



**PLAN CHECK CORRECTION SHEET
FOR MECHANICAL SYSTEMS
2014 LAMC**

This is intended to provide uniform application of the codes by the plan check staff and to help the public apply the codes correctly.

Section: Mechanical Plan Check

Plan Check/PCIS Application No.: _____ **Date:** _____

Job Address: _____

Applicant Name: _____

Address: _____ **Phone:** _____

City/State/Zip: _____ **E-mail:** _____

Plan Check Engineer: _____

Telephone: _____ **E-mail:** *firstname.lastname@lacity.org*

Your feedback is important; please visit our website to complete a Customer Survey at www.ladbs.org/LADBSWeb/customer-survey.jsf.

Your plans have been examined and the issuance of a permit is withheld for the reasons set forth. The approval of plans and specifications does not permit the violation of any section of the Code, or other local ordinance or state law.

INSTRUCTIONS:

- Corrections with circled item numbers apply to this plan check.
- Additional corrections are at the end of the list.
- Incomplete or non-legible drawings or calculations will not be accepted.
- Incorporate all comments as marked on the checked set of plans and calculations and this correction sheet.
- For each correction indicate the sheet number and detail or note number on the plans where the corrections are made.
- **WHEN YOU HAVE COMPLIED WITH ALL CORRECTIONS, CALL OR EMAIL THE PLAN CHECK ENGINEER TO MAKE AN APPOINTMENT FOR VERIFICATION**
- **PLEASE BRING THE MARKED UP PLANS AND THE CORRECTIONS SHEET TO THE VERIFICATION APPOINTMENT**

SEE MARKED UP PLANS FOR CLARIFICATIONS OF CORRECTIONS.

GENERAL REQUIREMENTS

1. Plans shall bear the license number and signature of an architect, engineer or contractor licensed in the appropriate discipline. (Chap. 7, Div. 3, Business and Professional Code, Art. 2, Sec. 6735.4; LAMC 112.2(8))
2. Show job address on plans. (LAMC 112.3(2))
3. Plans shall be legible, and the drawing scale shall not be smaller than 1/8 inch per foot. (LAMC 112.2 (4))
4. Show equipment schedule on the plans. (LAMC 112.3(1)(D))
5. Show the make, model, cfm, horsepower, static pressure rating and weight of each fan on the equipment schedule. (LAMC 112.3(1)(D))
6. Show location, size, gages, and materials of all ducts and openings (LAMC 601.2; LAMC 602.1; LAMC 112.3 (1) (B); LAMC Table 506.2(1))
7. Ducts shall be constructed in accordance with Chapter 6 of the Uniform Mechanical Code. (LAMC 601.1)
8. Show the occupancy of each area. (LAMC 112.3(1)(I))
9. Show the intended use of each room. (LAMC 112.3(1)(I))
10. Identify all fire-rated walls and ceilings. (LAMC 112.3(1)(J))
11. Provide roof plans showing the location of all roof equipment. (LAMC 112.3(1)(C); LAMC 303.9)
12. Provide a permanent roof access. (LAMC 304.2)
13. Provide approved structural plans showing that the roof is designed to withstand all dead loads and all required live loads. (LAMC.303.9.1)

14. Where ducts penetrate a rated corridor, indicate if rated corridors are tunnel type or full height. (LAMC 112.3(1)(J))

VENTILATION

- V1. Single family houses and multi-family structures of three stories or fewer above grade shall comply with ASHRAE 62.2, 2010 edition. (LAMC 402.1.2)
- V2. Natural ventilation and mechanical ventilation systems shall be designed in accordance with Sections 402.2 and 403.0, respectively. (LAMC 402.2; LAMC 403.0)
- V3. Exhaust ducts under positive pressure and venting systems shall not extend into or pass through ducts or plenums. (LAMC 504.1)
- V4. Make-up air shall be provided for all rooms with exhaust. (LAMC 505.3)
- V5. Environmental exhaust ducts shall terminate outside the building and shall be equipped with a back draft damper. (LAMC 504.1)
- V6. Exhaust outlets shall terminate no less than 3 feet from property line and 3 feet from openings into the building. (LAMC 504.5)
- V7. Exhaust outlets for product conveying systems shall terminate no less than 10 feet from property line, 3 feet from exterior roof/wall, 10 feet from openings into the building, and 10 feet above grade. (LAMC 506.9(2))
- V8. Exhaust outlets for ducts conveying explosive or flammable vapors, fumes, or dust shall terminate at least 30 feet from property line, 6 feet from exterior roof/wall, 10 feet from opening into the building, 30 feet from combustible walls or openings into the building that are in the direction of the exhaust discharge, and 10 feet above grade. (LAMC 506.9.1)

V9. Ducts conveying explosives or flammable vapors, fumes, or dusts shall extend directly to the exterior of the building without entering other spaces. (LAMC 505.1)

V10. Provide calculations showing how the system is balanced. The system shall be designed by the constant velocity or equal friction methods. (LAMC 505.2)

V11. Systems conveying particulate matter shall be designed employing the constant velocity method. (LAMC 505.2)

AIR-CONDITIONING

A1. Provide 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. (LAMC 312.2)

A2. Flexible ducts shall not penetrate fire-rated assemblies. (LABC 717.7)

A3. Flexible ducts shall not penetrate walls. (LABC 717.7)

A4. Flexible ducts shall not penetrate any floor. (LABC 717.7)

A5. Flexible ducts shall not penetrate ceilings. (LABC 717.7)

A6. Provide listed duct type smoke detectors in the supply air ducts in every air-conditioning system with a capacity 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. (LAMC 608.1)

A7. Provide listed duct type smoke detectors in the supply and return air ducts of each air-conditioning unit. (LABC 907.2.13.1.2(1); LABC 907.2.18.1(3))

A8. Provide listed duct type smoke detectors at each connection to a vertical duct or riser serving two or more stories from a return duct or plenum of an air-conditioning system. (LABC 907.2.13.1.2(2); LABC 907.2.18.1(4))

A9. Make-up air is not allowed to be taken from the corridor. (LAMC 602.1)

A10. Do not pressurize the corridor. Corridors shall have supply air inlets and exhaust air outlets. (LAMC 602.1)

A11. Provide make-up air in the corridor.
a. Provide a minimum of one air inlet and one outlet in each section of corridor isolated by doors. (LAMC 602.1)

A12. Provide listed fire dampers at all duct penetrations through fire-rated walls and barriers. (LAMC 605.2; LABC 717.6.1; LABC 717.5.1; LABC 717.5.2)

A13. Provide listed combination smoke/fire dampers at all duct penetrations through fire-rated shafts. (LAMC 605.1; LAMC 605.2; LABC 717.5.3)

A14. Provide listed fire radiation dampers at all duct penetrations through fire-rated floor/ceiling or roof/ceiling assemblies. (LAMC 605.3, LABC 717.6.1, LABC 717.6.2(2))

A15. Fire dampers shall be dynamic type. (LAMC 605.2)

A16. Install a duct type smoke detector within 5 feet of each smoke damper. (LABC 717.3.3.2(1))

A17. Provide a copy of the manufacturer's catalogs for the mechanical equipment used. (LAMC 112.2(5))

A18. Show on the plans that the air filters have a Minimum Efficiency Reporting Value (MERV) of 8 or higher. (LAGBC5.504.5.3) (Nonresidential Buildings)

TOILET ROOM VENTILATION

T1. Toilet exhaust ducts shall be made out of metal. (LAMC 504.1)

T2. Toilet exhaust ducts under positive pressure shall not extend into or pass through ducts or plenums. (LAMC 504.1; LAMC 602.1)

T3. Toilet exhausts shall terminate at least 3 feet from the property line, 3 feet from openings into any building, and 10 feet from mechanical air intakes. (LAMC 504.5; LAMC 314.3(1))

T4. Toilet rooms in commercial buildings shall have a ventilation system capable of exhausting 50 cfm per water closet or urinal. (70 cfm in assembly occupancies and schools). (LAMC Table 403.7)

a. Provide mechanical ventilation in each bathroom. (LAMC 402.5)

T5. Toilet rooms in residential occupancies shall exhaust 25 cfm if operating continuously or 50 cfm if operating intermittently. (LAMC Table 403.7)

a. State on the plans whether the toilet room ventilation system is designed for continuous or intermittent operation. (LAMC Table 403.7)

T6. Provide listed combination fire smoke dampers where the bathroom exhaust duct penetrates a fire-rated shaft. (LABC 717.5.1; LABC 717.5.2)

T7. Provide listed fire dampers where the bathroom exhaust duct penetrates fire-rated walls and barriers. (LABC 716.5.1; LABC 716.5.2)

LAUNDRY ROOM VENTILATION

L1. Exhaust duct for domestic dryers shall be 4 inches minimum and shall not exceed a total length of 14 feet including two 90° elbows. Two feet shall be deducted for each 90° elbow in excess of two. (LAMC 504.3.1; LAMC 504.3.1.2)

