ORDINANCE NO.

AN ORDINANCE REPEALING AND REPLACING ARTICLE 11 OF CHAPTER 25-12 OF THE CITY CODE (RESIDENTIAL CODE) TO ADOPT THE 2006 EDITION OF THE INTERNATIONAL RESIDENTIAL CODE FOR ONE- AND TWO-FAMILY DWELLINGS AND LOCAL AMENDMENTS.

BE IT ORDAINED BY THE CITY COUNCIL OF THE CITY OF AUSTIN:

PART 1. Chapter 25-12 is amended to repeal and replace Article 11(*Residential Code*) to read as follows:

ARTICLE 11. RESIDENTIAL CODE

§ 25-12-241 RESIDENTIAL CODE

(A) The International Residential Code for One- and Two-Family Dwellings, 2006 Edition, published by the International Code Council, Inc. (2006 International Residential Code) is adopted and incorporated into this section with the deletions and amendments in Subsections (B) and (C) and Section 25-12-243 (*Local Amendments to the International Code*).

(B) The following provisions of the 2006 International Residential Code are deleted:

Section R103	Section R112	Section R702.6
Section 105.2	Section R301.2.4	Section M1305.1.3
Section R105.3.1.1	Table R301.2(1)	Section M1305.1.3.1
Section R105.3.2	Section R309.5	Section M2201.6
Section 105.5	Section R324	Part IV
Section R106.1.3	Section R602.8	Part VI
Section R109.1.3	Section R602.8.1	Part VII
Section R110.3	Section R602.8.1.1	Part VIII

(C) The following definitions in Section R202 (*Definitions*) of the 2006 International Residential Code are deleted:

(1) BUILDING, EXISTING;

(2) HEIGHT, BUILDING; and

(3) MANUFACTURED HOME.

(D) The city clerk shall file a copy of the 2006 International Residential Code with the official ordinances of the City.

§ 25-12-242 CITATIONS TO THE RESIDENTIAL CODE

In the City Code, "Residential Code" means the 2006 International Residential Code adopted by Section 25-12-241 (*Residential Code*).

§ 25-12-243 LOCAL AMENDMENTS TO THE RESIDENTIAL CODE

The following provisions are local amendments to the 2006 International Residential Code. Each provision in this section is a substitute for an identically numbered provision deleted by Section 25-12-241(B) or (C) or an addition to the Residential Code.

R101.2.1 Electrical. The provisions of the ICC Electrical Code and the Electrical Code shall apply to the installation of electrical systems, including alterations, repairs, replacement, equipment, appliances, fixtures fittings and appurtenances thereto. The Electrical Code supersedes the ICC Electrical Code to the extent of conflict.

R101.2.2 Gas. The International Fuel Gas Code and the Plumbing Code apply to the installation of gas piping from the point of delivery, gas appliances and related accessories as covered by this code. The Plumbing Code supersedes the International Fuel Gas Code to the extent of conflict.

These requirements apply to gas piping systems extending from the point of delivery to the inlet connections of appliances and the installation and operation of residential and commercial gas appliances and related accessories.

R101.2.3 Plumbing. The Plumbing Code applies to the installation, alteration, repair and replacement of plumbing systems for one and two family dwelling construction. On-site sewage facilities are regulated under Chapter 15-5 (*Private Sewage Facilities*) of the City Code.

R101.2.4 Energy. The provisions of the Energy Code shall apply to all matters governing the design and construction of buildings for energy efficiency.

R102.7.2 Unsanitary conditions. Building sewer lines and roof drains that were not installed or that have not been maintained in accordance with the Plumbing Code and product listing in effect at the time of installation are unsanitary. The building official shall order the owner of the property to abate the unsanitary condition.

R104.10.1 Areas prone to flooding. The City Council shall hear and decide requests for variances to any provision related to areas prone to flooding in accordance with Appendix G, Section G105 (*Variances*) of the Building Code.

R105.1.1 Separate permit. A separate permit must be obtained for each building or structure.

R105.1.2 Persons authorized to obtain permits for plumbing work. Except as otherwise provided in Section R105 (*Permits*) , only a master plumber and irrigator licensed by the State of Texas and registered with the City may obtain permits required by the Residential Code to do plumbing work.

