

county of ventura

REVIEW	FIRST	SECOND	THIRD	FOURTH
DATE				

PLAN REVIEW CORRECTION LIST MECHANICAL SYSTEMS AND EQUIPMENT (Effective January 1, 2011)

Project Address	Locality	Plan Check Number
Owner/Agent	Mailing Address (Number & Street)	
City, State and Zip Code	Phone Number	

INSTRUCTIONS:

Circled item numbers on the following list identify required corrections. Code references following each item refer to California Mechanical Code (CMC) 2010 edition, California Business and Professions Code (BPC), California Building Code (CBC) 2010 edition.

- Corrections shall be made on the tracings. Three new sets of prints from the corrected tracings must be submitted for recheck, along with the marked-up set of drawings which was originally submitted for plan review.
- Minor corrections may be made on plans, in ink, when approved by the plan checker. Such corrections shall be initialed by the person responsible for the design.
- RETURN THIS LIST with corrected plans forms, and energy calculations. To facilitate rechecking, indicate (on the line to the left of any item circled below) the sheet number of your drawings where required corrections are shown.

GENERAL REQUIREMENTS

- ___ 1. Plans shall bear the license number and signature of an architect, engineer. Alternatively, the contractor licensed in the appropriate discipline can sign the plans provided the same contractor has been contracted to install the mechanical system. Business and Professions Code, Section 6737.3
- ___ 2. Show the job address on the plans.
- ___ 3. Plans shall be clearly legible, and to a scale no smaller than 1/8 inch per foot.
- ___ 4. Show equipment schedule on the plans
- ___ 5. Show the use and occupancy of each room or space on the plans.

- ___ 6. Added or converted appliances shall comply with Section 902.1 and 2 (A) thru (C).
- ___ 7. Ducts used in central vacuum cleaning systems within a dwelling unit shall be constructed of materials in compliance with the applicable standards referenced in Chapter 17, Sec. 506.1. Exception (3)
- ___ 8. Penetrations of fire walls or floor-ceiling or roof-ceiling assemblies shall comply with the Building Code.
- ___ 9. Copper or ferrous pipes or conduits extending from within the separation between a garage and dwelling unit to the central vacuuming unit may be used.

FURNACES AND AIR HANDLERS

- ___ 10. The furnace compartment shall be provided with an opening not less than 30 inches wide. (304.0)
- ___ 11. The furnace compartment: Central-heating furnaces not listed for closet or alcove installation shall be installed in a room or space having a volume at least twelve (12) times the total volume of the furnace; central-heating boilers not listed for closet or alcove installation shall be installed in a room or space having a volume sixteen (16) times the volume of the boiler. (303.2) Submit appliance and compartment volume calculations for review and approval.
- ___ 12. Under floor area access (304.1.3.)
- ___ 13. Show location and size of permanent access to the furnace. (904.10, 904.11 & 911.3, 911.4, 911.6)
- ___ 14. Show roof access. (304.1.1 & 903.7)