L2. Provide an approved "Request for Modification of Building Ordinances" form allowing the dryer vent to exceed 14 feet. (LAMC 504.3.1.2)

L3. Clothes dryer moisture exhaust ducts shall be made out of metal. (LAMC 504.3.1.1)

L4. Laundry room exhaust ducts shall be made out of metal. (LAMC 504.1; LAMC 602.1)

L5. Laundry room ventilation exhaust shall terminate at least 3 feet from property line, 3 feet from openings into the building, and 10 feet from make-up air inlets. (LAMC 504.5, LAMC 314.3)

L6. Clothes dryer moisture exhaust ducts under positive pressure shall not extend into or pass through ducts or plenums. (LAMC 504.3)

L7. Laundry room exhaust ducts under positive pressure shall not extend into or pass through ducts or plenums. (LAMC 602.1; LAMC 504.1)

L8. Calculate the laundry room ventilation requirement. (Residential occupancies up to 3 stories above grade use ASHRAE 62.2; Residential occupancies over 3 stories above grade use Title 24 Table 121-A; Hotels, motels, resorts, and dormitories use LAMC Table 402.1)

L9. Clothes dryer moisture exhaust ducts shall terminate outside of the building. (LAMC 504.3)

L10. Clothes dryer moisture exhaust ducts shall be equipped with back draft dampers. (LAMC 504.3)

- L11. Provide make-up air to the laundry room. (LAMC 402.1; LAMC 504.3.1)
- L12. Make-up air is not allowed to be taken from the corridor. (LAMC 602.1)
- L13. Laundry room make-up air shall take into consideration the air exhausted by the dryers. (LAMC 905.3)
- L14. Provide product literature for the clothes dryer showing the criteria to size the moisture exhaust duct. (LAMC 504.3.2)
- L15. Provide an approved "*Request for Modification of Building Ordinances*" form allowing the use of a draft inducer. (LAMC 504.3.1.2)
- L16. Provide product literature for the draft inducer showing pressure losses versus flow. (LAMC 112.3.1H)
- L17. Provide combustion air. (LAMC 701.1)
- L18. Provide listed combination smoke/fire dampers where the laundry room exhaust duct penetrates a fire-rated shaft. (LABC 717.5.3; LAMC 605.1; LAMC 605.2)
- L19. Provide listed fire dampers where the laundry room exhaust duct penetrates fire-rated walls and barriers. (LABC 717.5.1; LABC 717.5.2; LAMC 605.2)
- L20. Provide listed combination smoke/fire dampers where the laundry exhaust ducts penetrate fire-rated walls and barriers that are part of a horizontal exit. (LABC 717.5.1.1; LABC 717.5.2.1; LAMC 605.1; LAMC 605.2)
- L21. Remove the fire or combination smoke/fire damper from the clothes dryer moisture exhaust. (LAMC 504.3.1.1)

CORRIDOR VENTILATION

- C1. Show all fire-rated walls and ceilings where the ducts pass through. (LAMC 112.3(1)(J))
- C2. Indicate if rated corridors are tunnel type or full height. (LAMC 112.3(1)(J))
- C3. Provide corridor ventilation at the rate of not less than 0.06 cfm/square foot. (LAMC Table 402.1)
- C4. Provide listed combination smoke/fire dampers at all duct penetrations through fire-rated shafts. (LABC 717.5.3)
- C5. Provide listed fire dampers at all duct penetrations through fire-rated ceilings. (LABC 717.6.1)
- C6. Provide listed combination smoke/fire dampers to isolate ducts serving rated corridors. (LABC 717.5.1; 717.5.2; 717.5.4.1)
- C7. Fire dampers shall be dynamic type. (LAMC 605.2)
- C8. Do not pressurize the corridor. Corridors shall have supply air inlets and exhaust air outlets. (LAMC 602.1)
- C9. Provide make-up air in the corridor. (LAMC 602.1)
 - a. Provide an air inlet and outlet in each section of corridor isolated by doors (LAMC 602.1)
- C10. Rooms adjacent to the corridor shall not draw air from the corridor or transfer air to the corridor. (LAMC 602.1)

ENCLOSED PARKING GARAGE VENTILATION
(NOT INTENDED FOR AUTO REPAIR)

- G1. Provide a note on the plans stating that the garage ventilation system shall operate continuously. (LAMC 403.9)
- G2. Provide make-up air to replenish the air exhausted. (LAMC 505.3)
- G3. Provide verification that the carbon monoxide (CO) detectors are approved by the City of Los Angeles or a City of Los Angeles recognized listing agency. (LAMC 403.9(2))
- G4. Provide approved architectural plans showing the number of parking spaces. (LAMC 403.9.1.1)
- G5. Provide a floor plan showing location of all exhaust and make-up air ducts, fans, and air inlets and outlets. (LAMC 112.3(1)(C))
- G6. For alternative exhaust designs as described in Section 403.9.1, the exhaust air inlets shall be distributed so that no portion of the garage is more than 50 feet from an exhaust air inlet or provide calculations and analysis based on principles of engineering and mechanics showing that the proposed air inlet distribution provides adequate ventilation. (LAMC 403.9.1.2)
- G7. Provide an elevation detail showing the location of the exhaust air inlets or provide a note on the plans stating that the exhaust air inlets shall be located as stated in Section 403.9.1.2. The exhaust air inlets shall be located so that the highest elevation of the exhaust air inlet is no greater than 12 inches below the ceiling level (LAMC 403.9.1.2)
- G8. Show the termination of the garage exhaust. Exhaust outlets shall terminate not less than 10 feet from property line or center line of a public alley or street, 3 feet from exterior wall or roof, 10 feet from openings into the building, 10 feet above adjoining grade. (LAMC 506.9(2))
- G9. Separate the garage ventilation from all other ventilation systems. (LAMC 505.1.1)
- G10. Ducts shall be made out of metal or poured in place concrete, dry wall is not acceptable. (LAMC 506.1)
- G11. For fan rooms used as a plenum, the fan room walls shall be made of poured concrete and the fan room door shall be lined with sheet metal. (LAMC 602.1)
- G12. Specify the fire rating of the exhaust shaft. If the shaft is less than 2 hr. rated, provide combination smoke/fire dampers where the garage exhaust ducts penetrate the fire-rated shaft. (LABC 717.5.3)
- G13. In lieu of combined smoke/fire dampers, provide a dedicated 2 hr. shaft. (LABC 717.5.3 Exception 1.4)
- G14. Provide calculations showing that the exhaust fan is capable of uniformly exhausting 0.75 cfm per square foot of gross area of the garage. (LAMC Table 403.7)
- G15. Provide calculations for the exhaust rate based on the minimum exhaust rate based on the number of operating vehicles based on the following formula:
- Exhaust Rate = (No. of Parking Spaces) x 0.025x14,000 cfm
 - The minimum exhaust rate calculated with the above formula shall not be less than 14,000 cfm. (LAMC 403.9.1)

G16. Provide approved structural plans showing that the roof is designed to withstand all dead loads and required live loads. (LAMC.303.9)

G17. Review the attached document titled "*Standard Corrections List - Garage Ventilation CFD modeling*". Provide the information required and complete all applicable forms. (LAMC 403.9.1.2)

REFRIGERATION MACHINERY ROOMS

R1. Provide a refrigeration machinery room for the refrigeration system. (LAMC 1107.1)

R2. Provide an unobstructed and readily accessible opening not less than 3 feet wide by 6 feet-8 inches in height for equipment maintenance. (LAMC 1106.3)

R3. Door(s) shall swing in the direction of exit. (LABC 1015.4; LAMC 1107.3)

R4. Provide two separate exits for machinery rooms exceeding 1000 square feet. (LABC 1015.5; LAMC 1107.3)

R5. Provide a dedicated mechanical exhaust system and provide calculations showing that it can achieve the minimum required ventilation for heat removal and emergency purge. (LAMC 1108.2)

R6. A switch of the break-glass type, providing off-only control of refrigeration compressors, pumps, and valves, shall be provided adjacent to and outside of each exit door. (LAMC 1108.5)

R7. Switches control fans providing emergency purge ventilation shall be provided with manual reset, and shall be located adjacent to and outside of each exit door. (LAMC 1108.5)

- a. Provide either separate fans for emergency purge or use two speed fans. (LAMC 1108.2(2))

R8. A clearly-identified switch, either of the break-glass type or with an approved tamper-resistant cover, providing off-only control of refrigeration equipment, shall be located immediately outside of and adjacent to the principle exit. (LAMC 1109.4)

R9. Show make-up air inlets and exhaust outlets on the plans. (LAMC 112.3(1)(B); LAMC 1108.1)

R10. Make-up air intake shall be provided directly from outside of the building, shall be properly distributed, and shall be equipped with backdraft dampers. (LAMC 1108.9)