> **Exception**: The City may issue a permit to an unlicensed person for plumbing work that under state law may be done by an unlicensed person.

R105.1.3 Persons authorized to obtain permits for mechanical work. Except as otherwise provided in Section R105 (*Permits*), only an air conditioning and refrigeration contractor licensed by the State of Texas to perform mechanical work and registered with the City may obtain a permit required by the Residential Code to do mechanical work.

R105.1.4 Landscape irrigation. Only a person licensed by the State of Texas and registered with the City may obtain a permit to install landscape irrigation or a yard sprinkler system. An irrigator shall purchase a plumbing permit before installing landscape irrigation or a yard sprinkler system.

R105.2 Work exempt from permit. Permits shall not be required for the following. 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 this jurisdiction.

Building:

1. One-story detached accessory structures, provided the floor area does not exceed 200 square feet (18.58 m2).
2. Fences not over 6 feet (1829 mm) high.
3. Retaining walls that are not over 4 feet (1219 mm) in height measured from the bottom of the footing to the top of the wall, unless supporting a surcharge.
4. Water tanks supported directly upon grade if the capacity does not exceed 5,000 gallons (18927 L) and the ratio of height to diameter or width does not exceed 2 to 1.
5. Sidewalks and driveways not more than 30 inches (762mm) above adjacent grade and not over any basement or story below.

6. Painting, papering, tiling, carpeting, cabinets, counter tops and similar finish work.
7. Prefabricated swimming pools that are less than 24 inches (610 mm) deep.
8. Swings and other playground equipment accessory to a one or two-family dwelling.
9. Window awnings supported by an exterior wall which do not project more than 54 inches (1372 mm) from the exterior wall and do not require additional support.

Electrical:

Repairs and maintenance: A permit shall not be required for minor repair work, including the replacement of lamps or the connection of approved portable electrical equipment to approved permanently installed receptacles.

Gas:

1. Portable heating, cooking or clothes drying appliances.
2. Replacement of any minor part that does not alter approval of equipment or make such equipment unsafe.
3. Portable fuel cell appliances that are not connected to a fixed piping system and are not interconnected to a power grid.

Mechanical:

1. Portable heating appliance.
2. Portable ventilation appliances.
3. Portable cooling unit.
4. Steam, hot or chilled water piping within any heating or cooling equipment regulated by this code.
5. Replacement of any minor part that does not alter approval of equipment or make such equipment unsafe.
6. Portable evaporative cooler.
7. Self-contained refrigeration systems containing 10 pounds (4.54 kg) or less of refrigerant or that are actuated by motors of 1 horsepower (746 W) or less.
8. Portable fuel cell appliances that are not connected to a fixed piping system and are not interconnected to a power grid.
9. Replacement of the following if replaced with equipment of equivalent size and purpose:
   a. evaporator coils;
   b. air handlers (blower coils); and
   c. condensers of equivalent size or smaller;
10. Replacement or installation of a whole house dehumidifier, filtration system, ultraviolet light, ERV or zoning system.
11. Replacement or the addition of three or less supply or return duct runs.

12. Replacement of vent registers.
13. Replacement or addition of return grills.
14. Packaged terminal air conditioner units.

The stopping of leaks in drains, water, soil, waste or vent pipe; provided, however, that if any concealed trap, drainpipe, water, soil, waste or vent pipe becomes defective and it becomes necessary to remove and replace the same with new material, such work shall be considered as new work and a permit shall be obtained and inspection made as provided in this code.

The clearing of stoppages or the repairing of leaks in pipes, valves or fixtures, and the removal and reinstallation of water closets, provided such repairs do not involve or require the replacement or rearrangement of valves, pipes or fixtures.

R105.3.1.1 Substantially improved or substantially damaged existing buildings and structures. For applications for reconstruction, rehabilitation, addition or other improvement of existing buildings or structures located in an area prone to flooding as established by Table R301.2(1) (*Climatic and Geographic Design Criteria*), the building official shall examine or cause to be examined the construction documents and shall prepare a finding with regard to the value of the proposed work. If the work is a substantial improvement as defined in Section R202 (*Definitions*), the proposed work shall comply with Section R324(*Flood-Resistant Construction*) of this Code and Appendix G (*Flood-Resistant Construction*) of the Building Code.

