



# PLAN CHECK CORRECTION SHEET FOR PLUMBING SYSTEMS 2017 LAPC

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](http://www.ladbs.org/LADBSWeb/customer-survey.jsf).

If you have any questions or need clarification on any plan check matters, please contact a plan check supervisor or call our Customer Hotline at (213) 482-0056.

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**

### **A. NOTES ON PLANS**

1. Plans shall bear, on every sheet, the registration or license number and signature of an architect, contractor, or engineer, registered in the appropriate classification by the State of California. (State of California Business and Professional Code Div. 3, Chap. 7, Art. 3, Sec. 6735.4; LAPC 101.5.2; LAPC 101.5.6; LAPC 103.2.1)
2. Show the job address on each sheet of the plans. (LAPC 101.5.1; LAPC 103.2.2)
3. Indicate on the plans the scope of the work to be done. (LAPC 103.2.2)
4. Plans shall be legible, and the drawing scale shall not be smaller than 1/8 inch per foot. (LAPC 101.5.4)
5. Provide an approved "Request for Modification of Building Ordinances" form to allow plans at a scale smaller than 1/8 inch per foot. (LAPC 101.5.4; LAPC 103.2.2)

## **POTABLE WATER SYSTEM**

### **A. PLAN DETAILS**

- P1. Specify which fixtures are for private use and which are for public use. (LAPC 103.2.1)
- P2. Specify the piping materials for the domestic water system. (LAPC 604.0)
- P3. CPVC plumbing material shall comply with all applicable requirements of the code and the manufacturer's installation instructions. (LAPC 604.1.1)
- P4. Provide the manufacturer specifications and installation instructions for the pipe material. (LAPC 101.5; LAPC 103.2.1)
- P5. Provide calculations and details on the plans for the expansion loops. Show the expansion loops on the floor plans. (LAPC 103.2.1; LAPC 103.2.2)
- P6. Add the following note on the plans: "All fixtures, equipment, piping, and materials shall be listed." (LAPC 103.2.1; LAPC 301.2)
- P7. Add the following note on the plans: "All plumbing fixtures shall meet the flow requirements specified in the Los Angeles Plumbing Code." (LAPC 401.3)
- P8. Add the following note on the plans: "All faucets in public restrooms shall be self-closing or self-closing

metering faucets." (LAPC 407.2.2)

- P9. Add the following note on plans: "Public lavatories shall have controls to limit the water temperature to 110°F." (Title 24, Part 6 110.3(c)3)
- P10. Add the following note on the plans: "Water pipe and fittings with a lead content which exceeds 0.25% shall be prohibited in systems conveying potable water" (LAPC 604.2; Health & Safety Code 116875).
- P11. Provide site water piping plans (LAPC 101.5.4; LAPC 103.2.1).
- P12. Provide lot subdivision. Water pipes shall not cross lot lines. (LAPC 609.6)
- P13. Install a control valve in the domestic water supply to each building (LAPC 606.2).
- P14. Provide riser diagrams for hot & cold water systems (LAPC 101.5.3; LAPC 103.2.1).
- P15. The riser diagram shall indicate all the fixtures served the pipe sizes and the fixture unit count on each leg of pipe, pressure regulators, back flow prevention devices, and water meter. (LAPC 101.5.3; LAPC 103.2.1)
- P16. Show the size of a water meter on the riser diagram. (LAPC 101.5.3; LAPC 103.2.1; LAPC 610.1)
- P17. (A) Show all new and all existing devices located between the city water service and the building plumbing system that cause pressure losses or gains in the system. Devices shall include but not be limited to pumps, water softeners, and sub meters. (LAPC 101.5.1; LAPC 103.2.2; LAPC 610.2)  
(B) State the make(s), model(s), and size(s) of the devices shown in item (A), and indicate if they are new or existing. (LAPC 101.5.1; LAPC 103.2.2; LAPC 610.2)  
(C) Provide manufacturer's specification sheets for the devices shown in item (A) indicating the pressure loss versus the flow. (LAPC 101.5.1; LAPC 103.2.1; LAPC 610.2)
- P18. Indicate on the plans, all fixture unit loads in addition to the loads of the new fixtures including but not limited to, existing fixtures, irrigation load, make up water for cooling towers and boilers, demand for future use, and any other uses. (LAPC 101.5.3; LAPC 103.2.1; LAPC Appendix A Sect. A103.0)
- P19. Show the future water demand. (LAPC Appendix A Sec. A103.0)

