HVAC NOTES

1. SCOPE OF WORK
   - REPLACE EXISTING FURNACE IN CRAWLSPACE WITH NEW FURNACE AND DX COIL.
   - CONNECT CONDENSATE AND GAS PIPING FOR NEW FURNACE TO CONDENSATE AND GAS PIPING FROM EXISTING FURNACE.
   - REMOVE ALL EXISTING DUCTING, REGISTERS AND EQUIPMENT NOT BEING REUSED.
   - WHEREVER EXISTING FLOOR DIFFUSERS AND GRILLES ARE BEING REMOVED, PATCH TO MATCH EXISTING.
2. FURNISH AND INSTALL ALL MATERIALS AND PERFORM ALL LABOR NECESSARY FOR A COMPLETE INSTALLATION OF HVAC WORK INDICATED ON THE DRAWINGS. ALSO, PROVIDE ANY INCIDENTAL WORK NOT SHOWN OR SPECIFIED, WHICH CAN REASONABLY BE INFERRED OR TAKEN AS BELONGING TO THE WORK AND NECESSARY TO PROVIDE THE COMPLETE SYSTEM.
3. IT IS THE INSTALLING CONTRACTORS RESPONSIBILITY TO ASSURE ALL MECHANICAL SYSTEMS FUNCTION PROPERLY, SAFELY, AND MEET ALL LOCAL, STATE AND REGIONAL CODES.
4. ALL WORK IS TO CONFORM TO THE ACCEPTED STANDARDS OF THE TRADE. THE ENGINEER IS TO BE NOTIFIED IF ANY SUBSTITUTIONS ARE SEEN TO BE NECESSARY.
5. CONTRACTOR SHALL PARTICIPATE IN BID WALK-THRU AND SHALL FAMILIARIZE THEMSELVES WITH EXISTING CONDITIONS. BIDS SHALL BE ADJUSTED TO ACCOMMODATE ANY EXISTING CONDITIONS WHICH ARE NOT SHOWN ON PLANS AND ARE VISIBLE DURING WALK-THRU. ANY AND ALL DEVIATIONS FROM PLANS SHALL BE BROUGHT TO THE ARCHITECTS ATTENTION.
6. CONTROLS - GENERAL
   - A. THE VENTILATION SYSTEM SHALL BE WIRED TO OPERATE CONTINUOUSLY
   - B. ROOM THERMOSTATS SHALL BE PROGRAMMABLE WITH 5-1-1 DAY
   - C. PROGRAMMING AND 24-HOUR HEATING AND COOLING SETBACK CAPABILITY.
   - D. PROVIDE HARDWIRED THERMOSTAT FOR FC-2/HP-2.
   - E. THERMOSTATS SHALL BE INSTALLED WHERE INDICATED ON PLANS, 48 INCHES ABOVE FINISHED FLOOR LEVEL.
7. AIR DIFFUSERS AND RETURN/EXHAUST GRILLES SHALL BE SHOEMAKER, OR EQUAL. PROPOSED MODEL NUMBERS FOR DIFFERENT APPLICATIONS ARE AS FOLLOWS:

APPLICATION	MODEL #	REMARKS
CLG GYPSUM SUPPLY	CB	ADJUSTABLE CURVED BLADE DIFFUSER
		THROW PATTERN INDICATED
SIDEWALL SUPPLY	951	STEEL BLADE ADJUSTABLE DIFFUSER
CLG GYPSUM RETURN	915	HORIZONTAL BAR
		FIXED BLADE
GYPSUM CEILING	FG2	STAMP FACED FILTER GRILLE
FILTERED RETURN		PROVIDE 2" MERV-8 FILTER
DOOR LOUVER	4000	VISION PROOF ALUMINUM
		TRANSFER GRILLE

8. LOCATIONS OF DIFFUSERS AND GRILLES ON PLANS ARE APPROXIMATE AND MAY HAVE TO BE RELOCATED TO AVOID OBSTACLES, SUCH AS, LIGHT FIXTURES AND SPRINKLERS.
9. FLUES AND COMBUSTION INLETS FOR FURNACES SHALL TERMINATE A MINIMUM OF THREE (3) FEET ABOVE ANY FRESH AIR INLET WITHIN TEN (10') FEET.
10. SLOPE ALL CONDENSATE LINES AT 1/4" PER FOOT. CONDENSATE SHALL TERMINATE OUTSIDE A MINIMUM OF 6" ABOVE GRADE WITH A DOWNWARD ELBOW OR INDIRECTLY TO APPROVED PLUMBING FIXTURE. PIPING SHALL BE 3/4" SCHEDULE 40 PVC UNLESS OTHERWISE NOTED. IN LIEU OF SECONDARY DRAIN, FLOAT SWITCH FOR AIR HANDLER WILL INTERRUPT POWER TO THE FANCOIL UNIT WHEN MOISTURE IS DETECTED IN THE DRAIN PAN.
11. DUCT MATERIAL AND SEALING:
   - A. DUCTING IN CONCEALED LOCATION SHALL BE GALVANIZED SHEET METAL AND PRE-INSULATED FLEX DUCT AS INDICATED ON PLANS. DUCT SHALL BE MANUFACTURED IN ACCORDANCE WITH CHAPT. 6 OF THE 2016 CMC AND SMACNA GUIDELINES.
   - B. PRE-INSULATED FLEX DUCT SHALL HAVE AN R-VALUE = 8.0.
   - C. FACTORY-FABRICATED DUCT SYSTEMS SHALL COMPLY WITH UL181.
   - D. METAL TO METAL JOINTS SHALL BE SEALED WITH MASTIC SEALANT TO PROVIDE AIRTIGHT PROTECTION PRIOR TO INSULATION. APPLY SEALANT ACCORDING TO MANUFACTURER'S RECOMMENDATION.
   - E. INNER LINING OF FLEX DUCTING SHALL BE SECURELY FASTENED WITH A PANDUIT STRAP. THE EXTERIOR LINING (INSULATION) SHALL BE SECURELY TAPED TO THE SHEET METAL FITTING.
   - F. WHERE TURNS AND/OR TRANSITIONS EXCEED 45 DEGREES USE SHEET METAL FITINGS AND ELBOWS. PROVIDE SHEET METAL SLEEVES FOR ALL SPLICES.
   - G. CORRUGATED ALUMINUM FLEX DUCT SHALL NOT BE ALLOWED.
   - H. ALL TAPES AND MASTIC SEALANTS SHALL COMPLY WITH UL181, UL 181A, OR UL181B.
12. INCREASE DUCT SIZES GRADUALLY, NOT EXCEEDING 15 DEGREES DIVERGENCE WHEREVER POSSIBLE. DIVERGENCE UPSTREAM OF EQUIPMENT SHALL NOT EXCEED 20 DEGREES± CONVERGENCE DOWNSTREAM SHALL NOT EXCEED 30 DEGREES.
13. SUPPORTS AND HANGERS FOR DUCTING SHALL BE IN ACCORDANCE WITH THE 2016 UNIFORM MECHANICAL CODE AND IN ACCORDANCE WITH SMACNA HVAC DUCT CONSTRUCTION STANDARDS - METAL AND FLEXIBLE. DUCTS SHALL BE SUPPORTED AT EACH CHANGE OF DIRECTION, SUPPORTS AND 8' INTERVALS (MIN.). DUCT SUPPORTS FOR EXPOSED DUCTING SHALL CONSIST OF A 1" 20 GA. BAND SURROUNDING THE DUCT WITH A 3/8" STEEL ROD SUSPENDING IT FROM THE CEILING. DUCTS SHALL BE SUPPORTED A 8' INTERVALS (MIN.)
14. WRAP ALL UNLINED CONCEALED SUPPLY AND RETURN DUCTS WITH O.C. FIBERGLASS DUCT WRAP OR JM MICROLITE, 2" THICK AND 1" PER CUBIC FOOT DENSITY. WRAP INSULATION ENTIRELY AROUND DUCT AND WIRE SECURELY IN PLACE WITH #16 WIRE 12" O.C. ON EACH SIDE OF STANDING SEAM AND OVER INSULATION JOINT. LAP ALL INSULATION JOINTS 3" MIN. INSULATE DUCTS TIGHT AGAINST OTHER WORK BEFORE HANGING IN PLACE.
15. DUCTS SHALL BE LINED WITH 1" INTERIOR LINING WHERE INDICATED ON PLANS AND IN NO CASE LESS THAN 5 FEET OF AIR MOVING DEVICE. DUCT LINING SHALL BE 1" OWENS CORNING QUIETR® OR EQUAL. MATERIAL HAS A 'K' ØF Ø.23 (BTU/HR-FT-°F), Ø.1 NRC SOUND ABSORPTION COEFFICIENT.
16. AT TIME OF ROUGH INSTALLATION OR DURING STORAGE OF THE CONSTRUCTION SITE AND UNTIL FINAL STARTUP OF THE HVAC SYSTEM, ALL DUCTING AND RELATED AIR DISTRIBUTION COMPONENTS SHALL BE COVERED WITH TAPE, PLASTIC, SHEET METAL, OR OTHER METHODS ACCEPTABLE TO THE ENFORCING AGENCY TO REDUCE THE AMOUNT OF DUST OR DEBRIS WHICH MAY COLLECT IN THE SYSTEM.
17. AIR DISTRIBUTION SYSTEM SHALL BE BALANCED WITH AN APPROVED AND CALIBRATED AIR FLOW MEASURING DEVICE IN ACCORDANCE WITH THE REQUIREMENTS SET FORTH BY THE NATIONAL ENVIRONMENTAL BALANCING BUREAU (NEBB). AN INDEPENDENT CONTRACTOR SHALL PROVIDE THE AIR BALANCE. PROVIDE INDICATED AIR FLOW RATES (WITHIN ±5%). PROVIDE OWNER WITH COMPLETE AIR BALANCE REPORT IN ACCORDANCE WITH THE SPECIFICATIONS.
18. DUCT SYSTEM LEAKAGE TEST
   - PROVIDE DUCT TESTS FOR ALL SYSTEMS THAT HAVE ANY PORTION OF THE AIR DISTRIBUTION SYSTEM IN UNCONDITIONED SPACE (E.G. ATTICS & CRAWLSPACES)
   - PERFORM FINAL DUCT PRESSURE TEST AFTER THE DRY WALL HAS BEEN FINISHED AND T-BAR CEILING HAS BEEN COMPLETED. DUCTS SHALL BE PRESSURIZED TO 25 PASCAL AND THE AIR LEAKAGE SHALL NOT EXCEED 5% OF FAN FLOW. FINAL TEST SHALL BE PERFORMED BY INDEPENDENT CERTIFIED HERS. AT THE TESTERS DISCRETION ONE OUT OF SEVEN SYSTEMS SHALL BE TESTED.
   - DUCT TEST SHALL BE PERFORMED BY LICENSED HERS RATER.
19. NO DUCTED OR NON-DUCTED AIR MOVING DEVICE SHALL TERMINATE IN ATTIC.

