



**CITY OF LONG BEACH**  
 Department of Development Services  
 BUILDING AND SAFETY BUREAU

**PLUMBING**

**PLAN REVIEW CHECKLIST**

**DATE:**

<b>INFORMATION</b>	PROJECT NO.:	EXPIRATION DATE:	STATUS:
	PROJECT ADDRESS:		
	WORK DESCRIPTION:		
	APPLICANT'S NAME:		TEL. NO.:
	E-MAIL:		FAX. NO.:
<b>INSTRUCTIONS</b>	<p>Your application for a permit, together with plans and specifications, has been examined and you are advised that the issuance of a permit is withheld for the reasons hereinafter set forth. The approval of plans and specifications does not permit the violation of any sections of the Plumbing Code or other local ordinances or state laws.</p> <p>In an effort to streamline the plan review process, please follow the steps outlined below to ensure that there is no delay in processing your application and reviewing your responses to these plan check comments.</p> <ul style="list-style-type: none"> <li>• Comments identified herein apply to this plan check.</li> <li>• Revised plans and calculations shall incorporate or address all comments marked on the original checked set of plans, calculations, and this plan review checklist. Provide a written response to each comment and show where and how it has been addressed. Identify the sheet number and detail or reference note on the revised plans where the corrections are made. Time spent searching for the corrected items on the revised plans or calculations will delay the review and approval process.</li> <li>• Once all comments on the plans, calculations, and this checklist have been addressed, contact the following plan check staff member to <b>SCHEDULE AN APPOINTMENT</b> to review the changes made.</li> </ul> <p>PLAN REVIEWER: <u>MEI KWAN</u> TEL. NO.: <u>(562) 570-7630</u></p> <p>ADDRESS: <u>333 W. OCEAN BLVD., 4<sup>TH</sup> FLOOR, LONG BEACH, CA 90802</u></p> <p>EMAIL: <u>mei.kwan@longbeach.gov</u> WEBSITE: <u>www.lbds.info</u></p> <ul style="list-style-type: none"> <li>• Should you have any questions or need clarification pertaining to the comments made on your project, you may contact the plan check staff by telephone from 7:30 AM (8:30 AM Wed) to 4:30 PM (Monday - Friday).</li> <li>• Bring the original checked set of plans and calculations along with this checklist to the appointment meeting. Do not schedule an appointment meeting with the plan check staff until all comments have been addressed.</li> <li>• We will ensure that the appointment meeting or re-submittal of the plans for recheck will proceed as expeditiously as possible. If an impasse is reached during the appointment meeting, you may request that the plan check supervisor be summoned for a 2<sup>nd</sup> opinion or to attempt to resolve and/or clarify the matter.</li> <li>• Major revisions to the plans that necessitate additional review time may be subject to re-submittal and additional plan check fees as authorized by LBMC Subsection 18.05.040.F.</li> <li>• Reviewed plans and/or calculations not picked up within 60 days of notice will be discarded.</li> </ul>		
	<b>NOTE</b>	<p>Numbers within the parenthesis ( ) refer to the sections of the applicable code. 2016 California Plumbing Code (CPC). 2016 California Building Code (CBC). 2016 California Green Building Standard Code (CalGreen). 2016 California Energy Code (CEC). Long Beach Municipal Code (LBMC). Health and Safety Code (HSC). Table (T). Long Beach Water Department (LBWD). National Fire Protection Association (NFPA).</p>	

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**PERMIT APPLICATION**

1. Provide a complete and accurate plumbing permit application.
2. Provide complete contact information such as name, address, phone # and email address for the following individuals: (applicant) (owner) (engineer) (architect) (contractor) (\_\_\_\_\_).
3. Valuation provided or determined during the initial submittal process was not accurate. Valuation is revised to \$\_\_\_\_\_. Pay additional required plan check fee of \$\_\_\_\_\_.
4. Separate permit application(s) is(are) required for the following items:
  - a. Grading (rough or precise)
  - b. Fire sprinkler and/or alarm systems
  - c. Electrical work
  - d. Mechanical work
  - e. \_\_\_\_\_
5. When all required approvals are obtained, the permit application must be signed by the property owner, licensed contractor, or authorized agent at the time the permit is to be issued:
  - a. For owner-builder permits: Owner's signature can be verified with owner's driver license. Owner's representatives must present owner's approval with a notarized letter from the owner.
  - b. For contractor plumbing permits: Prior to the issuance of a plumbing permit, the contractor shall have the following:
    - i. Certificate of workers Compensation Insurance made out to the Contractors State License Board.
    - ii. Copy of Contractors State License or pocket ID.
    - iii. Copy of city business tax registration certificate or a newly paid receipt for one.
    - iv. Notarized letter of authorization for agents.