R105.3.2 Time limitation of application. An application for a permit for any proposed work shall expire 180 days after the date of filing. A person may request an extension to an application in accordance with Section 25-1-88 of the City Code (*Extension of Update Deadline*).

R105.5 Expiration. Every permit issued shall become invalid unless the work authorized by such permit is commenced within 180 days after its issuance, or if the work authorized by such permit is suspended or abandoned for a period of 180 days after the time the work is commenced. The building official is authorized to grant, in writing, one extension of time, for a period of not more than 180 days. The extension shall be requested in writing before the permit expires and justifiable cause demonstrated.

R105.9 Homestead Permit. A person who is not licensed to perform electrical, mechanical and plumbing work may perform electrical, mechanical and plumbing work within a residence owned by the person if the requirements of this section are met.

1. The residence is the person's homestead.

2. The work does not include electrical, mechanical and plumbing work that involves (1) the main electric service; and (2) reclaiming and charging a ducted heating and air-conditioning system containing refrigerant and natural gas plumbing systems.

3. The residence is the person's principal residence.

4. The person has not secured a homestead permit for another residence within the prior 24 month period.

5. The person must have owned and occupied the property as of January 1 of the tax year in which the person applies for a homestead permit.

6. A person must obtain a homestead permit and pay required permit fees before beginning any electrical, mechanical, or plumbing work. A person must apply for a homestead permit in person and must file an affidavit stating that the location at which the work is to be done is the person's homestead.

7. A person who has obtained a homestead permit may not allow or cause any person to perform electrical, mechanical, or plumbing work under the permit. The building official may suspend or revoke a homestead permit if work done under the permit is performed by anyone other than the person who obtained the permit.

8. A person may not transfer a permit to another person.

9. A person performing electrical, mechanical, or plumbing work under a homestead permit shall present a picture identification to verify that the person is authorized to perform work under the homestead permit when requested by the building official or his designee.

10. A homestead permit shall not be issued for electrical, mechanical, or plumbing work on a mobile, modular or manufactured home unless the homeowner owns the land on which the mobile, modular or manufactured home is located. A homestead permit shall not be issued if the mobile, modular or manufactured home is located in a mobile home park, mobile home community or other commercial premises.

R105.10 Registration. A plumber, air conditioning and refrigeration contractor, and irrigator shall register with the City before performing any work regulated by the Residential Code. A registration fee, authorized by separate ordinance, shall be paid when a license is presented for initial registration, after a license suspension, or after license expiration. A new fee is not required for the renewal of a license before expiration.

R106.1.3 Information for construction in flood hazard areas. For buildings and structures located in whole or in part in flood hazard areas as established by Table R301.2(1) (*Climatic and Geographic Design Criteria*), construction documents shall include:

1. Delineation of flood hazard areas, 25-year floodplain boundaries and flood zones, and the design flood elevation, as appropriate;

2. The elevation of the proposed lowest floor, including basement; in areas of shallow flooding (AO zones), the height of the proposed lowest floor, including basement, above the highest adjacent grade; and

3. If design flood elevations are not included on the community's ultimate conditions floodplain models and maps or the Flood Insurance Rate Map (FIRM), the building official and the applicant shall obtain and reasonably utilize any design flood elevation and floodway data available from other sources.

R109.1.1.1 Layout inspection. The layout inspection must be performed by a surveyor registered in the State of Texas.

R109.1.1.2 Plumbing inspection. An inspector employed by the City shall inspect plumbing installed in a slab before the foundation inspection occurs.

R109.1.3 Floodplain inspections. For construction in areas prone to flooding as established by Table R301.2(1) *(Climatic and Geographic Design Criteria)*, upon placement of the lowest floor, including basement, and prior to further vertical construction, the building official shall require submission of documentation, prepared and sealed by a Texas registered professional surveyor, of the elevation of the lowest floor, including basement, required in Section R324 (*Flood-Resistant Construction*).