HVAC EQUIPMENT SCHEDULE

SYMBOL	AREA SERVED	COOLING TOTAL (BTU/HR)	COOLING SENSIBLE (BTU/HR)	COOLING COIL EDB/EWB (°F)	HEATING HIGH INPUT/OUTPUT (BTU/HR)	HEATING DB (°F)	FAN CFM	FAN S.P. (WC)	FAN O.A. (CFM)(2) (MIN)	ELECT. VOLTAGE	ELECT. MCA	ELECT. COMP. LRA	ELECT. FUSE/MOCP	MFGR & MODEL NO.	WEIGHT (LBS)	EFFICIENCY	REMARKS
F-1	LOWER LEVEL	---	---	---	60,000 /58,000	25	1,200	0-0.9	200	115 V. 1 PHASE	12.4	---	15	CARRIER # 59TN6A060-14	142	AFUE = 96.7	TWO-STAGE CONDENSING FURNACE MOUNTED IN HORIZONTAL POSITION ECM FAN MOTOR L=35", W=29-1/2',H=17-1/2"
CU-1	LOWER LEVEL	36,800	23,030	80/65	---	---	---	---	---	208/230 V. 1 PHASE	22.08	82	35	CARRIER # 24ANB736-30	204	SEER = 16.5 EER=12.8	GROUND MOUNT CONDENSING UNIT W=31-3/16", D=31-3/16", H=39-1/8"
DX-1	LOWER LEVEL	PERFORMANCE FOR CU-1 ABOVE IS BASED ON THIS COIL												CARRIER # CAPMP3617	66.5	---	MULTIPOISE DIRECT EXPANSION COIL PRESS.DROP = 0.23 IN.WC AT 1200 CFM L=29-3/4", H=17-1/2", W=20-5/8"
FC-2	UPPER LEVEL	24,000	19,500	80/65	27,000	43	800	0.12-0.80	---	(1)	(1)	(1)	(1)	FUJITSU # ARU24RGLX	93	---	INDOOR HEAT PUMP FANCOIL UNIT DIMENSIONS: H=11-13/16", W=39-3/8", D=27-9/16" PROVIDE CONDENSATE PUMP (2) BUILT-IN FLOAT SWITCH FOR CONDENSATE SOUND - 34 DbA
HP-2	UPPER LEVEL	24,000	19,500	80/65	27,000	43	---	---	---	208/230 V. 1 PHASE	20.8	---	30	FUJITSU # AOU24RGLX	134	HSPF = 10.8 SEER = 17.5 EER=12.6	GROUND MOUNTED OUTDOOR HEAT PUMP DIMENSIONS: H=29-7/16", W=35-7/16", D=13" SOUND - 54 dBA
FC-3	COTTAGE	24,000	19,500	80/65	27,000	43	800	0.12-0.80	---	(1)	(1)	(1)	(1)	FUJITSU # ARU24RGLX	93	---	INDOOR HEAT PUMP FANCOIL UNIT DIMENSIONS: H=11-13/16", W=39-3/8", D=27-9/16" PROVIDE CONDENSATE PUMP (2) BUILT-IN FLOAT SWITCH FOR CONDENSATE SOUND - 34 DbA
HP-3	COTTAGE	24,000	19,500	80/65	27,000	43	---	---	---	208/230 V. 1 PHASE	20.8	---	30	FUJITSU # AOU24RGLX	134	HSPF = 10.8 SEER = 17.5 EER=12.6	GROUND MOUNTED OUTDOOR HEAT PUMP DIMENSIONS: H=29-7/16", W=35-7/16", D=13" SOUND - 54 dBA

NOTES:
(1) ELECTRICAL FOR INDOOR UNIT WILL BE PROVIDED BY OUTDOOR UNIT.
(2) FLOAT SWITCH, FOR AIR HANDLERS FC-2 AND FC-3, WILL INTERRUPT POWER TO THE FANCOIL UNIT WHEN MOISTURE IS DETECTED IN THE DRAIN PAN. THIS SATISFIES THE REQUIREMENT FOR SECONDARY CONDENSATE.

EXHAUST FAN SCHEDULE

SYMBOL	QTY.	AREA SERVED	COOLING DESCRIPTION	FAN CFM	FAN S.P. (WC)	FAN RPM	ELECT. VOLTAGE	ELECT. BHP	ELECT. WATTS	MFGR & MODEL NO.	WEIGHT (LBS)	SONES	REMARKS
EF-3	1	PANTRY	CEILING CABINET FAN	131	0.25	---	115 V. 1 PHASE	---	15.7	PANASONIC WHISPERGREEN SELECT™ FV-1115VQ1	11.2	0.7	UNIT HAS BUILT-IN BACKDRAFT DAMPER EXHAUST FAN SHALL HAVE 6" DUCT CONNENCTION FAN HAS 3 HIGH SPEED SETTINGS: 110, 130, OR 150 CFM FACTORY SETTING IS 130 CFM

NOTES:
1. INSTALL/MOUNT EXHAUST FANS ACCORDING TO MANUFACTURER'S RECOMMENDATIONS.

HVAC LEGEND

12"x6" SA 40 CFM — SUPPLY DIFFUSER, SIZE AND FLOW RATE LISTED ARROWS INDICATE THROW PATTERN	E — EQUIPMENT TAG
24"x16" RA 40 CFM — RETURN GRILLE, SIZE AND FLOW RATE LISTED	AC — ABOVE CEILING
4"x10" EA 40 CFM — CEILING EXHAUST GRILLE, SIZE AND FLOW RATE LISTED	F — FURNACE
RECTANGULAR SUPPLY AIR CROSS SECTION	CU — CONDENSING UNIT
RECTANGULAR RETURN AIR CROSS SECTION	HP — HEAT PUMP
RECTANGULAR EXHAUST AIR CROSS SECTION	FC — FAN COIL UNIT
THERMOSTAT	CFM — CUBIC FEET PER MINUTE
BALANCING DAMPER	EF — EXHAUST FAN
10"ø RIGID DUCT	SA — SUPPLY AIR
10"ø FLEXIBLE DUCT	RA — RETURN AIR
	EA — EXHAUST AIR
	OA — OUTSIDE AIR

BOST HOUSE
HVAC IMPROVEMENTS

CONTACTS

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melasenergy.com

SHEET INDEX

M0.1 PROJECT DATA, HVAC NOTES & SPECIFICATIONS
M1.1 COTTAGE AND 1st FLOOR HVAC PLAN
M1.2 2nd FLOOR HVAC PLAN
T-24-1 T-24 ENERGY REPORT

PROJECT DATA

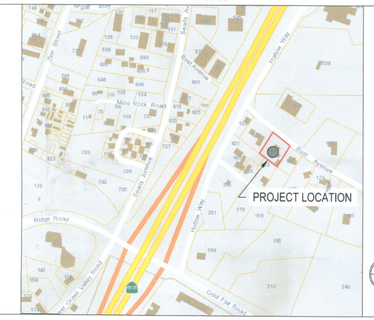
PROJECT SCOPE: REPLACE / MODIFY EXISTING HVAC SYSTEM

SQUARE FOOTAGES:

		OCC.	TYPE
1st FLOOR AREA	2177 SF	R-3	VB
2nd AREA	1427 SF		
TOTAL LIVING AREA	3604 SF		
COTTAGE (CONDITIONED)	743 SF		
CLIMATE ZONE:	11		

VICINITY MAP

NOT TO SCALE



NOTES

COMPLY WITH:
2016 California Residential Code (CRC)
2016 California Building Code (CBC)
2016 California Mechanical Code (CMC)
2016 California Energy Code (T-24)
2016 California Electric Code (CEC)
2016 California Plumbing Code (CPC)
2016 Swimming pool, Hot Tub and Spa Code
2016 California Fire Code
2016 California Green Building Standards Code (CGC)
Other Local & State Laws

OWNER

NEVADA COUNTY
FACILITIES SERVICE CENTER
10014 N. BLOOMFIELD RD.
NEVADA CITY, CA 95959
530-265-1330
ATTN: TIM HORNER

PROJECT ADDRESS: 145 BOST AVENUE
NEVADA CITY, CA 95959
APN: 005-300-010
0.5 ACRE

RECEIVED
JUL 22 2019
Nevada County Community Development Agency

19180S
REVIEWED FOR COMPLIANCE
with County of Nevada Building Regulation Ordinance & current California Codes. The stamping of this plan & specifications SHALL NOT be held to permit or to be an approval of violations of any County Ordinance or State Law.
County of Nevada Building Department
Authorized Signature 7/24/19 Date
These plans must be kept on the premises and accessible to the inspector at all times

JOB SET
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REGISTERED PROFESSIONAL ENGINEER — DAVID L. MELAS — No. M-26289 — Exp. 9/30/18 — MECHANICAL — STATE OF CALIFORNIA

SUBJECT TO FIELD INSPECTION

Plans shall reflect the scope of work of the project. Any changes or deviations must be submitted and reviewed by the Building Department prior to inspection.