**ADMINISTRATION**

6. Obtain all approvals/clearances from the following department/bureau/agency noted below. It is necessary to apply immediately for the signoff or approval as it can take weeks or months for some departments/bureaus/agencies to review and approve the project. All required approvals or clearances must be secured prior to permit issuance.
  - a. Building Plan Check Review
  - b. Health Department (int. backflow prevention, food facilities) (562) 570-4195
  - c. Water Department (ext. backflow prevention, sewer protection, & industrial waste) (562) 570-2419
  - d. Gas and Oil Department (562) 570-2059
  - e. Public Works (562) 570-6678
  - f. Harbor Department (562) 570-0041
  - g. Marine Bureau (562) 570-3215
  - h. LA County Sanitation (562) 908-4288
  - i. Complete Sewer Capacity Charge Form per attachment.
7. The final set of construction documents must be stamped by the following department/bureau/agency:
  - a. Health Department
  - b. Water Department

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- c. Public Works
  - d. \_\_\_\_\_
8. Two final sets of construction documents will be required during permit issuance. Construction documents must be:
- a. Quality blue or black line drawings with uniform and light background color
  - b. Maximum 36" x 48" size with minimum 1/8" lettering size.
  - c. Sticky back details must produce prints without contrasting shades of background color.
  - d. Remove all plans, details or notes that do not pertain to the project from the final set of construction documents.
9. List all applicable codes and/or standards on the first sheet or title sheet of the construction documents. This includes, but not limited to, the following:
- a. 2016 California Plumbing Code (CPC)
  - b. 2016 California Building Code (CBC)
  - c. 2016 California Green Building Standards Code (CalGreen)
  - d. 2016 California Energy Code
  - e. Long Beach Municipal Code (LBMC)
  - f. \_\_\_\_\_
10. Provide the following information on the first sheet or title sheet of the construction documents:
- a. Detailed scope of work description.
  - b. Address of the project.
  - c. Name, address, and contact information of the owner or applicant.
  - d. Name, address, and contact information of the registered design professional(s) and/or consultant(s), as applicable.
11. Each sheet of the construction documents must bear the signatures, registration number and expiration date of the responsible party or the registered design professional in responsible charge licensed in the State of California, as applicable. The responsible party is the registered mechanical engineer, or licensed architect, or licensed plumbing contractor (C-36).
12. Provide a written response to each comment of this checklist. Indicate where and how each item has been addressed. Identify the sheet number and/or detail or reference note on the revised construction documents where the corrections are made.
13. Provide detailed schedule(s) for the following item(s):
- a. Drawing abbreviations and symbols.
  - b. Type and specification for kitchen or cooking equipment.
14. Additional comments are marked on the submitted construction documents. Those comments are in conjunction with, or in addition to, the comments contained in this checklist.
15. Construction documents are incomplete. Additional comments may result upon submission of revised or updated construction documents.
16. Required calculations, certifications and/or technical documents shall be included on the construction documents and must bear the signatures, registration number and expiration date of the responsible party or the registered design professional in responsible charge licensed in the State of California, as applicable.

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17. Verify that the resubmitted plumbing plans thoroughly address all required fire protection measures for plumbing pipe penetrations through fire-resistance rated construction as determined by the approved architectural plan. Show the specific locations for all protection methods on the plans.
18. Building Plan Check approval is required for the following:
  - a. Method of supporting and anchoring the new domestic water heating equipment and booster pump systems weighing in excess of 400 pounds.
  - b. Establish the required the occupant load and the number and type of plumbing fixtures required vs provided. (CPC 422.0)
  - c. Determine the location and type of fire-resistance rating for walls and floor-ceiling assemblies.
  - d. Determine the opening, penetration and joint detailing requirement into or through fire-resistance-rated walls and/or floor-ceiling assemblies.
  - e. Determine accessibility compliance for plumbing fixtures and related features.

Provide a copy of the approved building plans OR provide confirmation that the information has been submitted to Building Plan Check for approval prior to resubmitting the plumbing plans. Please identify those plans as "For Reference Only".

## **PLUMBING FIXTURES**

19. Show on plans which fixtures are handicap accessible. (CPC 403.2)
20. All fixtures and appliances are to be identified and are required to be listed and labeled by an approved testing agency. (CPC 401.2)
21. The effective flush volume for urinal not to exceed 0.125 gallons. (CALGreen 5.303.3.2)
22. The schedule of plumbing fixtures should be detailed to include specifications for each fixture with maximum flows as required by the CEC and CalGreen.
23. Plumbing fixtures shall follow the maximum water use guidelines allowed in the CalGreen 5.303.3 through 5.303.6 for water conservation (non-residential).
24. Plumbing fixtures shall follow the maximum water use guidelines allowed in sections 4.303.1 through 4.303.2 for water conservation (residential) as required in the CalGreen.
25. Provide a schedule of plumbing fixtures and faucets showing compliance to water-conserving fixtures and fittings. Limited the effective flush volume for single flush toilets or dual flush toilets not to exceed 1.28 gallons. (CPC 411.2)
26. Where non-water urinals are installed, not less than one water supplied fixture rated at not less than 1 drainage fixture unit (DFU) shall be installed upstream on the same drain line to facilitate drain line flow and rinsing. (CPC 412.1.3 )
27. Self-closing or metered faucets shall be installed on lavatories intended to serve the transient public, such as service stations, train stations, airports, restaurants, and convention halls. (CPC 407.2.2 & 407.4)
28. Show the maximum flow rate for kitchen faucet. Limited the maximum flow rate for kitchen faucet not to exceed 1.8 gallons. (CPC 407.2.1.1)
29. Show the maximum flow rate for residential lavatory faucet. Limited the maximum flow rate for lavatory faucet not to exceed 1.2 gallons. (CPC 407.2.1.2)
30. Show the maximum flow rate for lavatory faucets in common and public use area. Limited the maximum flow rate for lavatory faucet not to exceed 0.5 gallons. (CPC 407.2.1.3)
31. Show the maximum flow rate for showerheads. Limited the maximum flow rate for showerheads not to exceed 2.0 gallons. (CPC 408.2)

