Council Bill Number: 115519
Ordinance Number: 122047

AN ORDINANCE relating to the Seattle Residential Code, Seattle Municipal Code Chapter 22.150; amending Chapter 1, Administration; Chapter 3, Building Planning; Chapter 10, Chimneys and Fireplaces; and Chapter 21, Hydronic Piping.

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Sponsor: STEINBRUECK
Committee Recommendation: Pass

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Text:

ORDINANCE _____

AN ORDINANCE relating to the Seattle Residential Code, Seattle Municipal Code Chapter 22.150; amending Chapter 1, Administration; Chapter 3, Building Planning; Chapter 10, Chimneys and Fireplaces; and Chapter 21, Hydronic Piping.

BE IT ORDAINED BY THE CITY OF SEATTLE AS FOLLOWS:

Section 1. Subsections R101.2 and R101.3 of the Seattle Residential Code are amended as follows:

SECTION R101

TITLE, PURPOSE AND SCOPE

R101.2 Purpose. The purpose of this code is to provide minimum standards to safeguard life or limb, health, property and public welfare by regulating and controlling the design, construction, quality of materials, occupancy, location and maintenance of all buildings and structures within the City and certain equipment specifically regulated herein.

The purpose of this code is to provide for and promote the health, safety and welfare of the general public, and not to create or otherwise establish or designate any particular class or group of persons who will or should be especially protected or benefited by the terms of this code.

NOTE: The minimum standards of the Seattle Housing and Building Maintenance Code, SMC 22.200-22.208, do not apply to any structure constructed and maintained in compliance with standards and procedures of the Seattle Building, Residential, Mechanical, Fire, Electrical and Plumbing Codes currently in effect.

R101.3 Scope. The provisions of this code apply to the construction, alteration, movement, enlargement, replacement, repair, equipment, use and occupancy, location, removal and demolition of detached one- and two-family dwellings and multiple single-family dwellings (townhouses) not more than three stories above grade in height with a separate means of egress, and their accessory structures, including adult family homes, foster family care homes and family day care homes licensed by the Washington State Department of Social and Health Services.

~~Existing buildings undergoing repair, alteration or additions, and change of occupancy and moved buildings shall comply with Chapter 34 of the Seattle Building Code. Existing mechanical systems shall comply with Section 104 of the Seattle Mechanical Code or Section 104 of the Seattle Fuel Gas Code.~~

Note: The seismic design for wood-frame buildings with more than two stories above grade shall comply with the Seattle Building Code. See Sections R301.2.2.4 and Table R602.10.1.

Interpretation R101.3a: Mixed use buildings, other than those containing home occupations, shall comply with the Seattle Building Code.

Interpretation R101.3b: ~~Buildings with dwellings above a common garage or other common space shall comply with the Seattle Building Code.~~ Dwellings located above a common garage or other common space are not within the scope of the Seattle Residential Code, and shall comply with the Seattle Building Code. Units in detached two-family dwellings may share a garage.

Section 2. Subsection R105.2 of the Seattle Residential Code is amended as follows:

SECTION R105

BUILDING PERMITS

R105.2 Work exempt from permit. A building permit shall not be required for the work listed below. Exemption from the permit requirements of this code shall not be deemed to grant authorization for any work to be done in any manner in violation of the provisions of this code or any other laws or ordinances of the City.

1. Minor repairs or alterations which, as determined by the building official, cost the owner $4,000 or less in any 6-month period. Such repairs and alterations shall not include the removal, reduction, alteration, or relocation of any loadbearing support. Egress, light, ventilation, and fire-resistance shall not be reduced.

2. Miscellaneous work including the following, provided no changes are made to the building envelope: patio and concrete slabs on grade, painting or cleaning a building, repointing a chimney, installing kitchen cabinets, paneling or other surface finishes over existing wall and ceiling systems, insulating existing buildings, abatement of hazardous materials, and in-kind or similar replacement of or repair of deteriorated members of a structure.