Project Title: BOST HOUSE
Project Location: 145 BOST AVENUE NEVADA CITY, CA 95959
Sheet Title: PROJECT DATA, HVAC NOTES AND SPECIFICATIONS

Revisions:

No.	Date:	By:	Description:
	-	-	-

Plot Date: 6/11/2019 JOB SET

Job #	19-066
Scale	as noted
Date 1st Issued	5-29-2019
Sheet Number	M0.1

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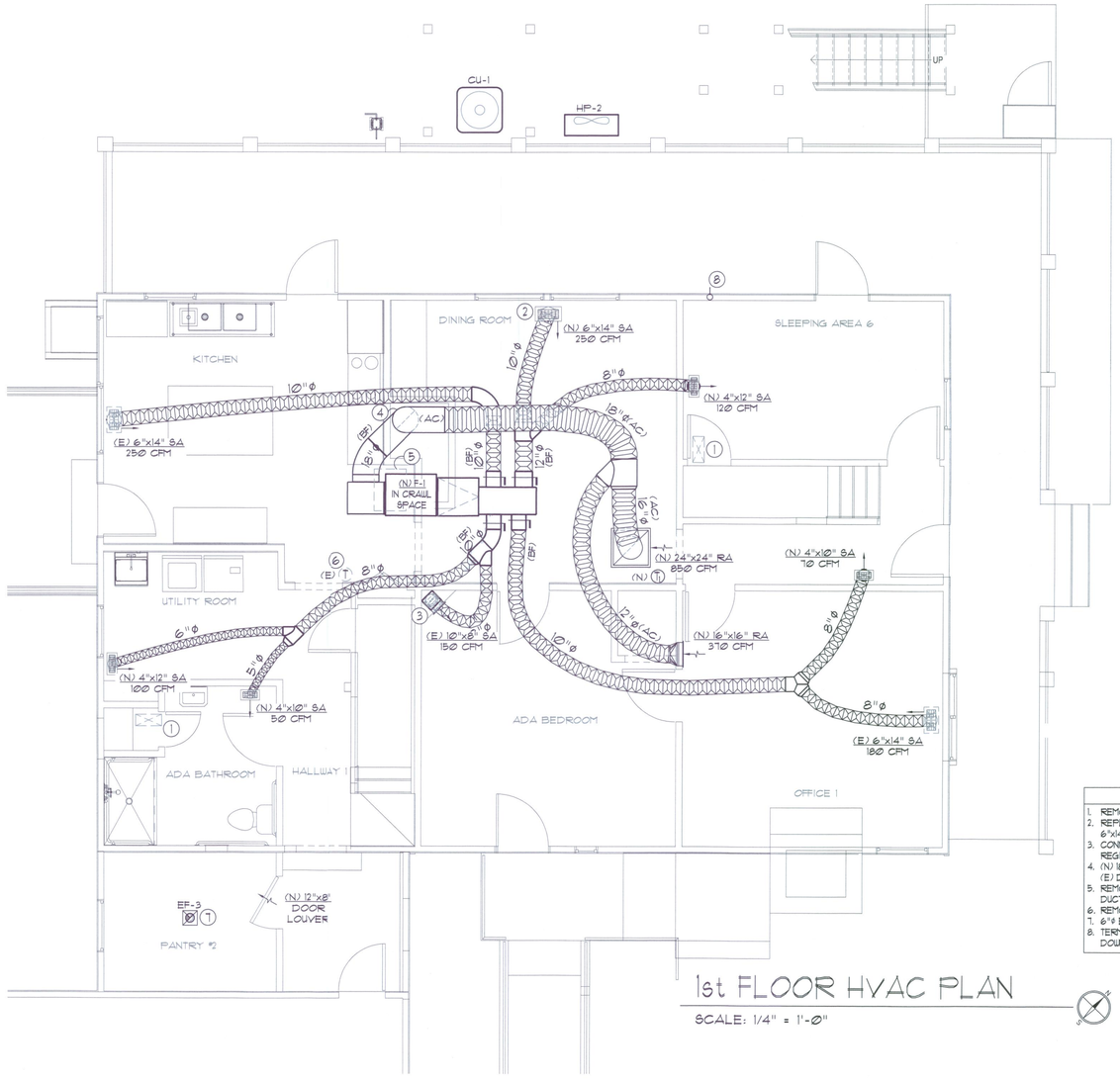
COTTAGE HVAC FLOOR PLAN

SCALE: 1/4" = 1'-0"

COTTAGE KEYED NOTES
1. CONNECT (E) Ø" & 8" SA DUCTS TO (N) PLENUM. ADD (N) BALANCING DAMPERS TO BALANCE AIR FLOW AS INDICATED
2. REPLACE (E) 6x14" WITH (N) 6x14" DIFFUSER. CAULK BETWEEN BOOT AND GYP. BOARD
3. (E) DIFFUSER TO REMAIN. CAULK BETWEEN BOOT AND GYP. BOARD
4. REPLACE (E) 20"x20" FILTER GRILLE WITH (N) 25"x20" FILTER GRILLE
5. FC-3 TO REPLACE (E) FURNACE. CAP (E) GAS PIPING. REMOVE (E) FLUE & PATCH ROOF.
6. TERMINATE PRIMARY CONDENSATE WITH DOWNWARD ELBOW 6" ABOVE FINISH GRADE



1st FLOOR HVAC PLAN

SCALE: 1/4" = 1'-0"

1st FLOOR KEYED NOTES
1. REMOVE FLOOR DIFFUSER AND PATCH FLOOR
2. REPLACE (E) 24"x6" RA FLOOR GRILLE WITH (N) 6"x14" FLOOR DIFFUSER. PATCH FLOOR.
3. CONNECT (N) DUCT TO (E) PLENUM SERVING (E) REGISTER. SEAL (E) PLENUM WITH MASTIC SEALER.
4. (N) 18"ø RA DUCT RISER IN CHASE. REMOVE ALL (E) DUCTING IN CHASE AND ABOVE CEILING
5. REMOVE (E) FURNACE AND ALL ASSOCIATED DUCTING IN CRAWL SPACE
6. REMOVE (E) THERMOSTAT
7. 6"ø EA DUCT THROUGH ROOF TO ROOF CAP
8. TERMINATE CONDENSATE FROM FC IN ATTIC WITH DOWNWARD ELBOW 6" ABOVE GRADE

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Project Title: BOST HOUSE
Project Location: 145 BOST AVENUE NEVADA CITY, CA 95959
Sheet Title: COTTAGE & 1ST FLOOR HVAC PLANS

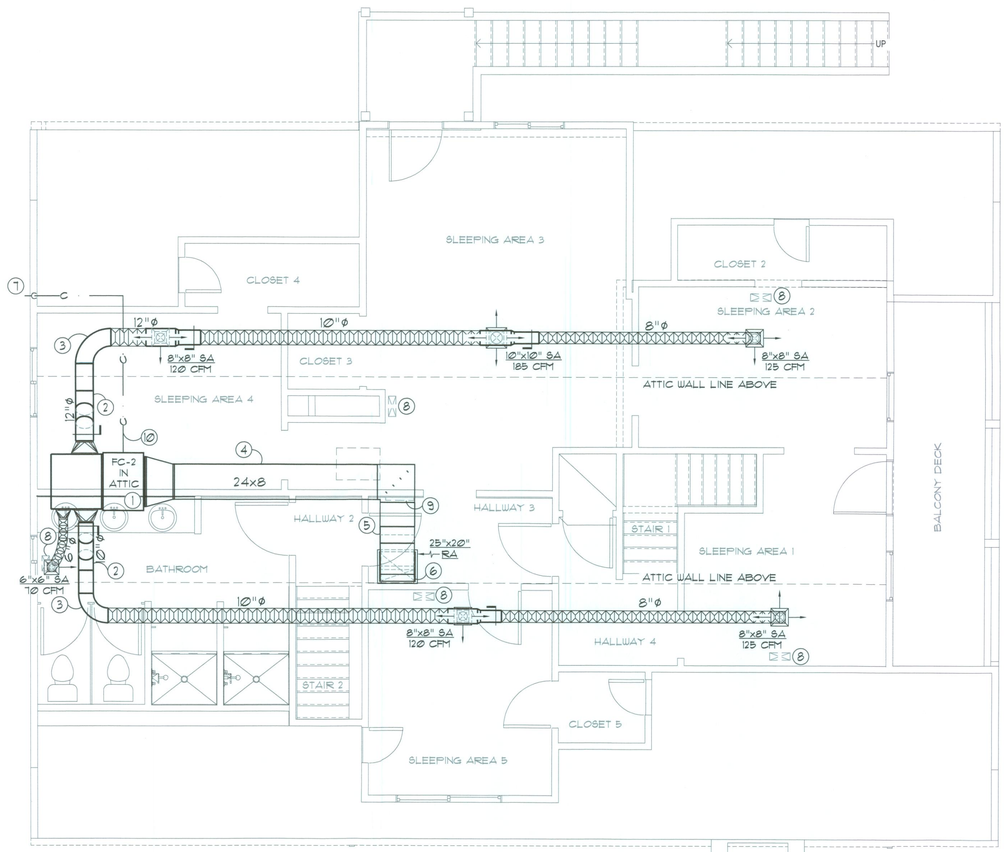
Revisions:

No.	Date:	By:	Description:
	-	-	-

Plot Date: 6/11/2019

Job #	19-066
Scale	as noted
Date 1st Issued	5-29-2019
Sheet Number	M1.1

JOB SET



2nd FLOOR HVAC PLAN

SCALE: 1/4" = 1'-0"

2nd FLOOR KEYED NOTES

1. FC-2 AT ATTIC CEILING ABOVE
2. ROUTE EXPOSED SA DUCT ALONG SLOPED ATTIC CEILING TO KNEEWALL ATTIC
3. ROUTE SA DUCT IN KNEEWALL ATTIC SPACE
4. EXPOSED 24"x8" RA DUCT AT ATTIC CEILING
5. ROUTE RA DUCT ALONG SLOPED ATTIC CEILING
6. DROP EXPOSED RA DUCT ALONG ATTIC KNEEWALL. TRANSITION DUCT TO 25"x20" RA GRILLE WITH A CONVERGENT ANGLE NOT TO EXCEED 30°.
7. TERMINATE CONDENSATE WITH DOWNWARD ELBOW 6" ABOVE GRADE
8. REMOVE (E) FLOOR REGISTERS AND PATCH FLOOR TO MATCH EXISTING
9. REMOVE (E) RA SIDEWALL GRILLE AND PATCH WALL TO MATCH EXISTING
10. ROUTE CONDENSATE ALONG CEILING TO ATTIC AREA

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Project Title: BOST HOUSE
Project Location: 145 BOST AVENUE NEVADA CITY, CA 95959
Sheet Title: 2ND FLOOR HVAC PLAN

Revisions:

No.	Date:	By:	Description:
	-	-	-

Plot Date: 6/11/2019

Job #	19-066
Scale	as noted
Date 1st Issued	5-29-2019
Sheet Number	M1.2

JOB SET

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COTTAGE MINI-SPLIT SYSTEM

CERTIFICATE OF COMPLIANCE — **CF1R-ALT-02-E**

Alterations to Space Conditioning Systems (formerly CF-1R-ALT-HVAC) — **(Page 1 of 3)**

Project Name: Bost House Cottage Mini Split | **Date Prepared:** 2019-06-04

A. General Information

CF1R-ALT-02 is applicable to multiple space conditioning systems contained within a single dwelling unit. When multiple dwelling units must be documented, use one CF1R-ALT-02 document for each dwelling unit.

