

Subchapter 2. Manufactured Homes, Mobilehomes, Multifamily Manufactured Homes, Commercial Modulares, And Special Purpose Commercial Modulares

Article 3. Commercial Modulares

Subarticle 1. Application and Scope

§ 4350. Application and Scope.

(a) Except as provided for by Section 18026.1 of the California Health and Safety Code the provisions of this article relating to design, construction and fire–life safety apply to all commercial modulares manufactured sold, offered for sale, rented or leased within this state. The provisions of this article are also applicable to the alteration, remanufacture, or conversion of any construction or fire–life safety equipment or installations or change of occupancy in any commercial modular bearing or required to bear a department insignia of approval.

(b) Equipment and installations conforming to standards in this article or to other nationally recognized and approved standards shall be considered acceptable by the department when listed or labeled and installed in accordance with the requirements of this article and the conditions of their approval, except where otherwise provided in this article. All equipment shall be clearly labeled to indicate compliance with applicable standards.

(c) The requirements of this article shall apply as follows:

(1) Special purpose commercial modulares designed for use as a module of a permanently constructed building or commercial modular, shall comply with the construction standards for commercial modulares.

(2) Commercial modular units or portions of existing units undergoing alteration, remanufacturing, repair, conversion or change in occupancy type shall be in compliance with the applicable regulations and standards no later than March 31, 2012. Thereafter, commercial modular units or portions of existing units undergoing alteration, remanufacturing, repair, conversion or change in occupancy type shall be designed and constructed in accordance with this article.

(3) With the exception of the conditions of Section 17292(a)(1) and (3) of the Education Code, a kindergarten through grade 12 or any junior college relocatable classroom purchased or leased with public funds and used as an educational facility by a publicly funded educational institution is not subject to the requirements of this article as long as it continues in use as an educational facility by a publicly funded educational institution.

(4) Any relocatable, portable or factory–built hospital building that houses patients who have less than the capacity of normally healthy persons to protect themselves are not subject to the requirements of this article.

AUTHORITY:

Note: Authority cited: Section 18020 Sections 18015, 18025, 18028, 18029 and 18029.5, Health and Safety Code. Reference: Section 17280, Education Code; and Sections 18000 et seq., 18025, 18028, 18029, 18029.3, 18029.4, 18029.5 and 129680, Health and Safety Code.

Subarticle 2. Construction and Fire-Life Safety

§ 4353. Minimum Requirements.

(a) Materials, products, applications, specifications, equipment and installations comprising the structural system fire–life safety aspects of a commercial modular shall conform with the standards incorporated in the California Code of Regulations, Title 24, Part 2, California Building Code (CBC), Chapter 35 and to the provisions of this article, including standards for listing and labeling, and compliance with manufacturer's installation instructions.

(b) The structural system, fire–life safety aspects and CALGreen standards of a commercial modular shall be designed, constructed and maintained in compliance with accepted engineering practices with the provisions of this subarticle and with the California Code of Regulations, Title 24, Part 2, California Building Code (CBC), Chapters 2 through 10, 11B, 12, 14 through 26, 30, 31C and 35, and Title 24, Part 11.

(c) Commercial modular manufacturing facilities are exempt from mandatory requirements of the California Code of Regulations, Title 24, Part 11, Chapter 5, Sections 5.105, 5.106, 5.401, 5.403, 5.404, 5.405, 5.406, 5.407, 5.408, 5.409, 5.410, 5.501, 5.502, 5.503, 5.504, 5.505 and 5.508.

AUTHORITY:

Note: Authority cited: Section 18020 Sections 18015 and 18029.5, Health and Safety Code. Reference: Sections 18056.5 18028 and 18058 18029.5

§ 4356. Structural Requirements.

(a) Commercial modulares shall be designed and constructed as a completely integrated structure capable of sustaining the design load requirements of this subarticle and those found in the California Code of Regulations, Title 24, Part 2, California Building Code (CBC) and shall be capable of transmitting these loads to running gear, or stabilizing devices, or a foundation system without causing an unsafe deformation or abnormal internal movement of the structure or its structural parts.

(b) Commercial modulars intended for installation on a foundation at a specific location may be designed and constructed for placement on a slab or site-installed floor which meets the requirements of Section 4353 of this subarticle.

AUTHORITY:

Note: Authority cited: 18020 18015, Health and Safety Code. Reference: Section 18056.5 18028, Health and Safety Code.

§ 4356.1. Light Modular Steel Moment Frames.

Commercial modulars may be constructed with Light Modular Steel Moment Frames, which shall be designed and constructed in compliance with Section 2211A of the California Code of Regulations, Title 24, Part 2, California Building Code (CBC), Chapter 22.

AUTHORITY:

Note: Authority cited: Section 18015, Health and Safety Code. Reference: Section 18028, Health and Safety Code.

§ 4356.5. New Materials and Methods.

Any new material or method of construction not provided for in this article and any material or method of questioned suitability, proposed for use in the manufacture of the structure, shall nevertheless conform in performance as outlined in this article.

AUTHORITY:

Note: Authority cited: Section 18020, Health and Safety Code. Reference: Section 18056.5, Health and Safety Code.

§ 4358. Wind Loads.

(a) Commercial modulars intended for installation on a foundation system at a specific location shall be designed in accordance with the wind load requirements of the California Code of Regulations, Title 24, Part 2, California Building Code (CBC), Chapter 16.

(b) The structural system of commercial modulars, not intended for site-specific locations, shall be designed and constructed to resist the effects of a minimum basic three-second wind speed gust of not less than eighty-five (85) miles per hour (38 m/s) in an Exposure C location.

(c) Commercial modulars intended for installation in areas subject to basic wind speed gusts in excess of an eighty-five (85) miles per hour (38 m/s) in an Exposure C location, shall have the structural system designed and constructed to comply with those higher requirements.

AUTHORITY:

Note: Authority cited: Section 18015, Health and Safety Code. Reference: Section 18028 Health and Safety Code.

§ 4358.3. Seismic Loads.

(a) Commercial modulars intended for installation on a foundation system at a specific location shall be designed to comply with the seismic design requirements in the California Code of Regulations, Title 24, Part 2, California Building Code (CBC) and shall be designed for actual site conditions and seismic loads applicable to the location.

