

DOCUMENT 00912

ADDENDUM NUMBER 2

Issued: September 16, 2010

**1315 Airport Boulevard Tenant Improvements
(Geothermal Heat Pump Retrofit)**

FROM: Sonoma County Water Agency
404 Aviation Boulevard
Santa Rosa, CA 95403-9019

TO: Prospective Bidders

This Addendum forms a part of and modifies the Project Manual dated August 2010. Bidder shall acknowledge receipt of this Addendum in the space provided in Document 00400 (Bid Form).

Modified text is indicated as follows: Double-underline designates text to be inserted; ~~strikethrough~~ designates text to be deleted.

Addendum Number 2 consists of 5 pages (size 8 1/2" x 11") and 8 revised Drawings.

I. General Changes

A. No changes.

II. Changes to Prior Addenda

A. No changes.

III. Changes to Introductory Information and Bidding Requirements

A. No changes.

IV. Changes to Contracting Requirements

A. No changes.

V. Changes to Conditions of the Contract

A. No changes.

VI. Changes to Specifications

A. Section 01100 (Summary):

1. Modify Paragraph 1.3D.7 as follows:

- a. 7. Mechanical Work. The lump sum price paid under this item shall be full payment for providing a complete and operational mechanical system for the geothermal heat pump system, including but not limited to, ~~gravity~~ ventilators, ductwork, dampers, diffusers, condenser water loop piping to each heat pump and to the ground loop header, valves, primary loop pumps, expansion tank, air

separator, filters, chemical feeders, hydronic related materials, valves, fire smoke dampers, supports, hardware, and appurtenances.

B. Section 15010 (Selective Mechanical Demolition):

1. Insert the following after Paragraph 3.6A.1.:
 - a. 2. Roof shall be completely repaired to match existing surrounding conditions.
2. Insert the following after Paragraph 3.6B.:
 - a. C. Insulate all repaired areas. Insulation shall match existing surrounding conditions.

C. Section 15838 (Power Ventilators):

1. Modify Paragraph 1.1A.1. as follows:
 - a. Centrifugal roof ~~ventilators~~exhaust fans
2. Insert the following after Paragraph 1.1A.2.:
 - a. 3. Rooftop Energy Recovery Ventilators
3. Insert the following after Paragraph 1.2D.:
 - a. E. ARI Standard 1060, air-to-air heat exchanger ratings
4. Insert the following after Paragraph 1.3A.6.:
 - a. 7. Energy recovery ventilator effectiveness.
 8. Energy recovery ventilator capacities.
5. Modify Paragraph 1.4C, as follows:
 - a. UL Standards: ~~Power Ventilators~~Exhaust fans shall comply with UL 705.
6. Modify Paragraph 2.1A. as follows:
 - a. Centrifugal Roof ~~Ventilators~~Exhaust Fans
7. Insert the following after Paragraph 2.1A.4.:
 - a. B. Energy Recovery Ventilators
 1. Greenheck Fan Corporation
 2. Simco
 3. RenewAire LLC
 4. Or Approved Equal
8. Modify heading of Paragraph 2.2 as follows:
 - a. **CENTRIFUGAL ROOF ~~VENTILATORS~~ EXHAUST FANS FOR ELECTRICAL ROOMS**
9. Modify heading of Paragraph 2.4 as follows:
 - a. **CENTRIFUGAL ROOF ~~VENTILATORS~~ EXHAUST FANS FOR THE WAREHOUSE**
10. Insert the following after Paragraph 2.5A.:
 - a. **2.6 ROOFTOP ENERGY RECOVERY VENTILATORS**
 - A. Unit Casing:
 1. Internal frame type construction shall be galvanized steel with all exposed panels being 18 gauge.
 2. Top panel joint shall be standing seam. All seams shall be sealed, requiring no on-site caulking or sealant.
 3. Weatherhoods shall incorporate a louvered design, moisture eliminator, and tested in accordance with AMCA Standard 500-L.
 4. Filters shall be 2-inch pleated fiberglass, 30% efficient.

- B. Insulation: 1 inch fiberglass with FSK facing on the unit casing.
 - C. Energy Recovery Wheel:
 - 1. Enthalpy type for both sensible and latent heat recovery, constructed of lightweight polymer media.
 - 2. ARI Certified to Standard 1060.
 - 3. Segments shall be removable on wheels greater than 26 inches.
 - 4. Wheels shall be mounted on a slide-out track.
 - D. Fans: Permanently lubricated, heavy duty type, with integral overload protection.
 - E. Electrical:
 - 1. Access doors shall incorporate integral door interlocking disconnect switch.
 - 2. 24V control transformer and terminal strip for controls connection.
 - 3. All components shall be weatherproof.
11. Insert the following after Paragraph 3.1B.:
- a. C. Roof curbs for Energy Recovery Ventilators shall be supplied by the unit manufacturer for field assembly.
- [renumber remaining paragraphs accordingly]
12. Modify Paragraph 3.3A. as follows:
- a. Warehouse ~~ventilation~~exhaust fans:
- D. Section 15940 (Mechanical Control Sequence):
- 1. Insert the following after Paragraph 1.1A.4.:
 - a. 5. Energy Recovery Ventilators

[renumber remaining paragraph accordingly]
 - 2. Fix Article numbering.
 - 3. Insert the following after Paragraph 1.4D.:
 - a. **1.5 WATER SOURCE HEAT PUMP & ERV UNIT CONTROL SEQUENCE FOR LABORATORIES**
 - A. Sequence typical for heat pump, HP-9, the corresponding thermostats or temperature sensors, the secondary loop hydronic pumps, P-9, and the energy recovery ventilator (ERV-1).
 - B. Temperature control: HP-9 shall cycle cooling or heating necessary to maintain set point as sensed by the corresponding thermostat.
 - C. Daytime Operation: To be active during occupiers hours.
 - 1. Normal condition:
 - a. Heat pump (HP-9) shall be engaged in fan mode only.
 - b. Energy Recovery Ventilator (ERV-1) shall engage. ERV-1 shall be interlocked with HP-9.
 - 2. Upon call for space cooling or heating by one of the thermostats or temperature sensors:

- a. Engage the Water Source Heat Pump compressor for that zone.
- b. Engage the corresponding Secondary Loop Hydronic Pump.
- 3. When the temperature reaches the set point at the thermostats or temperature sensors:
 - a. Disengage the Water Source Heat Pump compressor for that zone.
 - b. Disengage the corresponding Secondary Loop Hydronic Pump.
- D. Energy Recovery Ventilator (ERV-1):
 - 1. Shall exchange energy between the incoming fresh outside air and leaving exhaust air to reduce the heating or cooling load due to the lab conditioning requirements.
- 4. Modify Paragraph 1.6D.1.a.1)a) as follows:
 - a. a) HP-8, 9, 10, & 11 shall remain engaged.
- 5. Modify Paragraph 1.7C.1. as follows:
 - a. 1. The Primary Loop Hydronic Pump (P-A or P-B) shall engage with a call for cooling or heating from heat pump (HP-8, 9, 10, or 11).
- E. Section 15950 (Testing, Adjusting, and Balancing [TAB] of HVAC Systems):
 - 1. Insert the following as Paragraph 1.4B.6.:
 - a. 6. Energy Recovery Ventilator Test Reports:
 - a. Unit Data:
 - 1) Unit identification.
 - 2) Location.
 - 3) Make and type.
 - 4) Model number and unit size.
 - 5) Manufacturer's serial number.
 - 6) Unit arrangement and class.
 - 7) Discharge arrangement.
 - 8) Sheave make, size in inches, and bore.
 - 9) Center-to-center dimensions of sheave, and amount of adjustments in inches.
 - 10) Number, type, and size of filters.
 - b. Motor Data:
 - 1) Motor make, and frame type and size.
 - 2) Horsepower and rpm.
 - 3) Volts, phase, and hertz.
 - 4) Full-load amperage and service factor.
 - 5) Sheave make, size in inches, and bore.
 - 6) Center-to-center dimensions of sheave, and amount of adjustments in inches.

