LEGEND

SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION
#	KEY NOTE	TYPE / DESIGNATION	EQUIPMENT TAG
12X24	RECTANGULAR OR FLAT OVAL DUCTWORK SIZE (FIRST NUMBER IS SIDE SHOWN)	∞	HVAC FURNACE
8Ø	FLEXIBLE DUCTWORK		HVAC A/C UNIT OR HEAT PUMP
SA RA EA UP DN	DUCT SECTION		CEILING MOUNTED EXHAUST FAN
NECK SIZE/TAG AIR FLOW (CFM)	AIR DEVICE MARK		STORAGE TANK
SA RA EA	RECTANGULAR DIFFUSER		HVAC ACCESS PANEL
SA RA/EA	SIDE-WALL MOUNTED SUPPLY GRILLE OR RETURN/EXHAUST GRILLE	T T S	THERMOSTAT THERMOSTAT SUSPENDED
SA RA/EA	AIR FLOW	TS	TEMPERATURE SENSOR/TRANSMITTER
SA RA/EA	DUCT MOUNTED SIDE OUTLET/INLET REGISTER	HS	HUMIDITY SENSOR/ TRANSMITTER
SA RA EA	BOTTOM OUTLET/INLET REGISTER (PATTERN AS SHOWN ON PLANS)	P	PRESSURE DIFFERENTIAL SENSOR
UP DN	OFF-SET UP OR DOWN	SD	SMOKE DETECTOR
	INTERNALLY LINED DUCTWORK		POINT OF CONNECTION (P.O.C)
	FLEXIBLE CONNECTION		DROPPED CEILING
	RECTANGULAR TO ROUND TRANSITION	C	CONTROLLER
	ELBOWS WITH TURNING VANES	CO	CO SENSOR
A.D.	ACCESS DOOR		
H C	HC - HEATING COIL CC - COOLING COIL PHC - PRE-HEAT COIL RHC - RE-HEAT COIL		
	MANUAL VOLUME DAMPER		
	OPPOSED BLADE DAMPER		
BDD	BACKDRAFT DAMPER		
M	MOTORIZED DAMPER		
FD	FIRE DAMPER		
FSD	FIRE SMOKE DAMPER		
	FILTER		
	LOUVER		

ABBREVIATIONS

ABBREVIATION	DESCRIPTION	ABBREVIATION	DESCRIPTION
AD	ACCESS DOOR	MVD	MANUAL VOLUME DAMPER
BDD	BACKDRAFT DAMPER	NG	NATURAL GAS
CFM	CUBIC FEET PER MINUTE	OSA	OUTSIDE AIR
dBA	A-WEIGHTED DECIBEL	PDR	POWDER ROOM
EA	EXHAUST AIR	RA	RETURN AIR
EF	EXHAUST FAN	RL	REFRIGERANT LIQUID
FC	FAN COIL	RS	REFRIGERANT SUCTION
FD	FIRE DAMPER	RVD	REMOTE OPERATED DAMPER
HP	HEAT PUMP	SA	SUPPLY AIR
HSPF	HEATING SEASONAL PERFORMANCE FACTOR	SD	SMOKE DETECTOR
LAU	LAUNDRY ROOM	SQFT	SQUARE FEET

GENERAL NOTES

A. GENERAL

1. MECHANICAL SYSTEMS SHALL BE INSTALLED IN ACCORDANCE WITH THE CALIFORNIA MECHANICAL CODE (CMC) AND ALL APPLICABLE LOCAL CODES AND REGULATIONS WITH AMENDMENTS (LATEST EDITION).
2. ALL DIMENSIONS SHOWN ON THESE PLANS ARE APPROXIMATE AND MUST BE CONFIRMED ON SITE.
3. PROVIDE ANCHORAGE FOR ALL PIPING, DUCTWORK, AND EQUIPMENT IN ACCORDANCE WITH THE LATEST EDITION OF GUIDELINES FOR SEISMIC RESTRAINTS OF MECHANICAL SYSTEMS AND PLUMBING PIPING SYSTEMS PER SMACNA.
4. VENTILATION SYSTEMS DESIGNED AND INSTALLED SHALL MEET ASHRAE 62.2 REQUIREMENTS.
5. WHERE DEEMED ARCHITECTURALLY UNACCEPTABLE TO PROVIDE ADEQUATE DOOR UNDERCUT FOR PROPER AIR RETURN BETWEEN ROOMS, TRANSFER GRILLS SHALL BE INSTALLED AND COORDINATED WITH THE ARCHITECT.
6. WHEN SUPPLIED, DESIGN ENGINEER SHALL REVIEW AND APPROVE SUBMITTALS FOR ALL EQUIPMENT. IN THE CASE WHERE SUGGESTED SUBSTITUTE IS NOT ADEQUATE, SUBMITTAL SHALL BE RETURNED TO CONTRACTOR AND STAMPED AS "REVIEW AND RESUBMIT." SUBMITTAL APPROVAL CONFIRMS ONLY THAT SUGGESTED SUBSTITUTE HAS EQUIVALENT TECHNICAL PARAMETERS AND DESIGN CONSULTANT IS NOT RESPONSIBLE FOR ANY FINANCIAL IMPACT THAT THIS SUBSTITUTE CAUSES.
7. RESIDENTIAL HVAC SYSTEMS WITH CENTRAL FORCED AIR UNITS (FURNACES OR FAN COILS) HAVE LIMITED ZONING AND TEMPERATURE CONTROL ABILITY. THIS TYPE OF SYSTEMS ARE NOT CAPABLE OF CONTROLLING TEMPERATURES IN EACH ROOM INDIVIDUALLY. TEMPERATURES CAN BE CONTROLLED ONLY IN REFERENCE ROOMS WHERE THERMOSTATS ARE LOCATED. WHEN INDIVIDUAL ROOM TEMPERATURE CONTROL IS CRITICAL, CLIENT SHALL CONSULT WITH DESIGN TEAM AND CONTRACTORS FOR DIFFERENT SYSTEMS/SOLUTIONS.

B. CONTRACTOR NOTES

1. BEFORE SUBMITTING BID, CONTRACTOR SHALL SURVEY THE ENTIRE PROJECT SITE AND BECOME THOROUGHLY FAMILIAR WITH ACTUAL EXISTING CONDITIONS. THE INTENT OF WORK IS SHOWN ON THE DRAWINGS AND DESCRIBED HEREIN. BY THE ACT OF SUBMITTING A BID PROPOSAL FOR WORK, THE CONTRACTOR SHALL BE DEEMED TO HAVE MADE SUCH A STUDY AND EXAMINATION AND TO ACCEPT ALL CONDITIONS PRESENT AT SITE. NO REQUEST FOR ADDITIONAL PAYMENT SHALL BE CONSIDERED VALID, DUE TO CONTRACTOR FAILURE TO ALLOW IN COST ESTIMATE FOR CONDITIONS WHICH MAY EXIST.
2. CONTRACTOR SHALL REVIEW THE MECHANICAL AND OTHER CONSULTANTS DRAWINGS PRIOR TO STARTING ANY WORK AND INFORM ENGINEER AND ARCHITECT OF ANY DISCREPANCIES, OMISSIONS, OR IF CLARIFICATIONS ARE REQUIRED IN ORDER TO COMPLETE THE INSTALLATION PRIOR TO COMMENCING THE WORK. OWNER OR ITS REPRESENTATIVE SHALL SCHEDULE A MEETING WITH THE CONTRACTOR, ENGINEER, ARCHITECT AND OTHER CONSULTANTS DURING BIDDING PROCESS TO REVIEW AND DISCLOSE ANY DISCREPANCIES, OMISSIONS AND/OR CLARIFICATIONS RELATED TO THE CONSTRUCTION DOCUMENTS AND/OR SPECIFICATIONS NOTED BY CONTRACTOR AND/OR OWNER.
3. CONTRACTOR BID SHALL NOT BE LIMITED TO THE WORK SHOWN ON THE PLANS AND SPECIFICATIONS. ALL PREMIUM OVERTIME COSTS, UTILITY CHARGES, COST FOR TEMPORARY UTILITY SERVICES, ALL ALTERATIONS, ALL DEMOLITION AND EXTENSION WORKS, PERMITS, INSPECTION FEES, MISCELLANEOUS CONTINGENCY COST, ETC., SHALL BE INCLUDED IN BID.
4. ANY WORK TO BE PERFORMED MUST BE PLANNED IN ADVANCE. SCHEDULING SHALL BE DONE IN COOPERATION WITH CONSTRUCTION MANAGER. INCLUDE ALL PREMIUM TIME CHARGES IN BID TO COVER AFTER-HOURS AND WEEKEND WORK.
5. THE CONTRACTOR SHALL COORDINATE HIS WORK HARMONIOUSLY WITH ALL TRADES. COORDINATE THE LOCATIONS OF ALL CEILING DIFFUSERS, REGISTERS AND GRILLES WITH THE ARCHITECTURAL CEILING PLAN, ELECTRICAL LIGHTING LAYOUT AND ARCHITECTURAL ROOM ELEVATIONS. ALL WORK SHALL BE IN ACCORDANCE WITH BEST CONSTRUCTION PRACTICES.
6. THE CONTRACTOR SHALL FURNISH ALL MATERIAL, TOOLS, LABOR, ETC. TO INSTALL A COMPLETE AND FUNCTIONING SYSTEM AS INDICATED ON DRAWINGS.
7. THE CONTRACTOR SHALL REPORT TO THE CONSTRUCTION MANAGER IMMEDIATELY ANY INTERFERENCE BETWEEN TRADES OR WITH BUILDING OBSTRUCTIONS.
8. CONTRACTOR SHALL PROVIDE SHOP DRAWINGS FOR ALL EQUIPMENT, DUCTWORK, PIPING, DAMPERS, ETC. AND SUBMIT IT TO THE CONSTRUCTION MANAGER FOR APPROVAL.
9. COVER ALL WALLS, FLOOR, CEILING, AND ROOF OPENINGS LEFT AS THE RESULT OF THE WORK. PROVISIONS SHALL BE MADE TO PROTECT PEOPLE FROM INJURY AND TO PROTECT EQUIPMENT FROM WEATHER.
10. THE CONTRACTOR SHALL VERIFY THE INPUT VOLTAGE AND AMPERAGE (HORSEPOWER) RATING OF ALL EQUIPMENT AND CONFIRM WITH ELECTRICAL CONTRACTOR PRIOR TO INSTALLATION.
11. CONTRACTOR SHALL PROVIDE ALL SAFETY MATERIALS AND EQUIPMENT NOT LIMITED TO BARRIERS, SIGNS, LIGHTS, ETC.
12. CONTRACTOR SHALL PROVIDE BARRICADE, SAFETY SIGNS AND OTHER DEVICES TO ISOLATE WORK AREA DURING CONSTRUCTION, UPON CONSTRUCTION MANAGER APPROVAL.
13. CONTRACTOR SHALL REPAIR/PATCH AND WEATHER PROOF ANY OPENING CAUSED BY EQUIPMENT/PIPING INSTALLATION, AND SHALL PAINT WHERE NECESSARY.
14. THE CONTRACTOR SHALL PREPARE ONE (1) SET OF "RECORD DRAWINGS" PLANS AND KEEP AT JOB SITE FOR REVIEW BY THE CONSTRUCTION MANAGER. ANY CHANGES FROM THE DESIGN DRAWINGS SHALL BE NOTED WITH RED INK. UPON COMPLETION OF PROJECT THE CONTRACTOR SHALL SUBMIT THE PLANS TO THE CONSTRUCTION MANAGER.
15. THE CONTRACTOR SHALL THOROUGHLY CLEAN THE UNITS, REMOVE ALL PACKING LABELS, STICKERS AND ANY CRATING DEBRIS, AND LEAVE ALL INSTALLATION FINISHED AND READY FOR OPERATION.
16. AFTER COMPLETION, THE COMPLETE SYSTEM SHALL BE TESTED AND BALANCED. ANY ADDITIONAL BALANCING DEVICES REQUIRED FOR PROPER BALANCING SHALL BE INSTALLED. PRIOR TO BALANCING, ALL FILTERS SHALL BE REPLACED WITH NEW CLEAN FILTERS.
17. UPON COMPLETION OF PROJECT AND PRIOR TO ACCEPTANCE OF THE WORK BY THE CONSTRUCTION MANAGER, CONTRACTOR SHALL FURNISH TO HIM FOUR (4) COPIES OF OPERATION AND MAINTENANCE MANUAL OF EQUIPMENT BOUND IN BOOK FORM AND INDEXED. MANUAL SHALL CONTAIN PARTS LIST, RECOMMENDED PERIODS OF INSPECTION, ETC., AND NAME, ADDRESS AND PHONE NUMBER OF ALL SUPPLIERS.
18. THE CONTRACTOR SHALL FURNISH A TRAINED AND COMPETENT SERVICE ENGINEER TO INSTRUCT THE OPERATORS IN THE OPERATION AND MAINTENANCE OF THE SYSTEM.
19. COMPLETE INSTALLATION SHALL BE GUARANTEED, AND CONTRACTOR SHALL PROVIDE A MINIMUM 1 YEAR SERVICE, INCLUDING PARTS AND LABOR.