(b) All other commercial modulars shall be designed using the requirements of the California Code of Regulations, Title 24, Part 2, California Building Code (CBC) with the following assumptions:

(1) (Spectral response acceleration at short periods (0.2 seconds)) not less than 150 percent.

(2) (Spectral response acceleration at 1-second period) not less than 60 percent.

(3) All other factors shall be in accordance with strength design, load and resistance factor design, allowable stress design, empirical design or conventional construction and construction methods as prescribed by applicable material chapters of the CBC and by this article.

(c) Commercial modulars intended for installation or reinstallation on other than foundation systems in areas subject to seismic loads in excess to those in Subsection (b) of this section shall have the structural system designed and constructed to comply with the greater requirements.

AUTHORITY:

Note: Authority cited: Section 18020, Health and Safety Code. Reference: Section 18056.5, Health and Safety Code.

§ 4360.9. Fastening of Structural Systems.

Roof framing shall be securely fastened to wall framing, walls to floor structure and floor structure to chassis to secure and maintain continuity between the floor and chassis, so as to resist wind over-turning and sliding as imposed by design loads in Section 4358.

AUTHORITY:

Note: Authority cited: Section 18020, Health and Safety Code. Reference: Section 18056.5, Health and Safety Code.

§ 4363. Floor Construction.

(a) Wood floors or subfloors in kitchens, laundry rooms, water heater compartments and any other interior areas subject to excessive moisture shall be made impervious to moisture by sealing with an approved material, or by applying an overlay of approved nonabsorbent material applied with water resistant adhesive.

(b) Floors under heating appliances shall not be covered with materials such as flammable carpeting.

(c) Carpet. Carpet and carpet pads shall not be installed in concealed spaces subject to excessive moisture such as under plumbing fixtures. Carpet and/or carpet pads shall not be installed beneath the bottom plate of shear or bearing walls.

AUTHORITY:

Note: Authority cited: Section 18020, Health and Safety Code. Reference: Section 18056.5, Health and Safety Code.

§ 4365. Underfloor Closure Material.

Underfloor closure material and its method of construction and installation shall resist transportation damage and shall be of a water resistant material that maintains protection against infiltration or penetration to the underside of the commercial modular by water, vermin and vectors. The closure material shall be listed and tested material as noted in Subsection (a) of this section and installed as follows:

(a) Underfloor material (with or without patches) shall be tight-fitted against any floor penetrations and prevent the entrance of insects or rodents. The material shall be suitable for patches and repair, and the repair life shall be equivalent to the material life. The material shall meet or exceed the level of 48-inch pounds of puncture resistance in accordance with ASTM D 781 Standard Test Methods for Puncture and Stiffness of Paperboard, and Corrugated and Solid Fiberboard (1973).

(1) Exemption: Non-insulated moisture-resistant under floor construction shall not require underfloor closure material protection.

(2) Commercial modular and special purpose commercial modular units not designed for placement on a continuous foundation shall be protected in accordance with California Code of Regulations, Title 24, Part 2, California Building Code, Appendix F.

(b) Underfloor material shall be installed in accordance with installation instructions furnished by the manufacturer of the material.

(c) Patch installation instructions shall be included in the commercial modular manufacturer's instructions. (See Section 4368 of this subchapter).

AUTHORITY:

Note: Authority cited: Section 18020, Health and Safety Code. Reference: Section 18056.5, Health and Safety Code.

§ 4368. Installation Instructions.

(a) Commercial modular manufacturers shall provide printed instructions regarding at least one method of on-site assembly and installation of each commercial modular unit.

(b) Installation instructions and the plan approval number of the typical installation system shall be submitted with model plan approvals for review by the manufacturer's design approval agency.

(c) Installation instructions shall include at least the following information:

(1) Required structural connections between sections.

(2) Required non-structural connections between sections, including those required for weatherization.

(3) Required plumbing, mechanical, and electrical system connections between sections. Instructions shall indicate the method used in the manufacturing facility to identify each type of connection. The marking method clearly shall differentiate the type of connection required at each location (e.g., plumbing, mechanical or electrical).

(4) All electrical connections between sections shall be labeled clearly and permanently in the factory. The method of identification clearly shall indicate each circuit's electrical panel of origin and the corresponding circuit number.

(5) Basic support requirements and restrictions, including detailed support system attachment locations and load paths diagrams for at least one method of support. The methodology used for determining vertical and lateral support system design loads shall be provided.

(6) Any additional items (e.g., lags, nails, flashing, etc.) for which a manufacturer's explanation would be required in order to adequately and properly install the unit.

(7) When installation instructions are included as part of the model plan approvals, any details, notes or instructions relating to the installation shall be identified clearly and noted as part of the on-site installation assembly of the sections.

(d) The location, installation, permanent foundation or temporary support system and utility connections of commercial modulares are subject to the authority having inspection jurisdiction.

(e) The approved instructions used for at least one method of support system type; pier type and locations; tie-downs; and load-path information for installation shall be posted permanently inside each unit in an accessible area or location.

AUTHORITY:

Note: Authority cited: Section 18015, Health and Safety Code. Reference: Section 18028, Health and Safety Code.

§ 4369. Energy Requirements.

(a) Commercial modular units designed for installation on a foundation system shall comply with the applicable requirements of the Energy Efficiency Standards for Residential and Nonresidential Buildings of the California Code of Regulations, Title 24, Part 6, California Energy Code (CEC).

(b) Commercial modular units not designed for installation on a foundation system shall be designed to comply with the energy requirements for building envelopes in the California Code of Regulations, Title 24, Part 6, Subchapter 5, Section 141(d) (Performance Approach) or Section 143(a)(8) (Prescriptive Approach) for relocatable public school buildings.

(c) Except as required in Section 18029.4 of the California Health and Safety Code and Section 4350(c)(1) of this subarticle, the energy requirements found in this section shall not apply to special purpose commercial modular units.

AUTHORITY:

Note: Authority cited: Section 18015, Health and Safety Code. Reference: Sections 10827 and 18028, Health and Safety Code.

Subarticle 3. Electrical

§ 4380. Minimum Requirements.

(a) The provisions of this subarticle relating to electrical equipment and installations apply to all commercial modulars manufactured, or offered for sale, rent, or lease within this State. The provisions of this subarticle also are applicable to the alteration or conversion of electrical equipment and installations in any commercial modular bearing or required to bear a department insignia of approval.