[renumber remaining paragraphs accordingly]

VII. Changes to Drawings

- A. Delete Drawing No. M0.00 and replace with attached Drawing No. M0.00, dated September 14, 2010, and marked "Addendum No. 2"

- B. Delete Drawing No. M0.10 and replace with attached Drawing No. M0.10, dated September 14, 2010, and marked "Addendum No. 2"
- C. Delete Drawing No. M0.11 and replace with attached Drawing No. M0.11, dated September 14, 2010, and marked "Addendum No. 2"
- D. Delete Drawing No. M0.30 and replace with attached Drawing No. M0.30, dated September 14, 2010, and marked "Addendum No. 2"
- E. Delete Drawing No. M2.10 and replace with attached Drawing No. M2.10, dated September 14, 2010, and marked "Addendum No. 2"
- F. Delete Drawing No. M3.11 and replace with attached Drawing No. M3.11, dated September 14, 2010, and marked "Addendum No. 2"
- G. Delete Drawing No. ME0.01 and replace with attached Drawing No. ME0.01, dated September 14, 2010, and marked "Addendum No. 2"
- H. Delete Drawing No. ME4.10 and replace with attached Drawing No. ME4.10, dated September 14, 2010, and marked "Addendum No. 2"

VIII. Question(s)/Answer(s)

Owner's responses to Bidder questions shall be for the purposes of interpretation and clarification of the Contract Documents only, and shall not be construed as changing, superseding, or contradicting any express term in the Contract Documents. If any Bidder believes that a response to a question warrants a change in any term in the Contract Documents, the Bidder shall so request the change be made in writing addressed to Owner and received no later than the latest date for submitting Bidder questions. In the absence of a change in any term of the Contract Documents, the express terms of the Contract Documents shall have precedence. Bidder questions are listed below verbatim.

A. California Trane:

- 1. Can you waive the 14 day advance requirement if we get you our substitution form tomorrow? We look forward to the opportunity to work together with you.

Owner's response:

Answered in Addendum No. 1.

B. IES:

- 1.

There seems to be a contradiction in the type of acceptable DDC Controls specified in the HVAC Controls Section 15900. Under Part 2-Products; it states that the basis of design is for honeywell WEBS-AX (Spyder Controllers) system. The network controllers and engine framework is stated to be honeywell WEBS-AX built on the Niagra AX Framework, as well. Please verify that this is the only acceptable system for this project.

Owner's response:

Bid per Bid Documents.

END OF DOCUMENT

MECHANICAL LEGEND

AFF	ABOVE FINISHED FLOOR
C	CONDENSER SUPPLY (TO HEAT PUMP)
CR	CONDENSER RETURN (FROM HEAT PUMP)
COP	COEFFICIENT OF PERFORMANCE
CD	CONDENSATE DRAIN
CFM	CUBIC FEET PER MINUTE
DIA	DIAMETER
EER	ENERGY EFFICIENCY RATIO
EF	EXHAUST FAN
ESP	EXTERNAL STATIC PRESSURE
ERV	ENERGY RECOVERY VENTILATOR
F	FILTER
G	GAS
GA	GAUGE
HP	HEAT PUMP
HP	HORSEPOWER
HWS	HOT WATER SUPPLY
HWR	HOT WATER RETURN
I/O	INPUT/OUTPUT
LBS	POUNDS
LRA	LOCKED ROTOR AMPS
LDS	LOW DYNAMIC STIFFNESS
MBH	THOUSAND BTU'S PER HOUR
MCA	MINIMUM CIRCUIT AMPS
MG	MAKE-UP AIR GRILLE
MOCOP	MAXIMUM OVERCURRENT PROTECTION
NC	NOISE CRITERIA
OSA	OUTSIDE AIR
P	PUMP
PD	PRESSURE DROP (FEET OF WATER)
POC	PLACE OF CONNECTION
RLA	RATED LOAD AMPS
REQD	REQUIRED
TDH	TOTAL DYNAMIC HEAD
TYP	TYPICAL
UCD	UNDERCUT DOOR
20X20	RECTANGULAR DUCT DESIGN
12"	ROUND DUCT DESIGNATION
(E)	EXISTING
(N)	NEW
(R)	RE-USED FROM OWNER STOCK OR OTHER LOCATION
SM	DUCT SMOKE DETECTOR LOCATION
T3	THERMOSTAT/SENSOR (UNIT NOTED)
T1A	ZONE THERMOSTAT/SENSOR (UNIT & ZONE NOTED)
SD	SUPPLY DIFFUSER
RD	RETURN DIFFUSER
VD	VOLUME DAMPER
BD	BD BAROMETRIC BYPASS DAMPER
MD	MD MOTORIZED ZONE DAMPER

PIPING LEGEND

	AIR SEPARATOR
	BALANCING VALVE, CALIBRATED
	BALL VALVE
	BUTTERFLY VALVE
	CHECK, SWING GATE
	EXPANSION TANK
	FLEXIBLE PIPE CONNECTION
	FLOWRATE SENSOR
	GATE, ANGLE VALVE
	GATE OR GLOBE VALVE
	MANUAL AIR VENT
	MOTORIZED VALVE, ELECTRIC
	PRESSURE GAUGE
	PRESSURE REDUCING VALVE
	PRESSURE SENSOR (PS)
	PUMP
	P/T PORT
	REDUCER
	SOLENOID, ZONE VALVE
	STRAINER
	TEMPERATURE GAUGE OR SENSOR (TS)
	UNION

EXHAUST FAN SCHEDULE											
TAG	QTY.	CONDITION	CFM	ESP	SONES	RPM	ELECTRICAL		WEIGHT (LBS.)	SERVING	LOCATION
							VOLTAGE	BHP			
EF 1	2	EXISTING	12,379	0.125	16.7	483	460/60/3	1.73	403	WAREHOUSE	ROOF ①
EF 2	1	NEW	250	0.125	3.3	1300	115/60/1	0.02	142	ELECTRICAL ROOM	ROOF
EF 3	3	EXISTING	90	-	-	-	-	-	-	NORTHEAST RESTROOMS	CEILING
EF 4	1	EXISTING	350	0.125	5.4	1550	-	0.04	142	SOUTHWEST RESTROOMS	ROOF
EF 5	1	EXISTING	1454	0.125	11.8	1725	-	11.8	142	SOUTHEAST RESTROOMS	ROOF

① PROVIDE COMBINATION STARTER/DISCONNECT & INDIVIDUAL WALL SWITCHES. SEE ELECTRICAL PLANS FOR ELECTRICAL INFORMATION.

BAG-TYPE FILTER SCHEDULE

TAG	QTY	FLOW (GPM)	BAG SIZE	SYSTEM CONNECTION
F 1	1	15	2 SQ FT	2" NPT

EXPANSION TANK SCHEDULE

TAG	QTY	TANK VOLUME	ACCEPTANCE VOLUME	SYSTEM CONNECTION
ET 1	1	35 GAL	12 GAL	1" NPTM

ZONE & BYPASS DAMPER

	SIZE	MAX CFM	MIN CFM	LOCATION
MD-1A	12"	600	98	HP-1
MD-1B	18"	1650	217	HP-1
BD-1	18"	1935	0	HP-1
MD-2A	18"	1575	225	HP-2
MD-2B	10"	400	71	HP-2
MD-2C	14"	800	68	HP-2
MD-2D	12"	650	67	HP-2
BD-2	20"	2676	0	HP-2

CHEMICAL FEED TANK SCHEDULE

TAG	QTY	TANK VOLUME	FLOW (GPM)	SYSTEM CONNECTION
CF 1	1	5 GAL	5	3/4" NPT

ERV SCHEDULE									
TAG	CFM	ESP (EACH SIDE)	VOLTAGE	COOLING LOAD REDUCTION	HEATING LOAD REDUCTION	WHEEL EFFECTIVENESS	FLA	HP	WEIGHT (LBS)
ERV 1	1500	0.5	460/3/60	39.6 MBH	59.4 MBH	74%	1.3	2X 1.0	875