C. COMBUSTION AIR

1. ROUTING AND TERMINATION OF FLUE AND COMBUSTION AIR INTAKE FOR EACH HEATING UNIT SHALL COMPLY WITH CH 8. AND CH 7 OF CMC 2019 AND WITH MANUFACTURER'S SPECIFICATIONS. PROVIDE MANUFACTURER'S SPECIFICATIONS AND INSTALLATIONS INSTRUCTIONS TO VERIFY COMPLIANCE.
2. DRYER VENTS SHALL BE EQUIPPED WITH BACK-DRAFT DAMPERS PER 2019 CMC SECTION 504.4
3. SCREENS/LOUVERS SHALL NOT BE INSTALLED ON A DRYER VENT TERMINATION PER 2019 CMC (504.4.)
4. FLEXIBLE CLOTHES DRYER TRANSITION DUCTS SHALL NOT BE CONCEALED WITH CONSTRUCTION.
5. CLOTHES DRYER EXHAUST TERMINATION AT THE EXTERIOR OF A BUILDING SHALL MAINTAIN A MINIMUM FIVE (5) FEET SEPARATION FROM THE CONDENSING UNIT.
6. EXHAUST DUCT FOR TYPE 1 DRYERS SHALL COMPLY WITH 2019 CMC SECTION 504.4.
7. FURNACES, BOILERS, AND WATER HEATERS LOCATED WITHIN THE HOME'S PRESSURE BOUNDARY ARE MECHANICALLY DRAFTED OR DIRECT-VENTED. AS AN EXCEPTION, NATURALLY DRAFTED EQUIPMENT IS ALLOWED IN CLIMATE ZONES 1-3. FOR NATURALLY DRAFTED FURNACES, BOILERS, AND WATER HEATERS, THE RATER HAS FOLLOWED RESNET OR BPI COMBUSTION SAFETY TEST PROCEDURES AND MET THE SELECTED STANDARD'S LIMITS FOR DEPRESSURIZATION, SPILLAGE, DRAFT PRESSURE, AND CO-CONCENTRATION IN AMBIENT AIR, AS WELL AS A CO-CONCENTRATION IN THE FLUE OF ≤ 25 PPM.
8. OPENINGS USED TO CONNECT INDOOR SPACES WHERE INDOOR COMBUSTION AIR IS USED SHALL BE SIZED AND LOCATED IN ACCORDANCE WITH THE FOLLOWING PER 2019 CMC 701.5:
   - EACH OPENING SHALL HAVE A FREE AREA OF NOT LESS THAN ONE (1) SQUARE INCH PER 1000 BTU/HR OF THE TOTAL INPUT RATING OF THE APPLIANCE IN THE SPACE, BUT NOT LESS THAN 100 SQUARE INCHES OF THE TOP OF THE ENCLOSURE AND ONE OPENING SHALL COMMENCE WITHIN TWELVE (12) INCHES OF THE BOTTOM OF THE ENCLOSURE. THE DIMENSION OF AIR OPENINGS SHALL BE NOT LESS THAN THREE (3) INCHES.
   - THE VOLUMES OF SPACES IN DIFFERENT STORIES SHALL BE CONSIDERED AS COMMUNICATING SPACES WHERE SUCH SPACES ARE CONNECTED BY ONE OR MORE OPENINGS IN DOORS OR FLOORS HAVING A TOTAL FREE AREA OF NOT LESS THAN TWO (2) SQUARE INCHES PER 1000 BTU/HR OF TOTAL INPUT RATING OF APPLIANCES.

D. DUCTWORK

1. ALL DUCTWORK SHALL BE CONSTRUCTED, ERECTED, AND SEALED IN ACCORDANCE WITH THE MOST RESTRICTIVE OF LOCAL REGULATIONS AND PROCEDURES DETAILED IN ASHRAE HANDBOOK OF FUNDAMENTALS OR THE APPLICABLE STANDARDS ADOPTED BY THE SHEET METAL AND AIR CONDITIONING CONTRACTORS NATIONAL ASSOCIATION AND THE UNIFORM MECHANICAL CODE.
2. ALL DUCT SIZES ARE CLEAR INSIDE SIZES. OBTAIN APPROVAL FROM CONSTRUCTION MANAGER FOR SIZING OF ANY DUCTWORK, WHERE SIZES ARE NOT SHOWN ON DRAWINGS.
3. MANUAL VOLUME DAMPERS SHALL BE PROVIDED IN ALL DUCT BRANCHES TO INDIVIDUAL BOXES, DIFFUSERS, GRILLES AND REGISTERS AND SHALL BE LOCKED IN THE FINAL POSITION AFTER COMPLETION OF AIR BALANCE.
4. TRANSVERSE AND LONGITUDINAL JOINTS FOR ALL SUPPLY AIR DUCTS SHALL BE SEALED WITH APPROVED MASTIC PER SMACNA.
5. APPROVED MATERIALS SHALL BE INSTALLED WITHIN DUCTS AND PLENUMS FOR INSULATING, SOUND DEADENING OR OTHER PURPOSES. MATERIALS SHALL HAVE A MOLD HUMIDITY AND RESISTANT SURFACE THAT MEETS THE REQUIREMENTS OF UL181.
6. ANY METALLIC DUCT WORK USED SHALL BE INSTALLED IN ACCORDANCE WITH 2019 CMC SECTION 603.3.
7. ALL HANGARS AND SUPPORTS SHALL BE INSTALLED IN ACCORDANCE WITH ALL APPLICABLE FEDERAL, STATE, AND LOCAL CODES. ALL CONNECTIONS TO JOISTS SHALL BE MADE AT THE TOP CORD.

E. EQUIPMENT/APPLIANCES

1. ALL EQUIPMENT SHALL BE INSTALLED IN STRICT ACCORDANCE WITH THE EQUIPMENT MANUFACTURER'S RECOMMENDATIONS.
2. ALL HVAC EQUIPMENT SHALL BE U.L. LISTED AND BEAR A U.L. LABEL.
3. CONDENSER PAD SHALL BE A MINIMUM OF THREE (3) INCHES HIGH AND SHALL BE PROVIDED AND INSTALLED BY THE MECHANICAL CONTRACTOR UNLESS OTHERWISE SPECIFIED. THE CONDENSER SHALL BE SECURELY FASTENED TO THE PAD TO PREVENT EXCESSIVE MOTION DURING NORMAL OPERATING CONDITIONS AND SEISMIC ACTIVITY.
4. LISTED DIRECT-VENT APPLIANCES SHALL BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S INSTALLATION INSTRUCTIONS. CMC SECTION 802.2.4.
5. ALL CHIMNEYS SHALL BE INSTALLED IN ACCORDANCE WITH 2019 CMC SECTION 802.5.1 THROUGH 802.5.3. 2019 CMC SECTION 802.5.
6. A CHIMNEY FOR RESIDENTIAL-TYPE OR LOW-HEAT APPLIANCE SHALL EXTEND NOT LESS THAN THREE (3) FEET ABOVE THE HIGHEST POINT WHERE IT PASSES THROUGH A ROOF OF A BUILDING AND NOT LESS THAN TWO (2) FEET HIGHER THAN A PORTION OF A BUILDING WITHIN A HORIZONTAL DISTANCE OF TEN (10) FEET. 2019 CMC SECTION 802.5.4.
7. THE FUEL INPUT RATE TO THE APPLIANCE SHALL NOT BE INCREASED OR DECREASED IN VIOLATION OF THE APPROVED RATING AT THE ALTITUDE WHERE IT IS BEING USED. CMC 2019 SECTION 902.6.
8. ALL ELECTRICAL AIR CONDITIONER SYSTEMS DESIGNED FOR PERMANENT INSTALLATION SHALL COMPLY WITH UL 1995 OR UL 60335-2-40. 2019 CMC SECTION 903.1.
9. ALL GAS FIRED AIR CONDITIONERS SHALL COMPLY WITH SECTION 903.2.1 THROUGH SECTION 903.2.7. 2019 CMC SECTION 903.2.
10. LISTED OUTDOOR COOKING APPLIANCES SHALL BE INSTALLED IN ACCORDANCE WITH THEIR LISTING AND THE MANUFACTURER'S INSTALLATION INSTRUCTIONS, 2019 CMC SECTION 923.1. UNLISTED OUTDOOR COOKING APPLIANCES SHALL BE INSTALLED OUTDOORS WITH CLEARANCES TO COMBUSTIBLE MATERIAL OF NOT LESS THAN THIRTY-SIX(36) INCHES AT THE SIDES AND BACK AND NOT LESS THAN FOURTY-EIGHT (48) INCHES AT THE FRONT. IN NO CASE SHALL THE APPLIANCE BE LOCATED UNDER OVERHEAD COMBUSTIBLE CONSTRUCTION. 2019 CMC 923.2

F. FIRE PROTECTION

1. SEAL ALL PENETRATIONS THROUGH WALLS, CEILINGS, FLOOR, ETC. TO MAINTAIN THE FIRE RATING, AND BUILDING PRESSURIZATION.
2. EACH SINGLE SYSTEM HEATING OR COOLING AIR IN EXCESS OF 2,000 CUBIC FEET PER MINUTE SHALL BE EQUIPPED WITH AN AUTOMATIC SHUTOFF ACTIVATED BY SMOKE DETECTORS PER 2019 CMC SECTION 608.
3. PROVIDE LISTED DUCT TYPE SMOKE DETECTOR IN THE SUPPLY AIR DUCT IN EVERY AIR MOVING SYSTEM SUPPLYING AIR IN EXCESS 2000 CFM (MULTIPLE UNITS SERVING THE SAME ROOM, OR HAVING A COMMON RETURN AIR PLENUM OR COMMON OCA DUCT ARE CONSIDERED TO BE ONE SYSTEM FOR DETERMINATION OF THE CFM).
4. COMBINATION FIRE / SMOKE DAMPERS (FSD) SHALL CLOSE AUTOMATICALLY UPON DETECTION OF HEAT AND/OR SMOKE TO RESIST THE PASSAGE OF FLAME AND SMOKE. THE DAMPER SHALL BE CONTROLLED BY HEAT/FIRE AND SMOKE DETECTION SYSTEM IN CONFORMANCE WITH LOCAL CODE.
   - HEAT/FIRE DETECTION SYSTEM SHALL BE FACTORY PROVIDED WITH DAMPER.
   - SMOKE DETECTION SYSTEM SHALL BE A DUCT SMOKE DETECTOR INSTALLED PER LOCAL CODE. DUCT SMOKE DETECTOR SHALL BE FACTORY PROVIDED WITH DAMPER OR BY THIRD PARTY.