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32. Mixed water to showers, tub-shower combination shall be limited to 120°F. Provide water tempering valve conform to ASSE 1016 for showers, tub-shower combination. Provide water tempering valve conform to ASSE 1069 for gang shower. (CPC 408.3)
33. Hot water to bathtubs and whirlpool bathtubs shall be limited to 120°F. Provide water tempering valve conform to ASSE 1070 for bathtubs and whirlpool bathtubs. (CPC 409.4)
34. Provide a removable panel for access and removing the pump. Whirlpool pump access located in the crawl space shall be located no more than 20'-0" from an access door, trap door, or crawl hole. (CPC 409.6)
35. Provide elongated type water closet bowls with open front type or automatic seat cover dispenser of water closet seats for public use. (CPC 411.3)
36. Commercial dishwashing machines shall discharge indirectly through an air gap or direct connection in accordance with CPC 704.3 with floor drain protection. (CPC 414.3)
37. Where food is consumed indoors, water stations shall be permitted to be substituted for drinking fountains. Bottle filling stations shall be permitted to be substituted for drinking fountains up to 50% of the requirements for drinking fountains. Drinking fountains shall not be required for an occupant load of 30 or less. (CPC 415.2)
38. Drinking fountains shall be connected directly into the drainage system or indirectly through an air break. (CPC 415.3)
39. Drinking fountains shall not be installed in toilet rooms. (CPC 415.4)
40. Emergency eyewash and shower equipment shall be located on the same level as the hazard and accessible for immediate use. (CPC 416.4)
41. Floor drains with trap primers shall be installed in the following areas: (CPC 418.3)
  - a. Toilet rooms containing two or more water closets or a combination of one water closet and one urinal.
  - b. In commercial kitchens and in accordance with the CPC 704.3.
  - c. In laundry rooms in commercial buildings and common laundry facilities in multi-family dwelling buildings.
  - d. Boiler rooms.
42. Provide an approved strainer or gate at the floor sink. (CPC 421.2)
43. Hot water to public use lavatory shall be limited to 110°F. Provide water tempering valve conform to ASSE 1070 for public-use lavatory. Water heater thermostat shall not be considered as complying. Please show location of water tempering valve on plans. (CPC 407.3 & CEC 110.3(c)3)
44. Identify which fixtures are for private use and which are for public use.
45. Total number of water closets for women must equal the total number of water closets and urinals required for men. (CPC Table 422.1, footnote #3)
46. Where a separate toilet facility is required for each sex, and each toilet facility required to have only one water closet, two family or assisted use toilet facilities shall be permitted in place of the required separate toilet facilities. (CPC 422.2.1)
47. Provide separate toilet facilities, except the following: (CPC 422.2)
  - a. Residential installations.
  - b. In occupancies with a total occupant load of 10 or less, including customers and employees, one toilet facility, designed for use by no more than one person at a time, shall be permitted for use by both sexes.
  - c. In business and mercantile occupancies with a total occupant load of 50 or less including customers and employees, one toilet facility, designed for use by no more than one person at a time, shall be permitted for use by both sexes.
48. Where a separate toilet facility is required for each sex, and each toilet facility is required to have only one water closet, two family or assisted-use toilet facilities shall be permitted in place of the required separate toilet facilities. (CPC 422.2.1)

## WATER HEATERS

49. Indicate the type, size and capacity of the water heaters and water storage tanks.
50. Show location and permanent access to the water heaters.
51. Provide the manufacturer's printed sizing and installation instructions on the tankless water heater.
52. Provide seismic restraint details for water heaters / storage tanks. Water heaters shall be strapped to the building at the 1/3-point top and bottom. (CPC 507.2)
53. Drainage pan shall discharge to an observable location with a minimum 3/4" drain pipe. Drainage pan shall be at least 1-1/2" deep. (CPC 507.5)
54. Show location and size of all combustion-air openings. Provide calculations for the combustion air. Air for combustion, ventilation and dilution of flue gases shall comply with the CPC 506.0.
55. Provide an approved expansion tank or other device designed for intermittent operation for thermal expansion control or excessive water pressure. Show it on the riser diagram. (CPC 608.2 & 608.3)
56. State make and model of the thermal expansion tank. (CPC 608.2 & 608.3)
57. Provide a temperature and pressure relief valve on the water heaters. The valve shall discharge to an approved location. Pressure relief valves for water heaters installed inside a building shall discharge to a floor sink or similar fixture. (CPC 608.3, 608.4, & 608.5)
58. Provide a water pressure relief valve between any water-heating devices connected to a separate storage tank. (CPC 608.6)
59. Provide a vacuum relief valve at hot-water storage tank or an indirect water heater, which is located at an elevation above the fixture outlets in the hot-water system. (CPC 608.7)
60. Water heater located above ceiling, the following shall be provided:
  - a. Requires a minimum 24" wide walk way, maximum 20'-0" in length to appliance working platform. (CPC 508.4.1)
  - b. A level working platform not less than 30" x 30" shall be provided at the service side of the appliance. (CPC 508.4.3)
  - c. A permanent 120-volt receptacle outlet and a lighting fixture shall be installed near the appliance with the switch controlling the light to be at entrance to passageway. (CPC 508.4.4)
61. (A) The heat exchanger shall be listed, double wall type, and the space between the two walls shall be vented to the atmosphere (CPC 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. (CPC 505.4.1)
62. Install solar water heating system with a minimum solar savings fraction of 0.2. (CEC 150.1(c)8.B.iii)
63. 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). (CEC 110.3(c)1)
64. Install a check valve between the recirculation pump and the water heating equipment. (CEC 110.3(c)5B)
65. Install a hose bibb between the pump and the water heating equipment. (CEC 110.3(c)5C)
66. Install an isolation valve between the hose bibb and the water heating equipment. (CEC 110.3(c)5C)
67. Isolation valves shall be installed on both sides of the pump. (CEC 110.3(c)5D)
68. Instantaneous water heaters with an input rating greater than 6.8 kBTU/hr (2kW) shall have isolation valves on both the cold water supply and the hot water pipe leaving the water heater, and hose bibs or other fittings on each valve for flushing the water heater when the valves are closed. (CEC 110.3(c).7)