1. UNIT WEIGHT DOES NOT INCLUDE CURB.

EXTENDED RANGE WATER SOURCE HEAT PUMP SCHEDULE

TAG	NOMINAL TONS	CFM	OSA	MAX ESP	ELECTRICAL				COMPRESSOR		WATER FLOW			COOLING LOAD (MBH)	SENSIBLE LOAD (MBH)	HEATING LOAD (MBH)	EER	COP	OPERATING WEIGHT	SERVING	NOTES
					VOLTAGE	TOTAL FLA	MCA	MOCP	RLA	LRA	GPM	WATER CONN.	PD (FT.)								
HP 1	10	4000	612	0.9	460/3/60	19.9	21.9	25	7.8	52.0	22.5	1-1/2"	1.8	89.3	82.8	86.1	15.9	3.3	1219	EAST WING	ROOFTOP UNIT
HP 2	10	4000	557	0.9	460/3/60	19.9	21.9	25	7.8	52.0	22.5	1-1/2"	1.8	91.0	84.8	92.1	15.9	3.3	1219	SOUTHWEST CORNER	ROOFTOP UNIT
HP 3	5	2000	304	0.9	460/3/60	9.8	11.8	15	7.8	52.0	12.0	1"	5.0	51.4	47.7	40.0	13.7	4.2	835	EAST TENANT SPACE	ROOFTOP UNIT
HP 4	4	1600	487	0.5	460/3/60	8.2	9.8	15	6.2	41.0	9.0	1"	10.8	32.5	28.4	25.3	12.6	3.9	785	CENTRAL MEETING/LOCKER	ROOFTOP UNIT
HP 5	6	2400	501	0.9	460/3/60	12.0	14.4	20	9.6	75.0	13.5	1-1/4"	4.2	63.1	54.8	37.9	16.4	3.7	963	CORE OFFICES/KITCHEN/BREAK	ROOFTOP UNIT
HP 6	4	1600	189	0.6	460/3/60	8.2	9.8	15	6.2	41.0	9.0	3/4"	10.8	35.7	33.2	32.2	16.3	3.5	868	WEST OFFICES	ROOFTOP UNIT
HP 7	3	1200	290	0.7	460/3/60	7.8	9.3	15	5.8	38.0	7.0	3/4"	5.1	29.3	25.1	25.0	16.8	3.7	818	CENTRAL SUPPLY/STORAGE	ROOFTOP UNIT
HP 8	6	2400	231	0.9	460/3/60	12.0	14.4	20	9.6	75.0	13.5	1-1/4"	4.2	53.2	50.3	45.0	16.4	3.7	963	SCADA MAIN	ROOFTOP UNIT
HP 9	8	3200	189	0.8	460/3/60	15.5	17.0	20	6.2	41.0	18.0	1-1/2"	9.7	64.4	59.5	63.2	15.9	3.3	1174	LABS/STORAGE/OFFICE	ROOFTOP UNIT
HP 10	3/4	300	15	0.25	208-230/1/60	4.3	5.3	15	3.9	21.0	2.0	1/2"	3.2	5.3	5.2	1.1	18.1	3.4	156	DATA/TELECOM ROOM	HORIZONTAL CEILING-MOUNTED UNIT
HP 11	4	1550	22	0.75	460/3/60	13.3	14.9	20	6.4	41.0	9.0	1"	5.7	38.2	38.1	5.4	7.9	4.0	416	SCADA SERVER ROOM	HORIZONTAL CEILING-MOUNTED UNIT

NOTES:
1. UNIT WEIGHTS INCLUDE CURB FOR ROOFTOP UNITS.

DIFFUSER SCHEDULE

QTY	CONDITION	TAG	MAX CFM	NECK SIZE	MODULE SIZE	NC	PD	FLOW	LOCATION
4	EXISTING	SD-1.1	120	6"	24X24	-	-	SUPPLY	T-BAR CEILING
3	EXISTING	SD-1.2	230	8"	24X24	-	-	SUPPLY	T-BAR CEILING
9	EXISTING	SD-1.3	410	10"	24X24	-	-	SUPPLY	T-BAR CEILING
0	EXISTING	SD-1.4						NOT USED	
2	EXISTING	SD-1.5	120	6"	12X8	-	-	SUPPLY	GYPSUM CEILING
0	EXISTING	RD-1.1						NOT USED	
1	EXISTING	RD-1.2	210	8"	24X24	-	-	RETURN	T-BAR CEILING
5	EXISTING	RD-1.3	380	10"	24X24	-	-	RETURN	T-BAR CEILING
1	EXISTING	RD-1.4	600	12"	24X24	-	-	RETURN	T-BAR CEILING
5	RE-USED	SD-1.1	120	6"	24X24	-	-	SUPPLY	T-BAR CEILING
27	RE-USED	SD-1.2	230	8"	24X24	-	-	SUPPLY	T-BAR CEILING
12	RE-USED	SD-1.3	410	10"	24X24	-	-	SUPPLY	T-BAR CEILING
4	RE-USED	SD-1.4	680	12"	24X24	-	-	SUPPLY	T-BAR CEILING
4	RE-USED	RD-1.1	100	6"	24X24	-	-	RETURN	T-BAR CEILING
8	RE-USED	RD-1.2	210	8"	24X24	-	-	RETURN	T-BAR CEILING
7	RE-USED	RD-1.3	380	10"	24X24	-	-	RETURN	T-BAR CEILING
13	RE-USED	RD-1.4	600	12"	24X24	-	-	RETURN	T-BAR CEILING
0	NEW	SD-2.1						NOT USED	
12	NEW	SD-2.2	225	8"	24X24	27	0.097	SUPPLY	T-BAR CEILING
24	NEW	SD-2.3	410	10"	24X24	32	0.130	SUPPLY	T-BAR CEILING
0	NEW	SD-2.4						NOT USED	
1	NEW	SD-2.5	150	6"	12X8	17	0.066	SUPPLY	GYPSUM CEILING
0	NEW	RD-2.1						NOT USED	
15	NEW	RD-2.2	700-800	14"	24X24	43	0.190	RETURN	T-BAR CEILING
2	NEW	MG-2.1	810	16"	24X24	28	.12	MAKE-UP AIR GRILLE	T-BAR CEILING

PRIMARY HYDRONIC PUMP SCHEDULE

TAG	GPM	TDH	ELECTRICAL			IMPELLER DIA.	WEIGHT (LBS.)	NOTES
			VOLTAGE	HP	BHP			
P A	75	48	460/60/3	1.5	1.42	6.875"	170	MASTER PRIMARY LOOP PUMP
P B	75	48	460/60/3	1.5	1.42	6.875"	170	PRIMARY LOOP PUMP
TAG	GPM	TDH	ELECTRICAL			IMPELLER DIA.	WEIGHT (LBS.)	NOTES
			VOLTAGE	AMPS	WATTS			
P C	40	6	115/60/1	2.15	215	1/6	15	SCADA NIGHT PRIMARY LOOP PUMP

SECONDARY HYDRONIC PUMP SCHEDULE

TAG	GPM	TDH	ELECTRICAL				WEIGHT (LBS.)	NOTES
			VOLTAGE	AMPS	WATTS	HP		
P 1	22.5	10.6	115/60/1	2.15	245	1/6	12.5	HP-1 SECONDARY LOOP PUMP
P 2	22.5	10.6	115/60/1	2.15	245	1/6	12.5	HP-2 SECONDARY LOOP PUMP
P 3	13.5	10.5	115/60/1	1.7	205	1/12	12.5	HP-3 SECONDARY LOOP PUMP
P 4	7	14.8	115/60/1	1.7	205	1/12	12.5	HP-4 SECONDARY LOOP PUMP
P 5	13.5	12	115/60/1	1.7	205	1/12	12.5	HP-5 SECONDARY LOOP PUMP
P 6	9	14.8	115/60/1	1.7	205	1/12	12.5	HP-6 SECONDARY LOOP PUMP
P 7	7	11	115/60/1	1.7	185	1/12	11.25	HP-7 SECONDARY LOOP PUMP
P 8	13.5	12	115/60/1	1.7	205	1/12	12.5	HP-8 SECONDARY LOOP PUMP
P 9	18	16	115/60/1	2.15	245	1/6	12.5	HP-9 SECONDARY LOOP PUMP
P 10	2	5	115/60/1	0.74	85	1/25	6	HP-10 SECONDARY LOOP PUMP
P 11	9	9.1	115/60/1	1.7	185	1/12	11.25	HP-11 SECONDARY LOOP PUMP

AIR/DIRT SEPARATOR SCHEDULE

TAG	QTY	FLOW CAPACITY (GPM)	PRESSURE DROP (FT)	PIPE CONNECTION (NPT) SIZE		WORKING PRESSURE (PSI)	OPERATING WEIGHT (LBS)
				INLET	OUTLET		
AS 1	1	150	1	4"	4"	150	149

meline engineering
P.O. Box 276665
Sacramento, CA 95827
ph: 916.366.3458
fax: 916.366.3958
email: lisa@meline.com