G. PIPING

1. ALL HANGARS AND SUPPORTS SHALL BE INSTALLED IN ACCORDANCE WITH ALL APPLICABLE FEDERAL, STATE AND LOCAL CODES. ALL CONNECTIONS TO JOISTS SHALL BE MADE AT THE TOP CORD.
2. PLUMBING CONTRACTOR SHALL FURNISH AND INSTALL ALL CONDENSATE DRAIN LINES WITH CONNECTIONS TO AN APPROVED RECEPTOR IN ACCORDANCE WITH THE CALIFORNIA PLUMBING CODE. REFER TO PLUMBING PLANS FOR ALL PRIMARY AND SECONDARY CONDENSATE ROUTING.
3. CONTRACTOR SHALL VERIFY IN FIELD THE SHORTEST ROUTING FOR REFRIGERANT LINES THAT COMPLY WITH MANUFACTURER'S INSTALLATION GUIDELINES AND DO NOT INTERFERE OR RESTRICT OTHER TRADES.
4. THE LIQUID AND SUCTION LINES SHALL BE PROTECTED FROM THE ENVIRONMENT USING A WATER RESISTANT METAL JACKET, PAINTED CANVAS, PLASTIC COVER OR COATING PER 2019 CEC.

APPLICABLE CODES

APPLICABLE CODES AS OF JANUARY 1, 2020:

2019 CALIFORNIA BUILDING STANDARDS ADMINISTRATIVE CODE, PART 1, TITLE 24 C.C.R. ;

2019 CALIFORNIA BUILDING CODE (CBC), PART 2, TITLE 24 C.C.R. ;
(2018 INTERNATIONAL BUILDING CODE & 2019 CALIFORNIA AMENDMENTS)

2019 CALIFORNIA ELECTRICAL CODE (CEC), PART 3, TITLE 24 C.C.R. ;
(2017 NATIONAL ELECTRICAL CODE & 2019 CALIFORNIA AMENDMENTS)

2019 CALIFORNIA MECHANICAL CODE (CMC), PART 4, TITLE 24 C.C.R. ;
(2018 UNIFORM MECHANICAL CODE & 2019 CALIFORNIA AMENDMENTS)

2019 CALIFORNIA PLUMBING CODE (CPC), PART 5, TITLE 24 C.C.R. ;
(2018 UNIFORM PLUMBING CODE & 2019 CALIFORNIA AMENDMENTS)

2019 CALIFORNIA ENERGY CODE (CEC), PART 6, TITLE 24 C.C.R. ;

2019 CALIFORNIA FIRE CODE (CFC), PART 9, TITLE 24 C.C.R. ;
(2018 INTERNATIONAL FIRE CODE & 2019 CALIFORNIA AMENDMENTS)

2019 CALIFORNIA GREEN BUILDING STANDARDS CODE (CALGreen), PART 11, TITLE 24 C.C.R. ;

2019 CALIFORNIA REFERENCED STANDARDS, PART 12, TITLE 24 C.C.R. ;

TITLE 19 C.C.R., PUBLIC SAFETY, STATE FIRE MARSHAL REGULATIONS

CALGREEN NOTES

1. OPENINGS IN THE BUILDING ENVELOPE SEPARATING CONDITIONED SPACE FROM UNCONDITIONED SPACE NEEDED TO ACCOMODATE GAS, PLUMBING, ELECTRICAL LINES AND OTHER NECESSARY PENETRATIONS MUST BE SEALED IN COMPLIANCE WITH CALIFORNIA ENERGY CODE. CAL GREEN 4.406.1
2. AT THE TIME OF FINAL INSPECTION, A MANUAL, COMPACT DISC, WEB-BASED REFERENCE OR OTHER MEDIA ACCEPTABLE TO THE ENFORCING AGENCY INCLUDING ITEMS 1 THROUGH 10 IN ACCORDANCE WITH THIS SECTION SHALL BE PLACED IN THE BUILDING. CAL GREEN 4.410.1
   - 2.1. DIRECTIONS TO THE OWNER OR OCCUPANT THAT THE MANUAL SHALL REMAIN WITHIN BUILDING THROUGHOUT THE LIFE CYCLE OF THE STRUCTURE.
   - 2.2. OPERATION AND MAINTENANCE INSTRUCTIONS FOR THE FOLLOWING:
   - 2.2.1. EQUIPMENT AND APPLIANCES, INCLUDING WATER-SAVING DEVICES AND SYSTEMS, HVAC SYSTEMS, PHOTOVOLTAIC SYSTEMS, ELECTRIC VEHICLE CHARGERS, WATER-HEATING SYSTEMS AND OTHER MAJOR APPLIANCES AND EQUIPMENT.
   - 2.2.2. ROOF AND YARD DRAINAGE, INCLUDING GUTTERS AND DOWNSPOUTS.
   - 2.2.3. SPACE CONDITIONING SYSTEMS, INCLUDING CONDENSERS AND AIR FILTERS.
   - 2.2.4. LANDSCAPE IRRIGATION SYSTEMS.
   - 2.2.5. WATER REUSE SYSTEMS.
   - 2.3. INFORMATION FROM LOCAL UTILITY, WATER AND WASTE RECOVERY PROVIDERS ON METHODS TO FURTHER REDUCE CONSUMPTION, INCLUDING RECYCLE PROGRAMS AND LOCATIONS.
   - 2.4. PUBLIC TRANSPORTATION AND/OR CARPOOL OPTIONS AVAILABLE IN THE AREA.
   - 2.5. EDUCATIONAL MATERIAL ON THE POSITIVE IMPACTS OF AN INTERIOR RELATIVE HUMIDITY BETWEEN 30-60 PERCENT AND WHAT METHODS AN OCCUPANT MAY USE TO MAINTAIN THE RELATIVE HUMIDITY LEVEL IN THAT RANGE.
   - 2.6. INFORMATION ABOUT WATER-CONSERVING LANDSCAPE AND IRRIGATION DESIGN AND CONTROLLER WHICH CONSERVE WATER.
   - 2.7. INSTRUCTIONS FOR MAINTAINING GUTTERS AND DOWNSPOUTS AND THE IMPORTANCE OF DIVERTING WATER AT LEAST 5 FEET AWAY FROM THE FOUNDATION.
   - 2.8. INFORMATION ON REQUIRED ROUTINE MAINTENANCE MEASURES, INCLUDING, BUT NOT LIMITED TO, CAULKING, PAINTING, GRADING AROUND THE BUILDING, ETC.
   - 2.9. INFORMATION ABOUT STATE SOLAR ENERGY AND INCENTIVE PROGRAMS AVAILABLE.
   - 2.10. A COPY OF ALL SPECIAL INSPECTION VERIFICATIONS REQUIRED BY THE ENFORCING AGENCY OR THIS CODE.
3. AT THE TIME OF ROUGH INSTALLATION OR DURING STORAGE ON THE CONSTRUCTION SITE AND UNTIL FINAL STARTUP OF THE HEATING AND COOLING EQUIPMENT, ALL DUCT AND OTHER RELATED AIR DISTRIBUTION COMPONENT OPENINGS 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. CAL GREEN 4.504.1
4. HEATING AND AIR-CONDITIONING SYSTEMS HAS BEEN SIZED, DESIGNED AND HAVE THEIR EQUIPMENT SELECTED USING THE FOLLOWING METHODS:
   - 4.1. THE HEAT LOSS AND HEAT GAIN IS ESTABLISHED ACCORDING TO ACCA MANUAL J, ASHRAE HANDBOOKS OR OTHER EQUIVALENT DESIGN SOFTWARE OR METHODS.
   - 4.2. DUCT SYSTEMS ARE SIZED ACCORDING TO ACCA 29-D MANUAL D, ASHRAE HANDBOOKS OR OTHER EQUIVALENT DESIGN SOFTWARE OR METHODS.
   - 4.3. SELECT HEATING AND COOLING EQUIPMENT ACCORDING TO ACCA 36-S MANUAL S OR OTHER EQUIVALENT DESIGN SOFTWARE OR METHODS.