- P20. Provide on the plan a table with calculations for the total number of fixture units to be installed. Table shall indicate the total of each type of fixture, the associated hot and/or cold fixture unit value for each, total contribution of hot and cold fixture units in the system and the total number of fixture units in the building. (LAPC 103.2.1)
- P21. Indicate on the plans the type of the water closets and urinals (tank or flushometer valves) used. (LAPC 103.2.1; LAPC 610.0; LAPC Table 610.3; LAPC Appendix Table A103.1)
- P22. An approved pressure regulating valve (PRV) shall be installed to reduce the water pressure at any fixture to 80 psi or less. (LAPC 608.2)
- P23. The pressure regulating valve (PRV) shall be accessibly located aboveground or in a vault equipped with a properly sized and sloped drain to daylight. The PRV shall not be installed in a pit where it can become submerged in water. (LAPC 608.2)
- P24. Show make(s), model(s) and size(s) of the PRV(s) on the plans. (LAPC 101.5.3; LAPC 103.2.1, LAPC 608.2)
- P25. Provide a copy of the manufacturer's catalog for the PRV(s) used showing pressure drop through them. (LAPC 608.2)
- P26. Provide a reduced pressure back flow device (RP) at the meter. (LAPC 603.0; Table 603.2; and DWP Rule 16D)
- P27. The reduced pressure back flow device (RP) shall be installed at least 12 inches above grade or finished floor. The RP shall not be installed in a pit where it can become submerged in water. (Table 603.2; LAPC 603.4.3)
- P28. Show make, model and size of the RP on the plans. (LAPC 101.5.3; LAPC 103.2.1; LAPC 610.2)
- P29. Provide a copy of the manufacturer's catalog for the RP used showing pressure losses. (LAPC 101.5.1; LAPC 103.2.1; LAPC 610.2)
- P30. Indicate the type, size and capacity of the water heater(s) and water storage tank(s). (LAPC 103.2.2; LAPC 608.2)
- P31. State the first hour rating (in gallons) of the water heater and the number of bathrooms and bedrooms. (LAPC 501.1; Table 501.1(1))
- P32. Provide the manufacturer's printed sizing and installation instructions on the tank-less water heater. (LAPC 501.1)
- P33. Provide a temperature & pressure relief valve on the water heater. The valve shall discharge to an approved location. Pressure relief valves for water heaters installed inside a building shall discharge to a floor drain, floor sink or similar fixture. (LAPC 608.3; LAPC 608.4)
- P34. Provide an approved thermal expansion tank at the water heater. Show the expansion tank on the riser diagram. (LAPC 608.2; LAPC 608.3)
- P35. State make and model of the thermal expansion tank. (LAPC 608.2; LAPC 608.3)
- P36. Provide the manufacturer's sizing instructions for the thermal expansion tank. (LAPC 101.5.1; LAPC 103.2.1; LAPC 608.2; LAPC 608.3)
- P37. Install two hot water recirculation loops each serving half of the building. The recirculation loops shall meet the requirements of Title 24 Sections 110.3(c) 2 and 110.3(c) 5. (Title 24, Part 6 150.1(c)8.B.ii)
- P38. Showers shall be provided with individual tempering valves. (LAPC 408.3)
- P39. State make, model, rated pressure, and gpm of the water pump(s). (LAPC 103.2.1; LAPC 608.1)
- P40. Provide the pump performance curve for the water pump(s) being used. (LAPC 103.2.1)
- P41. The pump systems shall be approved by the City of Los Angeles Mechanical Testing Laboratory or other recognized agency. (LAPC 301.2)
- P42. (A) The heat exchanger shall be listed, double wall type and the space between the two walls shall be vented to the atmosphere. (LAPC 603.5.4)  
(B) State on plans the heater transfer medium. The medium shall be either potable water or fluids with toxicity rating of 1. (LAPC 505.4.1)
- P43. Install solar water heating system with a minimum solar savings fraction of 0.2. (Title 24, Part 6 150.1(c)8.B.iii)
- P44. For systems with a total capacity greater than 167,000 Btu/hr, provide separate remote heaters, heat exchangers, or boosters to supply outlets requiring higher than service water temperature as listed in the ASHRAE Applications Volume (higher than 120°F). (Title 24 Sect. 110.3(c)1)
- P45. Install a check valve between the recirculation pump and the water heating equipment. (Title 24, Part 6 110.3(c)5.B)
- P46. Install a hose bibb between the pump and the water heating equipment. (Title 24, Part 6