R109.1.3.1 Flood hazard documentation. The following documentation shall be prepared and sealed by a Texas registered professional surveyor and submitted to the building official for construction in flood hazard areas:

1. The elevation of the lowest floor, including basement, as required by the lowest floor elevation inspection in Section R109.1.3 (*Floodplain Inspections*).

2. For fully enclosed areas below the design flood elevation where provisions to allow for the automatic entry and exit of floodwaters do not meet the minimum requirements in Section 2.6.1.1 of ASCE 24 (*Flood Resistant Design and Construction*), construction documents shall include a statement that the design will provide for equalization of hydrostatic flood forces in accordance with the

provisions of Section 2.6.1.2 of ASCE 24 (*Flood Resistant Design and Construction*).

R109.1.4.1 Required documentation. The permit holder must provide the following documents on-site in a weather-tight container when the plumbing top out, mechanical rough, and framing inspection are conducted:

1. approved plans;
2. copy of the survey;
3. foundation report; and
4. framing pre-inspection report.

R109.1.5.2 Framing pre-inspection. The framing pre-inspection may be conducted by a registered architect, registered professional engineer, licensed real estate inspector, or certified one and two family dwelling code inspector. The inspector shall use the City framing checklist. The permit holder must correct violations identified in the framing pre-inspection and must provide a copy of the inspector's report to the City before the mechanical rough, plumbing top out, and framing inspection may be conducted.

R109.1.5.3 Insulation inspection. An inspector employed by the City shall conduct an insulation/energy inspection before a wallboard inspection is performed.

R109.1.5.4 Wallboard inspection. The wallboard inspection must be conducted by a registered architect, registered professional engineer, licensed real estate inspector, or certified one and two family dwelling code inspector. The inspector must verify that wallboard fastened to walls and ceilings complies with the Residential Code.

R109.1.6.1 Required documentation. The permit holder shall provide the following documentation onsite when the final inspection is conducted:

1. copy of the survey;
2. foundation report;
3. wallboard inspection report; and
4. if required, a copy of a release from a utility district.

If the documents are not onsite, work to be inspected shall fail the final inspection. The City shall assess a reinspection fee, authorized by separate ordinance, for the next requested final inspection.

R109.11 Special Inspections Program. The building official may establish by rule an inspection program for the installation of certain mechanical components in one and two family dwellings within the zoning jurisdiction of the City. Under the program, the

building official shall inspect work performed under one out of five of the applications submitted.

The special inspection program may apply to the following:

1. installation of HVAC equipment, with or without ductwork, in a building or section of a building that was previously not served by an HVAC system;
2. replacement of a complete existing central heat and air system with or without ductwork;
3. replacement or the addition to an existing unit of four or more supply or return duct runs;
4. replacement of any existing gas appliance;
5. replacement of any existing self contained packaged units.

R110.3 Certificate issued. After the building official inspects the building or structure and finds no violations of the provisions of the Residential Code or other laws that are enforced by the building official, the building official shall issue a certificate of occupancy, which shall contain the following:

1. the building permit number;
2. the address of the structure;
3. the name and address of the owner;
4. a description of that portion of the structure for which the certificate is issued;
5. a statement that the described portion of the structure has been inspected for compliance with the requirements of the Residential Code;
6. the name of the building official; and
7. a special stipulation or condition of the building permit.

SECTION R112

APPEALS AND VARIANCES

R112.1. Appeal of a building official determination. The Building and Fire Code Board shall hear an appeal of an order, decision, or determination of the building official under the Residential Code relating to building and fire issues. The Mechanical, Plumbing, and Solar Board shall hear an appeal of an order, decision, or determination of the building official under the Residential Code relating to mechanical, plumbing, and solar issues in accordance with Section 104 (*Private Sewage Systems*) of the Plumbing Code.

R112.2. Variances from flood plain management regulations. The City Council shall hear and decide a request for a variance from the flood plain regulations of this Code.

The decision of the City Council shall comply with the provisions of Appendix Section G105 of the Building Code (*Variances*).