3. One-story detached accessory buildings used for greenhouse, tool or storage shed, playhouse, or similar uses, provided:

3.1 The projected roof area does not exceed 120 square feet; and

3.2 The building is not placed on a concrete foundation other than a slab on grade.

4. Fences not over 8 feet high which do not have masonry or concrete elements above 6 feet.

5. Arbors and other open-framed landscape structures not exceeding 120 square feet in projected area.

6. Retaining walls and rockeries which are not over 4 feet in height measured from the bottom of the footing to the top of the wall, provided:

6.1 There is no surcharge or impoundment of Class I, II or III-A liquids.

6.2 Construction is not in a critical area or an environmentally sensitive area, nor supports soils in areas of geologic hazard, steep slope or having landslide potential as identified in the environmentally sensitive and critical area regulations contained in Chapters 25.05 and 25.09 of the Seattle Municipal Code.

6.3 Possible failure would likely cause no damage to adjoining property or structures.

7. Platforms, walks and driveways not more than 18 inches above grade and not over any basement or story below.

8. Window awnings supported by an exterior wall when projecting not more than 54 inches.

9. Prefabricated swimming pools, spas and similar equipment accessory to a building subject to this code in which the pool walls are entirely above the adjacent grade and if the capacity does not exceed 5,000 gallons.

10. Replacement of roofing materials and siding. This shall not include structural changes, replacement of sheathing or alterations to doors and windows. ~~Existing roof sheathing may be replaced and roof structure may be repaired without permit provided no changes are made to the building envelope other than adding or replacing insulation, and the work is equivalent or better than the existing structure.~~ See Energy Code Sections 101.3.2.5 and 1132.1 for insulation requirements for existing buildings.

Exception: In detached one- and two- family dwellings, the existing roof sheathing may be replaced and roof structure may be repaired without permit provided no changes are made to the building envelope other than adding or replacing insulation, and the work is equivalent to or better than the existing structure

11. Private playground equipment including tree houses.

12. Removal and/or replacement of underground storage tanks that are subject to regulation by a state or federal agency.

Note: A Fire Department permit is required for removal, replacement and decommissioning of underground storage tanks.

13. Installation of dish and panel antennas 6.56 feet (2 m) or less in diameter or diagonal measurement.

14. Portable heating appliances, portable ventilating equipment, and portable cooling units, provided that the total capacity of these portable appliances shall not exceed 40 percent of the cumulative heating, cooling or ventilating requirements of a building or dwelling unit and shall not exceed 3 kW or 10,000 Btu input.

15. Any closed system of steam, hot or chilled water piping within heating or cooling equipment regulated by this code.

16. Minor work or the replacement of any component part of a mechanical system which does not alter its original approval and complies with other applicable requirements of this code.

Section 3. A new Section R109 is added to the Seattle Residential Code as follows:

SECTION R109

EXISTING STRUCTURES AND EQUIPMENT

R109.1 General. Buildings in existence at the time of the passage of this code which were legally constructed and occupied in accordance with the provisions of a prior code may have their existing use continued, provided such use is not unsafe.

Mechanical systems lawfully in existence at the time of the adoption of this code may have their use, maintenance or repair, conversion of fuel, or component replacement continued if the use, maintenance, repair, conversion of fuel, or component replacement is in accordance with the basic original design and location, and no hazard to life, health or property has been created by such mechanical system.

R109.2 Legalizing existing uses. In order to legalize an existing use for the record, it is required that the building comply with the fire and life safety requirements of this code or the code effective at the time the building was constructed. If the existing use is other than that for which the building was constructed, the building shall comply with this code or the code effective at the time the existing use was legally established.

R109.3 Maintenance. All buildings or structures, both existing and new, and all parts thereof shall be maintained in a safe and sanitary condition. All mechanical systems, materials and appurtenances, both existing and new, and all parts thereof shall be maintained in proper operating condition in accordance with the original design and in a safe and hazard-free condition. All devices or safeguards which are or were required by a code in effect when the building or structure was erected, altered, or repaired shall be maintained in good working order. To determine compliance with this subsection, the building official may cause a mechanical system or equipment to be reinspected.