   EXCEPTION: USE OF ALTERNATE DESIGN TEMPERATURES NECESSARY TO ENSURE THE SYSTEMS FUNCTION ARE ACCEPTABLE. CAL GREEN 4.507.2
5. INSTALLATIONS OF HVAC, REFRIGERATION AND FIRE SUPPRESSION EQUIPMENT SHALL NOT CONTAIN ANY CFCs OR HALONS. CAL GREEN 5.508.1
6. DEVELOP A WRITTEN PLAN OF PROCEDURES FOR TESTING AND ADJUSTING SYSTEMS. SYSTEMS TO BE INCLUDED FOR TESTING AND ADJUSTING SHALL INCLUDE, AS APPLICABLE TO THE PROJECT, THE SYSTEMS LISTED IN SECTION 5.410.4.2.
7. ADHESIVES, SEALANTS, AND CAULKS USED ON THE PROJECT SHALL MEET THE REQUIREMENTS OF SECTIONS 5.504.4.1 THROUGH 5.504.4.6.
8. BATHROOM EXHAUST FANS SHALL BE ENERGY STAR COMPLIANT AND DUCTED TO TERMINATE OUTSIDE THE BUILDING.
9. UNLESS FUNCTIONING AS A COMPONENT OF A WHOLE HOUSE VENTILATION SYSTEM, BATHROOM EXHAUST FANS MUST BE CONTROLLED BY A HUMIDITY CONTROL, WHICH SHALL BE CAPABLE OF ADJUSTMENT BETWEEN A RELATIVE HUMIDITY RANGE OF 50 TO 80% (SEC 4.506.1)

SHEET INDEX

ISSUED DATE: 8/24/2020

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DATE SIGNED: 3/24/21

PROJECT:

BORSTEIN RESIDENCE

NOT FOR BID OR CONSTRUCTION

DEVELOPER:

ARCHITECT:

Architeyk

LOCATION:

188 Homewood Road
Los Angeles
CA, 90049

REVISIONS

NO.	DATE	DESCRIPTION

SHEET NAME:

GENERAL NOTES & LEGENDS

PROJECT NUMBER:

65671

ENGINEER:

DRAFTER:

SHEET NUMBER:

M-0.1

DIFFUSERS/GRILLES/REGISTERS

TAG / CFM

TAG	MANUFACTURER MODEL NO.	AIRFLOW RANGE (CFM)	DUCT SIZE (IN.)	FACE SIZE (IN.)	PRESS. DROP (IN. W.G.)	FUNCTION	NOTES
S-1	TRUAIRE 210VM	0 - 50 51 - 100 101 - 150 151 - 200 201 - 300 301 - 400	Ø5 Ø6 Ø7 Ø8 Ø9 Ø10	10 x 4 10 x 6 12 x 6 14 X 6 14 X 8 14 X 12	0.01 0.01 0.01 0.02 0.02 0.01	CEILING & WALL SUPPLY GRILLE	1,2,3,4,5
R-1	TRUAIRE 290 FIXED BAR	0 - 850 0 - 2500	Ø10 Ø18	14 X 14 30 X 20	0.065	CEILING & WALL RETURN GRILLE	1,2,3,4,5

NOTES:
1. ALL PERFORMANCE DATA SHALL BE IN ACCORDANCE WITH ANSI/ASHRAE STANDARDS.
2. UNLESS OTHERWISE NOTED, ALL DIFFUSERS/REGISTERS/GRILLES SHALL HAVE NC RATINGS <30.
3. COORDINATE FRAME TYPE WITH ARCHITECTURAL RCP.
4. COLOR TO BE SPECIFIED BY ARCHITECT.
5. PROVIDE GRILLE WITH VERTICAL ORIENTED BLADES AND MULTI SHUTTER DAMPER.

SCHEDULE OF FANS

TYPE / TAG

GENERAL						FAN DATA			MOTOR			NOTES
TYPE TAG	SERVICE	MANUFACTURER MODEL NO.	LOCATION	WEIGHT (LBS)	TYPE / DESIGN	TOTAL AIR QTY (CFM)	EXTERNAL STATIC PRESSURE (IN. W.G.)	SONES	MOTOR TYPE	RATED SIZE	VOLTS/ PHASE/ HERTZ	
EF R	RESTROOM	AIRKING AK50S	CEILING	12.0	CEILING MOUNTED	50	0.1	0.5	PSC	14.5 W	120/1/60	1,2,3
EF B	BATHROOM	AIRKING E80SH	CEILING	15.4	CEILING MOUNTED	80	0.1	0.3	PSC	37.0 W	120/1/60	1,2,3,4
EF MB	MASTER BATHROOM	AIRKING E130SH	CEILING	15.6	CEILING MOUNTED	130	0.1	0.3	PSC	37.0 W	120/1/60	1,2,3,4
EF L	LAUNDRY ROOM	AIRKING E130S	CEILING	17.0	CEILING MOUNTED	130	0.1	0.3	PSC	37.0 W	120/1/60	1,2,3

NOTES:
1. ALL FANS SHALL BE TESTED AND RATED, CERTIFIED, AND SEALED IN ACCORDANCE WITH AMCA FOR BOTH SOUND AND AIR PERFORMANCE. ALL FANS SHALL BE U.L. LISTED.
2. FAN SHALL BE PROVIDED WITH A NEMA-1 (INDOORS) OR NEMA-3R (OUTDOORS) DISCONNECT SWITCH. REFER TO ELECTRICAL DRAWINGS FOR MORE INFORMATION.
3. PROVIDE GRAVITY BACKDRAFT DAMPER IN THROAT OF EXHAUST DUCT.
4. FAN SHALL BE PROVIDED WITH BUILT-IN HUMIDITY SENSOR.

AIR SYSTEM DESIGN CRITERIA

CITY	LOS ANGELES
COUNTY	LOS ANGELES
CLIMATE ZONE	6
SUMMER AMBIENT DESIGN TEMPERATURE (°F DB/WB)	81.5 / 67.7
SUMMER DAILY RANGE (°F WB)	11.2
WINTER AMBIENT DESIGN TEMPERATURE (°F DB)	45.0
SUMMER INDOOR DESIGN TEMPERATURE (°F DB)	75
WINTER INDOOR DESIGN TEMPERATURE (°F DB)	68

WHOLE UNIT VENTILATION CALCULATION (ASHRAE 62.2) CONTINUOUSLY

LOCATION	FLOOR PLAN
FLOOR AREA (SQFT)	8484
NO. OF BEDROOMS	5
VENTILATION RATE (CFM) = 0.03(SQFT) +7.5(BEDROOMS+1)	299.5
DESIGNED VENTILATION (CFM)	300

SEQUENCE OF OPERATIONS

NOTE: ELECTRICAL CONTRACTOR SHALL PROVIDE AND INSTALL RELAYS AS REQUIRED TO ACHIEVE CONTROL OF UNITS AS SPECIFIED BELOW

FC/CU's	Unit shall operate via a wall-mounted thermostat. Fan to operate as required by thermostat. Cooling and heating modes shall operate as required by thermostat.
EF R	Fan to operate via a wall-mounted switch. Switch to interlock with light.
EF B & EF MB	Fan to operate via built-in humidity sensor.
EF L	Fan to operate continuously while house is occupied. Fan to act as IAQ fan to meet ASHRAE 62.2 ventilation requirements.

ISSUED DATE: 8/24/2020

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Palm Springs
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DATE SIGNED: 3/24/21

PROJECT:
BORSTEIN RESIDENCE

NOT FOR BID OR CONSTRUCTION

DEVELOPER:

ARCHITECT:
Architeyk

LOCATION:
188 Homewood Road
Los Angeles
CA, 90049

REVISIONS

NO.	DATE	DESCRIPTION

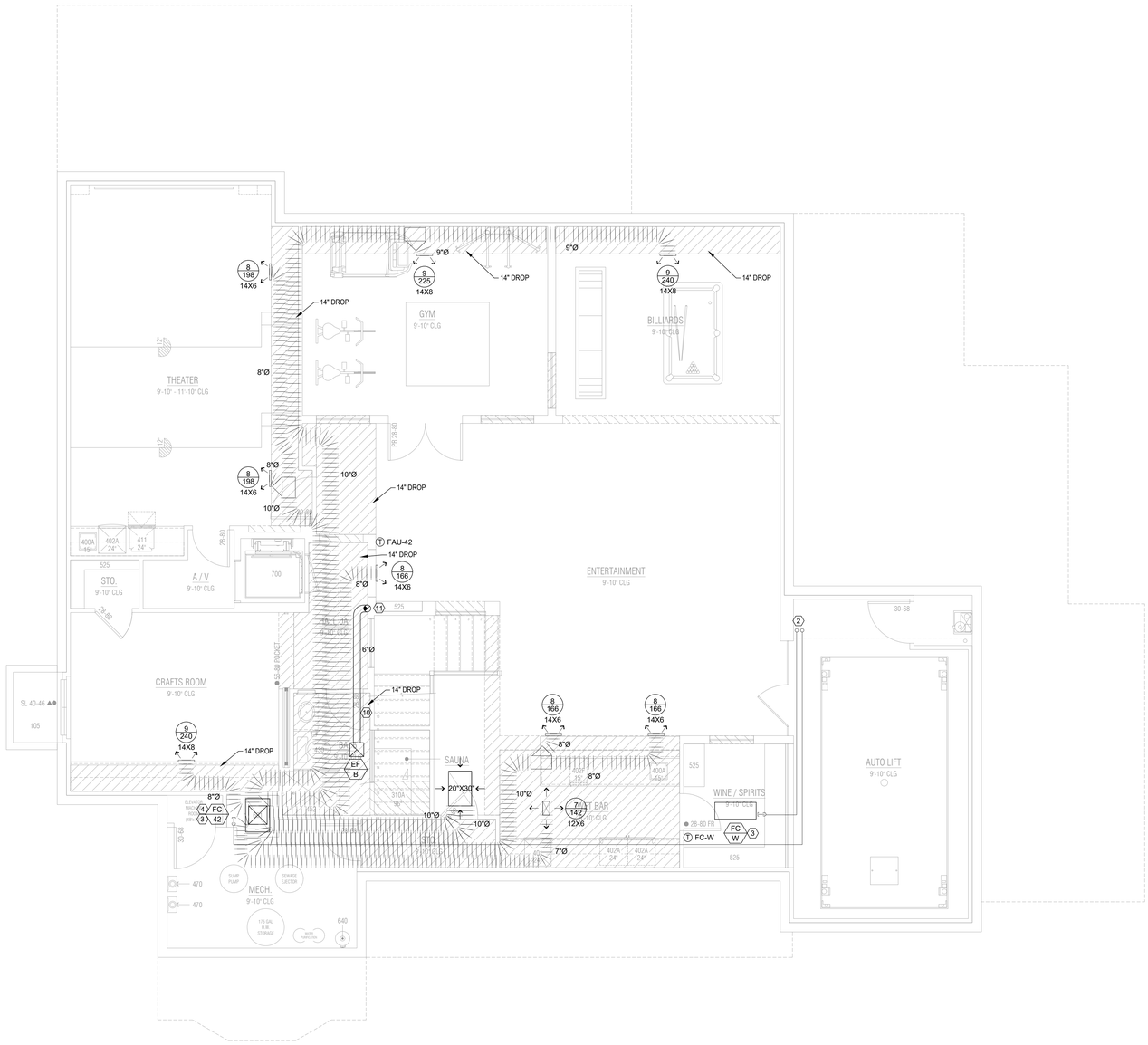
SHEET NAME:
EQUIPMENT SCHEDULES

PROJECT NUMBER:
65671

ENGINEER:

DRAFTER:

SHEET NUMBER:
M-0.2



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

0 2' 4' 8' 12'
1/4" = 1'-0"