R113.5 Criminal Offense. A person who violates the Residential Code commits an offense. An offense under this section is a Class C misdemeanor punishable as provided in Section 1-1-99 (*Offenses; General Penalty*).

SECTION R115
AREAS PRONE TO FLOODING

A building or structure constructed under the Residential Code is subject to Section R324(*Flood-Resistant Construction*) of this Code and Appendix G (*Flood-Resistant Construction*) of the Building Code.

SECTION R202
DEFINITIONS

25-YEAR FLOOD PLAIN. The greater of the following two areas:

1. an area within a flood plain subject to a four percent or greater chance of flooding in any year (25-year flood); or

2. an area with a flood plain subject to a four percent or greater chance of flooding in any year (25-year flood) based on projected full development in accordance with the City of Austin Drainage Criteria Manual.

BASE FLOOD. A flood having a one percent chance of being equaled or exceeded in any given year (100-year flood).

BASE FLOOD ELEVATION. The elevation of the base flood, including wave height, relative to the National Geodetic Vertical Datum (NGVD), North American Vertical Datum (NAVD) or other datum specified on the Flood Insurance Rate Map (FIRM).

BUILDING, EXISTING. A building erected before the adoption of this Code or for which a legal building permit has been issued.

> **Exception:** For purposes of flood plain management, an existing building is a building erected for which the start of construction commenced before September 2, 1981.

DESIGN FLOOD. The flood associated with an area with a flood plain subject to a one percent or greater chance of flooding in any year (100-year flood) based on projected full development in accordance with the City of Austin Drainage Criteria Manual.

DESIGN FLOOD ELEVATION. The elevation of the design flood relative to the City of Austin vertical datum standard.

DRY FLOODPROOFING. A combination of design modifications that result in a building or structure, including the attendant utility and sanitary facilities, being water tight with walls substantially impermeable to the passage of water and with structural components having the capacity to resist loads as identified in ASCE 7.

EXISTING CONSTRUCTION. A building or structure erected before the adoption of this Code or for which a legal building permit has been issued.

> **Exception:** For purposes of flood plain management, existing construction is a building or and structure for which the start of construction commenced before September 2, 1981. Existing construction is also referred to as existing structure.

FLOOD or FLOODING. A general and temporary condition of partial or complete inundation of normally dry land from:

1. the overflow of inland waters; or

2. the unusual and rapid accumulation or runoff of surface waters from any source.

FLOOD DAMAGE-RESISTANT MATERIALS. Any construction material capable of withstanding direct and prolonged contact with floodwaters without sustaining any damage that requires more than cosmetic repair.

FLOOD HAZARD AREA. The greater of the following two areas:

1. an area within a flood plain subject to a one percent or greater chance of flooding in any year (100-year flood) ; or

2. an area with a flood plain subject to a one percent or greater chance of flooding in any year (100-year flood) based on projected full development in accordance with the City of Austin Drainage Criteria Manual.

FLOOD INSURANCE RATE MAP (FIRM). An official map of a community on which the Federal Emergency Management Agency (FEMA) has delineated both the special flood hazard areas and the risk premium zones applicable to the community.

FLOOD INSURANCE STUDY. The official report provided by the Federal Emergency Management Agency containing the Flood Insurance Rate Map (FIRM), the

Flood Boundary Map, the water surface elevation of the base flood, and supporting technical data.

FLOODWAY. The channel of the river, creek, or other watercourse and the adjacent land areas that must be reserved in order to discharge the base flood without cumulatively increasing the water surface elevation more than a designated height. An area with a flood plain subject to a four percent or greater chance of flooding in any year (25-year flood) based on projected full development in accordance with the City of Austin Drainage Criteria Manual.

HEIGHT, BUILDING. Building height has the meaning established in Section 25-1-21 (*Definitions*) of the City Code.