The owner or a designated agent shall be responsible for maintenance of buildings, structures, mechanical systems and equipment. It is unlawful to fail to so maintain these parts of the building or equipment or to fail to immediately comply with any lawful notice or order of the fire chief or the building official.

EXCEPTIONS:

1. The building official may modify the requirements of this subsection where all or a portion of a building is unoccupied, closed off and reasonably secure from unlawful entry.

2. Occupants of dwellings shall be responsible for the maintenance of smoke alarms required by Section R313 and the International Fire Code.

R109.4 Unsafe building appendages. Parapet walls, cornices, chimneys and other appendages or structural members which are supported by, attached to, or a part of a building and which are in a deteriorated condition or are otherwise unable to sustain the design loads which are specified in this code, are hereby designated as unsafe building appendages. All such unsafe building appendages are public nuisances and shall be abated in accordance with Section R102 of this code.

R109.5 Additions, alterations or repairs

R109.5.1 General. Buildings and structures to which additions, alterations or repairs are made shall comply with all the requirements of this code for new facilities except as specifically provided in this section. See also applicable provisions of the Seattle Energy Code.

Any building or addition that exceeds the scope of this code shall be designed to the provisions of the SBC.

Exception: An existing nonconforming building to which an addition is made may exceed the limitations of the preceding paragraph if the following conditions are met:

1. A fire wall, constructed per SBC 705, separates the addition and the existing structure;

2. The existing building is not made more nonconforming; and

3. The addition conforms to this code.

R109.5.2 When allowed. Additions, alterations or repairs may be made to any building or structure without requiring the existing building or structure to comply with all the requirements of this code, provided the addition, alteration or repair conforms to that required for a new building or structure.

Additions, alterations, renovations or repairs may be made to any mechanical system without requiring the existing mechanical system to comply with all the requirements of this code, provided the addition, alteration, renovation or repair conforms to that required for a new mechanical system. Additions, alterations, renovations or repairs shall not cause an existing system to become unsafe, unhealthy or overloaded.

Minor additions, alterations, renovations, and repairs to existing mechanical systems may be installed in accordance with the law in effect at the time the original installation was made, when approved by the building official.

R109.5.4 Impracticality. In cases where total compliance with all the requirements of this code is impractical, the applicant may arrange a pre-submittal conference with the design team and the building official. The applicant shall identify alternate design solutions and modifications and demonstrate comformance to Section R104.10 or R104.11. The building official may waive specific requirements in this code which he/she has determined to be impractical.

R109.5.5 Compliance with retroactive ordinances. Alterations and repairs to existing buildings which are being made in response to a notice or order requiring compliance with the Housing and Building Maintenance Code, Subtitle II, Title 22 of the Seattle Municipal Code, Fire Code or other ordinances applicable to existing buildings, shall be permitted to be made in accordance with the standards contained in those ordinances, rather than the standards for new buildings contained in this code. Where standards are not specified in those ordinances, such alterations or repairs must conform to the requirements of this chapter.

R109.5.6 Non-structural alterations or repairs. Alterations or repairs which are non-structural and do not affect any member or part of the building or structure having required fire-resistance may be made with the same materials of which the building or structure is constructed, provided that no change is permitted which increases its hazard.

R109.5.7 Maintenance of structural stability. When approved by the building official, minor structural alterations or repairs necessary to maintain the structural stability of the building may be made with the same material of which the building or structure is constructed.

R109.5.8 Historic buildings and structures. The building official may modify the specific requirements of this code as it applies to buildings and structures designated as landmarks of historical or cultural importance and require in lieu thereof alternate requirements which, in the opinion of the building official, will result in a reasonable degree of safety to the public and the occupants of those buildings.

A historic building or structure is one which has been designated for preservation by the City Landmarks Preservations Board or the State of Washington, has been listed, or has been determined eligible to be listed in the National Register of Historic Places, has been officially nominated for such status, or is a structure contributing to the character of a landmark or special review district.