FIRST FLOOR PLAN | 1

HVAC GENERAL NOTES

1. REFER TO DRAWING M-0.1 FOR LEGENDS, SYMBOLS, ABBREVIATIONS & GENERAL NOTES.
2. REFER TO DRAWING M-0.2 FOR EQUIPMENT SCHEDULES.
3. REFER TO MD SHEETS FOR MECHANICAL DETAILS.
4. COORDINATE EXACT ROUTING OF DUCTWORK WITH STRUCTURAL AND ALL OTHER TRADES, ROUTING SHOWN IS SCHEMATIC ONLY.
5. PROVIDE CAN AND DUCT COLLAR AS REQUIRED FOR ALL GRILLES AND DIFFUSERS.
6. OPENINGS IN THE ROOF SHALL NOT BE LOCATED WITHIN 5 FEET (1,524 MM) OF THE 1-HOUR FIRE-RESISTANCE-RATED EXTERIOR WALL FOR GROUPS R AND U AND 10 FEET (3,048 MM) OR OTHER OCCUPANCIES, MEASURED FROM THE INTERIOR SIDE OF THE WALL. (CBC 705.11.4.3).
7. FOR DOMESTIC DRYERS PROVIDE A MINIMUM OF 100 SQ. IN FREE AREA OPENING(S) INTO LAUNDRY ROOM FOR MAKE-UP AIR AS REQUIRED BY CODE (CMC 504.4.1). FOR TYPE 2 (COMMERCIAL DRYERS) MAKEUP AIR SHALL BE PROVIDED WITH AREA NOT LESS THAN 1 SQ.IN. FOR EACH 1000 BTUH OF TOTAL INPUT RATING OF THE DRYERS INSTALLED.
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DATE SIGNED: 3/24/21

PROJECT:
BORSTEIN RESIDENCE

NOT FOR BID OR CONSTRUCTION

DEVELOPER:

ARCHITECT:
Architeyk

LOCATION:
188 Homewood Road
Los Angeles
CA, 90049

REVISIONS

NO.	DATE	DESCRIPTION

SHEET NAME:
BASEMENT PLAN
FLOOR PLAN

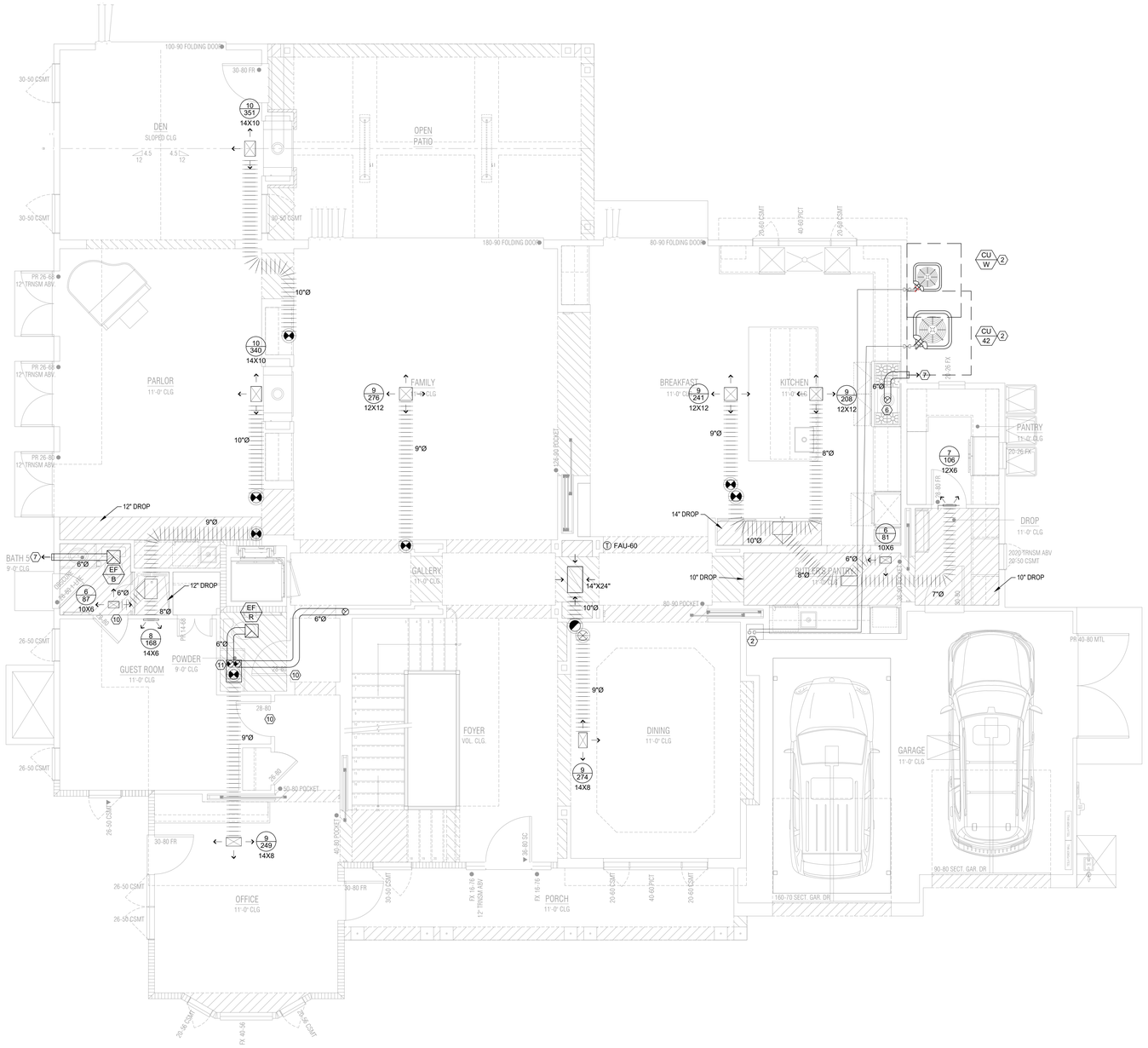
PROJECT NUMBER:
65671

ENGINEER:

DRAFTER:

SHEET NUMBER:
M-3.1

ISSUED DATE: 8/24/2020



1 MAIN LEVEL PLAN
SCALE: 1/4" = 1'-0"

0 2' 4' 8' 12'
1/4" = 1'-0"

FIRST FLOOR PLAN | 1

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Palm Springs
tel 760.323.5090

DATE SIGNED: 3/24/21

PROJECT:
BORSTEIN RESIDENCE

NOT FOR BID OR CONSTRUCTION

DEVELOPER:

ARCHITECT:
Architeyk

LOCATION:
188 Homewood Road
Los Angeles
CA, 90049

REVISIONS

NO.	DATE	DESCRIPTION

SHEET NAME:
MAIN LEVEL FLOOR PLAN

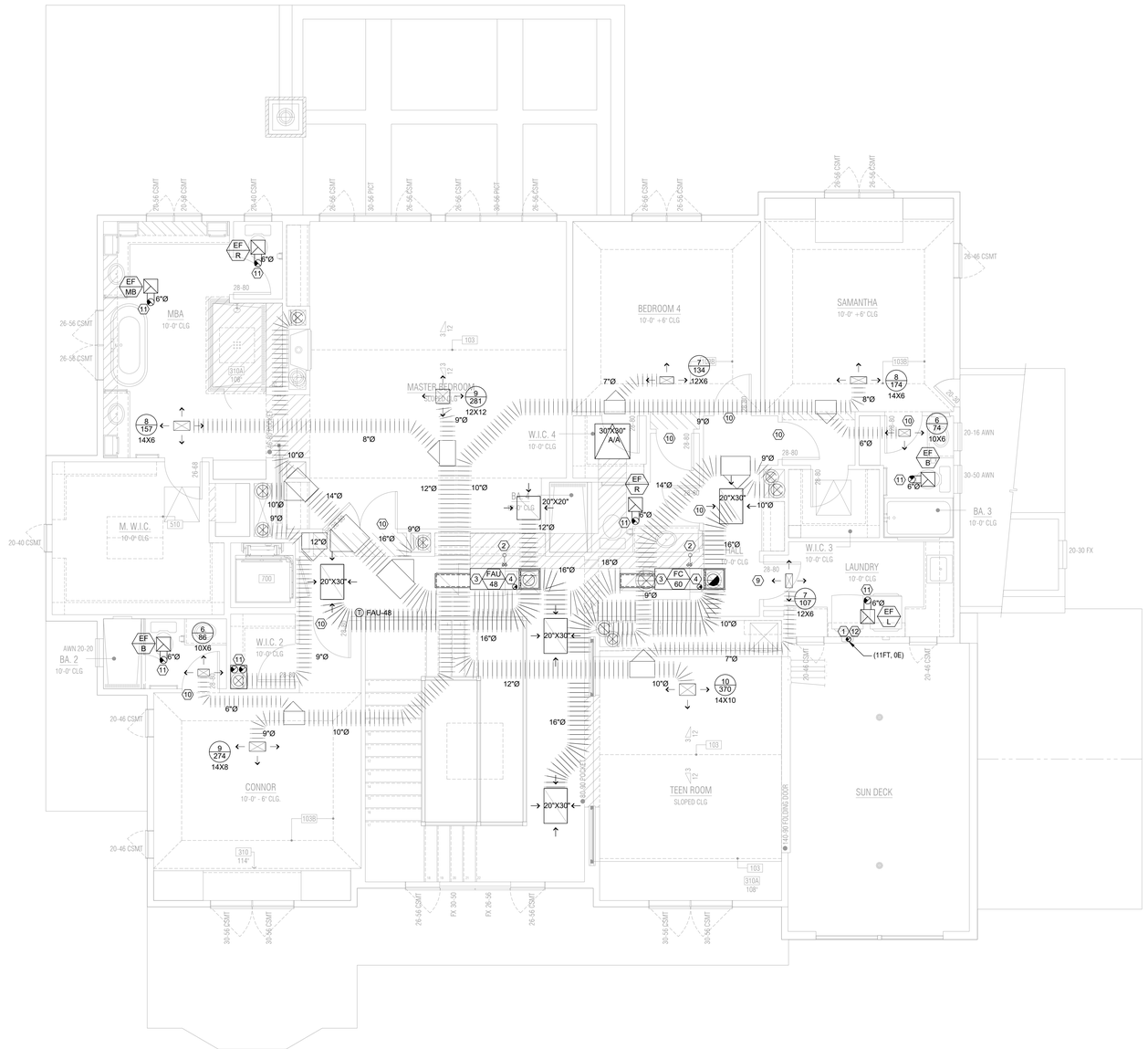
PROJECT NUMBER:
65671

ENGINEER:

DRAFTER:

SHEET NUMBER:
M-3.2

ISSUED DATE: 8/24/2020



1 UPPER LEVEL PLAN
SCALE: 1/4" = 1'-0"

0 2' 4' 8' 12'
1/4" = 1'-0"

FIRST FLOOR PLAN | 1

HVAC GENERAL NOTES

1. REFER TO DRAWING M-0.1 FOR LEGENDS, SYMBOLS, ABBREVIATIONS & GENERAL NOTES.
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Palm Springs
tel 760.323.5090

DATE SIGNED: 3/24/21

PROJECT:
BORSTEIN RESIDENCE

NOT FOR BID OR CONSTRUCTION

DEVELOPER:

ARCHITECT:
Architeyk

LOCATION:
188 Homewood Road
Los Angeles
CA, 90049

REVISIONS

NO.	DATE	DESCRIPTION

SHEET NAME:
UPPER LEVEL FLOOR PLAN

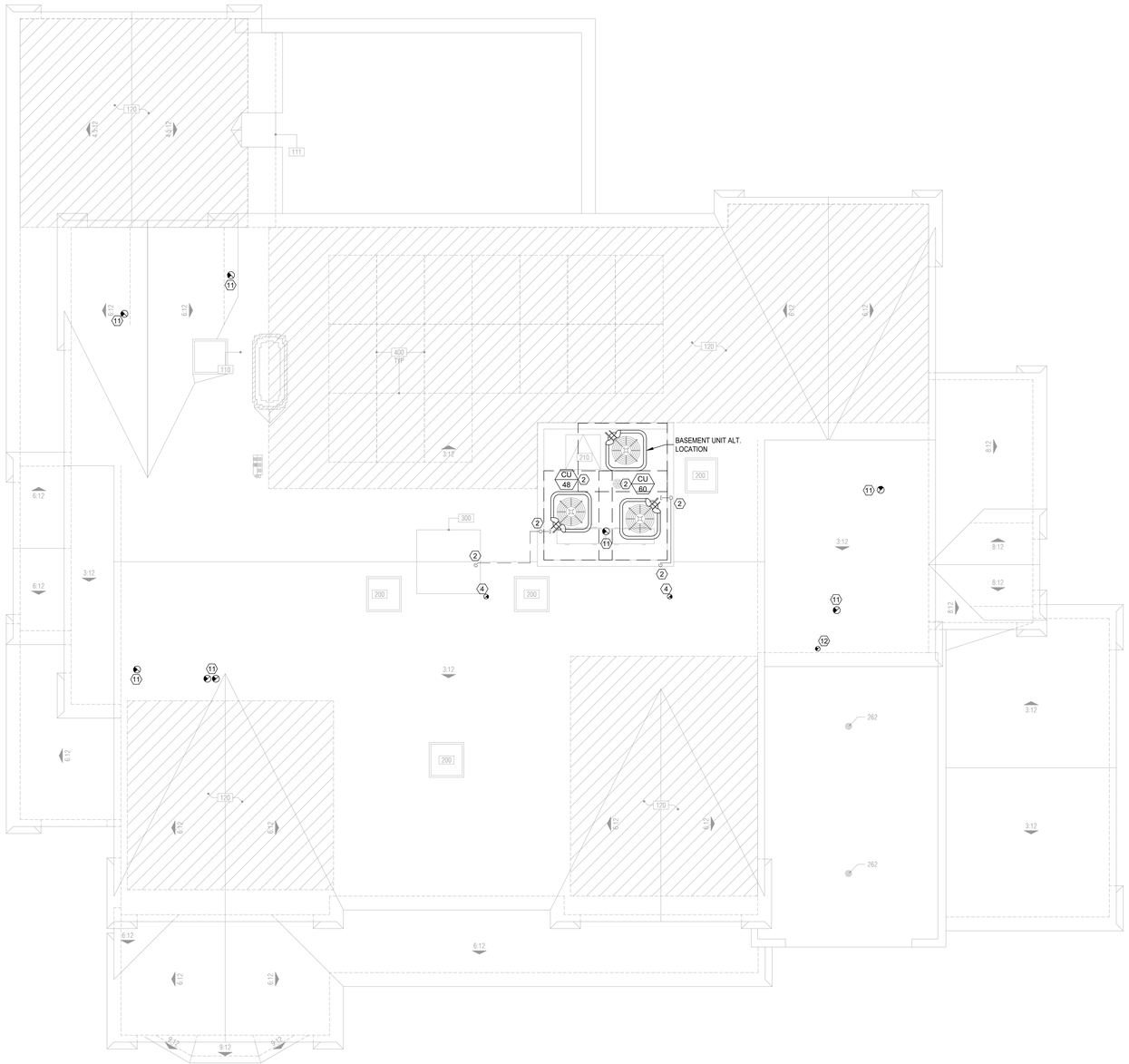
PROJECT NUMBER:
65671

ENGINEER:

DRAFTER:

SHEET NUMBER:
M-3.3

ISSUED DATE 9/24/2020



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

0 2' 4' 8' 12'
1/4" = 1'-0"

FIRST FLOOR PLAN | 1

HVAC GENERAL NOTES

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4. COORDINATE EXACT ROUTING OF DUCTWORK WITH STRUCTURAL AND ALL OTHER TRADES, ROUTING SHOWN IS SCHEMATIC ONLY.
5. PROVIDE CAN AND DUCT COLLAR AS REQUIRED FOR ALL GRILLES AND DIFFUSERS.
6. OPENINGS IN THE ROOF SHALL NOT BE LOCATED WITHIN 5 FEET (1,524 MM) OF THE 1-HOUR FIRE-RESISTANCE-RATED EXTERIOR WALL FOR GROUPS R AND U AND 10 FEET (3,048 MM) OR OTHER OCCUPANCIES, MEASURED FROM THE INTERIOR SIDE OF THE WALL. (CBC 705.11.4.3).
7. FOR DOMESTIC DRYERS PROVIDE A MINIMUM OF 100 SQ. IN FREE AREA OPENING(S) INTO LAUNDRY ROOM FOR MAKE-UP AIR AS REQUIRED BY CODE (CMC 504.4.1) FOR TYPE 2 (COMMERCIAL DRYERS) MAKEUP AIR SHALL BE PROVIDED WITH AREA NOT LESS THAN 1 SQ.IN. FOR EACH 1000 BTUH OF TOTAL INPUT RATING OF THE DRYERS INSTALLED.
8. FIRE SEAL ALL PENETRATIONS AS REQUIRED BY CODE.
9. FIRE DAMPER RATINGS SHALL BE IN ACCORDANCE WITH 717.3.2.1 THROUGH 717.3.2.4. FIRE DAMPERS SHALL HAVE THE MINIMUM FIRE PROTECTIONS RATING SPECIFIED IN TABLE 717.3.2.1 FOR TYPES OF PENETRATION.
10. FOR CEILING HEIGHTS SEE ARCHITECTURAL DRAWINGS.
11. ALL ENVIRONMENTAL AIR VENTS SHALL BE EQUIPPED WITH BACK-DRAFT DAMPERS (SECTION 504.0 CMC).
12. UNLESS NOTED DIFFERENT ON THE PLANS, ALL SUPPLY REGISTERS SHALL BE BAR TYPE (TRUAIRE TYPE 210, 220, 230, OR SIMILAR) WITH TOTAL PRESSURE LOSS LESS THAN. 0.025 in.w.g.
13. THE FLUE DUCT FOR SEALED COMBUSTION WATER HEATER IS SIDE-WAL DISCHARGE. 3 FEET AWAY FROM OPENINGS INTO THE BUILDING AND 5' AWAY FROM THE PROPERTY LINE. SEE CIVIL DRAWINGS FOR PROPERTY LINE DETAILS.
14. IF HUMIDISTAT IS REQUIRED, LOCATE IT ADJACENT TO THERMOSTAT OR INTEGRATED IN EXHAUST FAN.
15. "REGISTERED' COPY OF THE CF-2R FORMS SHALL BE SUBMITTED PRIOR TO FINAL INSPECTION, SIGNED BY HERS RATER, FOR FIELD VERIFICATION AND DIAGNOSTIC TESTING.
16. WHEN LOCAL EXHAUST FANS ARE USED FOR "CONTINUOUS" WHOLE BUILDING VENTILATION, READILY ACCESSIBLE SWITCH SHALL BE PROVIDED AS AN OVERRIDE CONTROL (SECTION 4.4 ASHRAE 62.2). FAN SHALL OPERATE AT ALL TIMES WHEN UNIT IS OCCUPIED. LABEL SHALL BE PROVIDED INDATING SYSTEM'S FUNCTION. FOLLOWING OR EQUIVALENT TEXT SHALL BE DISPLAYED:
    "THIS SWITCH CONTROLS THE INDOOR AIR QUALITY VENTILATION FOR THE HOME. LEAVE IT ON AT ALL TIMES WHEN HOME IS OCCUPIED UNLESS THE OUTDOOR AIR QUALITY IS VERY POOR. "
17. CONTRACTOR TO VERIFY INSTALLED DRYER LENGTHS AND NUMBER OF ELBOWS ON FIELD.
18. PER 2019 CEC FOR MULTIFAMILY LOW-RISE AND HIGH-RISE RESIDENTIAL BUILDINGS, CONTINUOUSLY OPERATED EXHAUST ONLY OR SUPPLY ONLY VENTILATION APPROACH SHALL BE ALLOWED TO BE USED TO PROVIDE THE REQUIRED UNIT VENTILATION AIRFLOW IF ENVELOPE LEAKAGE IS LESS THAN OR EQUAL TO 0.3 CFM AT 50 Pa PER SQUARE FOOT OF DWELLING UNIT ENVELOPE SURFACE. THIS REQUIREMENT SHALL BE FIELD TESTED AND VERIFIED (BLOWER DOOR TEST). THIS IS TO BE USED AS AN ALTERNATIVE TO BALANCED VENTILATION REQUIREMENT PER CEC. 120.1(b)2A iv AND 150.0(o)1C. WHEN THIS OPTION IS SELECTED BY DEVELOPER, GC WILL MAKE SURE THAT ALL NECESSARY BUILDING TECHNIQUES HAVE BEEN USED TO MEET THE LEAKAGE REQUIREMENTS.

HVAC KEY NOTES

1. CAP SHOULD BE LISTED FOR CLOTHES DRYER VENTING (DRYER JACK). DRYER MOISTURE DUCT SHALL BE EQUIPPED WITH BACK DRAFT DAMPER. DRYER MOISTURE DUCT SHALL BE MADE OUT OF METAL WITH SMOOTH INTERIOR FACE. LISTED CONNECTOR SHALL BE MAX. 6 FT. LONG.
2. PROVIDE RS/RL PIPING SIZE PER MANUFACTURER'S GUIDELINES. ROUTE FROM REMOTE CONDENSATE UNIT TO AIR HANDLER (FURNACE, FAN COIL ETC).
3. RUN 3/4" PRIMARY CONDENSATE LINE TO THE LAVATORY TAILPIECE. SECONDARY CONDENSATE TO DRAIN TO THE EXTERIOR ABOVE A WINDOW. OPTIONALLY USE OVERFLOW SWITCH. COORDINATE WITH THE PLUMBER. WHEN CONDENSATE LIFT IS REQUIRED USE CONDENSATE PUMPS.
4. EXHAUST VENT PIPE UP THRU ROOF, INSTALLED PER MANUFACTURER GUIDELINES. ROUTING AND TERMINATION OF VENT FOR HEATING UNIT SHALL COMPLY WITH CH. 8, CMC 2019.
5. PROVIDE WHOLE HOUSE EXHAUST FAN PER 2019 ENERGY CODE SECTION 150(O). SEE HVAC GENERAL NOTE #16 ABOVE FOR CONTROLS.
6. CONNECT KITCHEN HOOD (MIN. 100 CFM) TO 6"Ø KITCHEN HOOD EXHAUST AIR DUCT (MIN. 6"Ø)
7. EXHAUST OUTLET TERMINATES 3' AWAY FROM OPENINGS INTO THE BUILDING AND 3' AWAY FROM THE PROPERTY LINE. SEE CIVIL DRAWINGS FOR PROPERTY LINE DETAILS.
8. PROVIDE FLUE DUCT FOR WATER HEATER. INSTALLED PER MANUFACTURER'S INSTALLATION MANUAL.
9. PROVIDE OPENING NOT LESS THAN 100 SQ. IN. FREE NET AREA FOR DRYER MAKEUP AIR PER CMC 2019 (504.4.1)
10. PROVIDE DOOR UNDERCUT
11. 6"Ø EA DUCT UP THRU ROOF W/ CAP.
12. 4"Ø LINT DUCT UP THRU ROOF W/ CAP
13. ROUTE ALL 3RD FLOOR EXHAUST DUCT THROUGH ROOF.