MANUFACTURED HOME. A structure, transportable in one or more sections, which in the traveling mode is 8 body feet (2,438 body mm) or more in width or 40 body feet (12,192 body mm) or more in length, or, when erected on site, is 320 square feet ($30m^2$) or more, and which is built with or without a permanent chassis and designed to be used as a dwelling with or without a permanent foundation when connected to the required utilities, and includes the plumbing, heating, air-conditioning and electrical systems contained therein; except that such term shall include any structure that meets all the requirements of this paragraph except the size requirement and with respect to which the manufacturer voluntarily files a certification required by the secretary (HUD) and complies with the standards established under this title. For mobile homes built prior to June 15, 1976, a label certifying compliance to the Standard for Mobile Homes, NFPA 501, in effect at the time of manufacture is required.

NEW CONSTRUCTION. Structures for which the start of construction commenced on or after September 2, 1981, and includes subsequent improvements to such structures and improvements to all existing construction.

REGISTERED DESIGN PROFESSIONAL. An individual who is registered or licensed to practice his or her respective design profession as defined by the statutory requirements of the professional registration laws of the State of Texas.

REGULATORY FLOOD DATUM (RFD) has the meaning assigned in Section 1612 (*Flood Loads*) of the Building Code.

SINGLE BATHROOM GROUP means a group of fixtures that serves a dwelling unit and consists of not more than one water closet, one or more lavatories, and a bathtub or shower.

SPECIAL FLOOD HAZARD AREA. The land area subject to flood hazards and shown on a Flood Insurance Rate Map or other flood hazard map as Zone A, AE, A1-30, A99, AR, AO, AH, V, VO, VE or V1-30.

START OF CONSTRUCTION. The date of permit issuance for new construction and substantial improvements to existing structures, provided the actual start of construction, repair, reconstruction, rehabilitation, addition, placement or other improvement is within 180 days after the date of issuance. The actual start of construction means the first placement of permanent construction of a building (including a manufactured home) on a site, such as the pouring of a slab or footings, installation of pilings or construction of columns. Permanent construction does not include land preparation (such as clearing, excavation, grading or filling), the installation of streets or walkways, excavation for a basement, footings, piers or foundations, the erection of temporary forms or the installation of accessory buildings such as garages or sheds not occupied as dwelling units or not part of the main building. For a substantial improvement, the actual "start of construction" means the first alteration of any wall, ceiling, floor or other structural part of a building, whether or not that alteration affects the external dimensions of the building.

SUBSTANTIAL DAMAGE. Damage of any origin sustained by a structure for which the cost of restoring the structure to its pre-damaged condition equals or exceeds 50 percent of the market value of the structure before the damage occurred.

SUBSTANTIAL IMPROVEMENT. For the purpose of determining compliance with the flood hazard management provisions of this code, any repair, alteration, reconstruction, rehabilitation, addition or improvement of a building or structure, the cost of which equals or exceeds 50 percent of the market value of the structure before the improvement or repair is started or, if the structure has been damaged and is being restored, before the damage occurred. The cost used in the substantial improvement determination shall be the cumulative cost of all previous improvements for a specific building or structure occurring during the immediate 10-year period. If the structure has sustained substantial damage, any repairs are considered substantial improvement regardless of the actual repair work performed. The term does not, however, include either of the following:

1. any project for improvement of a building required to correct existing health, sanitary or safety code violations identified by the building official and that are the minimum necessary to assure safe living conditions; or

2. any alteration of a historic structure, provided that the alteration will not preclude the structure's continued designation as a historic structure; for the purpose of this exclusion, a historic building is a building that is:

2.1. listed or preliminarily determined to be eligible for listing in the National Register of Historic Places; or

2.2. determined by the Secretary of the U.S. Department of Interior as contributing to the historical significance of a registered historic district or a district preliminarily determined to qualify as an historic district; or

2.3. designated as historic under a State of Texas or local historic preservation program that is approved by the Department of Interior.

W-1 SPACES and W-2 SPACES have the meaning assigned in Appendix G (*Flood-Resistant Construction*).