- 110.3(c)5.C)
- P47. Install an isolation valve between the hose bibb and the water heating equipment. (Title 24, Part 6 110.3(c)5.C)
- P48. Install isolation valves on both sides of the recirculation pump. (Title 24, Part 6 110.3(c)5.D)
- P49. Instantaneous water heaters with an input rating greater than 6.8 kBTU/hr (2 kW) shall have isolation valves on both the cold water supply and the hot water pipe leaving the water heater, and hose bibbs or other fittings on each valve for flushing the water heater when the valves are closed. (Title 24 110.3(c)7)
- P50. Domestic water heating system shall comply with Title 24 section 150.1(c)8. (Title 24 Sec.150.1(c)8)
- P51. The hot water system shall comply with one of the following:
- A. The hot water system shall not allow more than 0.6 gallons of water to be delivered to any fixture before hot water arrives; (LAPC 610.4.1.1)
  - B. Where a hot water recirculation or electric resistance heat trace wire system is installed, the branch from the recirculating loop or electric resistance heat trace wire to the fixture shall contain a maximum of 0.6 gallons; (LAPC 610.4.1.2) or
  - C. Residential units having individual water heaters shall have a compact hot water system where the total developed length of pipe from the water heater to the farthest fixture does not exceed the values in Table 3.6.5 of the 2013 CEC Reference Appendices (Residential Appendices) (LAPC 610.4.1.3)
- P52. New residential buildings consisting of multi-family dwellings not exceeding three stories and containing 50 units or less shall install a separate meter or sub-meter within each individual dwelling unit and within common areas, such as recreation and laundry rooms. (LAGBC 4.303.3)
- P53. When City-recycled water is available for use within 200 feet of the property line, 100 percent of water for water closets, urinals, floor drains, and process cooling and heating in that building shall come from City-recycled water. Contact the Department of Water and Power (DWP) to provide written verification on the availability of recycled water. DWP may be contacted at the following e-mail: [Mario.Acevedo@ladwp.com](mailto:Mario.Acevedo@ladwp.com). (LAGBC 4.305.2; LAGBC 5.305.2)
- P54. Recycled water systems shall be designed and installed in accordance with the Los Angeles Plumbing Code. (LAGBC 4.305.2; LAGBC 5.305.2)
- P55. Cooling towers in all commercial buildings shall comply with one of the following:
- A. A minimum of 6 cycles of concentration (blowdown); or
  - B. A minimum of 50% of makeup water shall come from non-potable water sources, including treated backwash. (LAGBC 5.305.2)
- P56. Cooling towers in all residential buildings 25 stories or less shall comply with one of the following:
- A. A minimum of 6 cycles of concentration (blowdown); or
  - B. A minimum of 50% of make-up water supply shall come from non-potable water sources, including treated backwash. (LAGBC 4.305.3.1)
- P57. Cooling towers in residential buildings over 25 stories shall comply with all of the following:
- A. A minimum of 6 cycles of concentration (blowdown); and
  - B. 100% of make-up water supply shall come from non-potable water sources, including treated backwash. (LAGBC 4.305.3.2)
- P58. New commercial buildings or additions in excess of 50,000 ft<sup>2</sup> shall install separate submeters or meters as follows:
- A. For each individual leased, rented, or other tenant space within the building projected to consume more than 100 gallons per day.
  - B. Where potable water is used for industrial/process uses, for water supplied to the following subsystems:
    - a. Makeup water for cooling towers where flow through is greater than 500 gpm.
    - b. Makeup water for evaporative coolers greater than 6 gpm.
    - c. Steam and hot-water boilers with energy input more than 500,000 Btu/h.
  - C. For each building that uses more than 100 gallons per day on a parcel containing multiple buildings. (LAGBC 5.303.1.1)
- B. CALCULATIONS**
- P59. Provide hydraulic calculations for sizing the cold and hot water systems. (LAPC 103.2.1; LAPC 610.0; LAPC Appendix A)

- P60. The minimum water pressure supplied to the most remote fixture shall be not less than the requirements of that fixture and not less than 15 PSI, whichever is higher. (LAPC Appendix A A104.1; LAPC 608.1)
- P61. Clearly identify each hydraulic design zone on the riser diagram. Show any node points on the riser used in the calculations. (LAPC 103.2.2)
- P62. For each zone, provide hydraulic calculations showing the pressure losses from the city main to the pressure reducing valve for each zone. (LAPC 610.0)
- P63. Provide pipe sizing charts for each zone. (LAPC 103.2.1; LAPC 103.2.2)
- P64. For each down-feed zone, provide calculations for the highest and lowest floors in the zone to show that the pipe sizing chart is adequate for every floor in the zone and that no more than 80 psi is delivered to any point in the zone. (LAPC 608.2)

### **C. QSHPD 3 REQUIREMENTS**

- P65. Add the following note: "Sensor operated flush valves shall be capable of functioning during loss of normal power. (LAPC 413.2)
- P66. CPVC piping is not allowed. Change the piping material to an approved one. (LAPC 604.1)
- P67. Install a sectional valve at each riser or branch both in hot and cold water systems. (LAPC 606.8)
- P68. State on the plans at which temperature hot domestic water is supplied. It shall be in compliance with Table 613.1 (LAPC 613.0)
- P69. Provide at least two sources of hot water equipment to supply hot water for dishwashing and minimum patient services such as hand washing and bathing. (LAPC 613.2)
- P70. Install valves to automatically control the temperature of hot water to fixture used by patients within the range of 105°F to 120°F. (LAPC 613.5)
- P71. Hot water serving patient care areas shall have a continuous recirculating system. (LAPC 613.6)
- P72. Dialysis water feed lines shall be made out of material allowed by Section 614.1 (LAPC 614.1)