R109.5.9 Radon-resistive construction requirements. The radon- resistive construction requirements found in the Washington State Ventilation and Indoor Air Quality Code, WAC 51-13-502 shall apply to all residential buildings to which either an addition or substantial alteration is made where the basement, foundation or crawl space is altered or expanded.

R109.5.10. Unreinforced masonry chimneys. Whenever an unreinforced masonry chimney is altered or when the building in which such a chimney is located undergoes substantial alteration, the chimney shall be altered to conform to rules promulgated by the Director.

R109.5.11 Substantial alterations or repairs.

R109.5.11.1 General. Any building or structure to which substantial alterations or repairs are made shall conform with the requirements of this Section and Sections R310 (emergency escape and rescue openings), R311 (means of egress), R313 (smoke alarms), and R317 (dwelling unit separation).

R109.5.11.2 Definition. For the purpose of this section, substantial alterations or repairs may mean any one of the following and as determined by the building official:

1. Extensive structural repair.

2. Remodeling or additions which substantially extend the useful physical and/or economic life of the building or significant portion of the building.

3. Change to a use within the scope of the Seattle Residential Code from any other use.

4. Change from an accessory structure to any other use within the scope of the Seattle Residential Code.

5. Change from a detached one- or two-family dwelling to a townhouse.

6. Change to adult family home or family child day care home from any other use.

7. Repairs to a building damaged by fire or other means that exceed 60 percent of the building's value as determined by the building official, or by the assessed value per King County records, or by an appraisal made by a recognized appraisal agency approved by the building official.

R109.5.11.3 Seismic Regulations. Buildings or structures to which substantial alterations or repairs are made shall comply with Sections R301.1.3 or Sections R403.1.6, R602.10 and R602.11. In addition, the building official may require testing of existing materials when there is insufficient evidence of structural strength or integrity.

Exception: In lieu of compliance with the seismic provisions of Sections R403.1.6, R602.10 and R602.11, when approved by the building official, the applicant may evaluate and strengthen portions of the building lateral support structure, such as foundations and cripple walls.

R109.5.11.4 Other Structural Work. All other structural work shall comply with the requirements of the Seattle Residential Code, Chapters 3, 4, 5, 6, 8 and 10.

R109.5.11.5 Change of Use. When the use of a building or portion thereof is changed, the elements of the dwelling unit envelope which are altered shall comply with the sound transmission control

requirements of Section R328.

When the use of a building or portion thereof is changed to adult family home or to family child day care home, the building shall comply with Section R324 or R325, as applicable.

R109.6 Moved Buildings. Residential buildings or structures moved into or within the city are not required to comply with all of the requirements of this code if the original use classification of the building or structure is not changed. Compliance with all of the requirements of this chapter will be required if the moved residential buildings or structures undergo substantial alteration. Work performed on new and existing foundations shall comply with all of the requirements of this code for new construction.

Section 4. Subsection R304.1 of the Seattle Residential Code is amended as follows:

SECTION R304

MINIMUM ROOM AREAS

R304.1 Minimum area. Every dwelling unit shall have at least one habitable ~~common~~ room that shall have not less than 120 square feet (11.2 m2) of gross floor area. ~~Every room which is used for both cooking and living or both living and sleeping quarters shall have a floor area of not less than 130 square feet (12 m2) if used or intended to be used by only one occupant, or of not less than 150 square feet (14 m2) if used or intended to be used by more than one occupant. Where more than two persons occupy a room used for sleeping purposes, the required floor area shall be increased at the rate of 50 square feet (4.6 m2) for each occupant in excess of two. In a dormitory, minimum floor area shall be 60 square feet (5.5 m2) per single or double bunk and aisles not less than 3 feet (914 mm) in width shall be provided between the sides of bunks and from every bunk to an exit or exit-access doorway.~~

Section 5. Subsection R306.2 of the Seattle Residential Code is amended as follows:

SECTION R306

SANITATION

R306.2 Kitchen. Each dwelling unit shall be provided with a kitchen area and every kitchen area shall be provided with a sink~~, hot and cold running water, counter work space, cabinets for storage of cooking utensils and dishes, and stove and refrigerator or adequate space for the installation of the stove and refrigerator. Splash backs and counter tops shall have impervious surfaces~~.