TABLE R301.2(1) CLIMATIC AND GEOGRAPHIC DESIGN CRITERIA

TABLE R301.2(1)

CLIMATIC AND GEOGRAPHIC DESIGN CRITERIA

			Subject to Damage From							
Ground Snow Load	Wind Speed	Seismic Design Category	Weathering	Frost Line Depth	Termite	Winter Design Temp	Ice Barrier Underlayments Required	Flood Hazard	Air Freezing Index	Mean Average Temp
5	90	A	Negligible	0	Yes	28	No	Construction Commenced after 9/2/1981	50	65
					R320.1 Subterranean termite control methods. (Exception 2)					

R301.2.4 Floodplain construction. Buildings and structures constructed in whole or in part in flood hazard areas (including A Zones) as established in Table R301.2(1) (*Climatic and Geographic Design Criteria***)** shall be designed and constructed in accordance with Section R324 (*Flood-Resistant Construction*).

> **Exception:** Buildings and structures located in whole or in part in identified 25-year floodplain as established by future conditions floodplain models and maps shall be designed and constructed as stipulated in the Section R324 (*Flood-Resistant Construction*).

R309.5 Flood hazard areas. For buildings located in flood hazard areas as established by Table R301.2(1) (*Climatic and Geographic Design Criteria***)**, garage floors shall be elevated a minimum of one foot above the design flood elevation as determined in Section R324 (*Flood-Resistant Construction*).

SECTION R324
FLOOD-RESISTANT CONSTRUCTION

R324.1 General. Within a flood hazard area, all new construction of buildings, additions and alterations to buildings and structures, structures and portions of buildings and structures, including substantial improvements and restoration of substantial damage to buildings and structures, shall be designed and constructed to resist the effects of flood hazards and flood loads. All aspects of the existing structure shall be brought into compliance with the requirements for new construction for flood design.

> **Exception**: Buildings and structures located in whole or in part in a 25-year floodplain as established in Table R301.2(1) (*Climatic and Geographic Design Criteria*) shall be designed and constructed as stipulated in the Building Code.

R324.1.1 Structural systems. All structural systems of all buildings and structures shall be designed, connected and anchored to resist flotation, collapse or permanent lateral movement due to structural loads and stresses from flooding equal to the design flood elevation.

R324.1.2 Flood-resistant construction. All buildings and structures erected in areas prone to flooding shall be constructed by methods and practices that minimize flood damage.

R324.1.3 Establishing the design flood elevation. The design flood elevation shall be used to define areas prone to flooding, and shall describe, at a minimum, the base flood elevation at the depth of peak elevation of flooding considering the ultimate development of the watershed which has a 1 percent (100-year flood) or greater chance of being equaled or exceeded in any given year.

R324.1.3.1 Determination of design flood elevations. If design flood elevations are not specified, the building official is authorized to require the applicant to:

1. Obtain and reasonably use data available from a federal, state or other source; or

2. Determine the design flood elevation in accordance with accepted hydrologic and hydraulic engineering practices used to define special flood hazard areas. Determinations shall be undertaken by a professional engineer registered with the state of Texas who shall document that the technical methods used reflect currently accepted engineering practice. Studies, analyses and computations shall be submitted in sufficient detail to allow thorough review and approval.

R324.1.3.2 Determination of impacts. In riverine flood hazard areas where design flood elevations are specified but floodways have not been designated, the applicant shall demonstrate that the effect of the proposed buildings and structures on design flood elevations, including fill, when combined with all other existing and anticipated flood hazard area encroachments, will not increase the design flood elevation at any point within the jurisdiction.

R324.1.4 Lowest floor. The lowest floor shall be the floor of the lowest enclosed area, including basement, but excluding any unfinished flood-resistant enclosure that is useable solely for vehicle parking, building access or limited storage, provided that such enclosure is not built so as to render the building or structure in violation of this section.

> **Exception:** An unfinished flood-resistant enclosure used solely for storage of property, materials, or equipment that constitutes a safety hazard when contacted by flood waters is included when determining the lowest floor.

R324.1.5 Protection of mechanical and electrical systems. Electrical systems, equipment and components, and heating, ventilating, air conditioning and plumbing appliances, plumbing fixtures, duct systems, and other service equipment shall be located a minimum of one foot above the design flood elevation. If replaced as part of a substantial improvement, electrical systems, equipment and components, and heating, ventilating, air conditioning, and plumbing appliances, plumbing fixtures, duct systems, and other service equipment shall meet the requirements of this section. Systems, fixtures, and equipment and components shall not be mounted on or penetrate through walls intended to break away under flood loads.