## **WASTE AND VENT SYSTEM**

### **A. PLAN DETAILS**

- W1. Specify the slope of the horizontal drainage piping. (LAPC 708.1)
- W2. Provide site plans showing the building sewer and the city sewer main size. (LAPC 101.5.3; LAPC 103.2.1)
- W3. Provide lot subdivision. The building sewer shall

not cross lot lines. (LAPC 721.1)

- W4. Provide complete riser diagrams for the waste and vent systems. The waste system shall extend to the property line. (LAPC 101.5.3; LAPC 103.2.1)
- W5. The riser diagram shall show all the fixtures served, the pipe size, and the fixture unit count on each branch of pipe. (LAPC 101.5.3; LAPC 103.2.1)
- W6. Indicate on the plans the piping materials. (LAPC 701.2)
- W7. Show all pipe sizes on the plan. (LAPC 101.5.3; LAPC 103.2.1)
- W8. Show size of the sewer main in the street. (LAPC 101.5.3; LAPC 103.2.1)
- W9. Provide suds relief (show them on the riser). (LAPC 711.1)
- W10. Clearly indicate on the plans the waste stacks that carry the discharge of suds producing fixtures. (LAPC 711.1)
- W11. The aggregate cross sectional area of the vent shall not be less than that of the largest required building sewer. (LAPC 904.1)
- W12. Pot sinks, scullery sinks, dishwashing sinks, silverware-washing machines, commercial dishwashers, shall be directly connected to the drainage system. Provide a floor drain adjacent to the fixture with the fixture connected on the sewer side of the floor drain trap. (LAPC 704.3)
- W13. Ice machines drink dispensers, coffee machines, freezers, refrigeration coils, and similar equipment shall be indirectly connected to the drainage system. (LAPC 801.3)
- W14. Food-preparation sinks, steam kettles, potato peelers, dipper wells, and similar equipment shall be indirectly connected to the drainage system by means of an air-gap. (LAPC 801.3.3)
- W15. Provide clearance from "Industrial Waste." The Industrial Waste Management Division of the Department of Public Works, Bureau of Sanitation may be contacted at 323-342-6118 and is located at 2714 Media Center Drive, Los Angeles. (LAPC 306.1)
- W16. No food waste disposer or dishwasher shall be connected to or discharge into a grease interceptor. (LAPC 1014.1.3)
- W17. Show location(s) of the grease interceptor(s) on the lay out. (LAPC 103.2.2)