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DATE SIGNED: 3/24/21

PROJECT:
BORSTEIN RESIDENCE

NOT FOR BID OR CONSTRUCTION

DEVELOPER:

ARCHITECT:
Architeyk

LOCATION:
188 Homewood Road
Los Angeles
CA, 90049

REVISIONS

NO.	DATE	DESCRIPTION

SHEET NAME:
ROOF PLAN

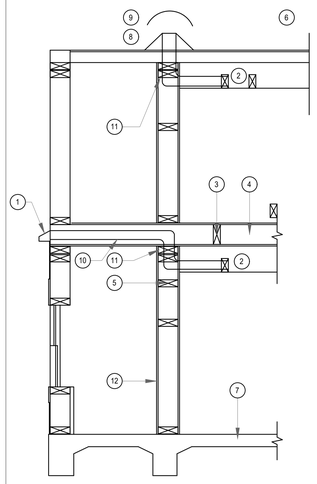
PROJECT NUMBER:
65671

ENGINEER:

DRAFTER:

SHEET NUMBER:
M-3.4

ISSUED DATE: 8/24/2020

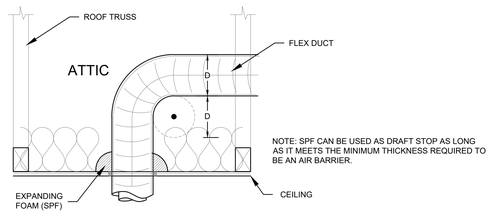


1. EYEBROW W/ BACKDRAFT DAMPER MAINTAIN MINIMUM THREE FEET AWAY FROM BUILDING OPENINGS (TYP.)
2. EXHAUST FAN IN CEILING OR WALL, SEE MECH DWSS.
3. 2X JOIST SEE STRUCT, DWSS. (TYP)
4. FLOOR CEILING ASSEMBLY
5. BLOCKING BY OTHERS (TYP)
6. ROOF - CEILING ASSEMBLY
7. FINISHED FLOOR
8. SHEET METAL FLASHING
9. TEE-TOP SHEET METAL ROOF JACK W/ WIRE MESH SCREEN
10. MIN 26 GAUGE SHEET METAL EXHAUST DUCT (TYP)
11. FIRE CAULK AT PLATE PENETRATION (TYP)
12. WALL (TYP)

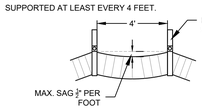
NOTE:
1. SIMILAR FOR ADDITIONAL LEVELS.
2. SEE LINED JOIST BAY DETAIL WHEN DUCT DOES NOT ENTER FLOOR-CEILING. ASSEMBLY FROM WALL CAVITY.
3. SEE EXHAUST/ VENT TERMINATION DETAIL.

BATHROOM EXHAUST VENTING 9

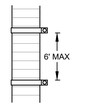
BEND SHALL BE MADE WITH NOT LESS THAN 1 DUCT DIAMETER CENTERLINE RADIUS. DUCTS SHOULD EXTEND A FEW INCHES BEYOND THE END OF A SHEET METAL CONNECTION BEFORE BENDING. DUCTS SHOULD NOT BE COMPRESSED.



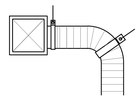
A.
SUPPORTED AT LEAST EVERY 4 FEET.



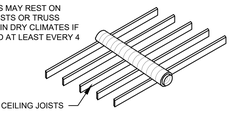
B.
VERTICALLY INSTALLED DUCT SHALL BE STABILIZED BY SUPPORT STRAPS AT A MAX. OF 6 FEET ON CENTER.



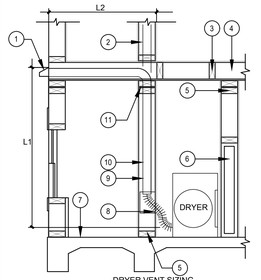
C.
SUPPORT DUCT BETWEEN METAL CONNECTION AND A BEND BY ALLOWING DUCT TO EXTEND STRAIGHT FOR A FEW INCHES BEFORE BENDING



D.
FLEX DUCTS MAY REST ON CEILING JOISTS OR TRUSS SUPPORTS IN DRY CLIMATES IF SUPPORTED AT LEAST EVERY 4 FEET.



FLEX DUCT DETAIL 6



DRYER VENT SIZING

DRYER VENT SIZE	LT	NOTES
4"	14'-0"	1

1. EYEBROW W/ BACKDRAFT DAMPER MAINTAIN MINIMUM THREE FEET AWAY FROM BUILDING OPENINGS (TYP.)
2. DRYER VENT TO ROOF WHERE SHOWN OR NOTED ON MECH. DWGS.
3. FLOOR JOISTS SEE STRUCT. DWGS. (TYP.)
4. FLOOR. CEILING ASSEMBLY
5. WALL TOP PLATES AND BOTTOM PLATES
6. LOUVERED DOOR BY OTHERS SEE ARCH. DWGS. OR TRANSFER LOUVER MIN. 100 SQ. IN. PER DRYER (NET FREE AREA)
7. FINISHED FLOOR.
8. APPROVED FLEXIBLE DUCT CONNECTORS NOT MORE THAN 6FT. IN LENGTH TO DRYER MAY BE USED (FLEXIBLE DUCT CONNECTOR SHALL NOT BE CONCEALED WITHIN BLDG. CONSTRUCTION). ILLUSTRATION DEPICTS USE OF DRYER BOX WITH THE FLEX DUCT CONNECTION. FLEX DUCT CONNECTOR SHALL NOT BE DEFORMED OR COMPRESSED.
9. DRYER DUCT SHALL NOT BE CONNECTED W/ SHEET METAL SCREWS OR OTHER FASTENERS WHICH WILL OBSTRUCT THE AIR FOW (TYP.)
10. DRYER DUCT SHALL BE OF MIN. 26 GAUGE SHEET METAL AND SHALL HAVE SMOOTH INTERIOR SURFACES (TYP.)
11. FIRECAULK TOP PLATE PENETRATION WHEN PENETRATE RATED FLOOR CEILING ASSEMBLY (TYP.)

NOTES:
1. FOR A 4" GALVANIZED DRYER VENT DUCT IF:L1 = 8' THEN: L2 = 14'-8" = 6'

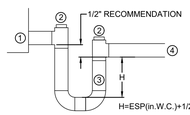
UNLESS OTHERWISE PERMITTED OR REQUIRED BY MANUFACTURER'S INSTRUCTIONS AND APPROVED BY AUTHORITY HAVING JURISDICTION, CLOTHES DRYER VENT SHALL NOT EXCEED A TOTAL COMBINED HORIZ. AND VERT. LENGTH OF 14' . TWO FEET SHALL BE DEDUCTED FOR EACH 90- DEGREE ELBOW IN EXCESS OF TWO. SECTION 504.4.2.1 OF THE CMC.

WHEN DUCT LENGTHS EXCEED CODE MINIMUM DRYER WITH LONG VENT OPTION SHALL BE SELECTED.

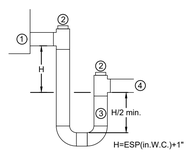
WHEN DUCT LENGTH EXCEED MANUFACTURER'S RECOMMENDED MAX. LENGTH UL LISTED POWER VENTILATORS SHALL BE USED IN ACCORDANCE WITH UL705 AND IN ACCORDANCE WITH THE MANUFACTURER'S INSTALLATION MANUAL.

DRYER VENT DETAIL 3

BLOW THROUGH UNIT
(COIL AT POSITIVE PRESSURE)



DRAW THROUGH UNIT
(COIL AT NEGATIVE PRESSURE)



1. CONDENSATE DRAIN CONNECTION
2. HAND TIGHT PLUG
3. P-TRAP WITH WATER SEAL
4. CONDENSATE LINE. MIN 1% (1/8" PER 1') SLOPE
   PVC OR COPPER PIPE

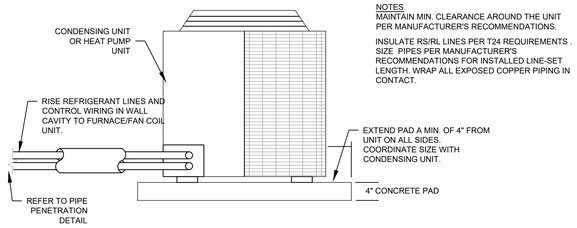
ESP = EXTERNAL STATIC PRESSURE (SEE MECHANICAL SCHEDULE).

PIPE MATERIAL - PVC/COPPER OR ANY OTHER MATERIAL APPROVED FOR DRAIN PIPES PER CPC

MANUFACTURER'S APPROVED CONDENSATE DRAIN KITS ARE ACCEPTABLE ALTERNATIVE TO THIS P TRAP.

CONDENSATE DRAIN DETAIL 8

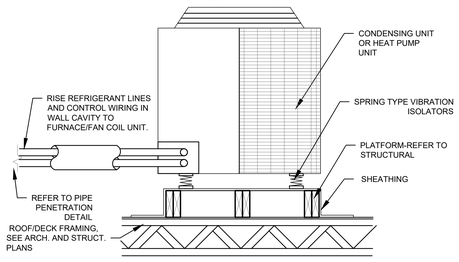
CONDENSING / HEAT PUMP UNIT ON THE GROUND



NOTES
MAINTAIN MIN. CLEARANCE AROUND THE UNIT PER MANUFACTURER'S RECOMMENDATIONS.

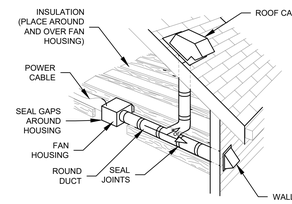
INSULATE RS/RL LINES PER T24 REQUIREMENTS . SIZE PIPES PER MANUFACTURER'S RECOMMENDATIONS FOR INSTALLED LINE-SET LENGTH. WRAP ALL EXPOSED COPPER PIPING IN CONTACT.