(b) Electrical materials, equipment, products and systems, and their installations in a commercial modular shall conform to those standards provided in the California Code of Regulations, Title 24, Part 3, California Electrical Code (CEC) and to the provisions of this subarticle, including standards for listing and labeling, and compliance with manufacturers installation instructions.

AUTHORITY:

Note: Authority cited: Sections 18015 and 18028 Health and Safety Code Reference: Sections 18025 and 18028, Health and Safety Code.

§ 4381. Definitions.

(a) Definitions contained in the California Code of Regulations, Title 24, Part 3, California Electrical Code (CEC) and the following definition shall apply to this subarticle.

(b) Feeder Assembly. The overhead or under-chassis conductors including the grounding conductor, raceway, together with the necessary fittings and equipment or a power-supply cord designed for the purpose of delivering energy from the source of electrical supply to the commercial modular distribution panelboard.

AUTHORITY:

Note: Authority cited: Section 18020, Health and Safety Code. Reference: Section 18055, Health and Safety Code.

§ 4383. Low-Voltage Systems.

(a) Low-voltage circuits furnished and installed by the commercial modular manufacturer are subject to this subarticle and the requirements of the California Code of Regulations, Title 24, Part 3, California Electrical Code (CEC), Articles 720 and 725.

AUTHORITY:

Note: Authority cited: Section 18020, Health and Safety Code. Reference: Section 18055, Health and Safety Code.

§ 4387. Combination Electrical Systems.

(a) Wiring suitable for connection to a battery or direct-current supply source shall be permitted to be connected to a 120-volt source provided that the entire wiring system and equipment are rated and installed in full conformity to the requirements of this subarticle governing 120-volt electrical systems. Circuits fed from alternating current transformers shall not supply direct-current appliances.

(b) The 120-volt alternating current side of the voltage converter shall be wired in full conformity with requirements for 120-volt electrical systems except for converters supplied as an integral part of an approved appliance.

(c) All converters and transformers shall be listed for use in recreational vehicles and designed or equipped to provide over-temperature protection. To determine the converter rating, the following formula shall be applied to the total connected load, including average battery charging rate, of all 12-volt equipment:

(1) The first 20 amperes of load at 100 percent.

(2) Plus, the second 20 amperes of load at 50 percent.

(3) Plus, all load above 40 amperes at 25 percent.

(d) Fixtures or appliances having both 120-volt and low-voltage connections shall be listed or approved for dual voltage.

(e) Autotransformers shall not be used.

(f) When a unit is equipped with a 120-volt or 120/240-volt alternating-current system and/or a low-voltage system, receptacles and plug caps of the low-voltage systems shall differ in configuration from those of the 120- or 120/240-volt system. When a unit equipped with a battery or direct-current system has an external connection for low-voltage power, the receptacle shall have a configuration that will not accept 120-volt power.

AUTHORITY:

Note: Authority cited: Section 18020, Health and Safety Code. Reference: Section 18055, Health and Safety Code.

§ 4389. Fuel-Fired Engine Driven Generator Units.

(a) All fuel-fired engine driven generators shall be tested, listed and labeled in accordance with nationally recognized standards by an approved testing agency.

(b) Fuel-fired engine driven generators shall be installed in accordance with the equipment manufacturer's installation instructions and this subarticle. A copy of the installation instructions shall be provided in the commercial modular.

(c) Generator units shall be mounted in a manner so that adequate structural support from the commercial modular frame is provided for the equipment. The equipment shall be secured in place by a method that will preclude displacement from vibration and road shock.

(d) Generator unit compartments shall be designed and installed to provide a vapor-tight separation between the compartment and the interior areas of the commercial modular.

(e) Generator unit compartments shall be constructed of galvanized steel, not less than 0.0299 inch (0.759 mm) thick. Seams and joints shall be lapped, mechanically secured and made airtight to the interior of the commercial modular. Alternate materials and methods of construction may be used if they provide equivalent quality, strength, effectiveness, fire resistance, durability and safety and are approved pursuant to this section.

(f) Fuel-fired engine exhaust systems, fuel-supplies, electrical conduit, cables, conductors and equipment shall not penetrate any area of the compartment that separates the compartment from the interior of the commercial modular. Electrical conduit, cables and conductors penetrating the compartment in areas other than those that separate the compartment from the interior of the commercial modular, shall be protected by the use of tight fitting grommets.

(g) Compartments shall be provided with ventilation. The type, amount and location of compartment ventilation shall be provided in accordance with the equipment manufacturer's installation instructions.

(h) Except as provided by the equipment manufacturer's installation instructions, fuel-fired engine exhaust systems shall be separated by a minimum of 1 1/2 inches from any combustible material or shall be insulated or shielded so that the exhaust system does not raise the temperature of any combustible material to more than 194 degrees F (90 degrees C). Each exhaust system shall be provided with an effective spark arrester and shall not terminate adjacent to the commercial modular gasoline filler spout. Exhausts shall terminate beyond the periphery of the commercial modular.

(i) Any generator shall be mounted in a manner to provide an effective bond to the commercial modular chassis. Listed equipment shall be installed to ensure that the current-carrying conductors from the generator and from an outside source are not connected to the commercial modular circuits at the same time.

(j) Supply conductors from a generator to a junction box or distribution panelboard shall be of the stranded type installed in flexible metal conduit or equivalent mechanical protection.

AUTHORITY:

Note: Authority cited: Section 18015, Health and Safety Code. Reference: Sections 18025, 18028 and 18029.5, Health and Safety Code.

§ 4390. Dual Supply.

(a) Where a dual-supply system, consisting of a generator and provisions for connecting to an outside source is installed, the feeder from the generator shall be protected by an overcurrent protective device.

(b) The two supply sources shall not be required to be of the same capacity.

(c) If the AC generator source exceeds 30 amperes, 115 volts, it shall be permissible to wire either as a 115-volt system or a 115/230-volt system, provided an overcurrent protective device of the proper rating is installed in the feeder circuit.

(d) The external power-supply assembly shall be permitted to be less than the calculated load but not less than 30 amperes and shall have over-current protection not greater than the capacity of the external power-supply assembly.