- W18. A grease interceptor shall not be installed in a building where food is handled. Location of the grease interceptor shall meet the approval of the Department. (LAPC 1014.3.4)
- W19. Provide product literature for the grease interceptor. (LAPC 101.5.1; LAPC 103.2.1; LAPC 1014.1)
- W20. The grease interceptor shall be approved by the City of Los Angeles Testing Laboratory or other City of Los Angeles recognized agency. (LAPC 301.2)
- W21. Show details for the island venting. (LAPC 909.1)
- W22. The island sink drain, upstream of the returned vent, shall serve no other fixtures. (LAPC 909.1)
- W23. Install a clean out every 100 feet or a manhole every 300 feet in the building sewer (site sewer) in straight runs and for each aggregate horizontal change in direction exceeding 135°. (LAPC 719.1; LAPC 719.6)
- W24. Provide yoke vents and show the yoke vents on the riser diagram. (LAPC 907.1; LAPC 907.2)
- W25. All wet vented fixtures shall be within the same story. (LAPC 908.1)
- W26. Only private bathroom groups may be wet vented horizontally. (LAPC 908.2)
- W27. No more than one bathroom group located on the same floor may be connected to a horizontal wet vent system. (LAPC 908.2)
- W28. Lavatories shall not be installed in horizontal wet vent systems. (LAPC 908.2.1)
- W29. The water closet in a horizontal wet vent system shall connect to the conventional sewer and shall be installed downstream of any wet vented fixture. (LAPC 908.2.4)
- W30. Combination waste and vent system is only allowed where structural conditions preclude the installation of a conventional system. (LAPC 910.1)
- W31. Discharge from toilets or urinals is not allowed in a combination waste and vent system. (LAPC 910.7)
- W32. Combination waste and vent systems shall not be utilized where solids or grease waste is anticipated. (LAPC Appendix B Sect. B 101.2)
- W33. No vertical waste pipes are allowed in a combination waste and vent system. (LAPC 910.5)
- W34. Show a detail of the connection of the branches to the main horizontal line. (LAPC 103.2.1; LAPC 910.2; LAPC 910.5)
- W35. Each drain pipe and each trap, in a combination waste and vent system, shall be 2 pipe sizes larger than the sizes required by Chapter 7 of the Plumbing Code. (LAPC 910.4)
- W36. Show a typical detail of the tailpiece and trap. (LAPC 103.2.1; LAPC 910.2; LAPC 910.4)
- W37. Provide a separate vent for each waste branch line exceeding 15' in length. (LAPC 910.3)
- W38. Provide a vent downstream of the uppermost fixture. (LAPC 910.3)
- W39. Relief vents shall be provided every 100 feet along the mains. (LAPC Appendix B Sect. B 101.40)
- W40. The minimum area of any vent installed in a combination waste and vent system shall be at least ½ the inside cross-sectional area of the drain pipe served. (LAPC 910.3)
- W41. Show on plans type & use of each fixture served by the combination waste and vent system. (LAPC 101.5.1; LAPC 103.2.2)
- W42. Show the combination waste and vent piping on floor plans. (LAPC 101.5.1; LAPC 103.2.2)
- W43. Waste piping, required by the Los Angeles Plumbing Code, shall be arranged to permit the discharge from the clothes washer, bathtub, showers, and bathroom/restroom wash basin to be used for a future graywater irrigation system. The discharge from graywater producing fixtures shall be piped separately. (LAGBC 4.305.1; LAGBC 5.305.1)
- W44. The point of connection between the graywater piping and other waste piping shall be accessible (as defined by LAGBC 2.202) and provided with signage that is satisfactory to the Department. (LAGBC 4.305.1; LAGBC 5.305.1)
- W45. When City-recycled water is available for use within 200 feet of the property line, 100 percent of water for water closets, urinals, floor drains, and process cooling and heating in that building shall come from City-recycled water. Recycled water systems shall be designed and installed in accordance with the Los Angeles Plumbing Code. (LAGBC 4.305.2; LAGBC 5.305.2)
- W46. New buildings where groundwater is being extracted and discharged, a system for onsite reuse of the groundwater shall be developed and constructed. Alternatively, the groundwater may be

discharged to the sewer. (LAGBC 4.305.4; LAGBC 5.305.4)

between the bottom of the sump and the gravity line. (LAPC 101.5.3; LAPC 103.2.1)

- W47. Cooling towers in all commercial buildings and residential buildings of 25 stories or less shall comply with one of the following:
- A. A minimum of 6 cycles of concentration (blowdown); or
  - B. A minimum of 50% of make-up water supply shall come from non-potable water sources, including treated backwash. (LAGBC 4.305.3.1; LAGBC 5.305.3)
- W48. Cooling towers in residential buildings over 25 stories shall comply with all of the following:
- A. A minimum of 6 cycles of concentration (blowdown); and
  - B. 100% of make-up water supply shall come from non-potable water sources, including treated backwash. (LAGBC 4.305.3.2)
- W49. Show size, length and type of material of the sewage ejector discharge line. (LAPC 101.5.3; LAPC 701.0)
- W50. The discharge line from the sewage ejector shall be provided with an accessible check valve and gate valve or ball valve. (LAPC 710.4)
- W51. Gate valve or ball valve and check valve shall be located outside the pump pit. (LAPC 710.4)
- W52. Provide dual pumps each capable of handling the load independently. (LAPC 710.9)
- W53. Provide air tight cover for the sump. (LAPC 710.10)
- W54. Sump(s) shall be provided with a vent pipe which shall extend through the roof. (LAPC 710.7).
- W55. Show load discharging into the sump. (LAPC 101.5.3; LAPC 103.2.2)
- W56. Show make, model and HP of sewage ejector on plan. (LAPC 101.5.1; LAPC 103.2.2)
- W57. Provide pump performance curves. (LAPC 101.5.1; LAPC 103.2.1)
- W58. Provide a riser diagram showing the sump, sump inlet & outlet, check valve, gate valve, levels, alarm and gravity line. (LAPC 101.5.3; LAPC 103.2.2)
- W59. The discharge line of the pump shall connect to the horizontal gravity line from the top through a wye branch fitting. (LAPC 710.4)
- W60. State length of pipe & elevation difference

- W61. Show high water level. It shall be at least 2 inches below the lowest inlet. (LAPC 710.9)
- W62. Sumps receiving waste from water closets shall have a minimum 2 inch discharge (single family dwelling). 3 inch discharge is required for commercial buildings. (LAPC 710.3)
- W63. Allow two fixtures units for each gallon per minute discharging from the sewage ejector. (LAPC 710.5)
- W64. Sump(s) shall be made of concrete, metal, or other approved materials. Fiberglass sumps shall be approved by the Los Angeles City Mechanical Testing Laboratory or listed by a City of Los Angeles recognized agency. (LAPC 710.8; LAPC 301.1)
- W65. Specify the type of material of the sump on the plans, or specify make, model and research report number of the prefabricated sump. (LAPC 301.1; LAPC 710.8)
- W66. The fire pump room shall be provided with a floor drain and a floor sink. (NFPA 20 Sec. 4.12.7.2)