- ___ 15. Show direct vent appliance vent termination with clearances specified by manufacturer's installation instructions, submit manufacturer's installation instructions, etc. (802.1.1, 802.2(3)).
- ___ 16. Show location and size of all combustion-air openings or ducts. (701.2)
- ___ 17. Provide calculations for the combustion air. Size of openings or ducts shall be per 701.
- ___ 18. Combustion-air ducts shall be of galvanized steel. (701.10)
- ___ 19. Dampers are not allowed in combustion-air ducts. (701.11)
- ___ 20. Detail equipment support and anchorage for 1106.2.
- ___ 21. Provide an elevation of the furnace: show the draft hood, vent size and type (i.e., double wall type B vent, plastic pipe vent or special gas vent system, etc.) clearance and vent termination. (Table 8-1 Vent type table 802.4.1 and 802.4.3)
- ___ 22. The vent shall be metal double wall type B (802.6.3.1)
- ___ 23. Single wall metal pipe not permitted.(802.6.3)
- ___ 24. The vent shall be positive pressure type. Show category II, III, IV Vent system (802.4.3, 802.4, Table 8.1)
- ___ 25. Provide manufacturer's listing instructions showing the venting criteria and condensate waste disposal for the condensate furnaces. (802.4, 802.8, 802.8.5, and 802.9 condenser)
- ___ 26. The vent diameter shall be equal to or greater than the diameter of the vent collar of the appliance. (802.6.3.2)
- ___ 27. The Type B vent termination shall be at least 5 feet above the highest connected equipment draft hood or flue collar. (802.6.2.1)
- ___ 28. Vents shall extend above the roof and shall terminate in a listed vent cap. Termination point shall be at least 3 feet above any forced air inlet into the building located within 10 feet, 8 feet from a vertical wall or similar obstruction. (802.6.2) Figure 8-2
- ___ 29. Infrared Heaters:
Support. Suspended-type infrared heaters shall be fixed in position independent of gas and electric supply lines. Hangers and brackets shall be of noncombustible material. Heaters subject to vibration shall be provided with vibration-isolating hangers. [NFPA 54:10.18.1] (919.1)
- ___ 30. Broiler Units.
920.1 Listed Units. Listed open-top broiler units shall be installed in accordance with the manufacturer's installation instructions. [NFPA 54:10.19.1] (920.1 & 920.2)
Unlisted Units. Unlisted open-top broiler units shall be installed in accordance with the manufacturer's instructions but shall not be installed in combustible material. [NFPA 54:10.19.2] (920.3)
- ___ 31. A listed pool heater shall be installed in accordance with its listing and the manufacturer's instructions. A pool heater listed for outdoor installation shall be installed with the venting means supplied by the manufacturer and in accordance with the manufacturer's instructions. (920.1, 920.3, 922.0)
- ___ 32. Type B or L vent shall extend vertically, except one 60-degree offset is allowed. Scope 1/4 inch/foot upward. (802.6.1.1 & 802.10.1)
- ___ 33. The total horizontal run of a vent plus the length of horizontal vent connector shall not exceed 75% of the vertical height of the vent. (802.6.1.1)
- ___ 34. Decorative shrouds shall not be installed at the termination of factory built chimneys or gas vents except where such shrouds are listed for use with the specific factory built chimneys or gas venting system and are installed in accordance with manufacturers' installation instructions. (802.5.2.3, 802.5.2.4, & 802.6.2.4.)
- ___ 35. Multiple appliance vent connectors entering a common venting system shall be sized per Section 803.1 and 803.1.2.
- ___ 36. The area of a common vent connector shall not be less than the area of the largest vent connectors plus 50% of the areas of the additional vent connectors. (802.6.3.1(4))
- ___ 37. When sizing Category I - II venting systems specify which table in Appendix C, Chapter 8, the venting system has been designed to. (803. 1)
- ___ 38. Show Type B-W Vent for wall furnace terminating at least 12 feet from the bottom of the furnace. (802.6.2.2)
- ___ 39. Provide manufacturers listing for proposed wall furnaces. (928.1)
- ___ 40. Outdoor Cooking Appliances. Listed outdoor cooking appliances shall be installed in accordance with their listing and the manufacturer's instructions. (921.0)
- ___ 41. 917.0 Clearances for Listed Appliances. Listed illuminating appliances shall be installed in accordance with their listing and the manufacturers' instructions (NFPA 54:10.16.1) 917.2 Clearances for Unlisted Appliances. 917.2(B)
- CONDITIONED AIR**
- ___ 42. Provide a primary and a secondary condensate drain (watertight pan) for cooling coils installed above the ceiling or in furred spaces. The secondary drain shall terminate in a visible location (309.1, 311.0, 311.3, & 1106.10-13)
- ___ 43. Show on the plans the duct materials and gages. Gages shall be per 602.1 Table 5-5 and 5.6.
- ___ 44. Ducts shall be insulated in accordance with Appendix (A) Tables 6-2A thru 6-2Q and Title 24 Energy Report.
- ___ 45. Provide duct type smoke detectors in the supply air ducts in every air conditioning system in excess of 2,000 cfm. Multiple units serving the same room, or having a common return air plenum or a common outside air duct are considered to be one system for the

determination of the cfm. In lieu of duct type smoke detectors, complete coverage area detectors may be installed. (609.0)

- ___ 46. Show all fire rated corridors, walls and ceilings on plans.
- ___ 47. Indicate if rated corridors are tunnel type or full height.
- ___ 48. Make-up air or return air shall not be taken from corridors.
- ___ 49. Listed fire dampers and smoke dampers are required to be installed at all duct penetrations through firewalls, fire barriers and fire partitions. (716.5 CBC)
- ___ 50. Listed fire dampers and smoke dampers are required to be installed at all duct penetration through fire rated shafts. (716.5.3 CBC)
- ___ 51. Listed fire dampers are required to be installed at all duct penetration through fire rated floors/ceilings. (716.6 CBC)
- ___ 52. Provide combination smoke/fire dampers to isolate ducts serving rated corridors. (716.5.4 & 716.5.4.1 CBC)
- ___ 53. Provide combination smoke/fire dampers in ducts penetrating elevator lobbies. (716.5.3 CBC)
- ___ 54. Fire dampers shall be accessible for inspection, maintenance with access 2 feet (606.5)
- ___ 55. Provide a copy of the manufacturer's catalogs for the mechanical equipment used.
- ___ 56. Provide permanent roof access (904.10, 304.1, 304.1.2 CMC)