R11. Exhaust shall be discharged at least 20 feet from property lines and openings into the building. (LAMC 1108.7)

R12. Only equipment essential to the operation of refrigeration system shall be allowed within the machinery room. (LAMC 1109.1)

R13. Show on plans make, model, HP, cfm, and static pressure rating of all fans. (LAMC 112.3(1)(D))

R14. Provide product literature for all fans used showing their cfm & static pressure rating. (LAMC 112.3(1)(D))

R15. State the type of refrigerant. (LAMC 1102.2)

R16. Show the location of refrigerant-vapor detectors. (LAMC 1107.4)

R17. The refrigerant-vapor detectors shall be interconnected with the refrigeration machine room exhaust fans to provide emergency purge ventilation when activated. (LAMC 1108.5)

FIRE PUMP AND GENERATOR ROOMS

- FP1. Show the engine exhaust pipe from the point of connection at the engine to the point of termination. Show all wall and roof penetrations and identify which walls and roofs are fire-rated. (LAMC 112.3(1))
- FP2. Provide a minimum of 9 inches clearance from combustible construction. The clearance shall be measured from the outside surface of the pipe or duct and not from the insulation around the pipe. (LAMC 802.7.3.4; Table 802.7.3.4(1); NFPA-211 8.22.1.3; NFPA-211 8.2.2.2.6)
- FP3. Show that the exhaust pipe is guarded at the penetration of combustible roof by ventilated metal thimbles that extend not less than 9 inches on each side above and below the roof. The metal thimbles shall be at least 6 inches larger in diameter than the exhaust pipe or duct. (NFPA-37 8.3)
- FP4. Show that the exhaust pipe is guarded at the point of penetration of combustible walls by ventilated metal thimbles. The metal thimbles shall be at least 12 inches larger in diameter than the exhaust pipe or duct. (NFPA-37 8.3)
- FP5. Provide a drain at the low point of the engine exhaust system. (NFPA-37 8.1.5)
- FP6. Provide at least one flexible connector in the engine exhaust system to minimize the risk of leak due to engine vibration. (NFPA-37 8.2.2)
- FP7. Show that the engine exhaust system terminates at a safe location. Exhaust system shall terminate outside the building and shall not be directed towards structures or areas that contain flammable vapors, gases or combustible dust. (NFPA-37 8.2.3.1; NFPA-37 8.2.3.2)
- FP8. Show that the engine exhaust is guarded where necessary to prevent personnel burns. (NFPA-37 8.2.4).
- FP9. Enclose the engine exhaust pipe in a fire-rated shaft. (LAMC 802.15; NFPA-211 8.2.2.2.1)
- FP10. No portion of the engine exhaust pipe shall extend into or pass through ducts or plenums (LAMC 802.3.5)
- FP11. Provide installation instructions from the engine manufacturer showing the following:
- a. The amount of combustion air required.
 - b. The amount of air required for radiator or room cooling.
 - c. The engines exhaust CFM and the exhaust pipe back pressure.
 - d. The maximum allowable room temperature. (NFPA-37 8.1.2)
- FP12. Provide calculations showing that all of the manufacturer's criteria specified in item 18 above are met. (NFPA-37 8.1.2)
- FP13. Provide calculations showing the pressure loss in the exhaust pipe is less than the pipe back pressure provided by the engine manufacturer. (NFPA-37 8.1.2)
- FP14. Show room ventilation supply and exhaust. (LAMC 504.1; LAMC 112.3)
- FP15. In absence of product literature, calculate the room ventilation according to LAMC 1108.2.
- FP16. The room ventilation shall be added to the combustion air. (LAMC 701.9.1; LAMC 701.9.3)
- FP17. Show point of termination outside of the building of the room ventilation. (LAMC 504.5)
- FP18. In absence of product literature, size combustion air according to LAMC 701.9.

FP19. Combustion air shall be drawn from outdoors. (LAMC 701.9)

FP20. Dampers are not allowed in combustion-air ducts. (LAMC 701.12)

FURNACES

F1. Show that the flame associated to the furnace installed in the garage is located a minimum of 18 inches below the floor–ceiling assembly or 18 inches above the floor. (LAMC 911.8; NFPA-88A 6.2.2)

F2. The furnace shall not be installed in repair garages; It shall be installed in a detached room or building. (LAMC 911.8.1)

F3. Remove the furnace from the bedroom or show compliance with Section 904.1. (LAMC 904.1)

F4. Remove the furnace from the bathroom or show compliance with section 904.1. (LAMC 904.1)

F5. Show the clearances around the furnace. (LAMC 904.2)

F6. Provide product literature showing the required clearances around the furnace. (LAMC 904.2)

F7. Under floor furnace supported by the ground shall be installed on a concrete slab not less than 3 inches above adjoining space. (LAMC 904.3.1.1)

F8. Under floor furnace supported from above shall have a clearance of at least 6 inches above adjoining ground level. (LAMC 904.3.1.2)

F9. Show compliance with Section 904.3.1.3 when excavation is necessary for the installation of the furnace below the floor. (LAMC 904.3.1.3)

F10. Where the excavation exceeds 12 inches provide a seepage pan. (LAMC 912.9)

F11. Show 24 inches passage way to the furnace. (LAMC 904.10.2)

F12. State the height of the passage way to the furnace. (LAMC 904.10.1)

F13. Passage ways with height less than 6 feet shall not exceed 20 feet in length. (LAMC 904.10.1)

F14. Show the location and size of permanent access to the furnace. (LAMC 304.1; LAMC 304.2; LAMC 904.10)

F15. Provide a working platform or grade surface not less than 30 inches by 30 inches on the service side of the furnace. (LAMC 304.1; LAMC 904.10.3)

F16. Show location and size of all combustion air openings or ducts. (LAMC 701.1)

F17. Provide calculations for the combustion air. (LAMC 701.1)

F18. Combustion air duct shall be of galvanized steel. (LAMC 701.11(1))

F19. Dampers are not allowed in combustion air ducts. (LAMC 701.12)

F20. Provide a fire-rated enclosure around the vent. (LAMC 701.12)

F21. Provide an elevation of the furnace. Show the draft hood, vent size and type (e.g. double wall type B vent, positive-pressure vent, etc.), clearances and vent termination. (LAMC 802.12; LAMC 802.4; LAMC 802.8; LAMC 802.6; LAMC 802.6.2)

F22. The vent shall be type B. (LAMC 802.4; LAMC Table 802.4)

F23. The vent shall be listed positive-pressure type. (LAMC 802.3.3)

F24. The vent shall have at least the same area the draft hood, but shall not be greater than 7 times the area of the draft hood outlet area. (LAMC 802.6.3.1(3))

- F25. The vent termination shall be at least 5 feet above the vent collar. (LAMC 802.7.2; LAMC 802.6.2.1)
- F26. Vents shall extend above the roof and shall terminate in a vent cap. (LAMC 802.7.2(3))
- F27. Vent termination point shall be at least 3 feet above any forced air inlet into the building located within 10 feet; and shall be 4 feet away from the property line. (LAMC 802.6.2.5; LAMC 802.7.2(2))
- a. Provide product literature showing that the mechanical draft system is listed. (LAMC 802.3.3)
 - b. Provide calculations and supporting documentation for the mechanical draft system.
- F28. The mechanical venting system shall terminate at least 4 feet below or horizontally from, and 1 foot above any opening into the building. (LAMC 802.8.2)
- F29. The vent shall extend vertically, except one 60° offset is allowed. (LAMC 802.6.1)
- F30. 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. (LAMC 802.6.1; LAMC 802.10.9.2)
- F31. Provide manufacture brochure showing the venting criteria for the condensing furnaces. (LAMC 802.6.3.2)
- F32. Vents shall not extend into or pass through ducts or plenums. (LAMC 802.3.5)
- F33. Connectors entering a common venting system shall be offset. (LAMC 802.10.3; LAMC 802.10.3.1)
- F34. 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. (LAMC 802.10.2.3)

TYPE-I KITCHEN HOODS

- K1. Provide kitchen lay out plans showing location of hoods, ducts, shafts, and make-up air. (LAMC 112.3(1)(A),(B),(C),(K))
- K2. Provide roof plans showing the location of the kitchen exhaust blower, property line and any openings into the building. (LAMC 510.8.1)
- K3. 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, show also make-up air duct and factory built-in fire damper. (LAMC 112.3(1)(K); 112.3(2); 507.2; 508.1; 508.2; 508.5; 508.5.4; 509.2; 510.1.4; 510.2; 510.3; 510.7.1; 510.7.2; 510.7.3; 510.8.2)
- K4. Please note that general specifications in lieu of the actual sectional elevation views are not acceptable. (LAMC 112.3)
- K5. Exhaust outlets serving grease duct systems shall terminate above the roof surface, 10 feet from property line, 10 feet from air intake openings and 10 feet above adjoining grade. Base of fan shall be 40 inches above roof surface. (LAMC 510.8.1)
- K6. Provide an elevation to scale showing that the termination of the grease exhaust duct complies with Section 510.8.2. (LAMC 510.8.2)
- K7. Show sizes, gauges, and materials of all ducts and hoods. (LAMC 508.1.1; LAMC 510.5.1)
- K8. Each exhaust outlet within a hood shall serve not more than a 12-foot section of unlisted hood. (LAMC 508.9)