AUTHORITY:

Note: Authority cited: Section 18020, Health and Safety Code. Reference: Section 18055, Health and Safety Code.

§ 4391. Distribution Panelboard.

Each commercial modular unit shall have an appropriately rated branch circuit panelboard, and a main disconnect shall be installed when required by Article 230 of the California Code of Regulations, Title 24, Part 3, California Electrical Code (CEC).

AUTHORITY:

Note: Authority cited: Section 18020, Health and Safety Code. Reference: Section 18055, Health and Safety Code.

§ 4394. Identification of Electrical System.

Each commercial modular shall have a label permanently affixed on or adjacent to the distribution panelboard indicating the voltage and calculated load of the electrical system in the unit. The information on the label shall remain legible for the life of the commercial modular and shall conform to the requirements of Subsections (a) through (c) of Section 4031 of this subchapter.

AUTHORITY:

Note: Authority cited: Section 18020, Health and Safety Code. Reference: Section 18055, Health and Safety Code.

§ 4396. Wiring of Expandable or Multiple Units.

Expandable or multiple commercial modular sections shall have permanent type wiring methods and materials used for connecting such sections to each other.

AUTHORITY:

Note: Authority cited: Section 18015, Health and Safety Code. Reference: Section 18025, Health and Safety Code.

§ 4397. Outdoor or Underchassis Wiring, 120–Volts or Over.

Where exterior or underchassis wiring is 120–volt (nominal) or more and is exposed to moisture or possible mechanical damage, the wiring shall be protected by rigid metal conduit, intermediate metal conduit or electrical metallic tubing that is closely routed against frames and equipment enclosures.

AUTHORITY:

Note: Authority cited: Section 18015, Health and Safety Code. Reference: Section 18025, Health and Safety Code.

§ 4398. Rodent Resistance.

All exterior openings around wiring, conduit, cable, boxes and equipment shall be sealed to resist the entrance of rodents.

§ 4400. Equipment Mounting.

Electrical equipment shall be securely mounted to prevent displacement during transit.

§ 4402. Grounding.

Each commercial modular and its grounding and bonding system shall comply with the requirements found in the California Code of Regulations, Title 24, Part 3, California Electrical Code (CEC), Article 250 and shall comply with the requirements for mobilehomes found in the CEC, Article 550.16.

AUTHORITY:

Note: Authority cited: Section 18015, Health and Safety Code. Reference: Sections 18025 and 18028, Health and Safety Code.

§ 4404. Receptacle Outlets Requiring Ground–Fault Circuit Protection.

Each commercial modular shall comply with Ground-Fault Circuit-Interrupter Protection requirements found in the California Code of Regulations, Title 24, Part 3, California Electrical Code (CEC), Article 210.8.

AUTHORITY:

Note: Authority cited: Section 18015, Health and Safety Code. Reference: Sections 18025 and 18028, Health and Safety Code.

Subarticle 4. Mechanical

§ 4414. Minimum Requirements.

(a) The provisions of this subarticle relating to mechanical equipment and installations apply to all commercial coaches manufactured, sold, offered for sale, rent or lease within this State. The provisions of this subarticle are also applicable to the alteration or conversion of mechanical equipment and installations in any commercial coach bearing or required to bear a department insignia of approval.

(b) Mechanical equipment, products, systems and installations in a commercial modular shall conform with the California Code of Regulations, Title 24, Part 4, California Mechanical Code (CMC), to the provisions of this subarticle, including standards for listing and labeling, and compliance with manufacturer's installation instructions.

AUTHORITY:

Note: Authority cited: Section 18055, Health and Safety Code. Reference: Sections 18025 and 18028, Health and Safety Code.

§ 4415. Definitions.

(a) Definitions contained in the California Code of Regulations, Title 24, Part 4, California Mechanical Code (CMC) and the following definitions shall apply to this subarticle.

(b) Automatic Pilot Device. A device employed with gas–burning equipment that will either automatically shut off the gas supply to the burner(s) being served or automatically actuate, electrically or otherwise, a gas shutoff device when the pilot flame is extinguished.

(c) Direct System. A system in which the evaporator is in direct contact with the material or space refrigerated, or is located in air–circulating passages communicating with such spaces.

(d) Expansion Coil. An evaporator constructed of pipe or tubing.

(e) Gas. Fuel gas, such as natural gas, manufactured gas, undiluted liquefied petroleum gas (vapor phase only), liquefied petroleum air–gas mixtures or mixtures of these gases which would ignite in the presence of oxygen.

(f) Gas–Supply Connection. The terminal end of the gas–piping system to which a gas–supply connector is attached.

(g) Input Rating. The maximum fuel–burning capacity of any warm–air furnace, heater or burner expressed in British thermal units per hour.

(h) Quick–Disconnect Device. A hand–operated device which provides a means for connecting and disconnecting an appliance or an appliance connector to a gas supply and which is equipped with an automatic means to shut off the gas supply when the device is disconnected.

(i) Refrigerant. A substance used to produce refrigeration by its expansion or vaporization.

(j) Roof Jack. That portion of a heater flue or vent assembly, including the cap, insulating means, flashing and ceiling plate, located in and above the roof.

AUTHORITY:

Note: Authority cited: Section 18015, Health and Safety Code. Reference: Sections 18025 and 18028, Health and Safety Code.

§ 4473. Appliances.

(a) All heat-producing appliances used in commercial modulars shall be specifically listed, labeled, or certified by an approved testing agency in accordance with nationally recognized standards, except as provided in this article. Heat-producing appliances, vents, and chimneys shall be installed in accordance with the terms of their listing and the manufacturer's instructions.

(b) In addition, appliances and equipment for heating of grease or other liquids shall be designed in such a manner that means are provided to prevent the spillage of liquids when the unit is in transit.

AUTHORITY:

Note: Authority cited: Section 18015, Health and Safety Code. Reference: Section 18025, Health and Safety Code.

§ 4495. Expandable or Multiple-Section Commercial Modular Ducts.

(a) Expandable or multiple-section commercial modulars may have ducts of the heating system installed in the various units. The points of connection must be so designed and constructed that when sections are fully expanded or coupled, the resulting duct joint will conform to the requirements of this subarticle.