## **B. CALCULATIONS**

- W67. Determine the flow of water in gallons per minute discharging into the sump. (LAPC 101.5.1; LAPC 103.2.1)
- W68. Provide calculations for the system curve. Take into consideration losses due to all the fittings, gate valve and backwater valve. (LAPC 101.5.1; LAPC 103.2.1)
- W69. Draw the system curve on the pump curve to determine the point of intersection, which will determine the volume flow rate coming out of the pump. (LAPC 101.5.1; LAPC 103.2.1)
- W70. Determine the waste fixture unit load of the gravity line by allowing 2 fixture units for every gallon per minute pumped by the sewage ejector. (LAPC 710.5)
- W71. The pump shall have a discharge capacity of not less than 20 gpm (Sewage ejectors LAPC 710.3(1))

## **C. OSHPD 3 REQUIREMENTS**

- W72. Remove floor drains from operating and delivery rooms. (LAPC 310.10)
- W73. ABS and PVC for waste and vent systems are not

allowed. (LAPC 701.1(2); LAPC903.1.3)

W74. Each vent shall terminate not less than 25 feet from any air intake or vent shaft. (LAPC 906.2.1)

W75. Grease interceptor shall not be installed in the kitchen. (LAPC 1014.1(B); LAPC 1014.1(C); LAPC 1015.6; LAPC 1015.7)

## **GAS SYSTEM**

### **A. PLAN DETAILS**

G1. Provide a complete riser diagram for the gas system. (LAPC 101.5.3; LAPC 103.3)

G2. The riser diagram shall indicate all of the appliances/equipment being served, the pipe sizes, and the hourly volume (CFH) of gas on each leg of pipe. (LAPC 101.5.3; LAPC 103.3; LAPC 1208.1; LAPC 1216.1)

G3. Indicate on the plans the total length of the system from the gas meter or regulator to the most remote gas outlet. (LAPC 1216.1.1)

G4. Indicate on the plans the material for the gas piping. (LAPC 1202.2; LAPC 1208.5)

G5. Provide a separate gas shut-off valve for each tenant. (LAPC 1210.11.1.1)

G6. Indicate on the plans the hourly volume (CFH) of gas required at each outlet. (LAPC 1208.4.1)

G7. Provide an approved type seismic gas shut-off valve. (LAPC 1217.2; LAPC 1211.7)

G8. Indicate on the plans the size, make, and model of the seismic gas shut-off valve. (LAPC 1211.7)

G9. The seismic gas shut-off valve shall be mounted rigidly to the exterior of the building or structure containing the fuel gas piping. (LAPC 1217.3.2)

G10. No gas pipe shall be installed under the building unless it is properly sleeved. (LAPC 1210.1.6)

G11. Provide a letter from the gas company stating that they will deliver the desired pressure and volume of gas. (LAPC 1216.6)

G12. Show on the plans the size, make, model, orifice size, spring color, pressure setting, and inlet pressure of the gas pressure regulator. (LAPC 103.3)

G13. Provide manufacturer's cut-sheet for the gas pressure regulator showing the inlet and outlet pressures at the selected setting. (LAPC 101.5.1; LAPC 103.2.1)

G14. An approved gas shut-off valve shall be installed immediately preceding each regulator. (LAPC 1210.11)

G15. Pressure regulator shall be vented to the outside of the building and shall terminate not less than 3 feet from a source of ignition. (LAPC 1208.7.5.(1); LAPC 1208.7.5(3))

G16. The pressure regulator(s) shall be provided with factory installed overpressure protection devices to limit the pressure downstream of the line pressure regulator to 2 psi in the event of failure of the line pressure regulator. (LAPC 1208.7.1)

G17. Provide a copy of an approved "Request for Modification of Building Ordinances" form allowing the use of high pressure gas. (LAPC 1201.1; LAPC 1210.5)

## **STORM DRAINAGE SYSTEM**

### **A. PLAN DETAILS**

1. Provide complete riser diagrams for the rain water system. (LAPC 101.5.3; LAPC 103.2.2)

2. Indicate on the plans the piping material of the rain water system. (LAPC 1101.4)

3. Indicate on the riser diagram the area (ft<sup>2</sup>) covered by each drain. (LAPC 101.5.3; LAPC 103.2.2; Appendix D Sect. D 103.1; LAPC 1101.12.1; LAPC Table 1101.12; and LAPC Table 1101.8)