- K9. Specify on plan make, model, size, free area and number of filters used. (LAMC 509.1; LAMC 509.2.3)
- K10. Provide product literature for the filters showing the size, free area and friction loss, and listing. (LAMC 112.2(5); LAMC 509.1)
- K11. 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. (LAMC 510.1.3)
- K12. Duct enclosures from the point of ceiling, wall or floor penetration shall be at least 1 hr. fire-rated, except it shall be 2 hr. fire-rated in buildings four stories or more. (LAMC 510.7; LAMC 510.7.1; LAMC 510.7.1.2)
- K13. The duct enclosure shall be sealed around the duct at the point of penetration. (LAMC 510.7)
- K14. A clearance of at least 6 inches and not more than 18 inches shall be maintained between duct and enclosure. (LAMC 507.1.3)
- K15. 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. (LAMC 507.2)
- K16. Provide product literature for the grease exhaust blower and the make-up air fan, showing cfm, static pressures, and, if required, UL listing. (LAMC 112.2(5); LAMC 112.3(1)(D); LAMC 511.0)
- K17. List the type of cooking equipment on plans. (LAMC 112.3(1)(K); LAMC 508.4.1)
- K18. Provide product literature for the cooking equipment showing that it is listed by AGA, UL, or approved by the City of Los Angeles or other recognized agency. (LAMC 515.1)
- K19. 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 of air. (LAMC 508.4)
- K20. Air velocity within the duct system shall be not less than 500 feet per minute and shall not exceed 2,500 ft/min. (LAMC 511.2)
- K21. Provide make-up air. (LAMC 511.3)
- K22. Provide product literature for the compensating hood. The equipment shall be listed. (LAMC 112.2)
- K23. Compensating hoods shall draw not less than 20% of the required airflow from the kitchen. (LAMC 511.4)
- K24. Provide product literature for the ventless/recirculating hood. (LAMC 112.2)
- K25. Provide product literature showing that the ventless hood is listed in accordance with EPA 202 for reduced emissions, and operates with a total airflow of 500 cfm. (LAMC 508.1 Exception 1)
- K26. Provide product literature for the recirculating hood showing it is listed to UL 710B. (LAMC 508.1 Exception 2; LAMC 516.2.2)
- K27. Fire protection shall be provided in recirculating hoods. (LAMC 516.2.3)
- K28. The fire-extinguishing system shall be interconnected to the fuel or current supply so that the fuel or current is automatically shut off to all equipment under the hood when the system is actuated. (LAMC 513.4)

- K29. The exhaust and make-up air systems shall be connected by electrical interlock switch. (LAMC 511.3)
- K30. Provide clearance from the Health Department. (LAMC 112.3(1)(K)(2))
- K31. Provide clearance from the South Coast Air Quality Management District. (LAMC 112.3 (1)(K)(3))
- K32. Provide access openings for cleaning, maintenance, and inspection. (LAMC 510.3)
- K33. Type-I hoods for use over solid-fuel cooking equipment shall be provided with separate exhaust systems. (LAMC 517.3.1)
- K34. Wall termination of solid-fuel exhaust is prohibited. (LAMC 514.4.2)
- K35. Provide product literature showing that the solid-fuel cooking equipment is required to have a natural draft. (LAMC 517.1.1)
- K36. Provide a spark arrester for the solid-fuel cooking equipment. (LAMC 517.5.1)
- K37. Provide make-up air for the solid-fuel cooking equipment. (LAMC 517.16.1)
- K38. Provide calculations showing that the solid-fuel cooking appliance is not installed in a confined space as defined in Section 205.0. (LAMC 205.0; LAMC 517.2.1)
- K39. Indicate on plans what provisions have been made for fire protection in the hood and in the duct. (LAMC 112.3(1)(K)(1); LAMC 513.1; LAMC 513.1.1; LAMC 513.2)
- TYPE-II KITCHEN HOODS**
- K40. Provide kitchen lay out plans showing location of hoods, ducts, shafts, and make-up air. (LAMC 112.3(1)(A),(B),(C),(K))
- K41. Provide roof plans showing the location of the kitchen exhaust blower, property line and any openings into the building. (LAMC 112.3(1)(C), LAMC 510.8.1)
- K42. Provide make-up air. (LAMC 511.3)
- K43. Show sizes, gauges, and materials of all ducts and hoods. (LAMC 112.3(1)(B); LAMC 112.3(1)(K); LAMC 510.1.7)
- K44. Specify on plan make, model, HP, cfm and static pressure rating of fans used. (LAMC 112.3(1)(D))
- K45. List type of cooking equipment on plans. (LAMC 112.3(1)(K))
- K46. Provide elevations showing the finished floor, equipment under the hood, hood, fire-rated shaft (if required), roof, blower, and distance of the outlet termination above roof. (LAMC 112.3(1)(K); LAMC 507.2; LAMC 314.3(1); LAMC 510.7)
- K47. The exhaust termination shall be at least 10 feet away from air inlets. (LAMC 510.8.1, LAMC 510.8.2)
- K48. Please note that general specifications in lieu of the actual sectional elevation views are not acceptable. (LAMC 112.3(1); LAMC 112.3(2))
- K49. Each exhaust outlet within a hood shall serve not more than a 12-foot section of hood. (LAMC 508.9)
- K50. Provide clearance from the Health Department. (LAMC 112.3(1)(K)(2))
- K51. Provide product literature for the exhaust blower and the make-up air fan, showing cfm, static pressures, and, if required, UL listing. (LAMC 112.2(5); LAMC 112.3(1)(D); LAMC 511.0)

- K52. Provide product literature for the cooking equipment showing that it is listed by AGA, UL, or approved by the City of Los Angeles or other recognized agency. (LAMC 515.1)
- K53. 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 of air determined by formulas. (LAMC 508.4)

OSHPD 3 HEALTH FACILITIES

- O1. The minimum volume of the boiler room shall be 16 times more than the total volume of the boilers installed in the room. (LAMC 303.3).
- O2. Show that your design complies with the heating, cooling and humidity requirements stated in Table 325.0. (LAPC 325.3)
- O3. All supply, return, exhaust fans required to maintain the positive and negative air balances as required in Table 4-A shall be on emergency power. (LAMC 326.0)

- O4. All control components and control systems necessary for the normal operation shall be on emergency power. (LAMC 326.0)
- O5. The ventilation air requirements listed in table 402.1 are not permitted for OSHPD facilities. Ventilation systems shall comply with sections 408 thru 418. (LAMC 402.0).
- O6. Evaporative cooling shall not be used in patient areas. (LAMC 405.0)
- O7. Flexible ducts that are more than 10 feet in length shall not be used.(LAMC 602.3.1)
- O8. Thermal acoustical lining materials shall not be installed within ducts, terminal boxes or sound traps and other in-duct systems serving patient areas like operating rooms, delivery rooms, post anesthesia care units, etc. (LAMC 604.2)
- O9. Perforated ventilating ceilings are not allowed in health facilities (LAMC 606.1.1).
- O10. Design of refrigeration systems shall comply with Table 1105.1.

A. GENERAL REQ. HVAC

暖通空调基本条例

A1 Plans shall bear the license number and signature of an architect, engineer or contractor licensed in the appropriate discipline.

(Chap. 7, Div. 3, Business and Professional Code, Art. 2, Sec. 6735.4)

设计图应标有适当专业的建筑师, 工程师或承包商的执照号码和签名。

A2 Show job address on plans (95.113.3 (2))

在设计图中显示项目地址

A3 Plans shall be clearly legible, and at a scale no smaller than 1/8 inch per foot. (95.113.2 (4)).

设计图应字迹清楚, 并且比例不小于每英尺 1/8 英寸。

A4 Show equipment schedule on the plans.(95.113.3-1)

设计图中应显示设备表

A5 Show the occupancy of each area.(95.113.3-1j)

显示每个区域的使用类别。

A6 Show the intended use of each room. (95.113.3-1j)

显示每个房间的用途

A7 Show all fire rated walls and ceilings. (95.113.3-1 k)

显示所有墙和天花板的防火等级

A8 Indicate if rated corridors are tunnel type or full height.(95.113.3-1k).

指明防火等级的走廊是隧道式或全高度式。

FURNACES

燃烧炉

A9 The furnace closet shall be provided with an opening not less than 24 inches wide. (95.303.0)

燃烧炉间应有不小于 24 英寸宽的开口

A10 The furnace closet shall be 12 inches wider than the furnace with a minimum clearance of 3 inches along the sides, back and top.(95.904.1).