69. Domestic water heating system shall comply with the CEC 150.1(c)8.

### **WATER SYSTEMS AND CALCULATIONS**

70. Specify the piping materials for the domestic water systems. (CPC 604.0)
71. If CPVC pipes are proposed for the domestic water systems, the plans should include but not limited to the following:
- Provide calculations and details on the plans for the expansion offsets or loops. Show the expansion offsets or loops on the floor plans.
  - Show hangers and supports details.
  - Show the location of piping transition (i.e. copper to CPVC).
  - Show the flushing procedures/details.
  - Note type of fire penetration protection for fire rated wall / floor / ceiling assemblies. The fire penetration protection shall meet the requirements as listed in the CBC.
  - Add note to the plans: “The appropriate plumbing contractor(s) shall provide a signed written “Certificate of Compliance” and “Worker Safety” certificates for installation and use of CPVC plumbing material to the AHJ prior to issuing plumbing permit(s).”
72. Provide the manufacturer specifications and installation instructions for the pipe material. (CPC 604.0)
73. Provide site water piping plans.
74. Provide lot subdivision. Water pipes shall not cross lot/property line(s). (CPC 609.6)
75. Provide riser diagram for hot and cold water systems.
76. The riser diagram shall indicate all the fixtures served, the pipe size, the fixture unit count on each leg of pipe, pressure regulators, backflow prevention devices, and water meter.
77. Show all pipe sizes on the plan.
78. Show the size of a water meter on the riser diagram. (CPC 610.1)
79. Install a control valve in the domestic water supply to each building. (CPC 606.2)
80. Install a control valve in the domestic water supply to each dwelling unit. In multi-dwelling units, one or more shut off valves shall be provided in each dwelling unit so that the water supply to a plumbing fixture or group of fixtures in that dwelling unit can be shut off without stopping water supply to fixtures in other dwelling units. These valves shall be accessible in the dwelling unit that they control. (CPC 606.3)
81. State make, model, rated pressure, and gpm of the booster pump(s). (CPC 608.1)
82. Provide the pump performance curve for the booster pump(s) being used.
83. (A) Show new and 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. (CPC 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.
- (C) Provide manufacturer’s specification sheets for the devices shown in item (A) indicating the pressure loss versus the flow.
84. Indicate 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. (CPC Appendix A Section A103.0)

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85. Show the future water demand. Future fixtures shall be included in sizing of the systems. (CPC Appendix A Section A103.0)
86. Provide 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.
87. Indicate the types of the water closets (tank or flushometer valves) used. (CPC 610.0, Table 610.4, CPC Appendix A Section A103.0)
88. New commercial buildings or additions in excess of 50,000 ft<sup>2</sup> shall install separate sub-meters or meters per the CalGreen 5.303.1.1 as following:
  - 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:
    - i. Makeup water for cooling towers where flow through is greater than 500 gpm.
    - ii. Makeup water for evaporative coolers greater than 6 gpm.
    - iii. 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.
89. Provide separate water meters for residential and non-residential units. New water service for a mixed-use project must have a separate service connection dedicated solely to the residential units and a separate service connection dedicated solely to the non-residential units. The systems for each must be independent of the other and not cross-connected. (LBMC 18.47.090 and LBWD Rules & Regulations 204.2.2(c))
90. Provide hydraulic calculations for sizing the cold and hot water systems. The calculations should be submitted showing the following information:
  - a. Minimum and maximum water pressure.
  - b. Height of highest outlet above meter.
  - c. Meter size and losses through it.
  - d. Maximum developed length.
  - e. Total fixture units and GPM.
  - f. Type of pipe.
  - g. Residual pressure (minimum 15 psi).
  - h. Any other losses (Regulators, RP devices, water filter, and tankless water heater shown).
  - i. Table showing SIZE OF PIPE vs. FIXTURE UNITS allowed.