TITLE 24

- ___ 57. Provide outside air. (Title 24, Sec. 121)
- ___ 58. Provide regularly occupied areas of the building with air filtration media for outside and return air prior to occupancy that provides at least a Minimum Efficiency Reporting Value (MERV) of 8. GBC 5.504.5.3
- ___ 59. Make-up air fans shall be electrically interlocked with their associated exhaust systems. (406.4.2 CBC)
- ___ 60. Backdraft dampers shall be provided in outdoor air supply and exhaust systems. (Title 24, Sec. 150(m)(7))
- ___ 61. Provide an economizer in every cooling unit exceeding 2,500 cfm. Cooling capacity 75,000 BTU. (Title 24, Sec. 144(e))
- ___ 62. Show thermostats. (Title 24, Sec. 122-B)
- ___ 63. Show signed statement of compliance (form Mech-1) on the plans. (Title 24, Sec. 10-103(a)2.C)
- ___ 64. Provide heating and cooling load calculation. (Title 24, Sec. 144(b))

- ___ 65. Provide complete Title 24 documentation. (Title 24, Sec. 10-103) Table 149-A, 149(d)
- ___ 66. Show compliance with at least one of the exceptions of Sec. 144(g) for the electrical resistant heating or provide energy budget. (Title 24, Sec. 144(g) & 152(c))
- ___ 67. Show signed statement of compliance (form Mech-1) on the plans. (Title 24, Sec. 10-103(a) 2.A).
- ___ 68. Also provide Mech-2, Mech-3 and Mech-4 with the submittal. (Title 24 Sec. 10-103(a) 2.C).

GENERAL

- ___ 69. Provide adequate ventilation. Please see Table 4-1 and Table 4-7 (CMC)
- ___ 70. Exhaust ducts under positive pressure and venting systems shall not extend into or pass through ducts or plenums. (602.1)
- ___ 71. Show location & sizes of all ventilation ducts & openings.
- ___ 72. Environmental exhausts ducts shall terminate outside the building and shall be equipped with a back-draft damper. (504.3.1)
- ___ 73. Exhaust outlets shall be 3 feet from the property line; 3 feet from opening into the building. (504.5)
- ___ 74. Exhaust outlets for product conveying systems shall be 10 feet from the property line, 3 feet from exterior roof/wall; 10 feet from opening into the building; 10 feet above grade. (510.8.2.1) (510.8.3.1)
- ___ 75. Make-up air shall be provided for all rooms with exhaust. (505.3)

LAUNDRY ROOMS

- ___ 76. Exhaust duct for domestic dryers shall be 4 inches minimum and shall not exceed a total length of 14 feet including two 90 degree elbows. Two feet shall be deducted for each 90 degree elbow in excess of two. (504.3.2.2)
- ___ 77. Provide engineering calculations or clothes dryer manufacturers installation instructions for dryer vents exceeding 14 feet. (504.3.2.2)
- ___ 78. Dryer exhausts shall terminate at least 3 feet from property line and 3 feet from openings into any building. (504.5 & 905.2)
- ___ 79. Dryer exhaust ducts shall be made out of metal and have smooth interior surface. (504.3.2.1)
- ___ 80. Laundry ventilation exhaust shall terminate at least 3 feet from property line and 3 feet from openings into any building. (504.5)
- ___ 81. Clothes dryer moisture exhaust duct shall not extend into or through ducts or plenums. (504.3.1)
- ___ 82. Laundry exhaust ducts under positive pressure shall not extend into or pass through ducts or plenums. (504.1)
- ___ 83. Show make up air for the laundry room exhaust system. (504.3.2 CMC and 905.3(B))

___ 84. Provide combustion air openings. (701.1 and 701.1.4)

openings into the building. (508.4.1, 508.4.1.1 & 508.4.2)

TOILET ROOMS

___ 85. Toilet rooms in commercial buildings shall have 75 cfm air changes per hour. (Chapter 4 Table 4-4 CMC)

___ 86. Toilet rooms in residential buildings shall have 50 cfm air changes per hour. Chapter 4 Table 4-1 and Table 4-4 (CMC & CRC)