Section 6. Subsection R306.5 of the Seattle Residential Code is repealed.

Section 7. Subsection R317.2 of the Seattle Residential Code is

amended as follows:

SECTION R317

DWELLING UNIT SEPARATION

R317.2 Townhouses. Each townhouse shall be considered a separate building and shall be separated by fire-resistance-rated wall assemblies meeting the requirements of Section R302 for exterior walls.

Exception: A common 2-hour fire-resistive-rated wall is permitted for townhouses if such walls do not contain plumbing or mechanical equipment, ducts or vents in the cavity of the common wall. Electrical installations shall be installed in accordance with Chapters 33 through 42. Penetrations of electrical outlet boxes shall be in accordance with Section R317.3.

R317.2.1 Continuity. The common wall for townhouses shall be continuous from the foundation to the underside of the roof sheathing, deck or slab and shall extend the full length of the common wall including walls extending through and separating attached accessory structures.

R317.2.2 Parapets. Parapets constructed in accordance with Section R317.2.3 shall be provided for townhouses as an extension of ~~common~~ exterior or common walls in accordance with the following:

1. Where roof surfaces adjacent to the wall or walls are at the same elevation, the parapet shall extend not less than 30 inches (762 mm) above the roof surfaces.

2. Where roof surfaces adjacent to the wall or walls are at different elevations and the higher roof is not more than 30 inches (762 mm) above the lower roof, the parapet shall extend not less than 30 inches (762 mm) above the lower roof surface.

Exception: A parapet is not required in the two cases above when the roof is covered with a minimum class C roof covering, and the roof decking or sheathing is of noncombustible materials or approved fire- retardant-treated wood for a distance of 4 feet (1219 mm) on each side of the wall or walls, or one layer of 5/8-inch (15.9 mm) Type X gypsum board is installed directly beneath the roof decking or sheathing for a distance of 4 feet (1219 mm) on each side of the wall or walls.

3. A parapet is not required where roof surfaces adjacent to the wall or walls are at different elevations and the higher roof is more than 30 inches (762 mm) above the lower roof. The common wall construction from the lower roof to the underside of the higher roof deck shall not have less than a 1-hour fire-resistive rating. The wall shall be rated for exposure from both sides.

R317.2.3 Parapet construction. Parapets shall have the same fire- resistance rating as that required for the supporting wall or walls. On any side adjacent to a roof surface, the parapet shall have noncombustible faces for the uppermost 18 inches (457 mm), to include counterflashing and coping materials. Where the roof slopes toward a parapet at slopes greater than two units vertical in 12 units horizontal (16.7-percent slope), the parapet shall extend to the same height as any portion of the roof within a distance of 3 feet (914 mm), but in no case shall the height be less than 30 inches (762 mm).

R317.2.4 Structural independence. Each individual townhouse shall be structurally independent.

Exceptions:

1. Foundations supporting exterior walls or common walls.

2. Structural roof and wall sheathing from each unit may fasten to the common wall framing.

3. Nonstructural wall coverings.

4. Flashing at termination of roof covering over common wall.

5. Townhouses separated by a common 2-hour fire-resistance-rated wall as provided in Section 317.2.

* * *

Section 8. Subsections R1003.5 and R1003.9 of the Seattle Residential Code are amended as follows:

SECTION R1003

MASONRY FIREPLACES

R1003.5 Firebox walls. Masonry fireboxes shall be constructed of solid masonry units, hollow masonry units grouted solid, stone or concrete. When a lining of firebrick at least 2 inches (51 mm) in thickness or other approved lining is provided, the minimum thickness of back and side walls shall each be 8 inches (203 mm) of solid masonry, including the lining. The width of joints between firebricks shall not be greater than 1/4 inch (6.4 mm). When no lining is provided, the total minimum thickness of back walls shall be not less than 8 inches, and ~~the thickness of~~ side walls shall ~~be not less than 7~~ 10 inches ~~178~~ 254 mm) of solid masonry. Firebrick shall conform to ASTM C 27 or C 1261 and shall be laid with medium duty refractory mortar conforming to ASTM C 199.