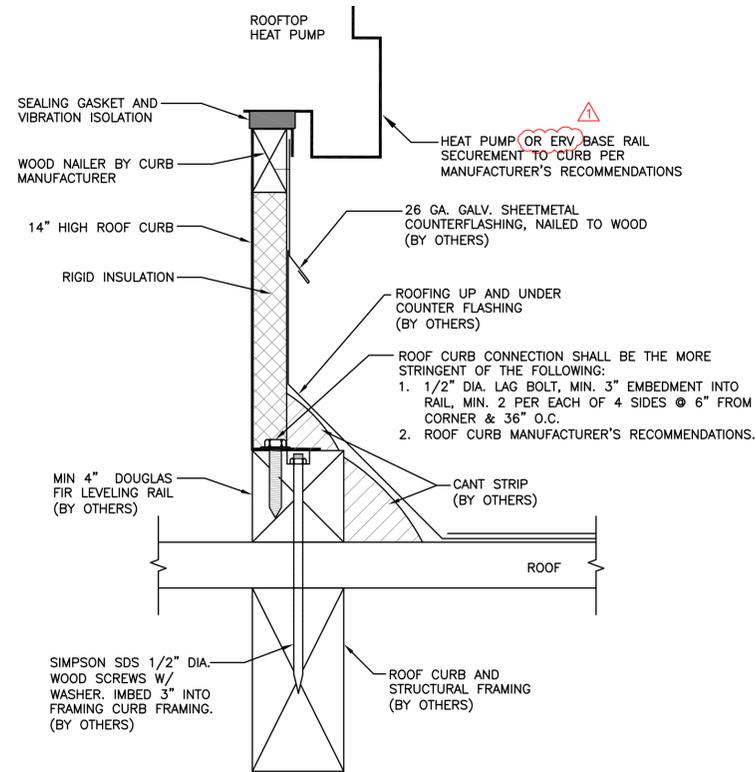
NO.	DATE	REVISION	BY
	9/14/2010	LAB EXHAUST CHANGES - ADDENDUM NO. 2	JP

SONOMA COUNTY WATER AGENCY

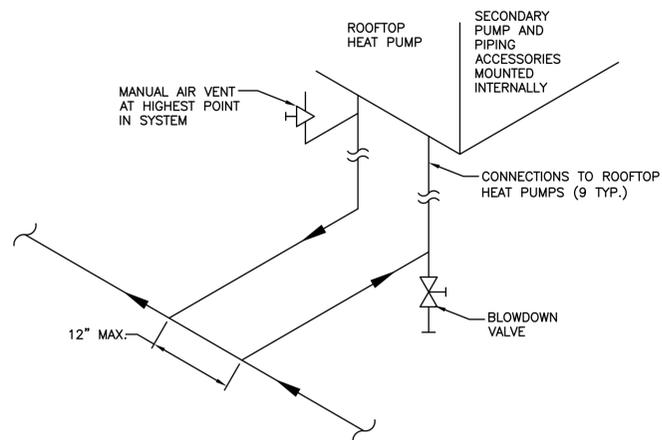
SCALE: NONE DATE: 8/3/2010
DRAWN: JP
REVIEWED:

SONOMA COUNTY WATER AGENCY
1315 AIRPORT BLVD TI
GEOTHERMAL HEAT PUMP RETROFIT
MECHANICAL SCHEDULES & LEGENDS

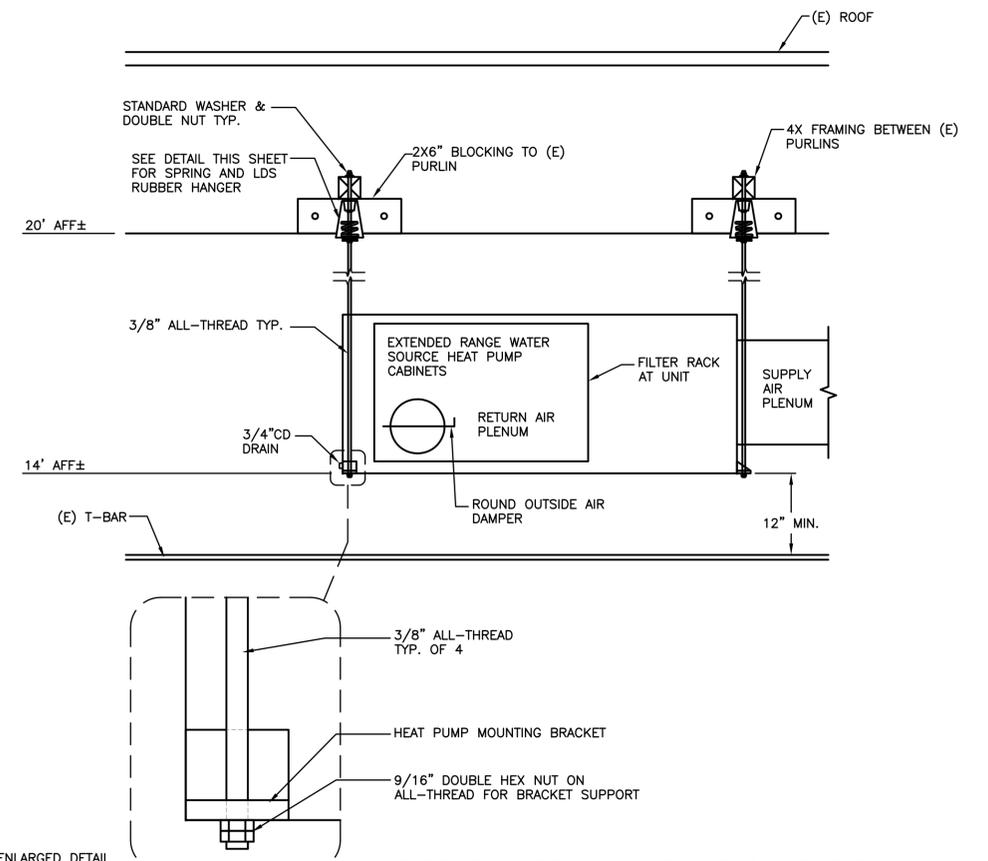
CONTRACT NUMBER: 10-83-7 #1
DRAWING NUMBER: **MO.00**



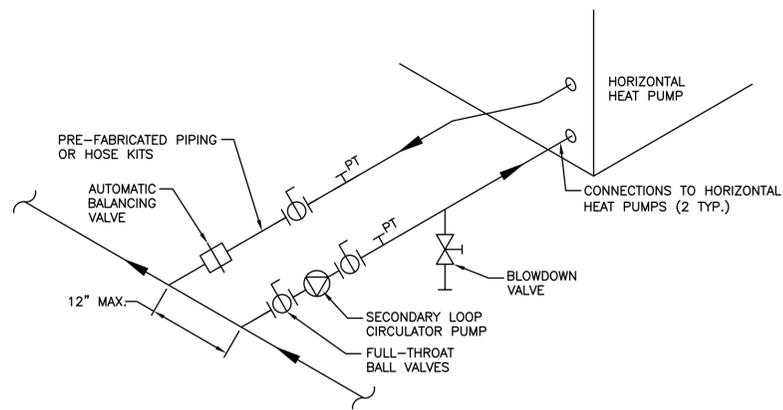
HEAT PUMP & ERV ROOF MOUNT DETAIL
SCALE: NONE