01	Project Name	Bost House Cottage Mini Split	02	Date Prepared	2019-06-04
03	Project Location	Bost Ave.	04	Building Type	Single family
05	CA City	Nevada City	06	Dwelling Unit Name	Bost House Cottage Mini Split
07	Zip Code	95959	08	Dwelling Unit Conditioned Floor Area (ft²)	700
09	Climate Zone	11	10	Number of Space Conditioning (SC) Systems in this Dwelling Unit:	1

B. Space Conditioning (SC) System Information

01	02	03	04	05	06	07	08	09	10
SC System Identification or Name	SC System Location or Area Served	CFA served by this SC System (ft²)	Is the SC system a ducted system?	Installing a refrigerant containing component?	Installing new SC system components?	Installing more than 40 feet of ducts?	Installing entirely new duct system?	Installing entirely new SC system?	Alteration Type
Cottage Mini Split	Location 1	700	Yes	Yes	Yes	Yes	Yes	Yes	Entirely new or complete replacement space conditioning system

C. Extension of Existing Duct System, Greater Than 40 Feet (Section150.2(b)1Dilb)

This section does not apply to this project.

Registration Number: 219-A0201280898A-000-000-0000000-0000 | Registration Date/Time: 2019-06-04 14:37:10 | HERS Provider: CalCERTS

CA Building Energy Efficiency Standards - 2016 Residential Compliance | Report Version: 2018.0.001 Schema Version: rev 20180426 | Report Generated: 2019-06-04 14:35:24

CERTIFICATE OF COMPLIANCE — **CF1R-ALT-02-E**

Alterations to Space Conditioning Systems (formerly CF-1R-ALT-HVAC) — **(Page 2 of 3)**

D. Altered Space Conditioning System (Sections 150.2(b)1E and F)

This section does not apply to this project.

E. Entirely New or Complete Replacement Duct System, with or without Equipment Changeout (Sections 150.2(b)1Dila and 150.2(b)1E, F)

This section does not apply to this project.

F. Entirely New or Complete Replacement Space Conditioning System (Section 150.2(b)1C)

01	02	03	04	05	06	07	08	09	10	11
System Identification or Name	Heating System Type	Altered Heating Component	Heating Efficiency Type	Heating Minimum Efficiency Value	Cooling System Type	Altered Cooling Component	Cooling Efficiency Type	Cooling Minimum Efficiency Value	Required Thermostat Type	New Duct R-Value
Cottage Mini Split	Central split HP	All new heating components	Heating Seasonal Performance Factor (HSPF)	8	Central split HP	All new cooling components	SEER	14	SetbackThermostat	R-8

Required Documentation:
CF2R-MCH-01-E - Space Conditioning Systems
- Duct insulation requirement for the new portions of supply-air and return-air ducts or plenums: R6 (CZ 1-10, 12 and 13) and R8 (CZ 11 and 14-16)

CF2R and CF3R-MCH-20-H Duct Leakage Test required
- Leakage rate compliance: <= 5%.

CF2R and CF3R-MCH-22 Fan Efficacy

CF2R and CF3R-MCH-23 Airflow Rate Verification
- Compliance: Fan Efficacy <= 0.58 W per cfm and System Airflow >= 350 cfm per ton.
- Alternative Compliance: CF2R and CF3R-MCH-28 Return Duct Design verification is an alternative to MCH-22 and MCH-23 verification.

CF2R and CF3R-MCH-25-H Refrigerant Charge verification required when refrigerant containing components are installed or altered (applicable in CZ 2, 8-15).

Exceptions:
Heating-only systems are exempt from the 0.58 W per cfm and 350 cfm per ton requirements.
Note: An "entirely new or replacement duct system" means at least 75% of the duct system is new duct material, and up to 25% may consist of reused parts from the dwelling unit's existing duct system (e.g., registers, grilles, boots, air handler, coil, plenums, duct material) if the reused parts are accessible and can be sealed to prevent leakage

Registration Number: 219-A0201280898A-000-000-0000000-0000 | Registration Date/Time: 2019-06-04 14:37:10 | HERS Provider: CalCERTS

CA Building Energy Efficiency Standards - 2016 Residential Compliance | Report Version: 2018.0.001 Schema Version: rev 20180426 | Report Generated: 2019-06-04 14:35:24

CERTIFICATE OF COMPLIANCE — **CF1R-ALT-02-E**

Alterations to Space Conditioning Systems (formerly CF-1R-ALT-HVAC) — **(Page 3 of 3)**

Documentation Author's Declaration Statement

1. I certify that this Certificate of Compliance documentation is accurate and complete.

Documentation Author Name: Miller, Christopher	Documentation Author Signature: Christopher Miller
Company: Melas Energy Engineering	Signature Date: 2019-06-04 14:35:29
Address: 547 Uren St.	CEA/ HERS Certification Identification (if applicable):
City/State/Zip: Nevada City CA 95959	Phone: 530-265-2492

Responsible Person's Declaration statement

I certify the following under penalty of perjury, under the laws of the State of California:
1. The information provided on this Certificate of Compliance is true and correct.
2. I am eligible under Division 3 of the Business and Professions Code to accept responsibility for the building design or system design identified on this Certificate of Compliance (responsible designer).
3. That the energy features and performance specifications, materials, components, and manufactured devices for the building design or system design identified on this Certificate of Compliance conform to the requirements of Title 24, Part 1 and Part 6 of the California Code of Regulations.
4. The building design features or system design features identified on this Certificate of Compliance are consistent with the information provided on other applicable compliance documents, worksheets, calculations, plans and specifications submitted to the enforcement agency for approval with this building permit application.
5. I will ensure that a registered copy of this Certificate of Compliance shall be made available with the building permit(s) issued for the building, and made available to the enforcement agency for all applicable inspections. I understand that a registered copy of this Certificate of Compliance is required to be included with the documentation the builder provides to the building owner at occupancy.

Responsible Designer Name: Melas, Michael	Responsible Delegher Signature: Michael Melas
Company : Melas Energy Engineering	Date Signed: 2019-06-04 14:37:10
Address: 547 Uren St.	License: 828365
City/State/Zip: Nevada City CA 95959	Phone: 530-265-2492

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Digitally signed by CalCERTS. This digital signature is provided in order to secure the content of this registered document, and in no way implies Registration Provider responsibility for the accuracy of the information.

Registration Number: 219-A0201280898A-000-000-0000000-0000 | Registration Date/Time: 2019-06-04 14:37:10 | HERS Provider: CalCERTS

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MAIN HOUSE MINI-SPLIT SYSTEM

CERTIFICATE OF COMPLIANCE — **CF1R-ALT-02-E**

Alterations to Space Conditioning Systems (formerly CF-1R-ALT-HVAC) — **(Page 1 of 3)**

Project Name: Bost House Main Mini Split | **Date Prepared:** 2019-06-04

A. General Information

CF1R-ALT-02 is applicable to multiple space conditioning systems contained within a single dwelling unit. When multiple dwelling units must be documented, use one CF1R-ALT-02 document for each dwelling unit.

01	Project Name	Bost House Main Mini Split	02	Date Prepared	2019-06-04
03	Project Location	Bost Ave.	04	Building Type	Single family
05	CA City	Nevada City	06	Dwelling Unit Name	Bost House Main Mini Split
07	Zip Code	95959	08	Dwelling Unit Conditioned Floor Area (ft²)	3100
09	Climate Zone	11	10	Number of Space Conditioning (SC) Systems in this Dwelling Unit:	1

B. Space Conditioning (SC) System Information

01	02	03	04	05	06	07	08	09	10
SC System Identification or Name	SC System Location or Area Served	CFA served by this SC System (ft²)	Is the SC system a ducted system?	Installing a refrigerant containing component?	Installing new SC system components?	Installing more than 40 feet of ducts?	Installing entirely new duct system?	Installing entirely new SC system?	Alteration Type
Mini Split	Location 1	1300	Yes	Yes	Yes	Yes	Yes	Yes	Entirely new or complete replacement space conditioning system

C. Extension of Existing Duct System, Greater Than 40 Feet (Section150.2(b)1Dilb)

This section does not apply to this project.

Registration Number: 219-A0201280888A-000-000-0000000-0000 | Registration Date/Time: 2019-06-04 14:37:44 | HERS Provider: CalCERTS

CA Building Energy Efficiency Standards - 2016 Residential Compliance | Report Version: 2018.0.001 Schema Version: rev 20180426 | Report Generated: 2019-06-04 14:26:05

CERTIFICATE OF COMPLIANCE — **CF1R-ALT-02-E**

Alterations to Space Conditioning Systems (formerly CF-1R-ALT-HVAC) — **(Page 2 of 3)**

D. Altered Space Conditioning System (Sections 150.2(b)1E and F)

This section does not apply to this project.

E. Entirely New or Complete Replacement Duct System, with or without Equipment Changeout (Sections 150.2(b)1Dila and 150.2(b)1E, F)

This section does not apply to this project.

F. Entirely New or Complete Replacement Space Conditioning System (Section 150.2(b)1C)

01	02	03	04	05	06	07	08	09	10	11
System Identification or Name	Heating System Type	Altered Heating Component	Heating Efficiency Type	Heating Minimum Efficiency Value	Cooling System Type	Altered Cooling Component	Cooling Efficiency Type	Cooling Minimum Efficiency Value	Required Thermostat Type	New Duct R-Value
Mini Split	Central split HP	All new heating components	Heating Seasonal Performance Factor (HSPF)	8	Central split HP	All new cooling components	SEER	14	SetbackThermostat	R-8

Required Documentation:
CF2R-MCH-01-E - Space Conditioning Systems
- Duct insulation requirement for the new portions of supply-air and return-air ducts or plenums: R6 (CZ 1-10, 12 and 13) and R8 (CZ 11 and 14-16)

CF2R and CF3R-MCH-20-H Duct Leakage Test required
- Leakage rate compliance: <= 5%.

CF2R and CF3R-MCH-22 Fan Efficacy

CF2R and CF3R-MCH-23 Airflow Rate Verification
- Compliance: Fan Efficacy <= 0.58 W per cfm and System Airflow >= 350 cfm per ton.
- Alternative Compliance: CF2R and CF3R-MCH-28 Return Duct Design verification is an alternative to MCH-22 and MCH-23 verification.