燃烧炉间应比加热炉宽 12 英寸且上端、后段、两侧最小净距 3 英寸

A11 Show location and size permanent access to the furnace.(95.305.0 & 95.308.0).

显示燃烧炉固定维修口的位置和尺寸。

A12 Show roof access.(95.910.7)

显示屋顶维修口的通行方式。

A13 Provide an approved structural plan showing that the anchorage of the roof is designed to withstand all dead loads and all required live loads. (94.910.1, 94.910.5 & 94.304.4)

提供核可的结构设计图表明屋顶锚固设计能承担所有恒荷载和动荷载。

A14 Floor furnaces shall be installed not less than 3 inches above grade.(95.909.3).

落地的炉子安装应高出地面 3 英寸以上。

A15 Show location and size of all combustion-air openings or ducts.(95.702.1, table 7-1)

表示出燃烧空气开口或管道的位置和尺寸大小

A16 Provide calculations for the combustion air. Size of openings or ducts shall be per Chapter 7 of the Uniform Mechanical Code. (95.707).

依照统一机械法规第 7 章提供燃烧空气量的计算。开口或管道尺寸大小

A17 Combustion-air duct shall be of galvanized steel.(95.704.1).

燃烧空气管道采用镀锌钢板。

A18 Dampers are not allowed.(95.702.2 & 95.704.2).

管道内不允许安装挡板

A19 Provide a fire rated enclosure around the vent.(95.704.2).

在排气口周围采用防火等级封装。

A20 Provide an elevation of the furnace: show draft hood, vent size and type (e.g. double wall type B vent, positive pressure vent etc.), clearances and vent termination. (95.303, 95.304, 95.307, 95.804, 95.805, 95.806)

提供燃烧炉的立面图：包括通风罩，排气管面积和类型（例如：双层 B 式排气口）正压排气间距和排气终端。

A21 The vent shall be double wall type B. (95.802.1)

排气口宜选用双层 B 式类型

A22. The vent shall be positive pressure type. (95.816.2)

排气口应选用正压类型。

A23 The vent diameter shall be equal or greater than the diameter of the vent collar of the appliance (95.808.1).

排气口直径宜大于或等于设备风口喉部直径。

A24 The vent termination shall be at least 5 feet above the vent collar. (95.806.2)

排气口终端至少宜高于风口喉部 5 英尺以上。

A25 Vents shall extend above the roof and shall terminate in a vent cap. Termination point shall be at least 3 feet above any forced air inlet into the building located within 10 feet; and shall be 4 feet away from the property line.(95.806.1 & 95.806.6.1)

通风系统宜伸出屋顶并且终端采用通风帽。终点至少高出位于 10 英尺范围内建筑机械设备进风口 3 英尺，且应远离财产线 4 英尺以上。

A26 Vents shall terminate at least 4 feet below or horizontally from, and 1 feet above any opening into the building.(95.806.6).

排风口应至少低于建筑的开水口处 4 英尺或者水平方向且高于进口处 1 英尺。

A27 The vent shall extend vertically, except on 60. offset allowed.(95.805.1).

除非 60 度的偏移角之例外的，否则排风口应垂直延伸。

A28 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. (95.805.1).

通风系统水平长度加上通风接口长度不宜超过通风系统垂直高度的 75%。

A29 Provide manufacture brochure showing the venting criteria for the condensing furnaces. (95.802.5)

提供制造手册说明冷凝燃炉的排气标准。

A30 Vents shall not extend into or pass through ducts plenums.(95.804.0)

排风口不宜延伸进或者穿越压力箱。

A31 Connectors entering a common venting system shall offset.(95.809-2)

接口接入一个共用的通风系统应错开。

A32 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.(95.809.3)

一个共同连接的排风管联接面积头不宜少于最小的排风管连接器加上 50% 的另接的排风口加接连接器。

A33 Specify according to which table in Appendix C, Chapter 8 of the Uniform Mechanical Code

the venting system has been designed.(95.801.0)

指明设计是根据的统一机械法规第八章的附录 C 哪一个表而做出的。

A34 Provide an approved variance allowing the draft inducer.(95.816.1)

提供一个可允许的诱导通风之变通方式。

AIR CONDITIONING

空气调节

A35 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.(95.1105.13)

为天花板或 furred spaces 上安装的冷却盘管提供冷凝水主排水管和间接排水管（隔水盘）。间接排水末端要接到可看见的位置。

A36. Show on plan duct materials and gages. Gages shall be per tables 6-A, 6-B & 6-C.

(95.601.1)

依照表 6-A, 6-B & 6-C 在设计图上显示管道材质及测量仪器。

A37 Ducts shall be constructed in accordance with chapter 6 of the Uniform Mechanical Code.

SMACNA is not an adopted code. (95.601.1)

管道架设要符合统一机械法规第六章， SMACNA 是不被采用的法规。

A38 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.(95, 609)

对于流量超过 2000 立方英尺/分钟的空调系统送风管道提供风管型烟感探测器。如果多单元服务于同一个房间，或者有共同的回风加压**，或共同的室外新风管道，在计算风量时视为一个系统。如不安装风管型烟感探测器，可以安装覆盖全区的探测器代替。

A39 Provide duct type smoke detectors in every ventilation system in excess of 2, 000 CFM.

Multiple units serving the same room are considered one system. In lieu of duct type smoke detectors, complete coverage area detectors any be installed. (95.609).

流量超过 2000 立方英尺/分的每个通风系统需设置风管型烟感探测器，多单元服务于同一个房间可应视为是一个系统，如不安装风管型烟感探测器，可以安装覆盖全区的探测器代替。

A40 Show all fire rated walls and ceilings on plans.(95.113.3)

在设计图上说明所有防火等级的墙及天花板。

A41 indicate if rated corridors are tunnel type or full height.(95.113.3)

说明防火等级走廊是隧道式或全高度式。

A42 Listed fire dampers and smoke dampers are required to be installed at all duct penetrations through area separation and occupancy separation walls. (91.713.10 &91.713.11)

在风管穿越隔离区和不同使用区墙壁时列出要求安装核可清单上的防火阀和排烟阀

A43 Listed fire dampers and smoke dampers are required to be installed at all duct penetrations through fire rated shafts.(91.7t3.10 & 91.713.11)

在风管穿越防火管道间处列出所有要求安装核可清单上的防火阀和排烟阀。

A44 Listed fire dampers are required to be installed at all duct penetrations through fire rated ceilings.(91.713.11)

列出风管穿越防火天花板是要求安装核可清单上的防火阀

A45 Provide combination smoke/fire dampers to isolate ducts serving rated corridors. (91.713.10 & 91.713.11)

设置防火/排烟阀以隔绝防火走廊的风管服务。

A46 Provide combination smoke/fire dampers in ducts penetrating elevator lobbies. (91.713.10 & 91.713.11)

在风管穿越电梯厅处提供排烟/防火两用阀。

A47 Fire dampers shall be dynamic type. (91.713.12)

防火阀应是动态类型的。

A48 Remove all return air registers from the corridor.(95.602.1).

移除走廊所有的回风装置。

A49 Provide an approved structural plan showing that the anchorage of the roof is designed to withstand all dead loads and all required live loads. (94.304.4)

提供经核可的结构图纸显示屋顶的支抗设计能够满足所有的静态和动态荷载。

A50 Provide a copy of the manufacturer catalogs mechanical equipment used.

为选用的机械设备提供一个厂商目录

A51 Provide a permanent roof access.(95.307.5)

提供一个永久的屋顶入口

TITLE 24

A52 Provide outside air. (Title 24 Sect. 121)

提供室外新风。

A53 Make-up air shall be electrically interlocked with associated exhaust systems. (95.402 & 95.505.3)

补风系统应与相关的排风系统电动联锁。

A54 Backdraft dampers shall be provided in outdoor air supply and exhaust systems. (Title 24 Sect. 150(m)7).

在室外新风管和排风管上需设置单向挡板。

A55 Provide economizer in every cooling unit exceeding 2, 500 cfm.(Title 24 Sect. 144(e))

超过 2500 CFM 风量的每个制冷单元需设置节能器。

A56 Show thermostats.(Title 24 Sect. 122)

显示温度调节装置。

A57 Show signed statement of compliance (form Mech-1) on the plans.

(Title 24 Sect. 10-103(a)2.A)

设计图上的 Mech-1 中显示签字及符合叙述。

A58 Also provide Mech-2, Mech-3, and Mech-4 with submittal. (Title 24 Sect. 10-103(a)2.C)

也需在送呈文件中提供 Mech-2, Mech-3, and Mech-4.