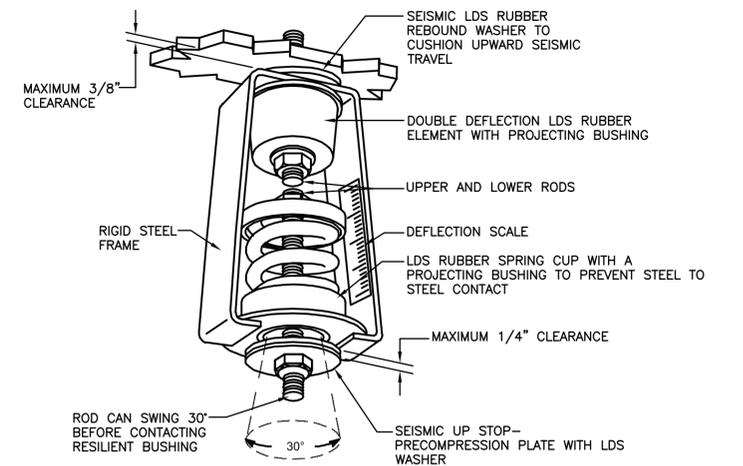
ROOFTOP HEAT PUMP PIPING SCHEMATIC DETAIL
SCALE: NONE



HORIZONTAL CEILING MOUNTED HP DETAIL
SCALE: NONE



HORIZONTAL HEAT PUMP PIPING SCHEMATIC DETAIL
SCALE: NONE



HORIZONTAL HP SPRING AND LDS RUBBER HANGER
SCALE: NONE

meline engineering
P.O. Box 276665
Sacramento, CA 95827
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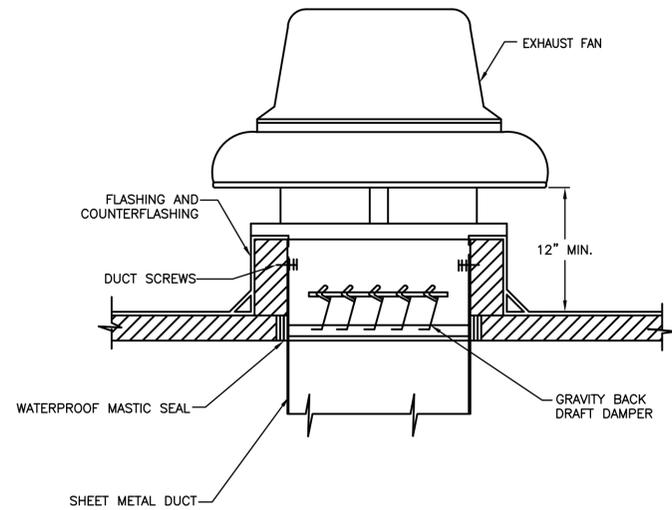
NO.	DATE	REVISION	BY
1	9/14/2010	LAB EXHAUST CHANGES - ADDENDUM NO. 2	JP

SONOMA COUNTY WATER AGENCY

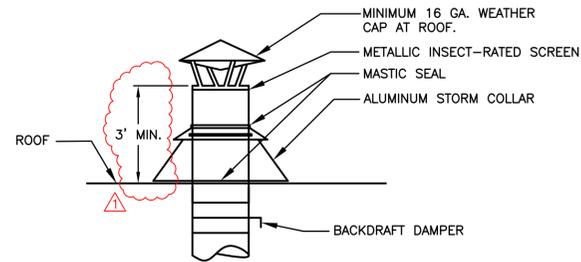
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DRAWN: JP
REVIEWED:

SONOMA COUNTY WATER AGENCY
1315 AIRPORT BLVD TI
GEOTHERMAL HEAT PUMP RETROFIT
MECHANICAL DETAILS

CONTRACT NUMBER: 10-83-7 #1
DRAWING NUMBER: **M0.10**

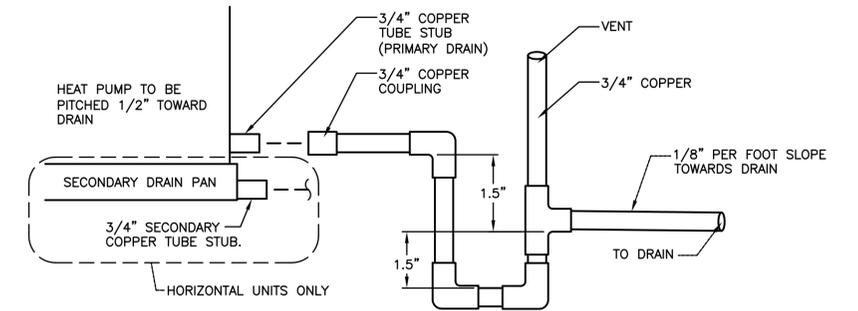


ROOFTOP EXHAUST FAN DETAIL
SCALE: NONE

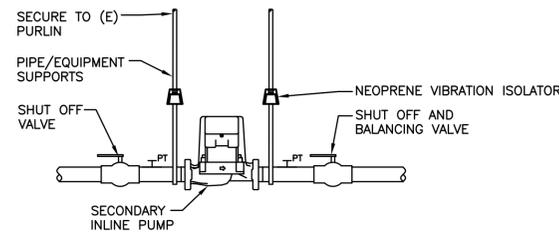


DUCT ROOF PENETRATION DETAIL
SCALE: NONE

DETAIL TYPICAL OF ROOF DUCT PENETRATIONS, INCLUDING ALL EXHAUST AIR AND FRESH INTAKE AIR.

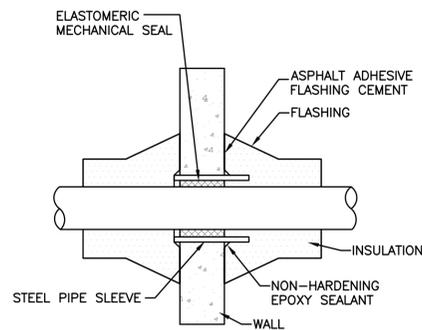


HEAT PUMP CONDENSATE DRAIN DETAIL
SCALE: N/A

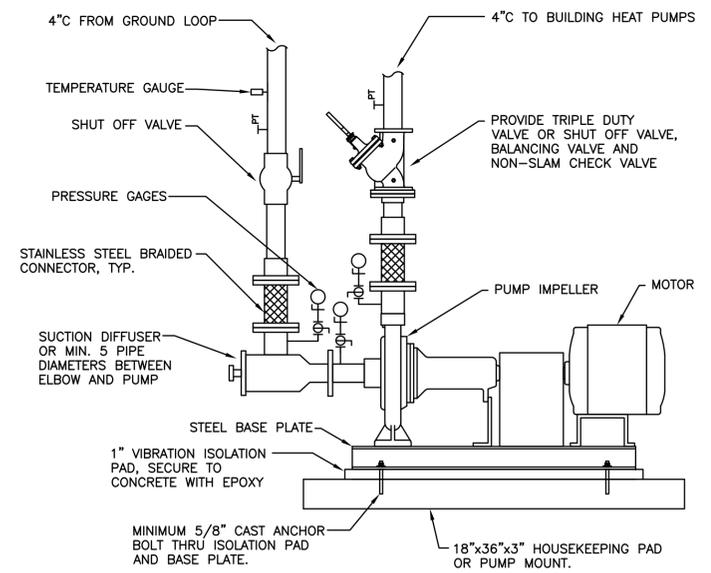


IN-LINE MOUNTING DETAIL
SCALE: N/A

DETAIL TYP FOR:



WALL PENETRATION DETAIL
SCALE: N/A



PRIMARY HYDRONIC PUMP & PIPING DETAIL
SCALE: N/A

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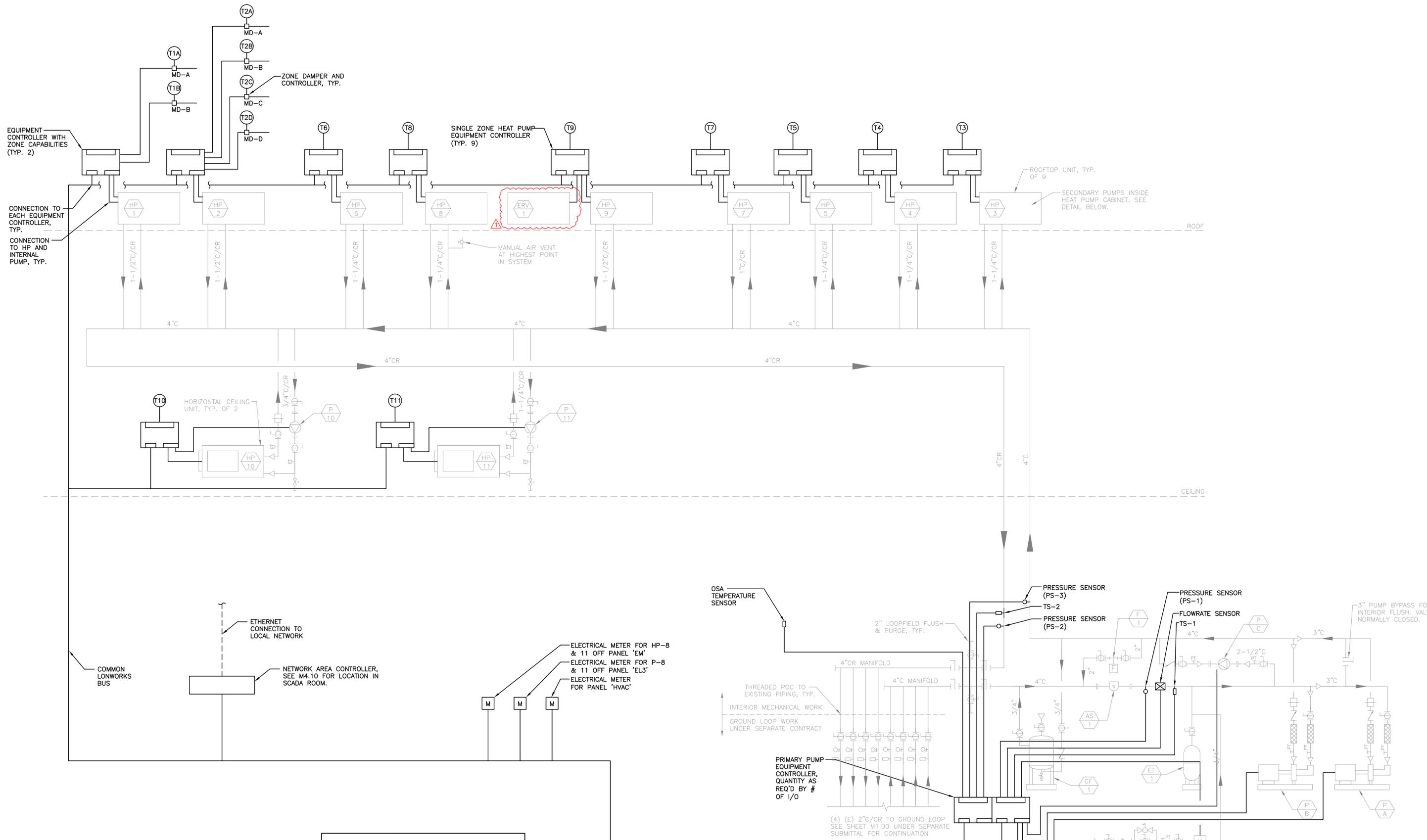
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SONOMA COUNTY WATER AGENCY

SCALE: NONE DATE: 8/3/2010
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SONOMA COUNTY WATER AGENCY
1315 AIRPORT BLVD TI
GEOTHERMAL HEAT PUMP RETROFIT
MECHANICAL DETAILS

CONTRACT NUMBER: 10-83-7 #1
DRAWING NUMBER: **MO.11**

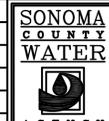



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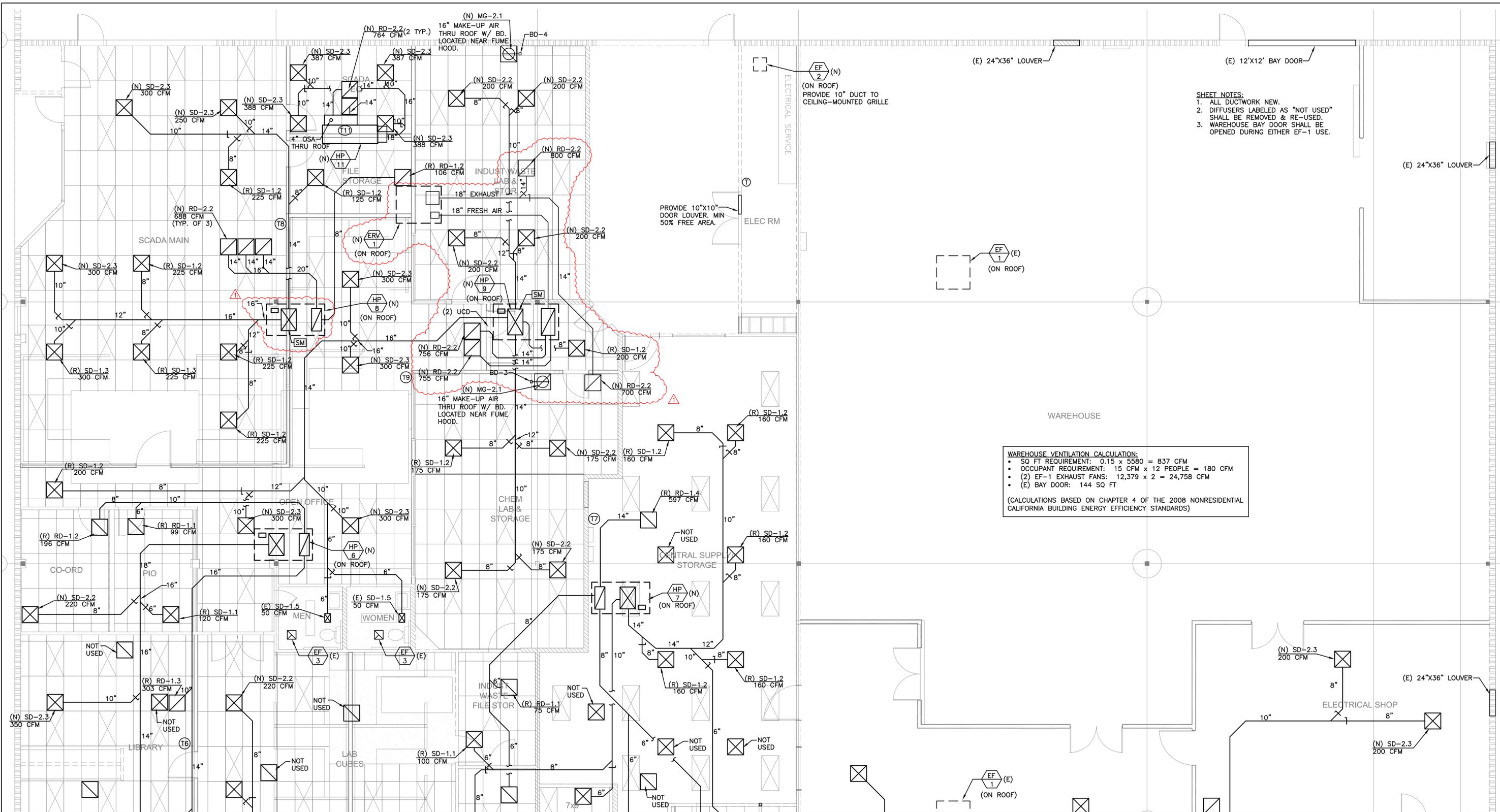
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SCALE: NONE
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SONOMA COUNTY WATER AGENCY
 1315 AIRPORT BLVD TI
 GEOTHERMAL HEAT PUMP RETROFIT
 MECHANICAL CONTROLS SCHEMATIC

CONTRACT NUMBER: 10-83-7 #1
 DRAWING NUMBER: **M0.30**



SHEET NOTES:
 1. ALL DUCTWORK NEW.
 2. DIFFUSERS LABELED AS "NOT USED" SHALL BE REMOVED & RE-USED.
 3. WAREHOUSE BAY DOOR SHALL BE OPENED DURING EITHER EF-1 USE.