(b) Crossover duct installations shall be designed to be effectively supported. The installation shall be designed to provide a minimum clearance of four (4) inches between the bottom of the ducts and the ground.

AUTHORITY:

Note: Authority cited: Section 18015, Health and Safety Code. Reference: Section 18025, Health and Safety Code.

Subarticle 5. Plumbing

§ 4514. Minimum Requirements.

(a) The provisions of this subarticle relating to plumbing equipment and installations apply to all commercial modulars sold, offered for sale, rented, or leased within this State. The provisions of this subarticle also are applicable to the alteration or conversion of plumbing equipment and installations in any commercial modular bearing or required to bear a department insignia of approval.

(b) Plumbing systems, materials, fixtures, products, equipment, and installations in or on a commercial modular shall be in compliance with the sections and tables of the California Code of Regulations, Title 24, Part 5, California Plumbing Code (CPC), Chapters 2 through 15 to include Appendices A, B, and I, and to the provisions of this subarticle including standards for listing and labeling and compliance with manufacturer's listing instructions.

(1) Exemption: Section 411.4 of the California Code of Regulations, Title 24, Part 5, California Plumbing Code.

AUTHORITY:

Note: Authority cited: Sections 18015 and 18025, Health and Safety Code. Reference: Sections 18025 and 18028, Health and Safety Code.

§ 4515. Definitions.

(a) Definitions contained in the California Code of Regulations, Title 24, Part 5, California Plumbing Code (CPC) and the following definitions shall apply to this subarticle.

(b) Drain Outlet. The discharge end of the unit main drain.

(c) LPG (LP Gas/Liquefied Petroleum Gas). Means and includes a material composed predominantly of any of the following hydrocarbons or mixtures of them: propane, propylene, butanes (normal butane or isobutene) and butylenes. When reference is made to "LPG" or "LP Gas," it shall refer to petroleum gases in either liquid or gaseous state.

(d) Toilet—Mechanical Seal. A toilet designed with a water flushing device and mechanical sealed trap.

(e) Toilet—Recirculating Chemical. A self-contained toilet in which waste is recirculated and chemically treated.

(f) Waste Holding Tank. A liquid tight tank for the temporary retention of body and/or liquid waste.

(g) Water Supply Connection. The fitting or point of connection in the unit water distribution system designed for connection to a water supply.

(h) Water Storage Tank. A tank designed for the purpose of storing potable water.

AUTHORITY:

Note: Authority cited: Section 18015, Health and Safety Code. Reference: Sections 18025 and 18028, Health and Safety Code.

§ 4516. LPG — Construction and Marking of Containers.

Containers shall be constructed and marked in accordance with the specifications for LPG containers of the U.S. Department of Transportation (DOT) or An International Code, 2007 ASME Boiler & Pressure Vessel Code (BPVC– VIII, 2007), incorporated by reference herein. ASME containers shall have a design pressure of not less than 312.5 pounds per square inch gauge (psig).

AUTHORITY:

Note: Authority cited: Sections 18015 and 18025, Health and Safety Code. Reference: Section 18028, Health and Safety Code.

§ 4516.1. LPG — Location and Installation of Containers and Systems.

(a) No LP-gas container shall be installed or provision made for installing or storing, even temporarily, inside any commercial modular, except for listed, completely self-contained hand torches, lanterns, or similar equipment with containers having a maximum water capacity of not more than two and one-half (2 1/2) pounds (approximately one (1) pound LPG capacity).

(b) Where provided, containers, control valves and regulating equipment shall be mounted on the hitch, installed in a single compartment that is vapor-tight to the inside of the commercial modular and accessible only from the outside, or mounted on the frame. Compartments shall be constructed of galvanized steel, not less than 0.0299 inch (0.759 mm) thick. Seams and joints shall be lapped, mechanically secured and made airtight to the interior. Alternate materials and methods of construction may be used if they provide equivalent quality, strength, effectiveness, fire resistance, durability and safety. Fuel-gas tubing from the gas-supply connection may pass through the wall, floor or ceiling of the compartment. Where such tubing passes through any wall, floor or ceiling, such tubing shall be protected by the use of bulkhead fittings or equivalent devices which shall snugly fit both the tubing and the hole in the compartment through which the tubing passes.

(c) Containers and container carriers shall be securely mounted, located, and installed, so as to minimize the possibility of damage to containers, their appurtenances or contents as follows:

(1) Containers shall be installed with as much road clearance as practicable but not less than the minimum road clearance under maximum spring deflection. This clearance shall be measured to the bottom of the container, or to the lowest fitting, support or attachment on the container or container housing, whichever is lower.

(2) Fuel containers and container carriers shall be securely mounted to prevent jarring-loose, slipping or rotating, and fastenings shall be designed and constructed to withstand, without permanent visible deformation, static loading in any direction equal to four times the weight of the container filled with fuel. When containers are mounted within a commercial modular, the securing of the container to the unit shall comply with this provision. Any hoods, domes or removable portions of the housing or cabinet shall be provided with means to keep them firmly in place in transit.

(3) All container valves, appurtenances and connections shall be adequately protected to prevent damage due to accidental contacts with stationary objects, from loose objects, stones, mud, or ice, thrown up from the ground or floor, and from damage due to overturn of the commercial modular or similar accident. In the case of permanently mounted containers, this provision may be met by the location on the commercial modular, with parts of the commercial modular furnishing the protection. On portable (removable) containers the protection for container valves and connections shall be permanently attached to the container.

(d) Access to a compartment containing LP gas tanks or cylinders shall be by a door or opening in the exterior wall of the commercial modular. Access doors or panels of compartments shall not be equipped with locks or require special tools or knowledge to open. The compartment shall be ventilated with two vents having an aggregate area of not less than two percent (2%) of the floor area of the compartment and shall open unrestricted to the outside atmosphere. The required vents shall be equally distributed between the floor and ceiling of the compartment. If the bottom vent is located in the access door or wall, it shall be flush with the floor level of the compartment. The top vent shall be located in the access door or wall with the bottom of the vent not more than twelve (12) inches below the ceiling level of the compartment. All vents shall have an unrestricted discharge to the outside atmosphere.

AUTHORITY:

Note: Authority cited: Section 18015, Health and Safety Code. Reference: Section 18025, Health and Safety Code.

§ 4516.3. LPG — Container Valves and Accessories.