CF2R and CF3R-MCH-25-H Refrigerant Charge verification required when refrigerant containing components are installed or altered (applicable in CZ 2, 8-15).

Exceptions:
Heating-only systems are exempt from the 0.58 W per cfm and 350 cfm per ton requirements.
Note: An "entirely new or replacement duct system" means at least 75% of the duct system is new duct material, and up to 25% may consist of reused parts from the dwelling unit's existing duct system (e.g., registers, grilles, boots, air handler, coil, plenums, duct material) if the reused parts are accessible and can be sealed to prevent leakage

Registration Number: 219-A0201280888A-000-000-0000000-0000 | Registration Date/Time: 2019-06-04 14:37:44 | HERS Provider: CalCERTS

CA Building Energy Efficiency Standards - 2016 Residential Compliance | Report Version: 2018.0.001 Schema Version: rev 20180426 | Report Generated: 2019-06-04 14:26:05

CERTIFICATE OF COMPLIANCE — **CF1R-ALT-02-E**

Alterations to Space Conditioning Systems (formerly CF-1R-ALT-HVAC) — **(Page 3 of 3)**

Documentation Author's Declaration Statement

1. I certify that this Certificate of Compliance documentation is accurate and complete.

Documentation Author Name: Miller, Christopher	Documentation Author Signature: Christopher Miller
Company: Melas Energy Engineering	Signature Date: 2019-06-04 14:30:27
Address: 547 Uren St.	CEA/ HERS Certification Identification (if applicable):
City/State/Zip: Nevada City CA 95959	Phone: 530-265-2492

Responsible Person's Declaration statement

I certify the following under penalty of perjury, under the laws of the State of California:
1. The information provided on this Certificate of Compliance is true and correct.
2. I am eligible under Division 3 of the Business and Professions Code to accept responsibility for the building design or system design identified on this Certificate of Compliance (responsible designer).
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4. The building design features or system design features identified on this Certificate of Compliance are consistent with the information provided on other applicable compliance documents, worksheets, calculations, plans and specifications submitted to the enforcement agency for approval with this building permit application.
5. I will ensure that a registered copy of this Certificate of Compliance shall be made available with the building permit(s) issued for the building, and made available to the enforcement agency for all applicable inspections. I understand that a registered copy of this Certificate of Compliance is required to be included with the documentation the builder provides to the building owner at occupancy.

Responsible Designer Name: Melas, Michael	Responsible Delegher Signature: Michael Melas
Company : Melas Energy Engineering	Date Signed: 2019-06-04 14:37:44
Address: 547 Uren St.	License: 828365
City/State/Zip: Nevada City CA 95959	Phone: 530-265-2492

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Registration Number: 219-A0201280888A-000-000-0000000-0000 | Registration Date/Time: 2019-06-04 14:37:44 | HERS Provider: CalCERTS

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MAIN HOUSE FURNACE SYSTEM

CERTIFICATE OF COMPLIANCE — **CF1R-ALT-02-E**

Alterations to Space Conditioning Systems (formerly CF-1R-ALT-HVAC) — **(Page 1 of 3)**

Project Name: Bost House Main Furnace | **Date Prepared:** 2019-06-04

A. General Information

CF1R-ALT-02 is applicable to multiple space conditioning systems contained within a single dwelling unit. When multiple dwelling units must be documented, use one CF1R-ALT-02 document for each dwelling unit.

01	Project Name	Bost House Main Furnace	02	Date Prepared	2019-06-04
03	Project Location	Bost Ave.	04	Building Type	Single family
05	CA City	Nevada City	06	Dwelling Unit Name	Bost House Main Furnace
07	Zip Code	95959	08	Dwelling Unit Conditioned Floor Area (ft²)	1800
09	Climate Zone	11	10	Number of Space Conditioning (SC) Systems in this Dwelling Unit:	1

B. Space Conditioning (SC) System Information

01	02	03	04	05	06	07	08	09	10
SC System Identification or Name	SC System Location or Area Served	CFA served by this SC System (ft²)	Is the SC system a ducted system?	Installing a refrigerant containing component?	Installing new SC system components?	Installing more than 40 feet of ducts?	Installing entirely new duct system?	Installing entirely new SC system?	Alteration Type
Furnace	Location 1	1800	Yes	Yes	Yes	Yes	Yes	Yes	Entirely new or complete replacement space conditioning system

C. Extension of Existing Duct System, Greater Than 40 Feet (Section150.2(b)1Dilb)

This section does not apply to this project.

Registration Number: 219-A0201280895A-000-000-0000000-0000 | Registration Date/Time: 2019-06-04 14:38:09 | HERS Provider: CalCERTS

CA Building Energy Efficiency Standards - 2016 Residential Compliance | Report Version: 2018.0.001 Schema Version: rev 20180426 | Report Generated: 2019-06-04 14:33:03

CERTIFICATE OF COMPLIANCE — **CF1R-ALT-02-E**

Alterations to Space Conditioning Systems (formerly CF-1R-ALT-HVAC) — **(Page 2 of 3)**

D. Altered Space Conditioning System (Sections 150.2(b)1E and F)

This section does not apply to this project.

E. Entirely New or Complete Replacement Duct System, with or without Equipment Changeout (Sections 150.2(b)1Dila and 150.2(b)1E, F)

This section does not apply to this project.

F. Entirely New or Complete Replacement Space Conditioning System (Section 150.2(b)1C)

01	02	03	04	05	06	07	08	09	10	11
System Identification or Name	Heating System Type	Altered Heating Component	Heating Efficiency Type	Heating Minimum Efficiency Value	Cooling System Type	Altered Cooling Component	Cooling Efficiency Type	Cooling Minimum Efficiency Value	Required Thermostat Type	New Duct R-Value
Furnace	Central gas furnace	All new heating components	Annual Fuel Utilization Efficiency (AFUE)	80	Central split AC	All new cooling components	SEER	14	SetbackThermostat	R-8

Required Documentation:
CF2R-MCH-01-E - Space Conditioning Systems
- Duct insulation requirement for the new portions of supply-air and return-air ducts or plenums: R6 (CZ 1-10, 12 and 13) and R8 (CZ 11 and 14-16)

CF2R and CF3R-MCH-20-H Duct Leakage Test required
- Leakage rate compliance: <= 5%.

CF2R and CF3R-MCH-22 Fan Efficacy

CF2R and CF3R-MCH-23 Airflow Rate Verification
- Compliance: Fan Efficacy <= 0.58 W per cfm and System Airflow >= 350 cfm per ton.
- Alternative Compliance: CF2R and CF3R-MCH-28 Return Duct Design verification is an alternative to MCH-22 and MCH-23 verification.

CF2R and CF3R-MCH-25-H Refrigerant Charge verification required when refrigerant containing components are installed or altered (applicable in CZ 2, 8-15).

Exceptions:
Heating-only systems are exempt from the 0.58 W per cfm and 350 cfm per ton requirements.
Note: An "entirely new or replacement duct system" means at least 75% of the duct system is new duct material, and up to 25% may consist of reused parts from the dwelling unit's existing duct system (e.g., registers, grilles, boots, air handler, coil, plenums, duct material) if the reused parts are accessible and can be sealed to prevent leakage

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CERTIFICATE OF COMPLIANCE — **CF1R-ALT-02-E**

Alterations to Space Conditioning Systems (formerly CF-1R-ALT-HVAC) — **(Page 3 of 3)**

Documentation Author's Declaration Statement

1. I certify that this Certificate of Compliance documentation is accurate and complete.

Documentation Author Name: Miller, Christopher	Documentation Author Signature: Christopher Miller
Company: Melas Energy Engineering	Signature Date: 2019-06-04 14:33:07
Address: 547 Uren St.	CEA/ HERS Certification Identification (if applicable):
City/State/Zip: Nevada City CA 95959	Phone: 530-265-2492

Responsible Person's Declaration statement

I certify the following under penalty of perjury, under the laws of the State of California:
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Responsible Designer Name: Melas, Michael	Responsible Delegher Signature: Michael Melas
Company : Melas Energy Engineering	Date Signed: 2019-06-04 14:38:09
Address: 547 Uren St.	License: 828365
City/State/Zip: Nevada City CA 95959	Phone: 530-265-2492

Easy to Verify at CalCERTS.com

Digitally signed by CalCERTS. This digital signature is provided in order to secure the content of this registered document, and in no way implies Registration Provider responsibility for the accuracy of the information.

Registration Number: 219-A0201280895A-000-000-0000000-0000 | Registration Date/Time: 2019-06-04 14:38:09 | HERS Provider: CalCERTS

CA Building Energy Efficiency Standards - 2016 Residential Compliance | Report Version: 2018.0.001 Schema Version: rev 20180426 | Report Generated: 2019-06-04 14:33:03

MELAS ENERGY ENGINEERING
ENERGY & MECHANICAL CONSULTANTS
547 UREN STREET
NEVADA CITY, CA 95959
PHONE (530) 265-2492
FAX (530) 265-2273

REGISTERED PROFESSIONAL ENGINEER — CHRISTOPHER C. MELAS — M-26789 Exp. 9/30/20 — MECHANICAL — STATE OF CALIFORNIA

TITLE-24 MECHANICAL ENERGY CALCULATIONS

Project Title: BOST HOUSE

Project Location: 145 BOST AVENUE NEVADA CITY, CA 95959

Sheet Title: TITLE-24 MECHANICAL ENERGY CALCULATIONS

Revisions:

No.	Date:	By:	Description:
	-	-	-

Plot Date:

Job #	19-066
Scale	None
Date 1st Issued	6-4-2019
Sheet Number	T24-1

JOB SET

CONDUIT SYMBOLS

- CONDUIT INSTALLED CONCEALED ABOVE CEILINGS OR IN WALLS IN FINISHED AREAS OR EXPOSED IN UNFINISHED AREAS
- CONDUIT INSTALLED BELOW FINISHED FLOOR OR BELOW GRADE
- INDICATES CONDUIT TURNING UP
- INDICATES CONDUIT TURNING DOWN
- CONDUIT STUBBED OUT AND CAPPED
- CONDUIT HOMERUN; ROUTE TO PANELBOARD, CABINET, OR TERMINAL BOARD INDICATED, AND TERMINATE CONDUCTORS TO CIRCUIT OVER CURRENT PROTECTIVE DEVICE