R1003.5.1 Steel fireplace units. Steel fireplace units are permitted to be installed with solid masonry to form a masonry fireplace when installed either according to the requirements of their listing or according to the requirements of this section. Steel fireplace units incorporating a steel firebox lining, shall be constructed with steel not less than 1/4 inch (6.4 mm) in thickness, and an air circulating chamber which is ducted to the interior of the building. The firebox lining shall be encased with solid masonry to provide a total thickness at the back and sides of not less than 8 inches (203

mm), of which not less than 4 inches (102 mm) shall be of solid masonry or concrete. Circulating air ducts employed with steel fireplace units shall be constructed of metal or masonry.

R1003.9 Hearth and hearth extension. Masonry fireplace hearths and hearth extensions shall be constructed of concrete or masonry, supported by noncombustible materials, and reinforced to carry their own weight and all imposed loads. No combustible material shall remain against the underside of hearths and hearth extensions after construction. ~~The hearth slab shall be lined with at least 21/2 inches (64 mm) of firebrick and shall not be less than 6 inches (152 mm) in total thickness.~~

R1003.9.1 Hearth thickness. The minimum thickness of fireplace hearths shall be 4 inches (102 mm).

R1003.9.2 Hearth extension thickness. The minimum thickness of hearth extensions shall be 2 inches (51 mm).

Exception: When the bottom of the firebox opening is raised at least 8 inches (203 mm) above the top of the hearth extension, a hearth extension of not less than 3/8-inch-thick (9.5 mm) brick, concrete, stone, tile or other approved noncombustible material is permitted.

Section A new Chapter 21 is added to the Seattle Residential Code to read as follows:

CHAPTER 21

HYDRONIC PIPING

SECTION M2101

HYDRONIC PIPING SYSTEMS INSTALLATION

M2101.1 General. Hydronic piping shall conform to Table M2101.1. Approved piping, valves, fittings and connections shall be installed in accordance with the manufacturer's installation instructions. Pipe and fittings shall be rated for use at the operating temperature and pressure of the hydronic system. Used pipe, fittings, valves or other materials shall be free of foreign materials.

TABLE M2101.1

HYDRONIC PIPING MATERIALS

MATERIAL USE CODE a STANDARDb JOINTS NOTES

Brass pipe 1 ASTM B 43 Brazed, welded, threaded, mechanical and flanged fittings

Brass tubing 1 ASTM B 135 Brazed, soldered and mechanical fittings

Chlorinated 1, 2, 3 ASTM D 2846 Solvent cement poly (vinyl joints, chloride) compression (CPVC) pipe joints and and tubing threaded adapters

Copper pipe 1 ASTM B 42, B Brazed, 302 soldered and mechanical fittings threaded, welded and flanged

Copper tubing 1, 2 ASTM B 75, B Brazed, Joints (type K, L or 88, B 251, B soldered and embedded in M) 306 flared concrete mechanical fittings

Cross-linked 2, 3 ASTM F 876, F Mechanical Install in polyethylene 877 compression accordance (PEX) tubing with Cross-linked manufacturer's polyethylene/ instructions. aluminum/cross- linked polyethylene ASTM F 1281 or Mechanical, Install in (PEX-AL-PEX) 1, 2 CAN/ CSA crimp/insert accordance pressure pipe B137.10 with manufacturer's instructions.

Plastic ASTM F 1807 fittings PEX

Polybutylene 1, 2, 3 ASTM D 3309 Heat-fusion, Joints in (PB) pipe and crimp/insert concrete shall tubing and compression be heat-fused.