4. Indicate on the plan the slope of horizontal piping. (LAPC Table 1101.8)

5. Provide overflow drains. Otherwise, indicate the reasons for not having them. (LAPC 1101.12.2)

6. If scuppers are used as overflow drains, they shall be sized having area equivalent to the one of the drains as determined by section 1101.12.1. Furthermore, scupper openings shall not be less of 4" high and have a width at least equal to the circumference of the roof drain required for the area served (Diameter X  $\pi$ ). (LAPC 1101.12.2.1)

7. Roof drains and over flow drains shall be piped independently to the outside of the building. (LAPC 1101.12.2.2.1)

8. Backwater valves shall be installed to prevent flooding of the garage. (LAPC 1101.5.4)

9. Provide an approved "Request for Modification of Building Ordinances" form from Grading allowing the site or roof drainage to drain into a sump system. (LAPC 7013.10)

10. Provide a riser diagram showing the sump, sump inlet & outlet, backwater valves and gravity line. (LAPC 101.5.3; LAPC 103.2.2)



11. Backwater valve and gate valve shall be located outside the pit. (LAPC 710.6)
  12. The gate valve shall be located on the discharge side of the check valve. (LAPC 710.4)
  13. Sump(s) shall be made of concrete, metal or other approved materials. Fiberglass sumps shall be approved by the Los Angeles City Mechanical Testing Laboratory or other agency recognized by the City of Los Angeles. (LAPC 710.8; LAPC 301.2)
  14. Specify the material of the sump pit on the plans or specify make, model and research report number of the prefabricated sump. (LAPC 101.5; LAPC 301.2)
  15. The sump pit shall be installed with a fitted cover. (LAPC 1101.6.2)
  16. The sump pit shall be at least 15 inches in diameter and 18 inches in depth. (LAPC 1101.6.2)
  17. The lowest inlet to the sump shall have a minimum clearance of 2 inches above the high water level. (LAPC 710.9)
  18. Sump(s) shall be provided with a vent pipe which shall extend through the roof. (LAPC 710.7; LAPC 906.1)
  19. Show the high water level. It shall be at least 2 inches below the lowest inlet. (LAPC 710.9)
  20. Show load discharging into the sump. (LAPC 101.5.3)
  21. Provide a detail showing the sump location, the inlet lines, the outlet line, and gravity line. (LAPC 101.5.1; LAPC 103.2.2)
  22. Show the gravity line all the way to the approved point of disposal. (LAPC 101.5.1; LAPC 103.2.2)
  23. When discharging to the public street the pressure line shall connect to a gravity pipe within the property. (Department of Public Works requirement)
  24. When discharging under the curb, the drain line shall not be smaller than three inch diameter or greater than four inch diameter. (Department of Public Works requirement)
  25. When the gravity line from rain water exceeds four inch in diameter, for the portion under the curb, either use rectangular fitting having height between three and four inches and a cross section equal or greater the cross section of the pipe, or manifold multiple pipes having aggregate cross sectional area equal or greater the cross sectional area of the gravity pipe. (Department of Public Works requirement)
  26. Show size, length and type of material of the pump discharge line. (LAPC 101.5.1; LAPC 103.2.2)
  27. The discharge line from the sump pump shall be provided with an accessible backwater valve and gate valve. (LAPC 710.4; LAPC 710.6)
  28. Backwater valve and gate valve shall be located outside of the pit. (LAPC 710.6)
  29. Provide dual sump pumps. (LAPC 1101.14)
  30. Minimum size of pump shall be 15 gpm. (LAPC 1101.6.2)
  31. The discharge line from the sump pump shall be at least 1 ½ inch diameter. (LAPC 1101.6.2)
  32. Where the sump pump discharge line connects to a horizontal drain line, such connection shall be made from the top through a wye branch fitting. (LAPC 710.4)
  33. Show make, model and HP of pump on plan. (LAPC 103.2.1)
  34. Provide pump performance curves. (LAPC 103.2.1)
  35. State the length of pipe & elevation difference between the bottom of the sump and the gravity line. (LAPC 101.5.3; LAPC 103.2.2)
  36. Provide clearance from the Department of Public Works allowing the water velocity to exceed 7 ft/s at the point of discharge to the public street. (Department of Public Works requirement)
- B. CALCULATIONS**
37. Determine the flow of water in gallons per minute going into the sump. (LAPC 101.5.1; LAPC 103.2.1)
  38. Calculate the amount of water collected at the rate of 0.021 gpm per square foot. (LAPC Table D 101.1)
  39. Provide a hydrologic report based on the proper 50-year isohyetal, and the calculations shall be according to the Peak Rate Method for a concentration time of 5 minutes. (LABC 7013.6)
  40. Provide calculations for the system curve. Take into consideration all the fittings, gate valve and backwater valve. (LAPC 101.5.1; LAPC 103.2.1)
  41. Draw the system curve on the pump curve to determine the point of intersection, which will determine the volume flow coming out of the pump. (LAPC 101.5.1; LAPC 103.2.1)
  42. Determine the square footage loading of the gravity drain by allowing 47.62 square feet of area for every gallon per minute pumped by the sump pump. (LAPC Table D 101.1)
  43. Provide calculations showing that the discharge to the street does not exceed 7 ft/s. (Department of Public Works requirement)
- SUBSURFACE DRAINAGE SYSTEMS**
- A. PLAN DETAILS**
1. Show the subsurface drainage piping on the floor plans. (LAPC 101.5.1)