It should be noted that maximum velocity of 8 ft/sec for cold water and 5 ft/sec for hot water should be maintained for copper tubing as required by CPC 610.12. (CPC 610.0 & Appendix A)
91. 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. (CPC 608.1 & Appendix A)
92. Clearly identify each hydraulic design zone on the riser diagram. Show any node points on the riser used in the calculations.
93. For each zone, provide hydraulic calculations showing the pressure losses from the city main to the pressure reducing valve for each zone. (CPC 610.0)
94. Provide pipe sizing charts for each zone.



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95. 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. (CPC 608.2)
96. All domestic hot water piping shall be insulated per the CPC 609.11.
97. Hot water pipe insulation for pipe less than 2 inches shall meet the minimum wall thickness indicated on Title 24 Part 6, 120.4. Insulation wall thickness shall be not less than 2" for a pipe of 2" or more in diameter. (CPC 609.11.2)
98. Install two hot water recirculation loops each serving half of the building. The recirculation loops shall meet the requirements of the CEC 110.3(c)2 and 110.3(c)5. (CEC 150.1(c)8.B.ii)

**BACKFLOW DEVICES (RP)**

99. Provide a reduced pressure backflow device at the meter. (CPC 603.0, Table 603.2, and LBWD Rules & Regulations)
100. Show make, model, and size of the reduced pressure backflow device on the plans.
101. Provide a copy of the manufacturer's catalog for the reduced pressure backflow device used showing pressure losses.
102. The reduced pressure backflow device shall be installed at least 12" above grade or finished floor. The RP shall not be installed in a pit where it can become submerged in water. Installations of the backflow device exceeding 5'-0" above the floor or grade shall be provided with a permanent platform capable of supporting a tester or maintenance person. (CPC 603.4.3, 603.4.9, & Table 603.2)
103. Provide backflow devices for carbonated beverage machines or dispensers such as soda and beer dispensers, coffee machines. (CPC 603.5.12)
104. Anti-siphon and/or backflow protection required at \_\_\_\_\_. (CPC 603)

**WASTE AND VENT SYSTEMS**

105. Specify the piping materials for waste and vent systems. (CPC 701.0 & 903.0)
106. Provide riser diagram for the waste and vent systems. The waste system shall extend to the property line.
107. The riser diagram shall indicate all the fixtures served, the pipe sizes, and the fixture unit count on each leg of pipe.
108. Show all pipe sizes on the plan.
109. Pot sinks, scullery sinks, dishwashing sinks, and silverware sinks 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. (CPC 704.3)
110. A cleanout shall be installed above the fixture connection fitting, serving each urinal, regardless of the location of the urinal in the building. (CPC 707.4)
111. Provide site plans showing the building sewer and the city sewer main size.
112. Provide lot subdivision. The building sewer shall not cross lot/property line(s). (CPC 721.1)
113. Specify the slope of the horizontal drainage piping. (CPC 708.1)
114. Show size of the sewer main in the street.
115. Building drain/building sewer clean-out should be shown on the plans (2'-0" outside the building) in compliance with the CPC 719.1.
116. Install a clean out every 100'-0" or a manhole every 300'-0" in the building sewer (site sewer) in straight runs and for each aggregate horizontal change in direction exceeding 135°. (CPC 719.1 & 719.6)

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117. Rain, surface, or subsurface water shall not be connected to or discharged into any sanitary drainage system. (CPC 714.2, 1101.3)
118. Indicate the waste stacks that carry the discharge of suds producing fixtures. Drainage connections shall not be made into a drainage piping system within eight (8) feet of any vertical to horizontal change of direction of a stack containing suds-producing fixtures. (CPC 711.1)
119. Clearly indicate on the plans the waste stacks that carry the discharge of the suds producing fixtures. (CPC 711.1)
120. The fire pump room shall be provided with a floor drain and a floor sink. (NFPA 20 Section 4.12.7.2)
121. The aggregate cross sectional area of the vent shall not be less than that of the largest required building sewer. (CPC 904.1)
122. Provide details for the island venting. (CPC 909.1)
123. The island sink drain, upstream of the returned vent, shall serve no other fixtures. (CPC 909.1)
124. Provide yoke vents and show the yoke vents on the riser diagram. (CPC 907.2)
125. All wet vents fixtures shall be within the same story. (CPC 908.1)
126. Only private bathroom groups may be wet vented horizontally. (CPC 908.2)
127. No more than one bathroom group located on the same floor may be connected to a horizontal wet vent system. (CPC 908.2)
128. 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. (CPC 908.2.4)
129. Show on plans type and use of each fixture served by the combination waste and vent systems.
130. Show the combination waste and vent piping on floor plans.
131. Combination waste and vent system is only allowed where structural conditions preclude the installation of a conventional system. (CPC 910.1)
132. Toilets or urinals are not allowed in a combination waste and vent system. (CPC 910.7)
133. Combination waste and vent systems shall not be utilized where solids or grease waste is anticipated. (CPC Appendix B Section B101.0)
134. Vertical waste pipes are not allowed in a combination waste and vent system. (CPC 910.5)
135. Show a detail of the connection of the branches of a waste and vent system to the main horizontal line. (CPC 910.2 & 910.5)
136. Each drainpipe and each trap, in a combination waste and vent system, shall be 2 pipe sizes larger than the sizes required by the CPC Chapter 7. (CPC 910.4)
137. The minimum area of any vent installed in a combination waste and vent system shall be at least 1/2 the cross sectional area of the drainpipe served. (CPC 910.3)
138. Show a typical detail of the tailpiece and trap. (CPC 910.2 & 910.4)
139. Provide a separate vent for each waste branch line exceeding 15'-0" in length and provide a vent downstream of the furthest fixture. (CPC 910.3)
140. Provide a vent downstream of the uppermost fixture. (CPC 910.3)
141. Relief vents shall be provided every 100'-0" along the mains. (CPC Appendix B Section B101.4)
142. Venting or drainage line from any equipment shall not be connected with the vent pipe serving the waste line.
143. Traps serving sink that are part of the equipment of bars, need not be vented as long as is indirectly connected to an open floor sink or other approved type of receptor. (CPC 902.2)