(a) Containers and safety relief valves located less than eighteen (18) inches (457 mm) from any component of an internal combustion engine exhaust system shall be shielded by a frame member or by a noncombustible baffle to dissipate radiated or convected heat with an air space on both sides of the frame member or baffle.

(b) Each container shall have a listed two-stage regulator. Such regulators shall have a capacity not less than the total input of all installed LP-Gas appliances. The regulator shall be securely mounted by attaching it to the container valve, container, supporting standard or wall. If the regulator is not mounted by the manufacturer, instructions for proper installation shall be provided. Regulators shall be installed so the regulator vent opening will not be affected by the elements such as sleet, snow, freezing rain, ice, mud or by wheel spray.

(c) A listed LPG excess flow valve shall be provided in accordance with the following:

(1) The inlet or outlet of each service valve of a permanently mounted container shall be equipped with a listed excess flow valve or listed Petroleum, Oil, and Lubricant (POL) adapter with an integral excess flow valve.

(2) Removable Department of Transportation (DOT) type containers shall have furnished or installed a listed POL adapter with an integral listed excess flow valve.

AUTHORITY:

Note: Authority cited: Section 18015, Health and Safety Code. Reference: Section 18025, Health and Safety Code.

§ 4516.5. LPG — Gas Container Safety Relief Devices.

(a) Department of Transportation (DOT) containers shall be provided with safety relief devices as required by the regulations of the U. S. Department of Transportation. ASME containers shall be provided with relief valves in accordance with Subsection 2.3.2 of the Liquefied Petroleum Gas Code (NFPA No. 58, 2001 (ANSI)), incorporated by reference herein. Safety relief valves shall have direct communication with the vapor space of the vessel.

(b) Final stage regulators shall be equipped on the low pressure side with one or both of the following:

(1) A relief valve having a start-to-discharge pressure setting of not less than 1.7 times and not more than three (3) times the delivery pressure of the regulator.

(2) A shutoff device that shuts the gas off at the inlet side when the downstream pressure reaches the overpressure limits of not less than 1.7 times and not more than three (3) times the delivery pressure of the regulator. Such a device shall not open to permit flow of gas until it has been manually reset.

(c) Systems installed outside of a commercial modular shall be so located that discharge from safety relief devices shall be not less than three (3) feet (0.9m) horizontally away from any openings into the commercial modular and from all the internal combustion engine exhaust termination(s) below the level of such discharge. When a system is located in a recess vaportight to the inside, vent openings to the exterior shall be not less than three (3) feet (0.9m) horizontally away from any opening into the interior of the unit below the level of these vents.

(d) Systems located near doors without screens or openable windows below the level of the gas compartment vents are exempt from the requirement of Subsection (c) of this section.

(e) Safety relief valves located within liquefied petroleum gas (LPG) container compartments may be less than three (3) feet (0.9m) from openings provided:

(1) The bottom vent of the compartment is at the same level or lower than the bottom of any opening into the interior.

(2) The compartment is not located on the same wall plane as the opening(s) and is at least two (2) feet (0.6096m) horizontally from such openings.

AUTHORITY:

Note: Authority cited: Section 18015, Health and Safety Code. Reference: Section 18025, Health and Safety Code.

§ 4516.7. LPG — Container Mounting.

(a) Housings and enclosures shall be designed to provide proper ventilation at least equivalent to that specified in Section 4516.1 of this subarticle.

(b) Doors, hoods, domes or portions of housings and enclosures required to be removed or opened for replacement of containers shall incorporate means for clamping them firmly in place and preventing them from working loose during transit.

(c) Provisions shall be incorporated in the assembly to hold the containers firmly in position and prevent their movement during transit.

(d) Containers shall be mounted on a substantial support or a base secured firmly to the commercial modular chassis. Neither the container nor its support shall extend below the axle.

AUTHORITY:

Note: Authority cited: Section 18015, Health and Safety Code. Reference: Section 18025, Health and Safety Code.

§ 4516.9. LPG — System Design and Service-Line Pressure.

(a) Systems shall be of the vapor-withdrawal type.

(b) Vapor, at a pressure not over eighteen (18) inches water column, shall be delivered from the container into the gas-supply connection.

(c) Container openings for vapor withdrawal shall be located in the vapor space when the container is in service or shall be provided with a suitable internal withdrawal tube which communicates with the vapor space in or near the highest point in the container when it is mounted in service position, with the commercial modular on a level surface. Containers shall be permanently and legibly marked in a conspicuous manner on the outside to show the correct mounting position and the position of the service outlet connection. The method of mounting in place shall be such as to minimize the possibility of an incorrect positioning of the container.

AUTHORITY:

Note: Authority cited: Section 18015, Health and Safety Code. Reference: Section 18025, Health and Safety Code.

§ 4517. Gas Piping/Tubing — Systems.

The installation of all gas piping or tubing systems attached to any commercial modular sold, offered for sale, rent or lease within the state shall comply with this subarticle except for piping or tubing designated as an integral part of an appliance or to gas appliance connectors.

AUTHORITY:

Note: Authority cited: Section 10815, Health and Safety Code. Reference: Section 10825, Health and Safety Code.

§ 4517.1. Gas Piping/Tubing — Piping Design.

A commercial modular designed for a fuel gas piping system shall be equipped with a system that is designed for LP gas only, combination LP-natural-gas, or natural gas only.

AUTHORITY:

Note: Authority cited: Section 18015, Health and Safety Code. Reference: Section 18025, Health and Safety Code.

§ 4517.2. Gas Piping/Tubing — Expandable or Multiple Commercial Modulares.

Where fuel gas piping is to be installed in more than one (1) section of an expandable or multiple-section commercial modular, the design and construction shall comply with all of the following:

(a) There shall be only one (1) point of crossover between each section, which shall be readily accessible from the exterior of the commercial modular.

(b) The connector between sections shall be of approved pipe or a listed flexible connector for exterior use and sized in accordance with Section 4517.3 of this subarticle.

(c) Protective caps or plugs shall be permanently attached to the unit by means of a metal chain and used to seal the system when not in use.

AUTHORITY:

Note: Authority cited: Section 18015, Health and Safety Code. Reference: Section 18025, Health and Safety Code.