A59. Provide heating and cooling load calculations. (Title 24 Sect. 144(b))

提供冷、热负荷计算书。

A60 Provide complete Title 24 documentation. (Title Sect. 10-103)

提供 24 法案所需包括的全部文件(法案章节 10-103)。

A61 Show compliance with at least one of the exceptions of section 144(g) of title for the electrical resistance heating or provide energy budget.(Title 24 Sect. 144(g); 152(c))

说明至少一个与 144(g)例外的电加热或提供能量估算. 有关能源法规之符合说明, 对于电热器的使用至少表示一个符于 144(g)节之例外, 或提供能源预算之说明(24 号法规 114(g)节, 152(c)节).

VENTILATION SYSTEM

(GENERAL)

通风系统

(总则)

V1 Exhaust ducts under positive pressure and venting systems shall not extend into or pass through ducts or plenums. (95.602.1)

正压的排风管道或通风系统不应延伸或穿越排风管道或增压风室。

V2 Show location & sizes of all ventilation ducts & openings.(95.113.3-1)

显示所有通风管道和风口的尺寸和位置。

V3 Environmental exhausts duct shall terminate outside the building and shall be equipped with a back draft damper.(95.504.1)

环境排风管应排至建筑物室外, 并且需安装单向阀。

V4 Exhaust outlets shall be 3 feet from property from opening into the building. (95.504.5)

排风口距离建筑物开口需 3 英尺以上。

V5 Exhaust outlets for product conveying systems shall be 10 feet from property line; 3 feet from exterior roof/wall; 10 feet from opening into the building; 10 feet above grade.(95.506.9.2)

产品运输传送带的排风口应距离财产线 10 英尺以上, 距离外墙、屋顶 3 英尺以上, 距离建筑物开口 10 英尺以上, 离地 10 英尺以上。

V6 Make-up air shall be provided for all rooms with exhaust. (95.505.3)

有排风的房间都需有补风系统。

LAUNDRY ROOMS

洗衣房

V7 Exhaust duct for domestic dryers shall be 4 inches min. and shall not exceed a total length of 14 feet including two 90, elbows. Two feet shall be deducted for each 90, elbow in excess of two.(95.504.3.2)

生活用的烘干机的排风管最小应是 4 英尺, 总长度不应超过 14 英尺包括两个 90 度弯头, 超过两个弯头时每个 90 度弯头应减去 2 英尺。

V8 Provide an approved variance allowing you to exceed 14 feet for the dryer vent. (95.504.3.2)

烘干机的排气如果有超过 14 英尺排风管, 需提供被核可的通融变更。

V9 Dryer exhausts shall terminate at least 3 feet from property line and three feet from openings into any building.(95.504.5)

烘干机的排气口出口距离财产线至少 3 英尺以上, 距离建筑物开口 3 英尺以上。

V10 Dryer exhaust ducts shall be made of metal.(95.504.3.2.1)

烘干机的排风管应是金属风管。

V11 Laundry ventilation exhaust shall terminate at least 3 feet from property line and 3 feet from openings into any building.(95.504.5)

洗衣房的排风系统出口端部距离财产线至少3英尺以上,并且距离建筑物的开口3英尺以上。

V12 Clothes dryer moisture exhaust duct shall not extend into or through ducts or plenums. (95.504.3.1)

烘干机除湿排风管不应延伸进入或穿过风管或增加风室。

V13 Laundry exhaust ducts under positive pressure shall not extend into or pass through ducts or plenums. (95.602.1)

洗衣房排风管必需是正压,不应延伸进入或穿过风管或增加风室。

V14 No fire dampers are allowed in the dryer exhaust duct.(95.504.3.1)

烘干机的排风管不允许设置防火挡板。

V15 Laundry room exhaust ducts shall be made out of metal.(95.504.3.2.1)

洗衣房的排风管应为金属风管。

V16 Residential laundry rooms shall have 5 air changes per hour. (91.1203.3)

住宅的洗衣房排风的换气次数至少应为5次/小时。

V17 Exhaust ducts shall terminate outside of the building and shall be equipped with back draft dampers. (95.504.3)

排风管的出口端部应在建筑外并且设置止回阀。

V18 Show make up air for the laundry room exhaust system.(91.402)

显示出洗衣房排风系统的补风系统。

V19 The make up air system shall be interlocked with the associated exhaust system. (95.402, 95.505.3 &95.505.1)

补风系统应与相应的排风系统实现联动互锁。

V20 Laundry room make up air shall take into consideration the air exhausted by the dryers.

洗衣房补风系统应考虑到烘干机的排出空气。

V21 Provide an approved variance allowing a draft inducer.(95.504.3.2)

对于诱导式通风应提供核可变通的证明。

V22 Provide combination fire smoke dampers where the laundry exhaust ducts penetrate a fire rated shaft.(91.713.10; 91.713.11)

在洗衣房排风管穿越防火级别的管道空间处提供多功能防火/排烟阀。

V23 Provide combination smoke/fire dampers where the laundry exhaust ducts penetrate an area separation or occupancy separation wall. (91.713.10; 91.713.11)

在洗衣房排风管穿越隔离区或者不同区域使用分隔墙壁处提供多功能防火/排烟阀。

V24 Provide combustion air openings.(95.701.1)

设置燃烧空气入口。

TOILET ROOMS

卫生间

V25 Toilet rooms in commercial buildings shall have 4 air changes per hour. (91.1202.2.1)

商业建筑中的卫生间的换气次数至少为4次/小时。

V26 Toilet rooms in residential buildings shall have 5 air changes per hour. (91.1203.3)

住宅中的卫生间的换气次数为至少5次/小时。

V27 Toilet exhausts shall terminate at least 3 feet from property line and 3 feet from openings into any building.(95.504.5)

卫生间的排风管端部距离财产线至少 3 英尺以上，并且距离建筑物入口 3 英尺以上。

V28 Show make up air for the toilet exhaust. (91.505.3)

表示出卫生间排风的补风系统。

V29. The make up air system shall be interlocked with the associated exhaust system. (95.402)

补风系统应与相应的排风系统电动联锁。

V30 Remove return air grill from the bathroom. (95.906.6.6)

移除洗澡房的回风口。

V31 Provide a duct type smoke detector in the toilet exhaust system exceeding 2, 000 cubic feet per minute. (95.609)

卫生间排风系统风量超过 2000 立方英尺/每分时应设置风管型烟感探测器。

V32 Toilet exhaust ducts shall be made of metal.(95.604.0)

卫生间排风管应采用金属风管。

V33 Toilet exhaust ducts under positive pressure shall not extend into or pass through ducts or plenums. (95.602.1)

卫生间排风管必需是正压，不应延伸进入或穿过风管或增加风室。

V34 Provide combination fire smoke dampers where the toilet exhaust ducts penetrate a fire rated shaft. (91.713.10, 91.713.11)

当卫生间排风管穿越防火等级的管道空间时应设置两用防火/排烟阀。

V35 Provide combination fire smoke dampers at every penetration of area separation and occupancy separation wall. (91.713.10; 91.713.11)

在风管穿越隔离区和不同使用区墙壁时提供多功能的防火阀和排烟阀

CORRIDOR VENTILATION

走廊通风

V36 Remove the return air registers from the corridor.(95.602.1)

在走廊上要移除回风装置。

V37 Listed fire dampers and smoke dampers area required to be installed at all duct penetrations through fire rated shafts.(91.713.10; 91.713.11)

当穿越防火等级的管道空间时，要有一个清单。

V38 Listed fire dampers are required to be installed at all duct penetrations through fire rated ceilings.(91.713.11)

如果有需要装风管穿越防火等级天花板时，需要有清单列出。

V39 Provide combination smoke/fire dampers to isolate ducts serving rated corridors.(91.713.11)

提供排烟阀/防火阀，用于防烟走廊的风管

V40 Fire dampers shall be dynamic type. (91.713.12)

防火挡板必需是动态型的。

V41 Corridors shall have supply and/or exhaust air inlets and/or outlets. (95.602.1)

走廊必需有空气的送风端或/且排气的入口端或/且出口端。

V42 Rooms adjacent to the corridor shall not draw air from the corridor or transfer air to the corridor. (95.602.1)

连接走廊的房间不应该从走廊吸取空气， 或把空气传回到走廊.

GARAGE VENTILATION

停车场排风

V43 Provide calculations showing that the exhaust fan is capable of uniformly exhausting 1.5 cfm per square foot of gross floor area.(91.1202.2.7)

必需提供计算， 显示排气风扇足以均匀的全地板面积排除 1.5 立方英尺/分风量.

V44 A variance is required to size the garage ventilation system based on 14, 000 cfm per moving vehicle.(91.1202.2.7)

车库通风系统的一个变通方式是基于每辆车通风量为 14000 立方英尺/分风量

V45 Provide make up air. (95.505.3)

提供新鲜空气补气.

V46 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.(95.506.9.2)

要表现出停车场排气口的出口端， 必须离开财产线 10 英尺， 距离外墙或者屋顶 3 英尺， 距离建筑物开口 10 英尺. 离相邻地板面 10 英尺之上.