___ 87. Toilet exhausts shall terminate at least 3 feet from property line and 3 feet from openings into any building. (504.5)

___ 88. The make-up air system shall be interlocked with the associated exhaust system. (505.3) CMC

___ 89. Show make-up air for toilet exhaust. (Sec. 203.0) 505.3 CMC

___ 90. Provide a duct type smoke detector in the enclosed space within the building's exhaust system exceeding 2,000 cubic feet per minute. (609.0)

___ 91. Toilet exhaust ducts shall be made of metal. (504.1)

___ 92. Toilet exhaust ducts under positive pressure shall not extend into or pass through ducts or plenums. (504.1) 602.1

___ 93. Provide combination fire/smoke dampers where the toilet exhaust ducts penetrate a fire rated shaft. (716.6 CBC)

CORRIDOR VENTILATION

___ 94. Provide corridor ventilation, separate from other building ventilation systems, for the exit enclosure. (Chapter 4, Table 4-4).

___ 95. Listed fire dampers and smoke dampers are required to be installed at all duct penetrations through fire rated ceilings, UL263 (716.6.2.1)

___ 96. Listed fire dampers are required to be installed at all duct penetrations through fire rated ceilings, UL263 (716.6.2.1) ASTM E 119

___ 97. Provide combination smoke/fire dampers to isolate ducts serving rated corridors. 716.5.4.1 (CBC)

___ 98. Corridors shall have supply and exhaust air inlets and outlets. (601.1.1) 716.5.4.1 (CBC)

___ 99. Rooms adjacent to the corridor shall not draw air from the corridor or transfer air to the corridor. (601.1.1)

KITCHEN HOODS – TYPE I HOODS

___ 100. Provide kitchen layout plans showing location of hoods, ducts, shafts, make up air, openable windows and their area, and the volume of the kitchen. (506.7, 506.9 & 507.1.6)

___ 101. Provide roof plans showing the location of the kitchen exhaust blower, property line and any

___ 102. Provide make up air. (511.3)

___ 103. Show sizes, gauges and materials of all ducts and hoods. (508.1.1 & 511.1.4)

___ 104. Specify on the plan the make, model, size, free area and number of filters used. (509.2.4)

___ 105. Provide elevations showing finished floor, cooking equipment, grease exhaust hood, distance between cooking equipment and grease filters, overhang, finished ceiling, flushing, fire rated shaft, clearance between duct and shaft, cleanouts, slope of horizontal ducts, roof blower, diverter, distance of outlet termination above roof. In compensating hoods, also show make-up air duct and factory built-in fire damper.

___ 106. Each exhaust outlet within a hood shall serve not more than a 12-foot section of hood. (510.3.4.1 & 510.3.4.4)

___ 107. Duct system shall have a slope not less than 1/4 inch per lineal foot toward the hood or toward an approved grease reservoir. When horizontal ducts exceed 75 feet in length, the slope shall not be less than 1 inch per lineal foot. (510.1.4) Factory Duct Enclosure (507.2.3)

___ 108. Duct enclosures from the point of ceiling, wall or floor penetration shall be at least one hour, except it shall be two-hour fire resistive construction in Type I & II buildings. (510.7.1.1) Factory Duct Enclosure (507.2.3)

___ 109. Field-applied and factory built grease duct enclosures shall be listed in accordance with U.L. Standard 2221 and have ICC report approval. A listed 2 layer factory wrap grease duct enclosure system only is allowed. (507.2.3)

___ 110. The duct enclosure shall be sealed around the duct at the point of penetration. (507.7.1.1)

___ 111. A clearance of at least 3 inches and not more than 12 inches shall be maintained between duct and enclosure. (507.6 & 510.7.1.1)

___ 112. Provide product literature for the grease exhaust blower and the make-up fan, showing cfm, static pressures, and, if required, listing by a nationally recognized testing and listing agency.

___ 113. Provide product literature for compensating and/or ventless hoods. The equipment shall be listed by a nationally recognized testing and listing agency. (516.0)

___ 114. Provide product literature for the filters showing the size, free area and friction loss. (509)

___ 115. Provide calculations for sizing exhaust fans and make-up air units. Calculations shall show that the fan is capable of providing the minimum required volume or air. (508.4, 511.2 & 511.3)