144. Vent pipe and fittings shall be in accordance with CPC 701.2 standard, except that: galvanized and stainless steel shall not be installed underground and less than 6” above ground. ABS and PVC DWV is permitted with the applicable standard referenced in table 1701.1. (CPC 903.1.1)
145. Each plumbing fixture trap shall be vented. Unless prohibited by structural conditions each vent shall vertically to a point not less than 6” above the flood level rim of the fixture; or less than 12” from a vertical surface. (CPC 906.1)

### **SEWAGE EJECTORS AND CALCULATIONS**

146. Show size, length and type of material of the sewage ejector discharge line. (CPC 701.0)
147. Provide an accessible check valve and gate valve or ball valve at the discharge line from the ejector. (CPC 710.4)
148. Gate valve or ball valve and check valve shall be located outside the pit. (CPC 710.4)
149. Provide dual pumps each capable of handling the load independently shall be provided in “public use” occupancy. (CPC 710.9)
150. Provide airtight cover for the sumps. (CPC 710.10)
151. Sewage ejector sump shall be provided with a separate vent pipe, which shall extend through the roof. (CPC 710.7 & 710.10)
152. Show load discharging into the sump.
153. Show make, model and HP of sewage ejector.
154. Provide pump performance curves.
155. Provide a riser diagram showing the sumps, sump inlet and outlet check valves and gravity line.
156. The discharge line of the pump shall connect to the horizontal gravity line from the top through a wye branch fitting (CPC 710.4)
157. State the length of pipe and elevation difference between the bottom of the sumps and the gravity line.
158. Show high water level. It shall be at least 2” below the lowest inlet. (CPC 710.9)
159. Sump receiving waste from water closets shall have a 2” discharge for single-family dwelling. A 3” discharge is required for commercial building. (CPC 710.3)
160. When calculating fixture unit, allow 2 fixture units for each gallon per minute discharging from the sewage ejector. (CPC 710.5)
161. Specify the type of material of the sump on the plans, or specify make, model of the prefabricated sump.
162. Provide audio and visual alarm. (CPC 710.9)
163. Determine the flow of water in gallons per minute discharging into the sump.
164. Provide calculations for the system curve. Take into consideration losses due to all the fittings, gate valve, and backwater valve.
165. 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.
166. 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. (CPC 710.5)
167. The pump shall have a discharge capacity of not less than 20 gpm. (CPC 710.3(1))

### **INDIRECT WASTE SYSTEMS**

168. Ice machines, iceboxes, drink dispensers, coffee machines, freezers, refrigeration coils, and similar equipment shall be indirectly connected to the drainage system. (CPC 801.3)

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169. For walk-in coolers, floor drain shall be permitted to connect to a separate drainage line discharging into an outside receptor. Such floor drain shall be trapped and individually vented. (CPC 801.3.2)
170. 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. (CPC 801.3.3)
171. Bins, sinks, and other equipment having drainage connections and used for the storage of unpackaged ice used for human ingestion, or used in direct contact with ready-to-eat food, shall be indirectly connected to the drainage system by means of an air gap. (CPC 801.3.3)
172. Each indirect waste pipe from food-handling fixtures or equipment shall be separately piped to the indirect waste receptor and shall not combine with other indirect waste pipes. (CPC 801.3.3)
173. Where the sink in a bar, soda fountain, or counter is so located that the trap serving the sink cannot be vented, the sink drain shall discharge through an air gap or air break into an approved receptor that is vented. The developed length from the fixture outlet to the receptor shall not exceed 5'-0". (CPC 801.3)
174. No indirect receptor shall be installed in a storeroom or other portion of the building not in general use. (CPC 804.1)
175. No piping or equipment discharges under pressure shall directly connect to the drainage system. Except approved fixtures and devices, such as commercial dishwashers, where the drainage system is properly sized. (CPC 805.1)
176. Steam and/or hot water drainage requires an indirect waste line. (CPC 810.1)
177. Pipe from boilers shall discharge by means of indirect waste piping. (CPC 810.1)
178. Carbonated liquid waste piping shall be of corrosive resistive material. Do not use copper or cast iron until proper neutralization or dilution has occurred. (CPC 811.0)
179. Provide use of each floor sink on plan.