WAREHOUSE VENTILATION CALCULATION:
 • SQ FT REQUIREMENT: $0.15 \times 5580 = 837$ CFM
 • OCCUPANT REQUIREMENT: 15 CFM \times 12 PEOPLE = 180 CFM
 • (2) EF-1 EXHAUST FANS: $12,379 \times 2 = 24,758$ CFM
 • (E) BAY DOOR: 144 SQ FT
 (CALCULATIONS BASED ON CHAPTER 4 OF THE 2008 NONRESIDENTIAL CALIFORNIA BUILDING ENERGY EFFICIENCY STANDARDS)

SEE M2.00 FOR CONTINUATION



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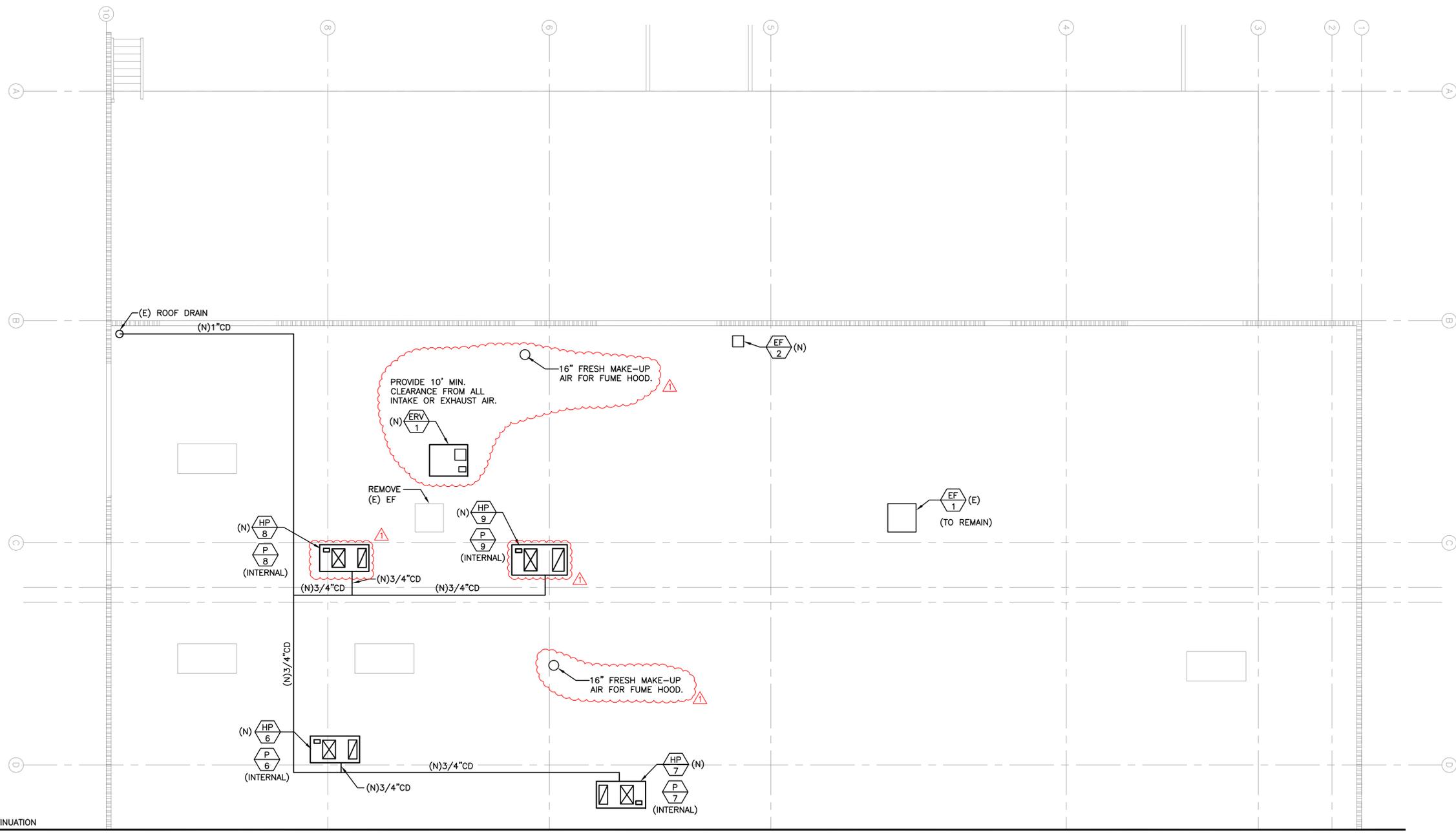
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DRAWN: JP	
REVIEWED:	



SONOMA COUNTY WATER AGENCY
 1315 AIRPORT BLVD TI
 GEOTHERMAL HEAT PUMP RETROFIT

CONTRACT NUMBER: 10-83-7 #1

DRAWING NUMBER: **M2.10**



SEE M3.10 FOR CONTINUATION



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NO.	DATE	REVISION	BY
1	9/14/2010	LAB EXHAUST CHANGES - ADDENDUM NO. 2	JP

SONOMA COUNTY WATER AGENCY

SCALE: NONE
 DATE: 8/3/2010

DRAWN: JP
 REVIEWED:

SONOMA COUNTY WATER AGENCY
 1315 AIRPORT BLVD TI
 GEOTHERMAL HEAT PUMP RETROFIT
 NEW MECHANICAL FLOOR PLAN NORTH

CONTRACT NUMBER: 10-83-7 #1

DRAWING NUMBER: **M3.11**

PNL 'HVAC' MAIN ELECTRICAL ROOM												PHASE		3 VOLTAGE		480 MCB		225A	
												WIRE		3 AIC		14K		MLO	
CKT	NOTES	TYPE	T	P	DESCRIPTION	LOAD	LOAD	DESCRIPTION	T	P	TYPE	NOTES	CKT						
1		M				5.3	A	2.2			M		2						
3		M	25	3	HP-1	5.3	B	2.2	HP-6	15	3	M	4						
5		M				5.3	C	2.2			M		6						
7		M				5.3	A	2.1			M		8						
9		M	25	3	HP-2	5.3	B	2.1	HP-7	15	3	M	10						
11		M				5.3	C	2.1			M		12						
13		M				2.6	A						14						
15		M	15	3	HP-3	2.6	B						16						
17		M				2.6	C						18						
19		M				2.2	A						20						
21		M	15	3	HP-4	2.2	B	2	EF-1 SOUTH, EF-1 NORTH	20	3	M	22						
23		M				2.2	C	2			M		24						
25		M				3.2	A						26						
27		M	20	3	HP-5	3.2	B						28						
29		M				3.2	C						30						
31		M				0.8	A				M		32						
33		M	15	3	P-A	0.8	B				M		34						
35		M				0.8	C				M		36						
37		M				0.8	A	3			G		38						
39		M	15	3	P-B	0.8	B	2.9	MFR HVAC	20	3	G	40						
41		M				0.8	C	2.3			G		42						
PHASE A						29.5	SUBTOTAL		DEMAND CALCULATION										
PHASE B						29.4			CONTINUOUS LOAD (C) 125%				0						
PHASE C						28.8			DEDICATED LOAD (D) 100%				0						
						8.2			GENERAL LOAD (G) 100 1ST 10KVA, 50% REST				8.2						
NOTES:						15.9			LARGEST MOTOR 25%				3.975						
						79.5			MOTOR LOAD (M) 100%				99.375						
									TOTAL DEMAND				112						
									AMPS @480				134						

<E> PNL 'EM' MAIN ELECTRICAL ROOM												PHASE		3 VOLTAGE		277/480		MCB	
												WIRE		4 AIC				200AMPS	
CKT	NOTES	TYPE	T	P	DESCRIPTION	LOAD	LOAD	DESCRIPTION	T	P	TYPE	NOTES	CKT						
1		M				3.2	A	3.5			M		2						
3		M	20	3	HP-8	3.2	B	3.5	HP-11	20	3	M	4						
5		M				3.2	C	3.5			M		6						
7		M					A	4.1			M		8						
9		M					B	4.1	HP-9	20	3	M	10						
11		M					C	4.1			M		12						
13		M					A						14						
15		M					B						16						
17		M					C						18						
19		M					A						20						
21		M					B						22						
23		M					C						24						
25		M					A						26						
27		M					B						28						
29		M					C						30						
31		M					A						32						
33		M					B						34						
35		M					C						36						
37		M					A	10.5			G		38						
39		M	15	3	P-B		B	11.32	<E> TRANSFORMER ET3	70	3	G	40						
41		D					C	11.22			G		42						
PHASE A						21.3	SUBTOTAL		DEMAND CALCULATION										
PHASE B						22.12			CONTINUOUS LOAD (C) 125%				0						
PHASE C						22.02			DEDICATED LOAD (D) 100%				0						
						33.04			GENERAL LOAD (G) 100 1ST 10KVA, 50% REST				33.04						
NOTES:						10.5			LARGEST MOTOR 25%				2.625						
						32.4			MOTOR LOAD (M) 100%				32.4						
									TOTAL DEMAND				68						
									AMPS @ 277/480				82						

