

**CITY OF TEMPE AMENDMENTS TO THE  
2003 INTERNATIONAL MECHANICAL CODE  
ARTICLE V, SECTION 8-500 OF THE  
TEMPE CITY CODE**

**Sec. 201. GENERAL.**

[§ 201.4 is hereby amended as follows:]

"*Section 201.4. Terms not defined.* Where terms are not defined through the methods authorized by this chapter, such terms shall have ordinarily accepted meanings such as the context implies. Webster's Third New International Dictionary of the English Language, Unabridged, shall be considered as providing ordinarily accepted meanings."

**Sec. 202. GENERAL DEFINITIONS.**

[§ 202 is hereby amended as follows:]

"**OCCUPANCY.** The purpose for which a building, or portion thereof, is utilized or occupied as classified by the *International Building Code* as adopted.

"**SMOKE DETECTOR.** An approved listed and labeled device that senses visible or invisible particles of combustion.

"**UNUSUALLY TIGHT CONSTRUCTION.** Construction meeting the following requirements:

- "1. Walls exposed to the outside atmosphere having a continuous water vapor retarder with a rating of 1 perm (57 ng/s • m<sup>2</sup> • Pa) or less with openings gasketed or sealed;
- "2. Openable windows and doors with weather-stripping; and
- "3. Caulking or sealants are applied to areas, such as joints around window and door frames, between sole plates and floors, between wall-ceiling joints, between wall panels, at penetrations for plumbing, electrical and gas lines, and at other openings."

**Sec. 301. GENERAL.**

[§ 301.2 is hereby amended as follows:]

"*Section 301.2. Energy Utilization.* Heating, ventilating and air-conditioning systems of all structures shall be designed and installed for efficient utilization of energy."

**Sec. 303. EQUIPMENT AND APPLIANCE LOCATION.**

[§ 303.3 is hereby amended as follows:]

"Section 303.3. *Prohibited locations.* Fuel-fired appliances shall not be located in, or obtain combustion air from, any of the following rooms or spaces:

1. Sleeping rooms.
2. Bathrooms.
3. Toilet rooms.
4. Storage closets.
5. Surgical rooms.
6. Any room operating under negative pressure unless the appliances are listed for that use."

**"Exception:** This section shall not apply to the following appliances:

- "1. Direct-vent appliances that obtain all combustion air directly from the outdoors.
- "2. Solid fuel-fired appliances provided that the room is not a confined space and the building is not of unusually tight construction.
- "3. Appliances installed in a dedicated enclosure in which all combustion air is taken directly from the outdoors, in accordance with Section 703. Access to such enclosure shall be through a solid door, weather-stripped and equipped with an approved self-closing device."

### **Sec. 303. EQUIPMENT AND APPLIANCE LOCATION.**

[§ 303.7 is hereby amended as follows:]

"Section 303.7. *Pit locations.* Appliances installed in pits or excavations shall not come in contact with the surrounding soil. The sides of the pit or excavation shall be held back a minimum of 12 inches (305 mm) from the appliance. Where the depth exceeds 12 inches (305 mm) below adjoining grade, the walls of the pit or excavation shall be lined with concrete or masonry. Such concrete or masonry shall extend a minimum of 4 inches (102 mm) above to adjacent grade and shall have sufficient lateral load-bearing capacity to resist collapse. The appliance shall be protected from flooding in an approved manner. Liquefied petroleum (LPG) appliances shall not be installed in a pit, attic or other location that would cause a ponding or retention of gas."

### **Sec. 304. INSTALLATION.**

[§ 304.3, exceptions added as follows:]

**"Exceptions:**

- "1. Elevation of the ignition source is not required for appliances that are listed as flammable vapor resistant and for installation without elevation.

- "2. Direct-vent appliances that obtain all combustion air directly from the outdoors.
- "3. Clothes dryers installed in private garages."

**Sec. 304. INSTALLATION.**

[§ 304.9 is hereby amended as follows:]

"*Section 304.9 Clearances from grade.* Equipment and appliances installed at grade level shall be supported on a level concrete slab or other approved material extending a minimum of 3 inches (76 mm) above finished grade or shall be suspended a minimum of 6 inches (152 mm) above finished grade."

**Sec. 307. CONDENSATE DISPOSAL.**

[§ 307.2.1 is hereby amended as follows:]

"*Section 307.2.1. Condensate disposal.* Condensate from all cooling coils and evaporators shall be conveyed from the drain pan outlet to an approved place of disposal. Condensate drain systems shall not discharge into or over a sidewalk or walkway so as to cause a nuisance."