Polyethylene 1, 2, 4 ASTM D 2513; (PE) pipe, ASTM D 3350; tubing and ASTM D 2513; fittings (for ASTM D 3035; ground source ASTM D 2447; Heat-fusion heat pump loop ASTM D 2683; systems) ASTM F 1055; ASTM D 2837; ASTM D 3350; ASTM D 1693

Soldering 1 ASTM B 813 Copper tube fluxes joints

Steel pipe 1, 2 ASTM A 53; A Brazed, welded, Joints in 106 threaded, concrete shall flanged and be welded. mechanical Galvanized fittings pipe shall not be welded or brazed.

Steel tubing 1 ASTM A 254 Mechanical fittings, welded

For SI: degrees C = [(degrees F)-32]/1.8.

a. Use code:

1. Above ground.

2. Embedded in radiant system.

3. Temperatures below 180 degrees F only.

4. Low temperature (below 130 degrees F) applications only.

b. Standards as listed in Chapter 43.

M2101.2 System drain down. Hydronic piping systems shall be installed to permit the system to be drained. When the system drains to the plumbing drainage system, the installation shall conform to the requirements of Chapters 25 through 32 of this code.

M2101.3 Protection of potable water. The potable water system shall be protected from backflow in accordance with the provisions listed in Section P2902.

M2101.4 Pipe penetrations. Openings through concrete or masonry building elements shall be sleeved.

M2101.5 Contact with building material. A hydronic piping system shall not be in direct contact with any building material that causes the piping material to degrade or corrode.

M2101.6 Drilling and notching. Wood-framed structural members shall be drilled, notched or altered in accordance with the provisions of Sections R502.6, R602.6, R602.6.1 and R802.6. Holes in cold-formed, steel-framed, load-bearing members shall only be permitted in accordance with Sections R506.2, R603.2 and R804.2. In accordance with the provisions of Sections R505.3.5, R603.3.4 and R804.3.5, cutting and notching of flanges and lips of cold-formed, steel-framed, load-bearing members shall not be permitted.

M2101.7 Prohibited tee applications. Fluid in the supply side of a hydronic system shall not enter a tee fitting through the branch opening.

M2101.8 Expansion, contraction and settlement. Piping shall be installed so that piping, connections and equipment shall not be subjected to excessive strains or stresses. Provisions shall be made to compensate for expansion,

contraction, shrinkage and structural settlement.

M2101.9 Piping support. Hangers and supports shall be of material of sufficient strength to support the piping, and shall be fabricated from materials compatible with the piping material. Piping shall be supported at intervals not exceeding the spacing specified in Table M2101.9.

M2101.10 Tests. Hydronic piping shall be tested hydrostatically at a pressure of not less than 100 pounds per square inch (psi) (689 kPa) for a duration of not less than 15 minutes.

TABLE M2101.9

HANGER SPACING INTERVALS

PIPING MATERIAL MAXIMUM HORIZONTAL MAXIMUM VERTICAL SPACING SPACING (feet) (feet)

ABS 4 10

CPVC =1 inch pipe or 3 5 tubing

CPVC = 1 1/4 inch 4 10

Copper or copper alloy 12 10 pipe

Copper or copper alloy 6 10 tubing

PB pipe or tubing 2.67 4

PE pipe or tubing 2.67 4

PEX tubing 2.67 4

PVC 4 10

Steel pipe 12 15

Steel tubing 8 10 For SI: 1 inch = 25.4 mm, 1 foot = 304.8 mm.

SECTION M2102

BASEBOARD CONVECTORS

M2102.1 General. Baseboard convectors shall be installed in accordance with the manufacturer's installation instructions. Convectors shall be supported independently of the hydronic piping.

SECTION M2103

FLOOR HEATING SYSTEMS

M2103.1 Piping materials. Piping for embedment in concrete or gypsum materials shall be standard-weight steel pipe, copper tubing, cross- linked polyethylene/aluminum/cross-linked polyethylene (PEX-AL-PEX) pressure pipe, chlorinated polyvinyl chloride (CPVC) or polybutylene with a minimum rating of 100 psi at 180 degrees F (68.9 kPa at 146 degrees C).