WIRING DEVICE SYMBOLS

- $\ominus_a$ 20A, 125V, DUPLEX RECEPTACLE OUTLET. ALPHABET INDICATES SPECIAL MOUNTING HEIGHT PER LIST:
  a – +84" AFF
  b – ABOVE COUNTER BACKSPLASH
  c – CEILING MOUNTED
- $\ominus$ 20A, 125V, DOUBLE DUPLEX RECEPTACLE OUTLET
- WP GFCI TYPE; 20A,125V, DUPLEX RECEPTACLE; +18" A.F.F. TO CENTERLINE UNLESS OTHERWISE NOTED. USE WET LOCATION RATED DEVICE FOR 'WP'. PROVIDE WITH WEATHER PROOF IN-USE COVER WHERE INDICATED BY 'WP'
- SPECIAL PURPOSE RECEPTACLE OUTLET; RATING AS SHOWN; +18" A.F.F. TO CENTERLINE
- S SINGLE POLE SWITCH

DESIGNATION SYMBOLS

- (A) COLUMN LINE
- (XXXX) FEEDER DESIGNATION TAG
- (1) SHEET NOTE TAG
- A / 22a FIXTURE DESIGNATION
  UPPER CASE LETTER INDICATES FIXTURE TYPE.
  LOWER CASE LETTER INDICATES SWITCH FOR FIXTURE
  NUMBER INDICATES CIRCUIT NUMBER (WHERE SHOWN).
- S_a LETTER INDICATES FIXTURES CONTROL (WHERE SHOWN)
- $\ominus_{22}$ NUMBER INDICATES CIRCUIT NUMBER (WHERE SHOWN)
- AC / 1 EQUIPMENT TAG

POWER SYMBOLS

- MOTOR OUTLET
- FUSED DISCONNECT
  SWITCH XX/XX/XX = AMP SWITCH/POLES/AMP FUSE
- NON-FUSED DISCONNECT
  SWITCH XX/XX = AMP SWITCH/POLES
- PB PULL BOX
- SURFACE MOUNTED PANEL OR TERMINAL CABINET
- FLUSH MOUNTED PANEL OR TERMINAL CABINET
- DISTRIBUTION PANEL
- JUNCTION BOX; WALL MOUNTED, CEILING MOUNTED
- S_M MOTOR RATED TOGGLE SWITCH. MATCH VOLTAGE WITH EQUIPMENT ON PLANS.
- 225 / 3 STATIONARY – CIRCUIT BREAKER; RATING AS SHOWN ON PLANS; AMPS/POLES
- EX EXHAUST FAN

- CONTRACTOR TO FIELD VERIFY ALL EXISTING PANELS, CIRCUIT BREAKERS, AND EXISTING CIRCUITS. IF A DISCREPANCY ARISES, NOTIFY THE OWNER OR OWNER REPRESENTATIVE IMMEDIATELY.
- CONTRACTOR IS RESPONSIBLE FOR FIELD CHANGES, ALL CODE REQUIREMENTS ASSOCIATED WITH FIELD CHANGES, AND DOCUMENTATION THEREOF.
- FIELD INSPECTIONS AND FINAL APPROVAL MAY BE DEPENDENT ON DOCUMENTATION OF FIELD CHANGES IN THE FORM OF AS-BUILT DRAWINGS. THE ENGINEER OF RECORD IS NOT RESPONSIBLE FOR AS-BUILT DRAWINGS, REVIEW OF, AND/OR APPROVAL OF AS-BUILT DRAWINGS BY OTHERS.
- PROVIDE NEW TYPE-WRITTEN PANEL SCHEDULES FOR ALL MODIFIED AND NEW PANELS. UPDATE EXISTING AND NEW PANEL SCHEDULES WITH ALL FIELD CHANGES. PROVIDE AS-BUILT DRAWINGS FOR FIELD INSPECTION.

GENERAL NOTES

1. CONTRACTOR IS RESPONSIBLE FOR READING AND INCLUDING ALL INFORMATION PROVIDED IN THE WRITTEN NOTES THROUGHOUT THE DRAWINGS. SYSTEM REQUIREMENTS MAY NOT BE PICTORIAL.
2. FURNISH ALL LABOR, MATERIALS, EQUIPMENT & SERVICES NECESSARY TO CONSTRUCT AND INSTALL COMPLETE & OPERATIONAL ELECTRICAL SYSTEMS INDICATED ON THE DRAWINGS & IN THE SPECIFICATIONS.
3. THIS IS A DESIGN/BID PROJECT. CONTRACTOR TO PROVIDE A BID BASED ON THE STAMPED/PERMIT DRAWINGS. IF THESE PLANS ARE NOT THE FINAL PERMIT SET, DRAWINGS ARE SUBJECT TO CHANGE. IF SOME PORTION OF THE DESIGN IS EXCLUDED FROM THE BID, PROVIDE AN EXPLANATION TO THE OWNER IN THE BID DOCUMENT.
4. CHANGES TO THE DESIGN ARE TO BE REQUESTED IN WRITING TO THE OWNER IN THE FORM OF A REQUEST FOR INFORMATION (RFI). CONTRACTOR IS RESPONSIBLE FOR CODE REQUIREMENTS ASSOCIATED WITH FIELD CHANGES AND DOCUMENTATION THEREOF.
5. FIELD INSPECTIONS AND FINAL APPROVAL MAY BE DEPENDENT ON DOCUMENTATION OF FIELD CHANGES IN THE FORM OF AS-BUILT DRAWINGS. THE ENGINEER OF RECORD IS NOT RESPONSIBLE FOR REVIEW AND/OR APPROVAL OF AS-BUILT DRAWINGS.
6. ALL DEVICES AND EQUIPMENT ARE NEW UNLESS OTHERWISE NOTED.
7. PROVIDE NEW TYPEWRITTEN PANEL SCHEDULES FOR ALL NEW AND EXISTING ELECTRICAL PANELS WHERE MODIFICATIONS WHERE MADE.
8. PROVIDE MELAMINE PLASTIC ENGRAVED LABELS FOR PANELS, MAIN SWITCHBOARD DISCONNECTS, AND ALL MAJOR ELECTRICAL EQUIPMENT.
9. ALL NEW CONDUITS, WITHIN FINISHED SPACES, SHALL BE CONCEALED, UNLESS OTHERWISE NOTED.
10. PROVIDE ALL SYSTEMS, EQUIPMENT, DEVICES, MATERIALS, FEEDERS, WIRING, CONDUITS AS SPECIFIED, WHETHER SHOWN OR NOT SHOWN ON FLOOR PLANS.
11. CONTRACTOR TO VERIFY THAT ALL TERMINALS ARE RATED AT 75°C OR HIGHER. PER NEC; IF A BREAKER (OR TERMINATION POINT) IS RATED AT 100 AMPS OR LESS AND IS NOT LABELED AS SUITABLE FOR TERMINATIONS AT 75°C, BY DEFAULT IT IS RATED 60°C. ALL SPECIFIED CONDUCTORS SIZES ARE BASED ON EXPECTED TERMINAL TEMPERATURE RATINGS. DO NOT CHANGE CONDUCTOR SIZE WITHOUT VERIFY THE TEMPERATURE RATING OF THE TERMINAL TO BE USED.
12. PROVIDE #12 CONDUCTORS FOR ALL WIRING FOR CIRCUITS WHERE NOT SHOWN ON DRAWINGS. NUMBER AS REQUIRED IN CONDUIT SIZED PER NEC. PROVIDE CONDUIT OR METAL SHEATHED CABLE FOR ALL CONDUCTORS, UNLESS OTHERWISE APPROVED.
13. INSTALL AND CONNECT A CODE SIZE INSULATED GROUND CONDUCTOR IN ALL BRANCH CIRCUITS AND FEEDER CONDUITS. THESE EQUIPMENT GROUND WIRES MAY NOT BE SHOWN ON THE PLANS. INCREASE CONDUIT SIZE WHERE REQUIRED.
14. ELECTRICAL PANELBOARDS SHALL HAVE DOOR-IN-DOOR FRONT COVERS.
15. LOCATION AND DEPTH OF ALL UNDERGROUND CONDUITS SHALL BE COORDINATED WITH THE WASTE LINES, RAIN WATER LEADER LINES, SPRINKLER LINES, WATER LINES AND BUILDING FOOTINGS PRIOR TO ROUGH IN.
16. FEEDERS ROUTED EXPOSED AT CEILING OR WALL SHALL BE APPROVED PRIOR TO ROUGH-IN.
17. VERIFY CONTROL REQUIREMENTS FOR HVAC EQUIPMENT PRIOR TO ROUGH-IN.
18. NON-METALLIC SHEATHED CABLE: USES PERMITTED AS FOLLOWS PER CEC 334.10: STRUCTURES OF TYPES III, IV, AND V CONSTRUCTION. CABLES SHALL BE CONCEALED WITHIN WALLS, FLOORS, OR CEILINGS THAT PROVIDE A THERMAL BARRIER OF MATERIAL THAT HAS AT LEAST A 15-MINUTE FINISH RATING AS IDENTIFIED IN LISTINGS OF FIRE-RATED ASSEMBLIES OR AS PER CEC 334.10. USES NOT PERMITTED AS FOLLOWS PER CEC 334.12: EXPOSED WITHIN A DROPPED OR SUSPENDED CEILING CAVITY, IN THEATERS AND SIMILAR LOCATIONS, EMBEDDED IN CONCRETE OR AGGREGATE, AND HAZARDOUS LOCATIONS OR AS PER CEC 334.12.

(E) PANEL 'P2' (SEPARATE BUILDING) — Bus Rating (Amps): 125; Main: 100A; Volts: 240/120V; Enclosure SURFACE/NEMA 3R; Phase: 1; AIC 10,000 AMPS; Wires: 3

*SEE NOTES BELOW FOR FURTHER INFORMATION AND PANEL OR CIRCUIT REQUIREMENTS.