§ 4517.3. Gas Piping/Tubing — Supply Sizing.

The natural gas supply connection(s) between the gas piping inlet and the gas meter shall not be less than three-fourth (3/4) inch nominal pipe size.

AUTHORITY:

Note: Authority cited: Section 18015, Health and Safety Code. Reference: Section 18025, Health and Safety Code.

§ 4517.4. Gas Piping/Tubing — Concealed Areas.

(a) Steel or copper tubing shall not be run inside walls, floors, ceilings or partitions. Where steel or copper tubing passes through walls, floors, ceilings, partitions or similar installations, such tubing shall be protected by the use of weather-resistant grommets that shall snugly fit both the tubing and the hole through which the tubing passes.

(b) Corrugated Stainless Steel Tubing (CSST) shall be installed in accordance with its listing and labeling.

AUTHORITY:

Note: Authority cited: Section 18015, Health and Safety Code. Reference: Section 18025, Health and Safety Code.

§ 4517.5. Piping/Tubing — Concealed Joints.

No gas piping or tubing joints shall be located in any floor, wall, ceiling, partition or similar concealed construction space.

AUTHORITY:

Note: Authority cited: Section 18015, Health and Safety Code. Reference: Section 18025, Health and Safety Code.

§ 4517.6. Gas Piping/Tubing — Gas-Supply Connection Cap.

A protective cap or plug permanently attached to the unit shall be installed to effectively close the gas-supply connection when not in use on LPG, combination LP-natural or natural-gas-piping or tubing systems.

AUTHORITY:

Note: Authority cited: Section 18015, Health and Safety Code. Reference: Section 18025, Health and Safety Code.

§ 4517.8. Waste Holding Tanks.

Waste holding tanks installed in plumbing systems shall comply with the following:

(a) Tanks shall be listed to approved standards and securely installed in a location to be removable for service, repair or replacement without the necessity of removing permanent, structural, mechanical or electrical equipment.

(b) Minimum size of inlet connections shall be determined by the total number of fixtures to be connected to the tank.

Toilet connections shall be 3-inch minimum pipe size and shall extend vertically. The inlet fitting shall not extend downward into the tank more than 1 1/2 inches (38 mm). The toilet connection shall be designed to receive or conform to an approved shape closet flange of standard dimensions or other approved fitting.

(c) Body waste holding tank drain opening shall be a minimum 3-inch pipe size. Liquid waste holding tank drain opening shall be a minimum 1 1/2 inch pipe size. Drain openings shall be located at the lowest point in the tank.

A listed fullway valve shall be directly connected to the tank or installed in the drain pipe of the tank within 36 inches (915 mm) of the drain outlet.

(d) The tank shall be vented at the highest point in the top of the tank by one of the following methods:

(1) A 1 1/4 inch minimum diameter individual vent pipe extending undiminished in size through the roof.

(2) A wet vent serving as a drain provided the drain portion is increased one pipe size larger than the connected trap arm.

AUTHORITY:

Note: Authority cited: Section 18020, Health and Safety Code. Reference: Section 18055, Health and Safety Code.

§ 4518. Electrical Equipment.

- (a) All electrical equipment installed in combination with gas equipment shall be listed for the purpose intended.
- (b) Gas piping shall not be used for an electrical ground.

AUTHORITY:

Note: Authority cited: Section 18015, Health and Safety Code. Reference: Section 18025, Health and Safety Code.

§ 4519. Water Supply Connections.

A commercial modular equipped with a water distribution system designed for connection to an outside source shall have a water-supply connection which shall terminate within 18 inches of the outside wall of the commercial modular and shall be equipped with a watertight cap or plug, which shall be permanently attached to the unit for use during transportation or movement.

AUTHORITY:

Note: Authority cited: Section 18015, Health and Safety Code. Reference: Section 18025, Health and Safety Code

§ 4519.1. Potable Water Storage Tanks.

Potable water storage tanks installed in plumbing systems shall comply with the following:

(a) Tanks shall be listed to approved standards and installed in a location to be removable for service, repair or replacement without the necessity of removing permanent structural, mechanical or electrical equipment. Where the tank is installed in such a manner that it may be subject to road damage it shall be provided with mechanical protection.

(b) Non-pressure gravity tanks shall be equipped with a vent at the top of the tank. Vents and overflow pipe openings shall be protected from the entrance of dirt, insects and other contamination.

(c) Potable water storage tanks designed to be pressurized, shall be equipped with a listed air pressure relief valve set to open at not more than 125 pounds per square inch gauge (psig) (862 KPA) or in accordance with the tank manufacturer's instructions.

AUTHORITY:

Note: Authority cited: Section 18015, Health and Safety Code. Reference: Section 18025, Health and Safety Code.

§ 4520. Fuel Conversion.

Heat-producing appliances shall not be converted from one fuel to another unless converted in accordance with the terms of its listing.

AUTHORITY:

Note: Authority cited: Section 18015, Health and Safety Code. Reference: Section 18025, Health and Safety Code.

§ 4520.1. Securing.

Every appliance shall be secured in place to avoid displacement and movement from vibration and road shock.

AUTHORITY:

Note: Authority cited: Section 18015, Health and Safety Code. Reference: Section 18025, Health and Safety Code.

§ 4520.2. Testing After Appliances Are Connected.

After appliances are connected, the piping system shall be pressurized to not less than ten (10) inches nor more than fourteen (14) inches water column and the appliance connections tested for leakage with soapy water or bubble solution.

AUTHORITY:

Note: Authority cited: Section 18015, Health and Safety Code. Reference: Section 18025, Health and Safety Code.

§ 4521. Rodent Resistance.

All exterior openings around piping, tubing, ducts, plenums, chimneys and vents shall be sealed to resist the entrance of rodents.

AUTHORITY:

Note: Authority cited: Section 18015, Health and Safety Code. Reference: Section 18025, Health and Safety Code.

§ 4522. Oil Piping — General.

The installation of all oil piping systems attached to any commercial modular shall comply with this subarticle except piping approved as an integral part of an appliance.

AUTHORITY:

Note: Authority cited: Section 18015, Health and Safety Code. Reference: Section 18025, Health and Safety Code.

§ 4522.1. Oil Piping — Expandable or Multiple Commercial Modulares.