**Sec. 307. CONDENSATE DISPOSAL.**

[§ 307.2.2 is hereby amended as follows:]

"*Section 307.2.2. Drain pipe materials and sizes.* Components of the condensate disposal system shall be cast iron, galvanized steel, copper, cross-linked polyethylene, polybutylene, polyethylene, ABS, CPVC or PVC pipe or tubing. All components shall be selected for the pressure and temperature rating of the installation. Condensate waste and drain lines size shall be not less than 3/4 inch (19 mm) internal diameter and shall not decrease in size from the drain pan connection to the place of disposal. Where the drain pipes for more than one unit are manifolded together for condensate drainage, the pipe or tubing shall be sized in accordance with an approved method. All horizontal sections of drain and waste piping shall be installed in a uniform alignment at a uniform slope in the direction of discharge of not less than one-eighth unit vertical in 12 units' horizontal (one-percent slope)."

**Sec. 312. HEATING AND COOLING LOAD CALCULATIONS.**

[§ 312.1 is hereby amended as follows:]

"*Section 312.1. Load calculations.* Heating and cooling system design loads for the purpose of sizing systems, appliances and equipment shall be determined in accordance with the procedures described in the ASHRAE *Handbook of Fundamentals*. Heating and cooling loads shall be adjusted to account for load reductions that are achieved when energy recovery systems are utilized in the HVAC system in accordance with the ASHRAE *Handbook - HVAC Systems and Equipment*. Alternatively, design loads shall be determined by an approved equivalent computation procedure."

**Sec. 401. GENERAL.**

[§ 401.5.1 is hereby amended as follows:]

"*Section 401.5.1. Intake openings.* Mechanical and gravity outdoor air intake openings, shall be located a minimum of 10 feet (3048 mm) from any hazardous or noxious contaminant such as vents, chimneys, plumbing vents, streets, alleys, parking lots and loading docks, except as otherwise specified in this code. Where a source of contaminant is located within 10 feet (3048 mm) of an intake opening, such opening shall be located a minimum of 2 feet (610 mm) below the contaminant source. All outside air intake openings shall be located on secure roofs or other secure locations as approved by the code official."

**Sec. 403. MECHANICAL VENTILATION.**

[§ 403.2.2 is hereby amended as follows:]

"*Section 403.2.2. Transfer air.* Except where recirculation from such spaces is prohibited by Table 403.3, air transferred from occupied spaces is not prohibited from serving as makeup air for required exhaust systems in such spaces as kitchens, baths, toilet rooms and elevators. The amount of transfer air and exhaust air shall be sufficient to provide the flow rates as specified in Sections 403.3 and 403.3.1. The required outdoor air rates specified in Table 403.3 shall be introduced directly into such spaces or into the occupied spaces from which air is transferred or a combination of both."

**Sec. 501. GENERAL.**

[§ 501.5 is hereby added as follows:]

"*Section 501.5. Duct Terminations.* Where an exhaust system termination point is not specified in this chapter, Section 502.7.3.6 may be used."

**Sec. 506. COMMERCIAL KITCHEN HOOD VENTILATION SYSTEM DUCTS AND EXHAUST EQUIPMENT.**

[§ 506.3.10, exception 2, is hereby amended as follows:]

"2. A duct enclosure for a grease duct that penetrates only a nonfire-resistant-rated roof/ceiling assembly and only passes through the attic space may have the total thickness of the required fire-resistive material installed on the duct side of the duct enclosure."

**Sec. 603. DUCT CONSTRUCTION AND INSTALLATION.**

[§ 603.9 is hereby amended as follows:]

"*Section 603.9. Joints, seams and connections.* All longitudinal and transverse joints, seams and connections in metallic and nonmetallic ducts shall be constructed as specified in SMACNA

HVAC Duct Construction Standards—Metal and Flexible and SMACNA Fibrous Glass Duct Construction Standards or NAIMA Fibrous Glass Duct Construction Standards. All longitudinal and transverse joints, seams and connections shall be sealed."

**Sec. 604. INSULATION.**

[§ 604.1 is hereby amended as follows:]

"Section 604.1. General. Duct insulation shall conform to the requirements of Sections 604.2 through 604.13."