Ckt	Description	NOTE	Load Type	Load (KVA)	OC Device Amps	OC Device Poles	Phase	OC Device Amps	OC Device Poles	Load (KVA)	Load Type	NOTE	Description	Ckt
1	MAIN OVER CURRENT	1	-	0.00	100	2	A	20	1	0.00	-	-	SPACE	2
3	"	1	-	0.00	-	-	B	20	1	0.00	-	-	SPACE	4
5	RECEPTACLES	1	1	0.72	20	1	A	30	2	2.50	5	1	DRYER	6
7	RECEPTACLES	1	2	0.72	20	1	B	-	-	2.50	5	1	"	8
9	RECEPTACLES	1	2	0.72	20	1	A	30	2	2.50	7	1	WATER HEATER	10
11	SPACE	-	-	0.00	-	-	B	-	-	2.50	7	1	"	12
13	HP-3 (OUTDOORS) & FC-3 (AT ATTIC)	2	4	2.50	30	2	A	20	1	1.50	2	1	LAUNDRY CIRCUIT	14
15	"	2	4	2.50	-	-	B	20	1	0.90	2	1	EXISTING LOAD	16
				3.94	3.22			6.50	5.90					
				A	B			A	B					
	LOAD PER PHASE			A=	10.44	B=	9.12							
	LOAD TYPE (NUMBER)			0	1	2	3	4	5	6	7			
	LOAD TYPE (DESCRIPTION)			P.Rm.Li	Lighting	Receps	Motors	L. Mot.	Kitch	Elevator	Equip	Total		
	TOTAL CONNECTED LOAD (KVA)			0.00	0.72	3.84	0.00	5.00	5.00	0.00	5.00	19.56		
	DEMAND MULTIPLIER:			*1.00*	*1.25*	*formula**	*1.00*	*1.25*	*0.65*	*1.00*	*1.00*			
	TOTAL DESIGN LOAD			0.00	0.90	3.84	0.00	6.25	3.25	0.00	5.00	20.88	KVA (2X MAX PHASE)	
	TOTAL AMPS			0.0	2.5	10.7	0.0	17.4	9.0	0.0	13.9	87.0	AMPS	

formula Type 2 (receptacles) formula is as follows: If the Total Connected Load is greater than 10KVA, Then the demand load is ((Connected Load - 10) * .5) +10, Else Demand Load equals Connected Load.

NOTES:

1	EXISTING LOAD TO REMAIN
2	NEW LOAD, NEW CIRCUIT BREAKER
3	-

(E) MDP (AT METER) — Bus Rating (Amps): 400; Main: 400A; Volts: 240/120V; Enclosure NEMA 3R; Phase: 1; AIC 65000 AMPS; Wires: 3

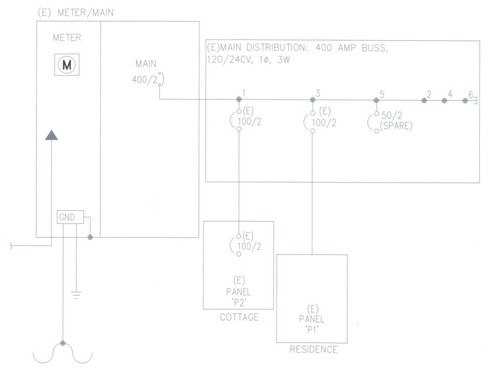
*SEE NOTES BELOW FOR FURTHER INFORMATION AND PANEL OR CIRCUIT REQUIREMENTS.

Ckt	Description	NOTE	Load Type	Load (KVA)	OC Device Amps	OC Device Poles	Phase	OC Device Amps	OC Device Poles	Load (KVA)	Load Type	NOTE	Description	Ckt
1	SPACE	-	-	0.00	-	-	A	-	-	0.00	-	-	SPACE	2
3	SPACE	-	-	0.00	-	-	B	-	-	0.00	-	-	SPACE	4
5	P1	1	7	12.86	100	2	A	50	2	0.00	-	-	SPARE	6
7	"	1	7	11.26	-	-	B	-	-	0.00	-	-	"	8
9	P2	1	7	7.94	100	2	A	-	-	0.00	-	-	SPACE	10
11	"	1	7	6.62	-	-	B	15	1	1.49	3	2	F-1 (AT CRAWL SPACE)	12
13	SPACE	-	-	0.00	-	-	A	35	2	2.65	4	2	CU-1 (OUTDOORS)	14
-	SPACE	-	-	0.00	-	-	B	-	-	2.65	4	2	"	-
15	SPACE	-	-	0.00	-	-	A	-	-	0.00	-	-	SPACE	16
-	SPACE	-	-	0.00	-	-	B	-	-	0.00	-	-	SPACE	-
17	SPACE	-	-	0.00	-	-	A	30	2	2.50	3	2	HP-2 (OUTDOORS) & FC-2 (AT ATTIC)	18
-	SPACE	-	-	0.00	-	-	B	-	-	2.50	3	2	"	-
				20.80	17.88			5.15	6.64					
				A	B			A	B					
	LOAD PER PHASE			A=	25.95	B=	2i.52							
	LOAD TYPE (NUMBER)			0	1	2	3	4	5	6	7			
	LOAD TYPE (DESCRIPTION)			P.Rm.Li	Lighting	Receps	Motors	L. Mot.	Kitch	Elevator	Equip	Total		
	TOTAL CONNECTED LOAD (KVA)			0.00	0.00	0.00	6.49	530	0.00	0.00	38.68	50.47		
	DEMAND MULTIPLIER:			*1.00*	*1.25*	*formula**	*1.00*	*125*	*0.65*	*1.00*	*1.00*			
	TOTAL DESIGN LOAD			0.00	0.00	0.00	6.49	663	0.00	0.00	38.68	51.90	KVA (2X MAX PHASE)	
	TOTAL AMPS			0.0	0.0	0.0	18.0	13.4	0.0	0.0	107.4	216.3	AMPS	

formula Type 2 (receptacles) formula is as follows: If the Total Connected Load is greater than 10KVA, Then the demand load is ((Connected Load - 10) * .5) +10, Else Demand Load equals Connected Load.

NOTES:

1	EXISTING LOAD TO REMAIN
2	NEW LOAD, NEW CIRCUIT BREAKER
3	-



(E) ONE-LINE DIAGRAM

SCALE: NONE

ELECTRICAL SHEET INDEX		
SHEET	DESCRIPTION	SCALE
E0.1	ONE-LINE DIAGRAM, LEGEND & SCHEDULES	NONE
E3.1	COTTAGE & 1ST FLOOR ELECTRICAL PLANS	1/4" = 1'-0"
E3.2	2ND FLOOR ELECTRICAL PLAN	1/4" = 1'-0"

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Engineer's Signature

REGISTERED PROFESSIONAL ENGINEER — MEGHAN LEIGH HOBBS — No. E17502 — ELECTRICAL — STATE OF CALIFORNIA

Project Title

BOST HOUSE
HVAC INSTALLATION
145 BOST AVE., NEVADA CITY, CA

Revisions

PERMIT SUBMITTAL 1
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ONE-LINE DIAGRAM, LEGEND, AND SCHEDULES

Sheet JOB SET

E0.1

THIS DRAWING IS NOT TO BE USED FOR CONSTRUCTION UNTIL IS HAS BEEN APPROVED FOR PERMIT AND STAMPED BY THE AUTHORITY HAVING JURISDICTION

GENERAL NOTES

A. CONTRACTOR SHALL PROVIDE A COMPLETE INSTALLATION INCLUDING ALL WORK REQUIRED TO PROVIDE A COMPLETE AND OPERATING SYSTEM FOR THE IMPROVEMENTS INDICATED.

B. ALL CONDUITS AND RACEWAYS SHALL BE RUN IN LOCATIONS WHERE THEY WILL NOT BE VISIBLE.

C. PROVIDE 2 #12 CONDUCTORS AND 1 #12 GROUND UNLESS OTHERWISE NOTED.

1. PER NEC; IF A BREAKER (OR TERMINATION POINT) IS RATED AT 100 AMPS OR LESS AND IS NOT LABELED AS SUITABLE FOR TERMINATIONS AT 75°C, BY DEFAULT IT IS RATED 60°C. ALL SPECIFIED CONDUCTORS SIZES ARE BASED ON EXPECTED TERMINAL TEMPERATURE RATINGS. DO NOT CHANGE CONDUCTOR SIZE WITHOUT VERIFY THE TEMPERATURE RATING OF THE TERMINAL TO BE USED.

D. INTERIOR ELECTRICAL PANELS TO BE NEMA1 WITH LOCKING ENCLOSURE.

E. EXTERIOR ELECTRICAL PANELS TO BE NEMA 3R WITH LOCKING ENCLOSURE.

F. PANELS TO BE MARKED FOR ARC FLASH HAZARD PER CEC110.16, MARKING TO BE CLEARLY VISIBLE TO QUALIFIED PERSONS BEFORE EXAMINATION, ADJUSTMENT, SERVICING OR MAINTENANCE OF THE EQUIPMENT.

G. INTERIOR CONDUIT TO BE INSTALLED IN A NEAT AND ORDERLY MANNER AT 90-DEGREE ANGLE TO WALLS AND AT A MINIMUM OF 12'-6" ABOVE FINISHED FLOOR. VERIFY CEILING HEIGHT.

H. PROVIDE LOCKING MECHANISM ON ALL CIRCUIT BREAKERS FEEDING FIRE ALARM, SECURITY PANELS, OR CCTV EQUIPMENT.

SHEET NOTES

1. VERIFY MECHANICAL AND PLUMBING EQUIPMENT ELECTRIAL INFORMATION (VOLTAGE, AMPERAGE, ETC.) WITH CURRENT MECHANICAL AND PLUMBING EQUIPMENT DRAWINGS AND MECHANICAL AND PLUMBING SUBMITTALS PRIOR TO ROUGH-IN. NOTE: VOLTAGE, AMPERAGE, OR QUANTITY MAY CHANGE DURING THE SUBMITTAL PROCESS WITHOUT NOTICE. IF THE ELECTRICAL INFORMATION DOES NOT MATCH THE INFORMATION PROVIDED ON THE ELECTRICAL DRAWINGS, NOTIFY OWNER OR OWNER REPRESENTATIVE PRIOR TO INSTALLATION AND/OR ORDERING OF MATERIAL.