2. State the piping material. (LAPC 1101.4; Table 1101.4.6)
  3. Provide a statement from a California registered civil engineer showing the required flow. (LAPC 101.5.1)
  4. Either terminate the subsurface drains to the city storm drain, or provide a soil report showing that there is no continuously flowing springs or ground water. (LAPC 1101.6.1)
  5. Provide a riser diagram showing the sump, sump inlet & outlet, backwater valves, gate valves, levels, alarm and gravity line. (LAPC 101.5.3; LAPC 103.2.1)
  6. Backwater valve and gate valve shall be located outside the pit. (LAPC 710.6)
  7. The gate valve shall be located on the discharge side of the check valve. (LAPC 710.4).
  8. Sump(s) shall be made of concrete, metal or other approved materials. Fiberglass sumps shall be approved by the Los Angeles city Mechanical Testing Laboratory. (LAPC 710.8; LAPC 301.2)
  9. Specify the type of material of the sump on the plans or specify make, model and research report number of the prefabricated sump. (LAPC 103.2.2; LAPC 301.2)
  10. Provide a fitted cover. (LAPC 1101.6.2; LAPC 710.10)
  11. The sump pit shall be at least 15 inches in diameter and 18 inches in depth. (LAPC 1101.6.2)
  12. Sump(s) shall be provided with a vent pipe which shall extend a minimum of six inches above the solid sump cover. (LAPC 710.7; LAPC 906.0)
  13. Show the fixture unit load discharging into the sump. (LAPC 101.5.3; LAPC 103.2.2)
  14. Provide a detail showing the sump location, the inlet lines, the outlet line, and gravity line. (LAPC 101.5.1; LAPC 103.2.2)
  15. Show the gravity line all the way to the property line. (LAPC 101.5.1; LAPC 103.2.2)
  16. When discharging to the public street the pressure line shall connect to a gravity pipe within the property. (Department of Public Works requirement)
  17. When discharging under the curb, the drain line shall not be smaller than three inch diameter nor greater than four inch diameter. (Department of Public Works requirement)
  18. When the gravity line from rain water exceeds four inch in diameter, for the portion under the curb, either use rectangular fitting having height between three and four inches and a cross section equal or greater the cross section of the pipe, or manifold multiple pipes having aggregate cross sectional area equal or greater the cross sectional area of the gravity pipe. (Department of Public Works requirement)
  19. Show size, length and type of material of the pump discharge pipe. (LAPC 101.5.1; LAPC 103.2.2)
  20. The discharge pipe from the sump pump shall be provided with an accessible backwater valve and gate valve. (LAPC 710.6)
  21. Provide dual sump pumps. (LAPC 1101.14)
  22. Minimum size of pump shall be 15 gpm. (LAPC 1101.6.2)
  23. The discharge line from the sump pump shall be at least 1 ½ inch diameter. (LAPC 1101.6.2)
  24. Where the sump pump discharge line connects to a horizontal drain line, such connection shall be made from the top through a wye branch fitting. (LAPC 710.4)
  25. Show make, model and HP of pump on plan. (LAPC 101.5.1; LAPC 103.2.2)
  26. Provide pump performance curves. (LAPC 101.5.3; 103.2.1)
  27. State length of pipe & elevation difference between the bottom of the sump and the gravity line. (LAPC 101.5.1; LAPC 103.2.2)
- B. CALCULATIONS**
28. Determine the gallons per minute going into the sump. (LAPC 101.5.1; LAPC 103.2.1).
  29. Provide calculations for the system curve. Take into consideration all the fittings, gate valve and backwater valve. (LAPC 101.5.1; LAPC 103.2.1)
  30. Draw the system curve on the pump curve to determine the point of intersection, which will determine the volume flow coming out of the pump. (LAPC 101.5.1; LAPC 103.2.1)
  31. Determine the required size of gravity drain according to Table D1.1 by allowing 47.62 square feet of area for every gallon per minute pumped by the sump pump. (LAPC Table D101.1)
  32. Provide calculations showing that the discharge to the street does not exceed 7 ft/s. (Department of Public Works requirement)
  33. Provide clearance from the Department of Public Works allowing the water velocity to exceed 7 ft/s at the point of discharge to the public street. (Department of Public Works requirement)