**Sec. 606. SMOKE DETECTION SYSTEMS CONTROL.**

[§ 606.2 is hereby amended as follows:]

"Section 606.2. Where required. Smoke detectors shall be installed where indicated in Sections 606.2.1 through 606.2.3.

**"Exceptions:**

"1. Smoke detectors shall not be required where air distribution systems are incapable of spreading smoke beyond the enclosing walls, floors and ceilings of the room or space in which the smoke is generated.

"2. Evaporative coolers which supply 100% outside air."

**Sec. 606. SMOKE DETECTION SYSTEMS CONTROL.**

[§ 606.2.1 is hereby amended as follows:]

"Section 606.2.1. Supply or return air systems. Smoke detectors shall be installed in air distribution systems with a design capacity greater than 2,000 cfm (0.9 m<sup>3</sup>/s) in the return air ducts or plenum upstream of any filters, exhaust air connections, outdoor air connections, or decontamination equipment and appliances or in the main supply air duct or plenum served by such air distribution system.

**"Exception:** Smoke detectors are not required in the main supply air or return air system where all portions of the building served by the air distribution system are protected by area smoke detectors connected to a fire alarm system in accordance with the International Fire Code. The area smoke detector system shall comply with Section 606.4."

**Sec. 606. SMOKE DETECTION SYSTEMS CONTROL.**

[§ 606.2.2 is hereby amended as follows:]

"Section 606.2.2. Common supply and return air systems. Where multiple air-handling systems share a common supply air or return air ducts or plenums with a combined design capacity

greater than 2,000 cfm (0.9 m<sup>3</sup>/s), the supply air or the return air system shall be provided with smoke detectors in accordance with Section 606.2.1."

**Sec. 606. SMOKE DETECTION SYSTEMS CONTROL.**

[§ 606.2.3 is hereby amended as follows:]

"*Section 606.2.3. Supply air or return air risers.* Where supply air or return air risers serve two or more stories and serve any portion of a supply air or return air system having a design capacity greater than 15,000 cfm (7.1 m<sup>3</sup>/s), smoke detectors shall be installed at each story. Such smoke detectors shall be located upstream of the connection between the supply air or return air riser and any air ducts or plenums."

**Sec. 701. GENERAL.**

[§ 701.2 is hereby amended as follows:]

"*Section 701.2. Combustion and dilution air required.* Every room or space containing fuel-burning appliances shall be provided with combustion and dilution air as required by this code. Combustion and dilution air shall be provided in accordance with Section 702, 703, 704, 705, 706 or 707 or shall be provided by an approved engineered system. For LPG appliances, any duct serving the lower opening shall be at the floor level and slope to the outdoors without traps or pockets. Direct vent appliances or equipment that do not draw combustion air from the inside of the building are not required to be considered in the determination of the combustion and dilution air requirements. Combustion air requirements shall be determined based on the simultaneous operation of all fuel-burning appliances drawing combustion and dilution air from the room or space."

**Sec. 902. MASONRY FIREPLACES.**

[§ 902.1 is hereby amended as follows:]

"*Section 902.1. General.* Masonry fireplaces shall be constructed in accordance with the *International Building Code* and comply with Section 926 of this code."

**Sec. 903. FACTORY BUILT FIREPLACES.**

[§ 903.1 is hereby amended as follows:]

"*Section 903.1. General.* Factory-built fireplaces shall be listed and labeled and shall be installed in accordance with the conditions of the listing and comply with Section 926. Factory-built fireplaces shall be tested in accordance with UL 127."

**Sec. 904. PELLET FUEL-BURNING APPLIANCES.**

[§ 904.1 is hereby amended as follows:]

"Section 904.1. General. Pellet fuel burning appliance shall be listed and labeled and shall be installed in accordance with the terms of the listing and comply with Section 926."

**Sec. 905. FIREPLACE STOVES AND ROOM HEATERS.**

[§ 905.1 is hereby amended as follows:]

"Section 905.1 General. Fireplace stoves and solid-fuel-type room heaters shall be listed and labeled and shall be installed in accordance with the conditions of the listing and comply with Section 926. Fireplace stoves shall be tested in accordance with UL 737. Solid-fuel-type room heaters shall be tested in accordance with UL1482. Fireplace inserts intended for installation in fireplaces shall be listed and labeled in accordance with the requirements of UL1482 and shall be installed in accordance with the manufacturer's installation instructions and comply with Section 926."