V47 Provide combination fire/smoke dampers where the garage exhaust ducts penetrate the fire rated shaft. (91.713.10, 91.713.11)

于车库排风管道穿越防火等级管道空间处提供排烟阀/防火阀.

V48 Provide combination fire/smoke dampers where the make up air ducts penetrate a fire rated shaft.(91.713.10, 91.713.11)

于车库补风管道穿越防火等级管道空间处提供排烟阀/防火阀.

V49 Do not connect any other ventilation system to the garage ventilation system. (95.505.1)

不要把其它的排风系统和地下室排风系统连接在一起.

V50 Ducts shall be made out of metal or poured in concrete dry wall is not acceptable. (95.602.1)

风管应该金属材质， 或灌装水泥材质. 但是干墙板不能被接受.

KITCHEN HOODS

TYPE I HOODS

厨房排气罩

H1 Provide kitchen layout plans showing location of hoods, ducts, shafts, make-up air, openable windows and their area, and the volume of the kitchen.

(95.113.3(1), 95.508.4, 95.508.9)

提供厨房的布置方案，显示排风罩，风管，管井，补风，可开启外窗及其面积，及厨房体积。

H2 Provide roof plans showing the location of the kitchen exhaust blower, property line and any openings into the building.(91.6302(3) & 95.508.9)

在屋顶图上标明厨房排风扇位置，财产线和所有建筑物开口。

H3 Provide make-up air.(95.509.9).

提供补风空气。

H4 Show sizes, gauges, and materials of all ducts and hoods (95.509.2 & 95.508.1)

在所有风管及端口出显示尺寸，规格及材质。

H5 Specify on plan make, model, HP, cfm and static pressure rating of fans used. (95.113.3(1)E)

在设计图上指定所用风扇的制造商，型号，马力，排风量和静压设计值。

H 6 Specify on plan make, model, size, free area and number of filters used. (95.509.5)

在设计图上指定所用过滤器制的造商，型号，尺寸，空间和编号。

H 7 List type of cooking equipment on plans.(95.113.3(1)L)

在设计图上厨房设备清单。

H8 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, show also make-up air duct and factory built-in fire damper. (95.503, 95.508, 95.509)

提供立面图显示完工后的地面，厨房设备，滤油排气罩，烹饪设备和油过滤器之间的距离，吊高，天花板，封闭垫片，耐火竖井，风管和竖井的间距，清扫口，水平风管的坡度，屋顶风机，换向器，出口距顶棚的距离。补风柜，显示补风管和厂装的防火挡板。

H9 Please note that general specifications in lieu of the actual sectional elevation are not acceptable.(95.113.3).

用一般的规范来取代立体切面图是不被接受的。

H10 Each exhaust outlet within a hood shall serve not more than a 12-foot section of hood. (95.509.10)

排烟罩内每个排风口服务范围不大于截面积为 12 英尺的排烟罩切面。

H11 Duct system shall have a slope not less than 1/4 inch per linear 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 linear foot. (95.508.2)

管道系统在向着排烟罩或规定的油脂储存区方向必须有一个不少于每线性英尺 1/4 英寸的斜度。当水平管道的长度超过 75 英尺时，每线形英尺的斜坡不能少于每英尺 1 英寸。

H12 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. (95.508.4)
距顶板、墙或者地面的风管外围材质至少应是 1 小时的耐火等级, 除非在 I 或者 II 型建筑中应是 2 小时耐火等级

H13 The duct enclosure shall be sealed around the duct at the point of penetration.(95.508.4)
在管道穿越处这管道周围都应被密封.

H14 A clearance of at least 3 inches and not more than 12 inches shall be maintained between duct and enclosure.(95.508.4).
在风管和墙壁之间最小间距应维持距为 3 英寸且不大于 12 英寸.

H15 Provide product literature for the grease exhaust blower and the make-up air fan, showing CFM, static pressures, and, if required, UL listing. (95.113.3E)
对于排油鼓风机和补风扇提供产品文件, 并在说明中显示立方英尺/分, 静压和 UL(如果需要).

H16 Provide product literature for the cooking equipment showing that it is listed by AGA, UL, or approved by the City of Los Angeles or other recognized agency.(95.113.3(1)L)
对于厨房设备的提供产品说明, 并在说明中显示该产品核可列于美国煤气协会, UL 和被洛杉矶市政府认可或其他被认可的代理机构的清单

H17 Provide product literature for the compensating and/or ventless hood. The equipment shall be UL listed and/or LA City approved. (95.113.3(1)L)
对于无通风孔的通风橱提供产品说明, 设备必须是 UL 标准所列的或者洛杉矶市政府核可的.

H18 Provide product literature for the filters showing the size free area and friction loss. (95.509.5)
提供过滤器说明文件显示自由空间和压力磨损值.

H19 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 of air. (95.509.7 & 95.509.8)
提供决定排风扇大小和补风机的计算说明, 计算中要显示那个风扇有能力满足最小的风量需求.

H20 Air velocity within the duct system shall be not less than 1, 500 feet per minute and shall not exceed 2, 500 ft/min.(95.508.6)
管道系统内的风速需在每分钟 1500 英尺至每分钟 2500 英尺之间.

H21 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. (95.509.4)

I 类油烟罩中裸露的排油烟管道或排烟罩系统距离无保护的易燃架构必须有至少 18 英寸的空隙，而在有一小时防火材料保护的易燃架构中，这个空隙可减小到不少于 3 英寸。

H22 Hoods less than 12 inches from the ceiling or wall shall be flashed solidly with materials as specified in Sec.95.508.1. (95.508.8 & 95.509.4)

排风罩如果低于天花板或墙体 12 英寸，需使用 95.508.1.章节所指定的物件固定。

H23 Exhaust outlets serving grease duct systems shall terminate above the roof surface, 10 feet from property line, 10 feet from air intake openings and 10 feet above adjoining grade. Base of fan shall be 2 feet above roof surface. (95.508.9)

排油烟管道终端将高于屋顶表面，和财产线至少 10 英尺距离，和进气口的开口至少 10 英尺距离。风扇底部应高于屋顶表面 2 英尺。

H24 A grease gutter shall drain to a receptacle accessible for cleaning.(95.509.3)

排油槽要泄流至可清洗处理的容器。

H25 Type I Hoods for use over solid-fuel cooking equipment shall be provided with separate exhaust systems.(95.509.7.1)

I 型排风罩如用于燃烧固体燃料的烹饪设备，应采用分开的排风系统

H26 Remove all the return air grills from the kitchen area. (95.906.6.6)

在厨房空间内要移除所有的回风装置。

H27 Indicate on plans what provisions have been made for fire protection in the hood and in the duct.(95.510.2, 95.510.2.3 & 95.510.2.4)

设计图上标明排风罩和风道采用了什么防火措施。

H28 The fire-extinguishing system shall be interconnected to the fuel or current supply so that the fuel or current is automatically shut off to all equipment under the hood when the system is actuated.(95.510.2.4.2)

消防系统应该与燃料或电力供应系统联动，当消防系统启动时，切断排风罩下设备的燃料或电力的供应

H29 The exhaust and make-up air systems shall be connected by electrical interlock switch. (95.509.9)

排气和补风系统将通过电气开关互锁。

H30 Provide clearance from the Health Department.(95.113.3.1.L.2)

提供卫生局许可证。

H31 Provide clearance from the Southern California Air Quality Management Division. (95.113.3.1.L.3)

提供南加州空气质量管理部門许可证。

H32 Provide cleanouts per code.(95.508.3)

依法规提供清洁口.

TYPE II HOODS

排风罩 II 型

H33 Provide kitchen layout plans showing location of hoods ducts, eventual shafts and make-up air. (95.113.3(1)95.508.4)

提供厨房的布置方案, 排风罩, 风管, 管井和补风.

H34 Provide roof plans showing the location of the kitchen exhaust blower, property line and any openings into the building. (91.6302(3) & 95.508.9)

在屋顶图上标明厨房排风位置, 财产线和所有建筑物开口.

H35 Provide make-up air.(95.509.9)

提供补风空气.

H36 Show sizes, gauges, and materials of all ducts and hoods.(95.509.2 & 95.508.1)

显示所有管道和排风罩的尺寸, 规格和材质.

H37 Specify on plan make, model, HP, cfm and static pressure rating of fans used. (95.113.3(1)E)

在设计图上详细说明风扇的制造商, 型号, 马力, 风量和静压等级.

H38 List type of cooking equipment on plans.(95.113.3(1)L)

在设计图上列出厨房设备的类型.

H39 Provide elevations showing finished floor, equipment under the hood, hood, distance between finished ceiling, flushing, eventual fire rated shaft, clearance between duct and shaft, cleanouts, roof, blower, diverter, distance of outlet termination above roof.

