE	20						20	SPARE	26
27	SPARE	20						20	SPARE	28
29	SPARE	20						20	SPARE	30
31	SPARE	20						20	SPARE	32
33	SPARE	20						20	SPARE	34
35	SPARE	20						20	SPARE	36
37	SPARE	20						-	-	38
39	SPARE	20						100	PANEL PP4	40
41	SPARE	20						-	-	42



Weston & SampsonSM

Five Centennial Drive, Peabody, MA 01960
(978) 532-1900 (800) SAMPSON
www.westonandsampson.com

Project / Title:

Worcester RECC

Drawn:

AVS

Checked:

SEH

Date:

2021-12-03

Ref. Dwg.:

Scale:

NTS

Sheet No.

SKE-1