ROOF/DECK MOUNTED CONDENSING/ HEAT PUMP UNIT

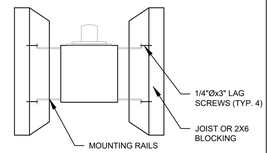


CONDENSING UNIT INSTALLATION 5

EXHAUST FAN IN ATTIC

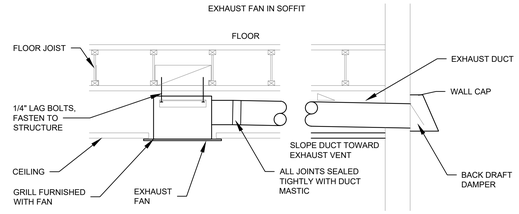


EXHAUST FAN MOUNTING
IN FLOOR / ROOF FRAMING

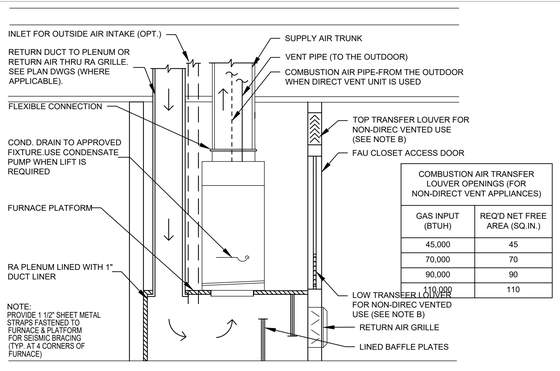


ENSURE DUCT JOINTS AND EXTERIOR PENETRATIONS ARE SEALED WITH CAULK OR OTHER SIMILAR MATERIAL TO CREATE AN AIR-TIGHT PATH. WHEN DUCTS IS LOCATED IN UNCONDITIONED SPACE PLACE /WRAP INSULATION AROUND THE DUCT AND FAN TO MINIMIZE POSSIBLE CONDENSATION BUILDUP WITHIN THE DUCT

EXHAUST FAN IN SOFFIT



CEILING TYPE EXHAUST FAN DETAIL 2



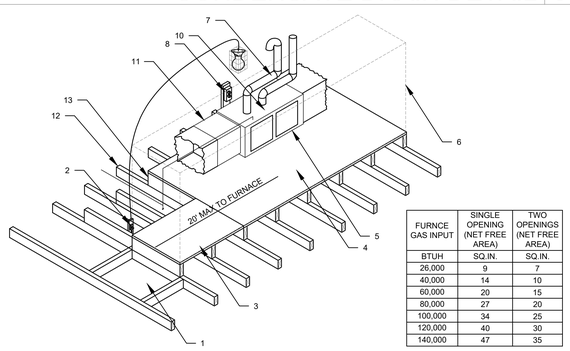
COMBUSTION AIR TRANSFER LOUVER OPENINGS (FOR NON-DIRECT VENT APPLIANCES)	
GAS INPUT (BTUH)	REQ'D NET FREE AREA (SQ.IN.)
45,000	45
70,000	70
90,000	90
110,000	110

A) DIRECT VENT APPLICATION: THE FURNACE MUST BE VENTED TO THE OUTDOORS AND COMBUSTION AIR MUST COME THROUGH THE INLET PIPE FROM THE OUTSIDE (THRU ROOF). USE THIS OPTION WHENEVER FURNACE MODEL SUPPORTS DIRECT VENTING

B) NON-DIRECT VENT APPLICATION: THE FURNACE MUST BE VENTED TO THE OUTDOORS AND COMBUSTION AIR CAN BE TAKEN FROM INDOOR SPACE.
- REQUIRED VOLUME OF SPACE IS NOT LESS THAN 50 CU.FT. PER 1000 BTUH OF INSTALLED EQUIPMENT.
- TRANSFER OPENINGS ARE ALLOWED TO CONNECT SPACES.
  - EACH OPENING SHALL HAVE NET FREE AREA NOT LESS THAN 1 SQ.IN. PER 1000 BTUH. OF THE TOTAL FURNACE INPUT, BUT NOT LESS THAN 100 SQUARE INCHES.
  - ONE OPENING SHALL COMMENCE WITHIN 12 INCHES (305 MM) OF THE TOP OF THE ENCLOSURE AND ONE OPENING SHALL COMMENCE WITHIN 12 INCHES (305 MM) OF THE BOTTOM OF THE ENCLOSURE. THE DIMENSION OF AIR OPENINGS SHALL BE NOT LESS THAN 3 INCHES (76 MM).

UNLESS DWELLING UNIT, MATERIALS EXPOSED WITHIN DUCTS OR PLENUMS SHALL BE NONCOMBUSTIBLE OR SHALL HAVE A FLAME SPREAD INDEX NOT TO EXCEED 25 AND A SMOKE-DEVELOPED INDEX NOT TO EXCEED 50, WHERE TESTED AS A COMPOSITE PRODUCT IN ACCORDANCE WITH ASTM E84 OR UL 723.
CENTRAL AIR FURNACES INSTALLED IN A CLOSET SHALL BE ACCESSIBLE FOR SERVICE AND REPAIR AS NEEDED. CHANGING FILTERS, LUBRICATING MOTOR AND FAN BEARINGS, CHECKING BELT TENSION, AND RELIGHTING THE PILOT FOLLOWING A SERVICE INTERRUPTION ARE NORMAL OWNER FUNCTIONS. SUFFICIENT WORKING SPACE ON THE CONTROL SIDE ENCOURAGES AND FACILITATES MAINTENANCE.

CLOSET FURNACE UNIT INSTALLATION 10



FURNCE GAS INPUT	SINGLE OPENING (NET FREE AREA)	TWO OPENINGS (NET FREE AREA)
BTUH	SQ.IN.	SQ.IN.
26,000	9	7
40,000	14	10
60,000	20	15
80,000	27	20
100,000	34	25
120,000	40	30
140,000	47	35

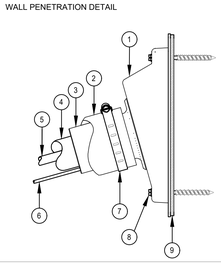
1. 22" x 30" MINIMUM ATTIC OPENING
2. LIGHT SWITCH LOCATED AT THE ENTRANCE
3. SOLID FLOORING MINIMUM 24" WIDE
4. MINIMUM 30"x30" FLOOR AREA AT REQUIRED ACCESS SIDE
   EXCEPTION: A WORKING PLATFORM NEED NOT BE PROVIDED WHERE THE FURNACE IS CAPABLE OF BEING SERVICED FROM THE REQUIRED ACCESS OPENING. THE FURNACE SERVICE SIDE SHALL NOT EXCEED 12 INCHES (305 MM) FROM THE ACCESS OPENING.
5. SERVICE SIDE OF APPLIANCE
6. WHERE HEIGHT OF PASSAGEWAY IS LESS THAN 6 FEET MAX. DISTANCE FROM ACCESS SHALL NOT EXCEED 20 FT.
7. GAS VENT. SEE NOTE
8. 120 V RECEPTACLE OUTLET (WITHIN 25 FT)
9. LIGHTING FIXTURE W/ LAMP PROTECTION CAGE BY ELECTRICAL
10. FURNACE
11. INDOOR COIL
12. ATTIC TRUSS (TYP.) REFER TO TRUSS SHOP DRAWINGS
13. 2"X6" SLEEPERS (TYP.) REFER TO TRUSS SHOP DRAWINGS

A) DIRECT VENT APPLICATION: THE FURNACE MUST BE VENTED TO THE OUTDOORS AND COMBUSTION AIR MUST COME THROUGH THE INLET PIPE FROM THE OUTSIDE (THRU ROOF). USE THIS OPTION WHENEVER FURNACE MODEL SUPPORTS DIRECT VENTING

B) NON-DIRECT VENT APPLICATION: FOR MODELS THAT DO NOT SUPPORT DIRECT VENTING, SUFFICIENT COMBUSTION AIR WILL BE PROVIDED PER MANUFACTURER RECOMMENDATIONS AND CMC/UMC CHAPTER 7. COMBUSTION AIR WILL BE PROVIDED EITHER AS:
- OUTDOOR COMBUSTION AIR
  (SPACES HAVING LESS THAN 50 CUBIC FEET PER 1,000 BTUH)
  i. ONE PERMANENT OPENING (1 SQ.IN PER 3,000 BTUH) COMMENCING WITHIN 12 INCHES (305 MM) OF THE TOP OF THE ENCLOSURE, SHALL BE PROVIDED
  ii. TWO PERMANENT OPENINGS (1 SQ.IN PER 4,000 BTUH) ONE COMMENCING WITHIN 12 INCHES (305 MM) OF THE TOP OF THE ENCLOSURE AND ONE COMMENCING WITHIN 12 INCHES (305 MM) OF THE BOTTOM OF THE ENCLOSURE. SHALL BE PROVIDED
  SEE TABLE ABOVE WITH REQUIRED OPENING SIZES. OR
- INDOOR COMBUSTION AIR
  (SPACES HAVING MORE THAN 50 CUBIC FEET PER 1,000 BTUH AND 0.40 ACH INFILTRATION)

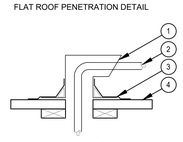
ATTIC FURNACE INSTALLATION 7

WALL PENETRATION DETAIL



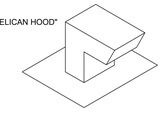
1. EXTERIOR WALL OR PARAPET WALL SEAL PENETRATION OUTLET WITH ELASTOMERIC LINE-SET COMPRESSION SLEEVE TYPE "TITANGS30" BY AIREX MANUFACTURING INC.
2. INSULATION PROTECTIVE PVC COVER TYPE "E-FLEX GUARD" BY AIREX MANUFACTURING INC OR SIMILAR
3. ELASTOMERIC LINE-SET COMPRESSION & ANTI-VIBRATION SLEEVE (COMPONENT OF REFERENCE 1 "TITAN GS30")
4. INSULATION FOR REFRIGERATION SUCTION LINE
5. REFRIGERATION SUCTION LINE
6. REFRIGERATION LIQUID LINE
7. MECHANICAL CONNECTION SECURED WITH STAINLESS STEEL CLAMP (COMPONENT OF REFERENCE 1 "TITAN GS30")
8. WALL FASTENERS SELF-TAPPING 3/8" HEX HEAD 1/4" DIAMETER ALL MATERIAL ANCHORS SCREWS WITH ELASTOMERIC WASHERS (COMPONENT OF REFERENCE 1 "TITAN GS30")
9. WALL SURFACE SEAL ELASTOMERIC GASKET (COMPONENT OF REFERENCE 1 "TITAN GS30")

FLAT ROOF PENETRATION DETAIL

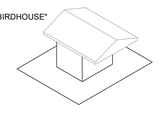


1. "PELICAN HOOD", "BIRDHOUSE" OR SIMILAR SHEET METAL RAIN HOOD PRODUCT
2. REFRIGERANT PIPES
3. SHEET METAL FLASHING WATER PROOFING PER ARCHITECTURAL DRAWINGS
4. ROOF

"PELICAN HOOD"



"BIRDHOUSE"



REFRIGERANT PIPE PENETRATION DETAIL 4

DETAIL #1 1

GOUVIS engineering consulting group, inc.

15 Studebaker
Irvine
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Irvine
tel 949.752.1612
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Palm Springs
tel 760.323.5090

DATE SIGNED: 3/24/21

PROJECT:
BORSTEIN RESIDENCE

NOT FOR BID OR CONSTRUCTION

DEVELOPER:

ARCHITECT:
Architeyk

LOCATION:
188 Homewood Road
Los Angeles
CA, 90049

REVISIONS

NO.	DATE	DESCRIPTION

SHEET NAME:
DETAILS

PROJECT NUMBER:
65671

ENGINEER:

DRAFTER:

SHEET NUMBER:
MD-1

ISSUED DATE: 8/24/2020