When a commercial modular is composed of multiple sections, or includes expandable rooms, the oil-piping system shall be located only in the section containing the oil-supply connection.

AUTHORITY:

Note: Authority cited: Section 18015, Health and Safety Code. Reference: Section 18025, Health and Safety Code.

§ 4522.2. Oil Piping — Materials.

All materials used for the installation, extension, alteration, or repair of any oil-piping system shall be new and free from defects or internal obstructions. The system shall be made of materials having a melting point of not less than 1,450 degrees Fahrenheit (787.8 degrees Celsius), except as provided in Section 4522.4 of this subarticle. They shall consist of one (1) or more of the following materials:

(a) Steel or wrought-iron pipe shall comply with American National Standard for Wrought-Steel or Wrought-Iron Pipe, B36.10-1970. Threaded copper or brass pipe in iron pipe sizes may be used.

(b) Fittings for oil piping shall be wrought iron, malleable iron, steel, or brass (containing not more than 75 percent copper).

(c) Copper tubing shall be annealed type, Grade K or L, conforming to the specifications for Seamless Copper Water Tube (ASTM B88-72), or shall comply with the specifications for Seamless Copper Tube for Air Conditioning and Refrigeration Field Service, (ASTM B280-73).

(d) Steel tubing shall have a minimum wall thickness of 0.032 inch for diameters up to one-half (1/2) inch and 0.049 inch for diameters one-half (1/2) inch and larger. Steel tubing shall be constructed in accordance with the Specification for Electric-Resistance Welded Coiled Steel Tubing for Gas and Fuel Oil Lines (ASTM A539-73) and shall be externally corrosion protected.

AUTHORITY:

Note: Authority cited: Section 18015, Health and Safety Code. Reference: Section 18025, Health and Safety Code.

§ 4522.3. Oil Piping — Size.

The minimum size of all fuel-oil tank piping connecting outside tanks to the appliances shall be no smaller than three-eighths (3/8) inch outside diameter copper tubing or one-fourth (1/4) inch iron pipe size. In those cases where No. 1 fuel oil is used with an automatic pump (fuel lifter), one-fourth (1/4) inch outside diameter copper tubing may be used if specified by the pump manufacturer.

AUTHORITY:

Note: Authority cited: Section 18015, Health and Safety Code. Reference: Section 18025, Health and Safety Code.

§ 4522.4. Oil Piping — Joints.

All pipe joints in the piping system, unless welded or brazed, shall be threaded joints that comply with ANSI Standards Pipe Threads (except Dryseal) B2.1-1968. Right and left nipples or couplings shall not be used. Unions, if used, shall be of ground joint type. The material used for welding or brazing pipe connections shall have a melting temperature in excess of 1,000 degrees Fahrenheit (537.8 degrees Celsius).

AUTHORITY:

Note: Authority cited: Section 18015, Health and Safety Code. Reference: Section 18025, Health and Safety Code.

§ 4522.5. Oil Piping — Tubing Joints.

Tubing joints shall be made with either a single or a double flare of the proper degree, as recommended by the tubing manufacturer, or with other listed vibration-resistant fittings, or joints may be brazed with material having a melting point exceeding 1,000 degrees Fahrenheit (537.8 degrees Celsius). Metallic ball sleeve compression-type tubing fittings shall not be used.

AUTHORITY:

Note: Authority cited: Section 18015, Health and Safety Code. Reference: Section 18025, Health and Safety Code.

§ 4522.6. Oil Piping — Pipe-Joint Compound.

Threaded joints shall be made tight with listed pipe-joint compound which shall be applied to the male threads only.

AUTHORITY:

Note: Authority cited: Section 18015, Health and Safety Code. Reference: Section 18025, Health and Safety Code.

§ 4522.7. Oil Piping — Grade of Piping.

Fuel-oil piping installed in conjunction with gravity feed systems to oil-heating equipment shall slope in a gradual rise upward from a central location to both the oil tank and the appliance in order to eliminate air locks.

AUTHORITY:

Note: Authority cited: Section 18015, Health and Safety Code. Reference: Section 18025, Health and Safety Code.

§ 4522.8. Oil Piping — Testing for Leakage.

Before operating the system, piping and tank installations shall be checked for oil leaks with fuel oil of the same grade that will be burned in the appliance. No other material shall be used for testing fuel-oil tanks and piping. Tanks shall be filled to maximum capacity for the final check for oil leakage.

AUTHORITY:

Note: Authority cited: Section 18015, Health and Safety Code. Reference: Section 18025, Health and Safety Code.

§ 4523. Oil Tanks.

Oil tanks and listed automatic pumps (oil lifters) installed for gravity flow of oil to heating equipment shall be installed so that the top of the tank is no higher than eight (8) feet above the appliance oil control and the bottom of the tank is not less than eighteen (18) inches above the appliance oil control.

AUTHORITY:

Note: Authority cited: Section 18015, Health and Safety Code. Reference: Section 18025, Health and Safety Code.

§ 4523.1. Oil Tank — Auxiliary Oil-Storage Tank.

Oil-supply tanks affixed to a commercial modular shall be so located as to require filling and draining from the outside and shall be in a place readily available for inspection. If the fuel-supply tank is located in a compartment of a commercial modular, the compartment shall be ventilated at the bottom to permit diffusion of vapors and shall be insulated from the structural members of the body. Tanks so installed shall be provided with an outside fill and vent pipe and an approved liquid-level gauge.

AUTHORITY:

Note: Authority cited: Section 18015, Health and Safety Code. Reference: Section 18025, Health and Safety Code.

§ 4523.2. Oil Tank — Shutoff Valve.

A readily accessible and listed manual shutoff valve shall be installed at the outlet of an oil-supply tank. The valve shall be installed to close against the supply.

AUTHORITY:

Note: Authority cited: Section 18015, Health and Safety Code. Reference: Section 18025, Health and Safety Code.

§ 4523.3. Oil Tank — Fuel-Oil Filters.

All oil tanks, except for integrally mounted tanks, shall be equipped with a listed oil filter or strainer located downstream from the tank shutoff valve. The fuel-oil filter or strainer shall contain a sump with a drain for the entrapment of water.

AUTHORITY:

Note: Authority cited: Section 18015, Health and Safety Code. Reference: Section 18025, Health and Safety Code.