M2103.2 Piping joints. Piping joints that are embedded shall be installed in accordance with the following requirements:

1. Steel pipe joints shall be welded.

2. Copper tubing shall be joined with brazing material having a melting point exceeding 1,000 degrees F (538 degrees C).

3. Polybutylene pipe and tubing joints shall be installed with socket-type, heat-fused polybutylene fittings.

4. CPVC tubing shall be joined using solvent cement joints.

M2103.3 Testing. Piping or tubing to be embedded shall be tested by applying a hydrostatic pressure of not less than 100 psi (68.9 kPa). The pressure shall be maintained for 30 minutes, during which all joints shall be visually inspected for leaks.

SECTION M2104

LOW TEMPERATURE PIPING

M2104.1 Piping materials. Low temperature piping for embedment in concrete or gypsum materials shall be as indicated in Table M2101.1.

M2104.2 Piping joints. Piping joints (other than those in Section M2103.2) that are embedded shall comply with the following:

1. Cross-linked Polyethylene (PEX) tubing shall be installed in accordance with the manufacturer's instructions.

2. Polyethylene tubing shall be installed with heat fusion joints.

M2104.2.1 Polyethylene plastic pipe and tubing for ground source heat pump loop systems. Joints between polyethylene plastic pipe and tubing or fittings for ground source heat pump loop systems shall be heat fusion joints conforming to Section M2104.2.1.1, electrofusion joints conforming to Section M2104.2.1.2 or stab-type insertion joints conforming to Section M2104.2.1.3.

M2104.2.1.1 Heat-fusion joints. Joints shall be of the socket-fusion, saddle-fusion or butt-fusion type, fabricated in accordance with the piping manufacturer's instructions. Joint surfaces shall be clean and free of moisture. Joint surfaces shall be heated to melt temperatures and joined. The joint shall be undisturbed until cool. Fittings shall be manufactured in accordance with ASTM D 2683.

M2104.2.1.2 Electrofusion joints. Joints shall be of the electrofusion type. Joint surfaces shall be clean and free of moisture, and scoured to expose virgin resin. Joint surfaces shall be heated to melt temperatures for the period of time specified by the manufacturer. The joint shall be undisturbed until cool. Fittings shall be manufactured in accordance with ASTM F 1055.

M2104.2.1.3 Stab-type insert fittings. Joint surfaces shall be clean and free of moisture. Pipe ends shall be chamfered and inserted into the fitting to full depth. Fittings shall be manufactured in accordance with ASTM D 2513.

SECTION M2105

GROUND SOURCE HEAT PUMP SYSTEM LOOP PIPING

M2105.1 Testing. The assembled loop system shall be pressure tested with water at 100 psi (690 kPa) for 30 minutes with no observed leaks before connection (header) trenches are backfilled.

Flow rates and pressure drops shall be compared to calculated values. If actual flow rate or pressure drop figures differ

from calculated values by more than 10 percent, the problem shall be identified and corrected.

Section 10. The provisions of this ordinance are declared to be separate and severable. The invalidity of any clause, sentence, paragraph, subdivision, section or portion of this ordinance, or the invalidity of the application thereof to any person, owner, or circumstance shall not affect the validity of the remainder of this ordinance, or the validity of its application to other persons, owners, or circumstances.

Section 11. This ordinance shall take effect and be in force thirty (30) days from and after its approval by the Mayor, but if not approved and returned by the Mayor within ten (10) days after presentation, it shall take effect as provided by Municipal Code Section 1.04.020.

Passed by the City Council the ____ day of _____, 2006, and signed by me in open session in authentication of its passage this _____ day of _____, 2006.

_____

President _____of the City Council

Approved by me this ____ day of _____, 2006.

_____

Gregory J. Nickels, Mayor

Filed by me this ____ day of _____, 2006.

_____

City Clerk

(Seal)

Maureen Traxler/ma

2005 Residential Code ord

February 2, 2006

version #1