2. F-1, CONDENSING FURNACE (IN CRAWL SPACE): 115V, 1PH, 12.4 MCA, 15 MOCP. PROVIDE DISCONNECT SWITCH AT UNIT.

3. CU-1, CONDENSING UNIT (OUTDOORS): 208/230V, 1PH, 22.08 MCA, 82 COMP. LRA, 35 MOCP. PROVIDE DISCONNECT SWITCH AT UNIT.

4. HP-2, HEAT PUMP (OUTDOORS): 208/230V, 1PH, 20.8 MCA, 30 MOCP. PROVIDE DISCONNECT SWITCH AT UNIT.

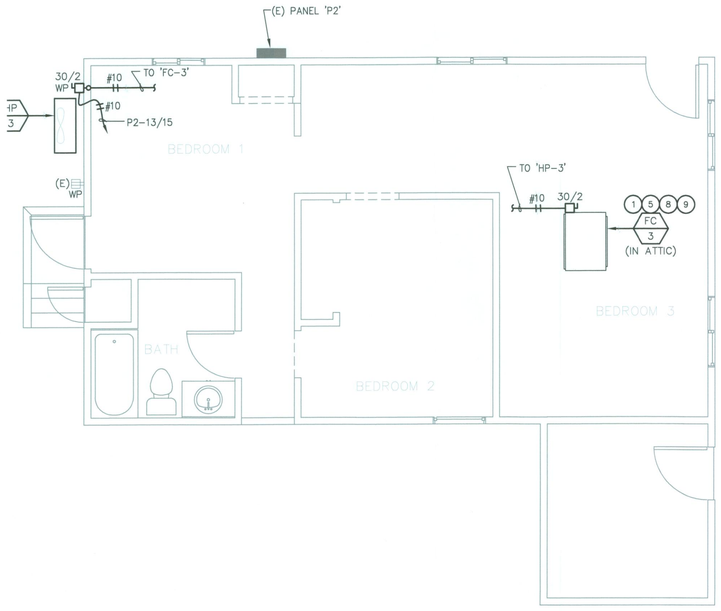
5. FC-3, HEAT PUMP FAN COIL (IN ATTIC): 208/230V, 1PH. POWERED BY OUTDOOR UNIT 'HP-3'. PROVIDE DISCONNECT SWITCH AT UNIT.

6. HP-3, HEAT PUMP (OUTDOORS): 208/230V, 1PH, 20.8 MCA, 30 MOCP. PROVIDE DISCONNECT SWITCH AT UNIT.

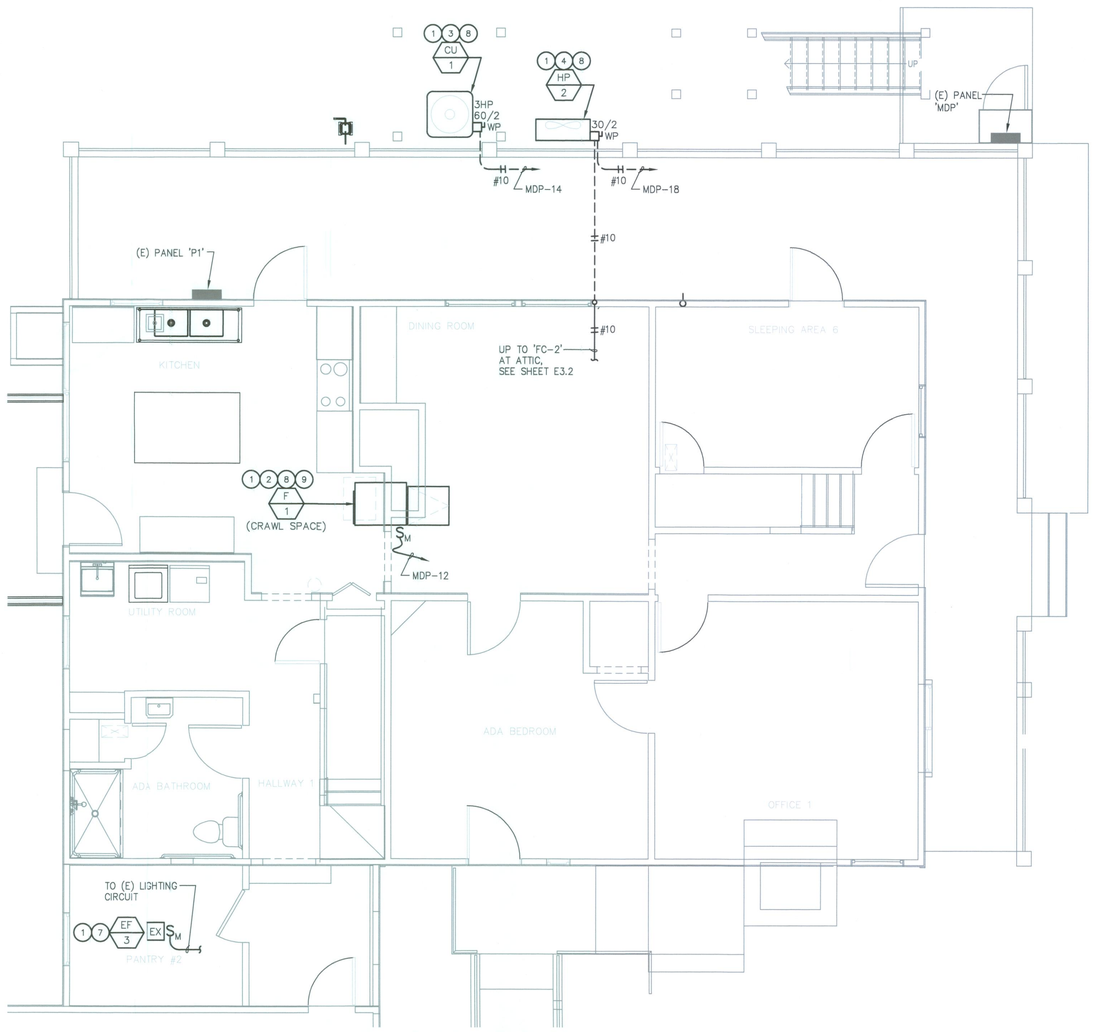
7. EF-3, CEILING CABINET EXHAUST FAN: 115V, 1PH, 15.7 WATTS. CONNECT TO (E) ROOM LIGHTING CIRCUIT AND WALL SWITCH.

8. VERIFY (E) RECEPTACLE LOCATED W/IN 25 FEET OF HVAC EQUIPMENT, PER NEC 210.63. PROVIDE NEW RECEPTACLE (IF NOT PRESENT), CONNECTED TO (E) RECEPTACLE CIRCUIT ON (E) PANEL P1. RECEPTACLES INSTALLED OUTDOORS SHALL BE GFCI PROTECTED.

9. VERIFY (E) LIGHTING AND SWITCH FOR ATTIC AND UNDERFLOOR SPACES, WHERE SPACE CONTAINS EQUIPMENT REQUIRING SERVICING, PER NEC 210.70(A)(3). PROVIDE NEW LED LIGHT W/ GU-24 SOCKET AND SWITCH (IF NOT PRESENT), CONNECTED TO (E) LIGHTING CIRCUIT ON (E) PANEL P1.



COTTAGE ELECTRICAL PLAN
SCALE: 1/4" = 1'-0"



1st FLOOR ELECTRICAL PLAN
SCALE: 1/4" = 1'-0"

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Engineer's Signature

REGISTERED PROFESSIONAL ENGINEER
MEGAN L. HOBBS
No. E17502
ELECTRICAL
STATE OF CALIFORNIA

Project Title

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COTTAGE &
1ST FLOOR
ELECTRICAL PLANS

Sheet JOB SET

E3.1

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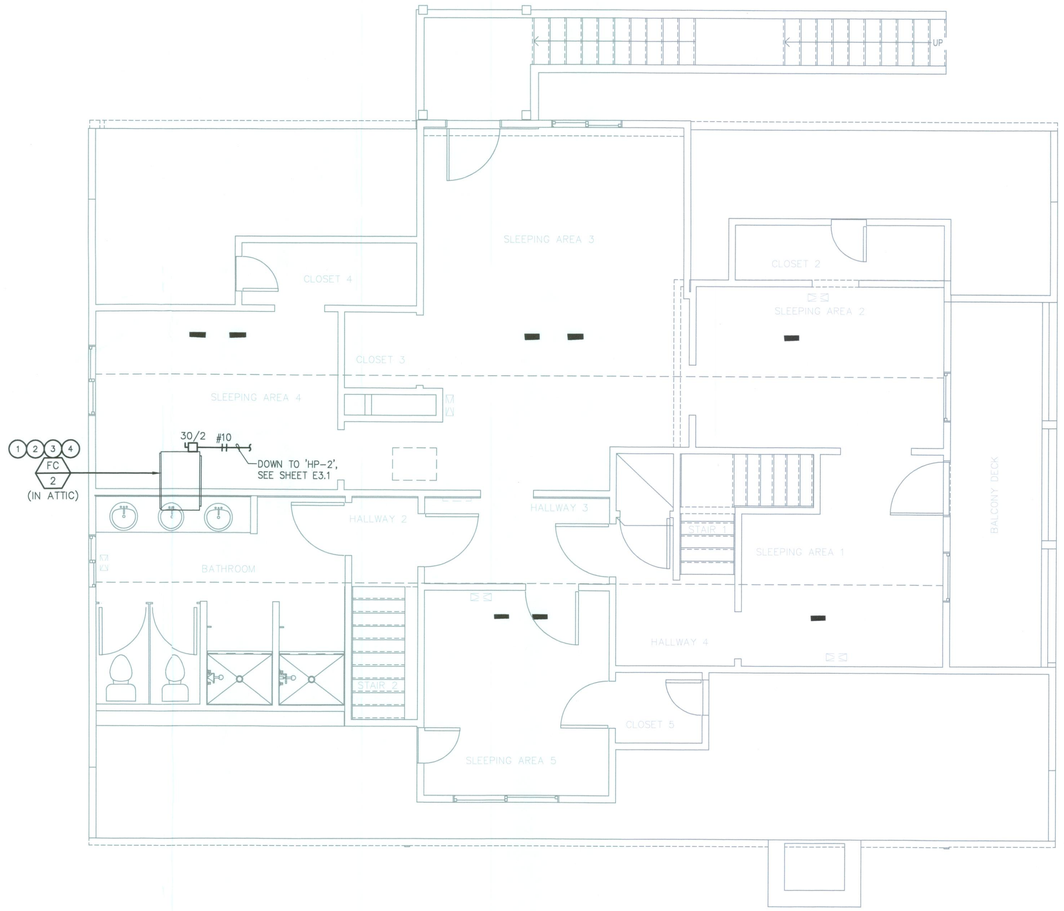

2nd FLOOR ELECTRICAL PLAN
SCALE: 1/4" = 1'-0"

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Engineer's Signature

REGISTERED PROFESSIONAL ENGINEER MEGAN L. HOBBS No. E17502 ELECTRICAL STATE OF CALIFORNIA

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2ND FLOOR ELECTRICAL PLAN

JOB SET

Sheet

E3.2