(95.503, 95.508, 95.509)

提供立面图显示完工地面, 排气罩下厨房设备, 烹饪设备和油过滤器之间的距离, 天花板, 冲刷, 耐火管井, 风管和竖井的间距, 清扫口, 水平风管的坡度, 屋顶鼓风机, 换向器, 出口超出屋顶的距离.

H40 Please note that general specifications in lieu of the actual sectional elevation are not acceptable.(95.113.3)

用一般的规范来取代立体切面图是不被接受的.

H41. Each exhaust outlet within a hood shall serve not more than a 12-foot section of hood.

(95.509.10)

排烟罩内每个排风口服务范围不大于截面积为 12 英尺的排烟罩切面..

H42 Provide product literature for the exhaust blower and the make-up air fan, showing CFM, static pressures, and, if required, UL listing. (95.113.3.1E)

对于排油鼓风机和补风扇提供产品文件, 并在说明中显示立方英尺/分, 静压和 UL (如果需要).

H43 Provide product literature for the cooking equipment showing that it is listed by AGA, UL, or approved by the City of Los Angeles or other recognized agency. (95.113.3(1)L)
对于厨房设备的提供产品说明，并在说明中显示该产品列于美国煤气协会，UL 和被洛杉矶市政府认可或其他被认可的代理机构的清单

H44 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 of air determined by formulas. (95.509.7 & 95.509.8)
提供决定排风扇大小和补风机的计算说明，计算中要显示那个风扇有能力满足最小的风量。

H45 Remove all the return air grills from the kitchen area. (95.906.6.6)
在厨房空间内要移除所有的回风装置。

H46 The exhaust and make-up air systems shall be connected by electrical interlock switch. (95.503.1)
排气和补风系统将通过电气开关互锁。

H47 Provide clearance from the Health Department.(95.113.3.1.L.2)
提供卫生局许可证。

H48 Provide cleanouts per code.(95.508.3)
依法规提供清洁口。

H49 Provide kitchen plans showing location of hoods, duct shafts, make-up air, openable windows and their area and the volume of the kitchen. (95.113.3(1), 95.508.4 & 95.508.7)
提供厨房平面图，通风柜，风管，管井，补风，可开启外窗及其面积，及厨房通风量

H50 Type II exhaust outlets shall be 10 feet from property line, 10 feet from air intake openings and 10 feet above adjoining grade. (95.508.9)
Type II 排油烟管道终端应与财产线至少 10 英尺，与进气口的开口至少 10 英尺距离，风扇底部应高于屋顶表面 10 英尺

H51 Provide a list of items (menu) to be cooked or baked under the hood. (95.507.0)
提供通风柜下煮或烤的菜单

REFRIGERATION

MACHINERY ROOM

冷冻机房

M1 A 3 feet wide & 6 feet 8 inches high clearance shall be provided around at least two sides of all moving machinery. (95.1106.3)
所有移动设备之间要有一个宽 3 英尺，高 6 英尺 8 英寸的间距。

M2 Door(s) shall swing in the direction of exit, (91.1007.4.4)
门应向出口摆动..

M3 Provide 2 separate exits.(91.1007.4.1; 95.1106.3)

提供两个分开的安全出口

M4. Provide calculation showing that the capacity of exhaust system complies with section.
(95.1106.7)

提供计算说明排风系统依法规有容量服务那个区域.

M5 A switch of the break-glass type, controlling the emergency purge ventilation system, shall be Provided adjacent to and outside of the exit door.(95.1108.5)

控制紧急通风系统的敲碎玻璃型开关, 应该安装在出口外面且临近出口.

M6 Switch controlling fans providing ventilation shall be in glass covered enclosures and shall be located adjacent to and outside of the exit door. (95.1108.6)

送风机控制开关应该有玻璃罩, 且应该安装在出口外面且临近出口

M7 Show make-up air inlets and exhaust outlets on plan.(95.1108.1)

在设计图上显示补风进口和排风口.

M8 Make-up air shall be from outside of the building and shall be equipped with a back draft damper.(95.1107.195.1108.9)

补风空气应该来自室外, 且应安装止回挡板

M9 Exhaust shall be discharged at least 20 feet from property line. Show that on plans.
(95.1108.7)

设计图上显示排气口离财产线 20 英尺.

M10. Only equipment essential to the operation of refrigeration system shall be allowed in the machinery room. (95.1109)

只有制冷系统操作必需的设备可以安装在机械房

M11 Show on plans make, model, HP, cfm & static pressure rating of all fans. (95.113.3.1E)

设计图上说明所有风扇的制造商, 型号, 马力, 风量和静压设定等级.

M12 Provide product literature for all fans used showing their cfm & static pressure rating.
(95.113.3.1E)

提供所有风扇的产品说明, 并在说明中显示出它们的风量及静压设定等级.

M13. State type of refrigerant. (95.1102)

指定制冷剂类型

M14 Show location of refrigerant-vapors detectors. (95.1107.4)

标明制冷剂探测器的位置.

FIRE PUMP & GENERATOR ROOM

消防泵和发电机房

M15 Show engine exhaust pipe.

标明发动机排风管道

M16 Show clearances for the engine exhaust pipe. It shall be a minimum of 18 inches from combustible construction and 2 inches from non combustible construction.(95.814.2)

标明发动机的排风管道间距。与可燃物的间距应该不小于 18 英寸，与非可燃物的间距应该不小于 2 英寸

M17. Show termination of engine exhaust pipe. (95.806.1.95.806.6)

标明发动机排风管道的终端.

M18. The engine exhaust pipe shall extend above the roof surface, and shall be located not less than 12 inches from any openings into the building, 2 feet from an adjoining building and 7 feet above grade when located adjacent to a public walkway. (95.816.5)

发动机的排风管道排放应该高出屋面，而且与建筑的各个开口距离不小于 12 英寸，与相邻建筑的距离不小于 2 英尺，当临近人行道安装时，要高于地面 7 英尺

M19 Enclose the engine exhaust pipe in a fire rated shaft.(95.814.1.7)

发动机的排风管道封闭在耐火管井里

M20. Show combustion air. (95.701.1)

显示助燃空气，

M21 Dampers are allowed in combustion air ducts. (95.704.2)

允许在管道中安装助燃空气的挡板.

M22 Show room ventilation. (95.113.3.1 G)

说明房间的通风设备.

M23 The room ventilation shall be added to the combustion air.(95.706)

房间的通风量应该加到燃烧空气量上

M24 Show room ventilation exhaust. (95.504.1)

说明房间的通气排风设备.

M25 Show point of termination outside of the building of the room ventilation. (95.504.5)

标出房间通风出风口在建筑外终端口的位置

M26 Justify either through product literature or engineering calculations the amount of outside air. (95.706)

用产品说明或工程计算的任意一中方法证明外气量.

M27. Combustion air shall not be drawn from the garage.(95.703.3)

助燃空气不应从车库抽取

SMOKE CONTROL

防排烟控制

C1 Write sequence of operation of the smoke control system on plans.(91.905.1)

C1 在设计图上写下防排烟控制系统的操作序列程序。(91.905.1)

C2 Provide calculations for the smoke control system.

C2 提供防排烟控制系统的计算说明。

C3 Write the cfm at every register during smoke mode.

C3 写下排烟模式期间每个调风器的流量数据 (cfm)。

C4 Provide outside air registers and exhaust air register every room. Provide fire control panel.(91.905.13)

C4 在每个房间配备室外调风器和排气调风器。提供消防控制面板。(91.905.13)

C5 Provide fire control panel.(91.905.13)

C5 提供消防控制面板。(91.905.13)

C6 The fire control panel shall be approved by fire Department.(Cal. Fire Code 1007.2.12.8)

C6 消防控制面板应得到消防局核可。(《加利福尼亚防火规范》1007.2.12.8)

C7 Correct the colors of the lamp-type indicators of the remote control panel in accordance to Section 91.905.13.1of the Los Angeles Building Code.

按照洛杉矶建筑规范第 91.905.13.1 条，改正远程控制面板的指示灯颜色

C8 Provide calculations showing that the maximum force to open a door in the stairshaft and in the vestibule does not exceed 8.5 lbs. For exterior doors, 5 lbs. For interior doors not required to be fire rated and 15 lbs. For interior doors required to be fire rated. Please be cautioned that the door between the stairshaft and the vestibule is not a fire rated door.

提供计算说明显示打开楼梯间和前室的门所需最大力不超过 8.5 lbs。对于外门，不超过 5 lbs。不是防火等级的内门不超过 15 lbs。请注意楼梯间和前室之间的门不是防火门

C9 Provide calculations showing that the staircase has a minimum positive differential pressure of 0.05 inches of water gauge.(91.1005.3.3.7.1.4)

提供计算说明楼梯间最小正压差 0.05 英寸水柱压力

C10 Provide calculations showing that the vestibule has a minimum positive differential pressure of 0.05 inches of water gauge. (91.1005.3.3.7.1.4)

提供计算说明门厅最小正压差 0.05 英寸水柱压力