### **CONDENSATE SYSTEMS**

180. Specify the piping materials for condensate drains.
181. Provided a manufacturer's printed literature or specification sheet on the drywell to justify the setback requirements.
182. All condensate from air-cooling coil, evaporative cooler, and air conditioning equipment shall be collected and discharge to an approved plumbing fixture or disposal area or by means of an indirect waste pipe. The minimum condensate pipe size per CPC Table 814.3. (CPC 814.3)
183. Provide a primary and a secondary condensate drain for cooling coils installed above the ceiling or in furred spaces. The secondary drain shall terminate in a visible location.
184. Condensate pump for primary drain shall be installed per the CPC 814.1.1.
185. Pump discharge shall rise vertically to a point where it is possible to connect to a gravity condensate drain and discharged to an approved disposal point. (CPC 814.1.1)
186. Each condensing unit shall be provided with a separate sump and interlocked with the equipment to prevent the equipment from operating during a failure. (CPC 814.1.1)
187. Separate pumps shall be permitted to connect to a single gravity indirect waste where equipped with check valves. (CPC 814.1.1)

### **TRAPS, GREASE INTERCEPTORS, HYDRO-MECHANICAL INTERCEPTORS (GREASE TRAPS) OR OTHER INTERCEPTORS**

188. One trap serving a three-compartment sink shall have the trap centrally located. (CPC 1001.2)
189. Floor drains directly connect to the drainage system and subject to infrequent use shall be provided with a trap primer. Trap primers shall be placed in an accessible location for maintenance. (CPC 1007.1)

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190. Provide an interceptor or clarifier for proper handling of liquid wastes containing grease, flammable wastes, sand, solids, acid or alkaline substances, or other ingredients harmful to the building drainage system, the public or private sewer system. (CPC 1009.1)
191. Show all grease waste piping on the plans.
192. Interceptors or clarifiers shall be properly vented. (CPC 1009.4)
193. Show detail of grease interceptors, hydro-mechanical interceptors, or clarifiers on plans.
194. Show locations of the grease interceptors, hydro-mechanical interceptors, or clarifiers on the lay out.
195. Size hydro-mechanical interceptors per the CPC 1014.2.1.
196. Show location of required flow control and venting for hydro-mechanical interceptors. (CPC 1014.2)
197. Provide product literature for the hydro-mechanical grease interceptors.
198. Size grease interceptors per CPC Table 1014.3.6 for grease interceptor 500 gallon or more. (CPC 1014.3.6)
199. Provide product literature for the grease interceptors.
200. Gravity grease interceptors shall not be installed in a part of the building where food is handled, and shall be placed as close as practical to the fixtures they serve. Location of the grease interceptor shall meet the approval of the LBWD. (CPC 1014.3.4)
201. Each business establishment shall have an interceptor that serves only that establishment unless otherwise approved by the AHJ. (CPC 1014.3.4.2)

### **STORM DRAINAGE SYSTEMS**

202. Specify the piping materials for rainwater systems. (CPC 1101.4 & 1102.0)
203. Rainwater drains shall not be connected to sanitary system. (CPC 1101.3)
204. Provide a riser diagram for rainwater systems.
205. Indicate on riser diagram, the area (ft<sup>2</sup>) covered by each drain. (CPC Appendix D, 1101.12.1, Table 1101.12, & Table 1101.8)
206. Indicate the slope of horizontal piping. (CPC Table 1101.8)
207. Provide overflow drains. Overflow drains having the same size as the roof drains shall be installed with the inlet flow line located 2" above the low point of the roof. Otherwise, indicate the reasons for not having them. (CPC 1101.12.2)
208. Debris and waste water shall not be discharged to rainwater systems. (CPC 714.2, 1101.3)
209. If scuppers are used as overflow drains, they shall be sized having area equivalent to the one of the drains as determined by CPC 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  $\pi$ ). (CPC 1101.12.2.1)
210. Roof drains and overflow drains shall be piped independently to the outside of the building. (CPC 1101.12.2.2.1)
211. Backwater valves shall be installed to prevent flooding of the garage.

### **SUBSURFACE DRAINAGE SYSTEMS**

212. Provide drainage calculations from the soils engineer for the subsurface drains and amount of rain (GPM) the drains were sized for, this information will help in sizing the rain water system.
213. Provide a statement from a California registered Civil Engineer showing the required flow.
214. Show subsurface drainage on the floor plans.
215. Specify the piping materials for the subsurface drains. (CPC 1101.4)

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- 216. Subsurface drains shall not terminate into sanitary drainage system; 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. (CPC 1101.6.1)
- 217. Backwater valves shall be installed to prevent flooding of the garage.