___ 116. Provide cleanouts per code. (510.3.4.4)

___ 117. Air velocity within the duct system shall not exceed 2,500 cft/min. 511.1 (Performance Test 511.2.2)

- ___ 118. Exposed grease duct/hood systems serving a Type I hood shall have a clearance from unprotected combustible construction of at least 18 inches. Clearance may be reduced to not less than 3 inches when the combustible construction is protected with material required for one-hour fire-resistive construction (508.4)
- ___ 119. Hoods less than 12 inches from the ceiling or wall shall be flashed solidly with materials as specified in Sec. 508.2. (507.10, 508.4 & 508.4.1)
- ___ 120. Exhaust outlets serving grease duct systems shall be 40 inches above roof surface, 10 feet from property line, 10 feet from air intake openings and 10 feet above adjoining grade. (510.8.2)
- ___ 121. A grease gutter shall drain to a receptacle accessible for cleaning. (509.2.5)
- ___ 122. Type I Hoods for use over solid-fuel cooking equipment shall be provided with separate exhaust system. (517.3.1)
- ___ 123. The exhaust and make-up air systems shall be connected by electrical interlock switches. (503.1 & 517.6.2)
- ___ 124. Provide clearance from the Ventura County Health Department.
- ___ 125. Provide clearance from the Ventura County Fire Department.

REFRIGERATION – MACHINERY ROOM

- ___ 126. A 3 foot wide and 6 foot 8 inch high clearance shall be provided around at least two sides of all moving machinery (1107.2 CBC)
- ___ 127. Door(s) shall swing in the direction of exit. (1007 CBC) (1008.1.2 CMC)
- ___ 128. Provide two separate exits. (1015.4 & 1107.3 CBC)
- ___ 129. Provide calculation showing that the capacity of the exhaust system complies with the section. (1107.2 CBC)
- ___ 130. A switch of the break-glass type, controlling the emergency purge ventilation system, shall be provided adjacent to and outside of the exit door. (1108.5 CBC)
- ___ 131. A switch controlling fans providing ventilation shall be in glass covered enclosure and shall be located adjacent to and outside of the exit door. (1108.6 CBC)
- ___ 132. Show make-up air inlets and exhaust outlets on the plan. (1108.1 and 1108.2)
- ___ 133. Make-up air shall be from outside of the building and shall be equipped with a back draft damper. (1108.1 & 1108.9)
- ___ 134. Exhaust shall be discharged at least 20 feet from the property line. Show this on the plans. (1108.7)
- ___ 135. Only equipment essential to the operation of the refrigeration system shall be allowed in the machinery room. (1109.4 & 1109.8)

- ___ 136. Show on plans the make, model, HP, cfm & static pressure rating of all fans. (1108.8)
- ___ 137. Provide product literature for all fans used showing their cfm & static pressure rating.
- ___ 138. State type of refrigerant (1102.1 and 1102.8)
- ___ 139. Show location of refrigerant-vapor detectors and vapor alarms (1107.4)

GAS PIPING

- ___ 140. State type(s) of gas pipe materials proposed. (1309 & 1309.1.2)
- ___ 141. Show gas piping system and pipe size on plumbing floor plans. Show length, size of all gas piping. (1309.4.1 and 1317.0)
- ___ 142. Show appliance BTU and CFT/Hour at each outlet. (Use 1000 BTU/HR when calculating appliance's CFT/HR gas demand, per the Gas Company) (1309.4.2)
- ___ 143. Gas piping system design submitted requires California licensed mechanical engineer design and calculations. (1309.4.3)(1)(2)(3)

BOILERS

- ___ 144. Show method of providing combustion air. (701.5, 701.6, 701.9 & 802.6.1)
- ___ 145. Show detail of water heater vent to atmosphere (802.6.1.)
- ___ 146. Note on plans, water heater vent shall terminate 8', minimum, from vertical wall or similar obstruction. (802.6.2(1))
- ___ 147. Show temperature and pressure relief valves piped to discharge to an approved receptor connected to the building waste system. (1006.0)
- ___ 148. State on plans that boiler must be listed by nationally recognized test laboratory. (Chapter 10, Sec. 302.1 & 303.1)
- ___ 149. To meet combustion air requirements, provide detail of combustion vent, size, material, etc. (CMC 701.1)

GARAGE VENTILATION

- ___ 150. Provide calculations showing that the exhaust fan is capable of uniformly exhausting 1.5 cfm per square foot of gross floor area (406.4.1 CBC)
- ___ 151. A variance is required to size the garage ventilation system based on .75 cfm per sq. ft. Table A-4 CMC.
- ___ 152. Provide make-up air. (505.3)
- ___ 153. Show the termination of the garage exhaust. Exhaust outlet shall terminate not less than 10 feet from property line, 3 feet from exterior wall or roof, 10 feet from openings into the building, 10 feet above adjoining grade. (506.9.2)