PNL 'HVACL' MAIN ELECTRICAL ROOM												PHASE		3 VOLTAGE		120/208		MCB	
												WIRE		4 AIC		10K		50A	
CKT	NOTES	TYPE	T	P	DESCRIPTION	LOAD	LOAD	DESCRIPTION	T	P	TYPE	NOTES	CKT						
1		M	20	1	P1, P2, P10	0.72	A	0.2	EF-2 ELECTRICAL ROOM	20	1	M	2						
3		M	20	1	P3, P4, P5	0.72	B	0.4	EF-4, EF-5 (SOUTH END)	20	1	M	4						
5		M	20	1	P6, P7	0.5	A	0.2	EF-3 (SOUTH END)	20	1	M	6						
7		M	20	1	P8, P9	0.5	B	0.4	EF-3 (MENS AND WOMENS NORTH)	20	1	M	8						
9		G	20	1	DDC UNIT CONTROLLERS	1	B	0.5	HP-10	15	2	M	10						
11		G	20	1	DDC UNIT CONTROLLERS	1	C	0.5			M		12						
13		M					A						14						
15		M					B						16						
17		M					C						18						
19		M					A						20						
PHASE A						1.32	SUBTOTAL		DEMAND CALCULATION										
PHASE B						2.62			CONTINUOUS LOAD (C) 125%				0						
PHASE C						2.2			DEDICATED LOAD (D) 100%				0						
						2			GENERAL LOAD (G) 100 1ST 10KVA, 50% REST				2						
NOTES:						1			LARGEST MOTOR 25%				0.25						
						4.14			MOTOR LOAD (M) 100%				5.175						
									TOTAL DEMAND				7						
									AMPS @ 120/208				21						

<E> PNL 'EL3' MAIN ELECTRICAL ROOM												PHASE		3 VOLTAGE		120/208		MCB	
												WIRE		4 AIC		MLO		150AMPS	
CKT	NOTES	TYPE	T	P	DESCRIPTION	LOAD	LOAD	DESCRIPTION	T	P	TYPE	NOTES	CKT						
1		M	20	1	P-8, P-9, P-11	0.72	A	0.4			M		2						
3		M	20	1	P-8, P-9, P-11	0.72	B	0.4	ERV - 1	20	3	M	4						
5		G	20	1	CIRCULATING PUMP P-C	1	C	0.4			M		6						
7		M					A						8						
9		M					B						10						
11		M					C						12						
13		M					A						14						
15		M					B						16						
17		M					C						18						
19		M					A						20						
21		M					B						22						
23		M					C						24						
25		M					A						26						
27		M					B						28						
29		M					C						30						
31		M					A						32						
33		M					B						34						
35		M					C						36						
37		G				8.5	A	2			G		38						
39		G	125	3	<E> EL3A FEEDER	9.32	B	2	EL3B FEEDER	100	3	G	40						
41		G				9.5	C	1.72			G		42						
PHASE A						11.62	SUBTOTAL		DEMAND CALCULATION										
PHASE B						12.02			CONTINUOUS LOAD (C) 125%				0						
PHASE C						12.62			DEDICATED LOAD (D) 100%				0						
						34.04			GENERAL LOAD (G) 100 1ST 10KVA, 50% REST				34.04						
NOTES:						1			LARGEST MOTOR 25%				0.25						
						2.22			MOTOR LOAD (M) 100%				2.775						
									TOTAL DEMAND				37						
									AMPS @ 120/208				103						



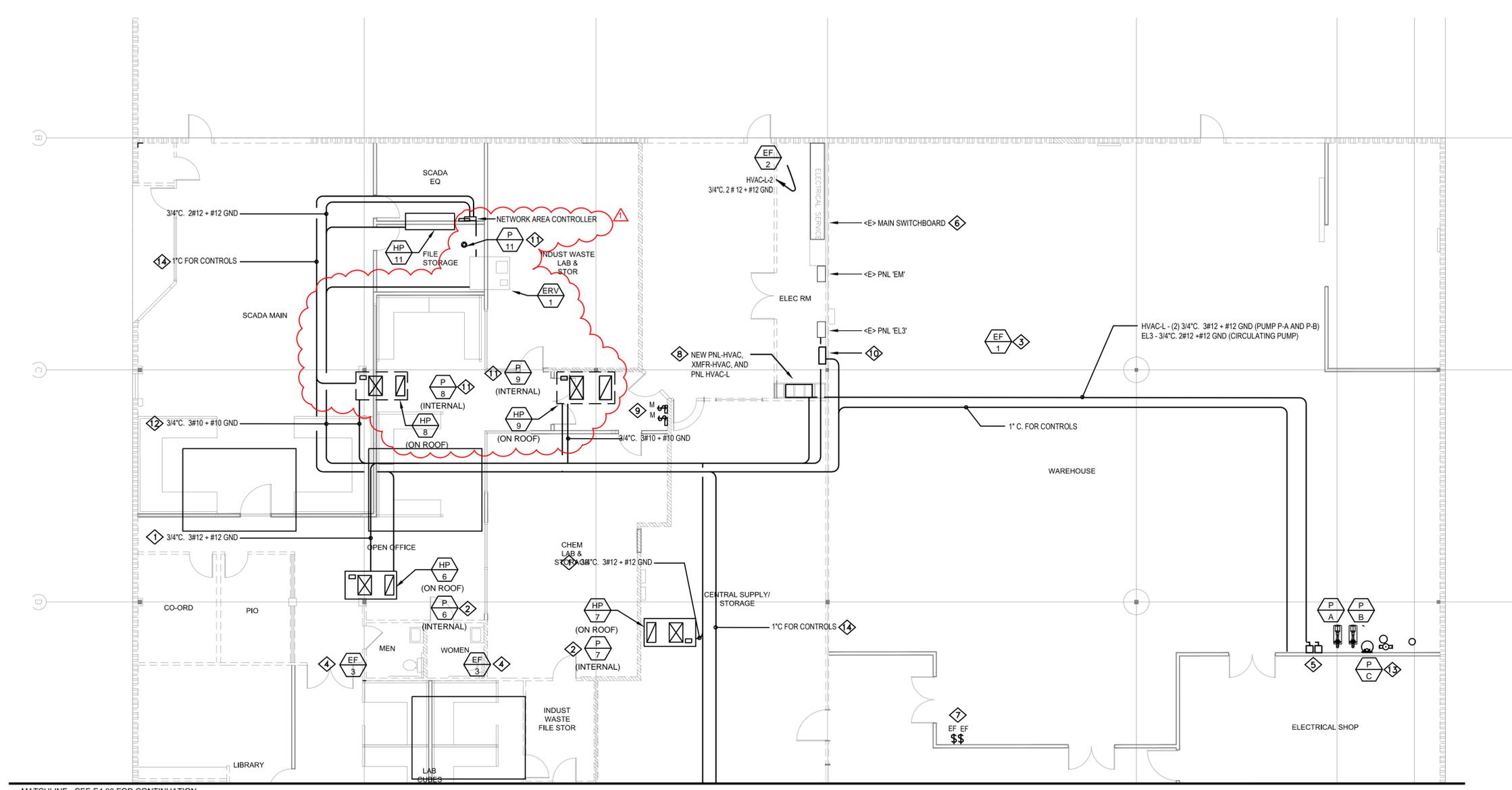
NO.	DATE	REVISION	BY
1	9/14/2010	LAB EXHAUST CHANGES - ADDENDUM NO. 2	JP

SCALE:	DATE:
	8/3/2010
DRAWN:	SH
REVIEWED:	RL

SONOMA COUNTY WATER AGENCY
1315 AIRPORT BLVD TI
GEOTHERMAL HEAT PUMP RETROFIT
ELECTRICAL SCHEDULES

DRAWING NUMBER: **ME0.01**

CONTRACT NUMBER: 10-83-7 #1



REFERENCE SHEET NOTES

- 1 HOMERUN TO PANEL 'HVAC'. NO MORE THAN THREE CURRENT CARRYING CONDUCTORS PER CONDUIT.
- 2 POWER FOR SECONDARY PUMP SHALL BE 120VOLT, SINGLE PHASE, 3/4\"/>

MATCHLINE - SEE E4.00 FOR CONTINUATION



NO.	DATE	REVISION	BY
1	9/14/2010	LAB EXHAUST CHANGES - ADDENDUM NO. 2	JP

SCALE: 1/8" = 1'
 DATE: 8/3/2010
 DRAWN: SH
 REVIEWED: RL



SONOMA COUNTY WATER AGENCY
 1315 AIRPORT BLVD TI
 GEOTHERMAL HEAT PUMP RETROFIT
 ELECTRICAL POWER PLAN NORTH

CONTRACT NUMBER: 10-83-7 #1
 DRAWING NUMBER: ME4.10