**Sec. 926. SOLID FUEL-BURNING EQUIPMENT OR FIREPLACE RESTRICTIONS.**

[§ 926 is hereby added as follows:]

"Section 926. Solid Fuel-Burning Equipment or Fireplace restrictions."

**"926.1 Definitions.** For the purposes of this Section, the following words and terms shall have the meaning ascribed thereto:

**"FIREPLACE:** Means a built-in-place masonry hearth and fire chamber or a factory-built appliance, designed to burn solid fuel or to accommodate gas or electric log insert or similar device, and which is intended for occasional recreational or aesthetic use, not for cooking, heating, or industrial processes.

**"SOLID FUEL:** Means and includes, but is not limited to, wood, coal, or other nongaseous or non-liquid fuels, including those fuels defined by the Maricopa County Air Pollution Control Officer as "inappropriate fuel" to burn in residential wood burning devices.

**"WOOD STOVE:** Means a solid-fuel-burning heating appliance including a pellet stove, which is either freestanding or designed to be inserted into a fireplace.

**"926.2 General.** On or after December 31, 1998, no person, firm, or corporation shall construct or install a fireplace or a woodstove, and the City shall not approve or issue a permit to construct or install a fireplace or a woodstove, unless the fireplace or woodstove complies with one (1) of the following:

- "1. A fireplace which has permanently installed gas or electric log insert;
- "2. A fireplace, woodstove, or other solid-fuel-burning appliance which has been certified by the United States Environmental Protection Agency as conforming to 40 Code of Federal Regulations Part 60, Subpart AAA;

- "3. A fireplace, woodstove, or other solid-fuel-burning appliance that has been tested and listed by a nationally recognized testing agency to meet performance standards equivalent to those adopted by 40 Code of Federal Regulations Part 60, Subpart AAA;
- "4. A fireplace, woodstove, or other solid-fuel-burning appliance that has been determined by the Maricopa County Air Pollution Control Officer to meet performance standards equivalent to those adopted by 40 Code of Federal Regulations Part 60, Subpart AAA; or
- "5. A fireplace that has a permanently installed woodstove insert that complies with paragraphs 2, 3, or 4 above.

**"Exceptions:** The following installations are not regulated and are not prohibited by this Section:

- "1. Furnaces, boilers, incinerators, kilns, and other similar space heating or industrial process equipment;
- "2. Cook stoves, barbecue grills, and similar appliances designed primarily for cooking; and
- "3. Fire pits, barbecue grills, and other outdoor fireplaces.

"Fireplaces constructed or installed on or after December 31, 1998, that contain a gas or electric log insert or a woodstove insert, shall not be altered to directly burn wood or any other solid fuel. On or after December 31, 1998, no person, firm, or corporation shall alter a fireplace, woodstove, or other solid-fuel-burning appliance in any manner that would void its certification or operational compliance with the provisions of this Section.

"Fireplaces constructed or installed on or after December 31, 1998, shall not be altered without first obtaining a permit from the City to insure compliance with this Section."

#### **Sec. 1204. PIPE INSULATION.**

[§ 1204.1 is hereby amended as follows:]

*"Section 1204.1. Insulation characteristics.* Pipe insulation installed in buildings, shall be tested in accordance with ASTM E 84 and shall have a maximum flame spread index of 25 and a smoke-developed index not exceeding 450. Insulation installed in an air plenum shall comply with Section 602.2.1."

#### **Sec. 1204. PIPE INSULATION.**

[§ 1204.2 is hereby amended as follows:]

*"Section 1204.2. Required thickness.* Hydronic piping shall be insulated."

**Sec. 1208. TESTS.**

[§ 1208.1.2 is hereby added as follows:]

"*Section 1208.1.2. Test Gauges.* Tests required by this Code which are performed utilizing dial gauges shall be limited to gauges having the following pressure increments or graduations.

"1208.1.2.1 Required pressure tests exceeding ten (10) pounds (69 kPa) but less than one hundred (100) pounds (690 kPa) shall be performed with gauges having increments of one (1) pound (7 kPa) or less.

"1208.1.2.2 Required pressure tests of one hundred (100) pounds (690 kPa) or more shall be performed with gauges having increments 2 psi (14 kPa) or less.

"1208.1.2.3 Pressure tests required by this code, which are performed utilizing dial gauges, shall be limited to a gauge having a maximum gauge rating not exceeding twice the applied test pressure."