**SUMP PUMPS AND CALCULATIONS**

- 218. Provide an approved modification from Grading allowing the site drainage to drain into a sump system.
- 219. Provide a riser diagram showing the sump, sump inlet & outlet, backwater valves and gravity line.
- 220. Backwater valves and gate valves shall be located outside the pit. (CPC 710.6)
- 221. The gate valve shall be located on the discharge side of the check valve. (CPC 710.4)
- 222. Sumps shall be made of concrete, metal or other approved materials. (CPC 710.8)
- 223. Specify the type of material or specify make, model and research report number of the prefabricated sump.
- 224. Provided an airtight cover. (CPC 1101.6.2)
- 225. The sump pit shall be at least 15" in diameter and 18" in depth. (CPC 1101.6.2)
- 226. Show high water level. It shall be at least 2" below the lowest inlet. The lowest inlet to the sump shall have a minimum clearance of 2" above the high water level. (CPC 710.9)
- 227. Sumps shall be provided with a vent pipe, which shall extend a minimum of 6" above the solid sump cover. (CPC 710.7 & 906.1)
- 228. The pumps shall have an audio and visual alarm, readily accessible, that signals pump failure or an overload condition. (CPC 710.9)
- 229. Show load discharging into the sump.
- 230. Provide a detail showing the sump location, the inlet lines, the outlet line, and gravity line.
- 231. Show the gravity line all the way to the approved point of disposal.
- 232. When discharging to the public street, the pressure line shall connect to a gravity pipe within the property. (Long Beach Public Works)
- 233. When discharging under the curb, the drain line shall not be smaller than 3" diameter or greater than 4" diameter. (Long Beach Public Works)
- 234. When the gravity line from rain water exceeds 4" in diameter, for the portion under the curb, either use rectangular fitting having height between 3" and 4" and a cross section equal or greater than the cross section of the pipe, or manifold multiple pipes having aggregate cross sectional area equal or greater than the cross sectional area of the gravity pipe. (Long Beach Public Works)
- 235. Show size, length and type of material of the pump discharge line.
- 236. The discharge line from the sump pump shall be provided with an accessible backwater valve and gate valve. (CPC 710.4)
- 237. Backwater valve and gate valve shall be located outside of the pit. (CPC 710.6)
- 238. Provide dual sump pumps. (CPC 1101.14)
- 239. Minimum size of pump shall be 15 gpm. (CPC 1101.6.2)
- 240. The discharge line from the sump pump shall be at least 1-1/2" diameter. (CPC 1101.6.2)
- 241. 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. (CPC 710.4)
- 242. Show make, model and horsepower of pump.

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- 243. Provide pump performance curves.
- 244. State length of pipe and elevation difference between the bottom of the sump and the gravity line.
- 245. Determine the flow of water in gallons per minute going into the sump.
- 246. Provide calculations for the system curve. Take into consideration all the fittings, gate valve, and backwater valve.
- 247. 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.

### **NATURAL GAS SYSTEMS**

- 248. Specify the piping materials for the gas systems. (CPC 1208.5)
- 249. Sediment traps shall be installed as close as practical to the inlet of the gas utilizing equipment. Ranges shall not be required to be so equipped. (CPC 1212.8)
- 250. Indicate the total developed length of the system from the meter or regulator to the most remote gas outlet. (CPC 1216.1.1)
- 251. Indicate the hourly volume (CFH) of gas required at each outlet. (Note: 1000BTU = 1CFH) (CPC 1208.4.1)
- 252. Provide riser diagram for the gas systems.
- 253. The riser diagram shall indicate all the equipment or appliances being served, the pipe sizes, and the hourly volume (CFH) of gas on each leg of pipe.
- 254. Show all pipe sizes on the plan.
- 255. Provide a separate gas shut-off valve for each tenant. (CPC 1210.11.1.1)
- 256. No gas pipe shall be installed under the building unless it is properly sleeved. (CPC 1210.1.6)
- 257. Show points of connection of new pipe to existing pipe.
- 258. The existing gas pipe shall be enlarged or a separate gas piping shall be provided to ensure adequate capacity of piping is provided. (CPC Sec.1208.1.1)
- 259. Provide plumbing plans with stamp and signature of approval by the Long Beach Gas Dept. regarding any requirements and for the approval of medium pressure gas and/or high pressure gas systems (over 14" W.C. or 1/2 psi). Please contact Jane Hermsen at (562) 570-2059 for information.
- 260. Provide a copy of an approved "*Request for Modification of Building Ordinances*" form allowing the use of high pressure gas. (CPC 1201.1 & 1210.5)

### **GAS PRESSURE REGULATORS**

- 261. Show the size, make, model, orifice size, spring number, pressure at the inlet of the pressure regulator, and setting of pressure regulator.
- 262. Provide manufacturer's cut-sheet for regulator showing inlet and outlet pressures at the selected setting.
- 263. 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. (CPC 1208.7.1)
- 264. Pressure regulator shall be vented to the outside of the building and shall terminate not less than 3'-0" from a source of ignition. (CPC 1208.7.5)
- 265. Provide an approved gas valve immediately preceding each regulator. (CPC 1208.7)

### **MEDICAL GAS**

- 266. Provide required ventilation calculations for medical gas storage area per NFPA 99.

**SEWER CAPACITY CHARGE**

- 267. Please provide a completed and signed Sewer Capacity Charge Form.
- 268. Provide demolition plan(s) with stamp, wet signature, registration number and expiration date of the responsible party (i.e. Licensed Architect, Engineer) showing the locations of the plumbing fixtures that are being demolish; or a copy of the demolition permit that included the plumbing fixture counts for sewer capacity credit.

**ENERGY EFFICIENCY STANDARDS**

- 269. Show on the plumbing plan, the Compliance Form (Performance or prescriptive method) for water heating system per 2016 California Building Energy Efficiency Standards. The forms shall be completed and signed by a licensed professional as describe in Section 10-103.
- 270. Provide supportive documents to justify that the water heaters proposed have met and recognized by the California Energy Commission. For certified appliances, go to [www.energy.ca.gov/appliances/database](http://www.energy.ca.gov/appliances/database)

**ADDITIONAL WRITTEN COMMENTS**

No.	Comment	Code Sec. No.