> **Exception:** Electrical systems, equipment and components, and heating, ventilating, air conditioning and plumbing appliances, plumbing fixtures, duct systems, and other service equipment are permitted to be located a minimum of one foot above the design flood elevation provided that they are designed and installed to prevent water from entering or accumulating within the components and to resist hydrostatic and hydrodynamic loads and stresses, including the effects of buoyancy, during the occurrence of flooding to the design flood elevation in compliance with the flood-resistant construction requirements of the Building Code. Electrical wiring systems are permitted to be located below the design flood elevation provided they conform to the provisions of the electrical part of this code for wet locations.

R324.1.7 Flood-resistant materials. Building materials used below the regulatory flood datum shall comply with the following**:**

1. All wood, including floor sheathing, shall be pressure-preservative-treated in accordance with AWPA U1 for the species, product, preservative and end use or be the decay-resistant heartwood of redwood, black locust or cedars. Preservatives shall be listed in Section 4 of AWPA U1.

2. Materials and installation methods used for flooring and interior and exterior walls and wall coverings shall conform to the provisions of FEMA/FIA-TB.

R324.1.8 Manufactured housing. New or replacement manufactured housing shall be elevated in accordance with Section R324.2 (*Flood hazard areas (including A Zones)*) and the anchor and tie-down requirements of Sections AE604 (*Anchorage Installations*) and AE605 (*Ties, Materials and Installation*) of Appendix E (*Manufactured Housing Used as Dwellings*) shall apply. The foundation and anchorage of manufactured housing to be located in identified 25-year floodplain shall be designed and constructed in accordance with the applicable provisions in the Building Code.

R324.1.9 As-built elevation documentation. A surveyor registered with the state of Texas shall prepare and seal documentation of the elevations specified in Section R324.2 (*Establishment of flood hazard areas (including A Zones)*) or R324.3 (*Coastal high-hazard areas (including V Zones)*).

R324.2 Establishment of flood hazard areas (including A Zones). Flood hazard areas include the following:

1. the flood hazard areas identified by the Federal Emergency Management Agency in that certain scientific and engineering report entitled, "The Flood Insurance Study for Austin, Texas," dated January 19, 2000, with accompanying Flood Insurance Rate Maps and Flood Boundary-Floodway Maps (FIRM and FBFM) and related supporting data along with any amendments or revisions thereto; and

2. the 100-year and 25-year floodplains based on projected full development as specified in the Austin City Code and Drainage Criteria Manual.

All buildings and structures constructed in whole or in part in a flood hazard area shall be designed and constructed in accordance with Sections R324.2.1 (*Elevation requirements*) and R324.2.3 (*Foundation design and construction*).

R324.2.1 Elevation requirements.

1. Buildings and structures shall have the lowest floors elevated a minimum of one foot above the design flood elevation.

2. A minimum freeboard of one (1) foot shall be added where the design flood elevation or other elevation requirements are specified.

3. In areas of shallow flooding (AO Zones), buildings and structures shall have the lowest floor (including basement) elevated at least as high above the highest adjacent grade as the depth number specified in feet (mm) on the FIRM plus one foot, or at least 2 feet (610 mm) if a depth number is not specified.

4. Basement floors that are below grade on all sides shall be elevated a minimum of one foot above the design flood elevation.

   Exception: Enclosed areas below the design flood elevation, including basements whose floors are not below grade on all sides, shall meet the requirements of Section R324.2.2 (*Enclosed area below design flood elevation*).

R324.2.2 Enclosed area below design flood elevation. Enclosed areas, including crawl spaces, that are below the regulatory flood datum shall:

1. Be used solely for parking of vehicles, building access or storage, such storage excluding any property, material, or equipment which may constitute a safety hazard when contacted by flood waters.

2. Be provided with flood openings that meet the following criteria:

   2.1. There shall be a minimum of two openings on different sides of each enclosed area; if a building has more than one enclosed area below the design flood elevation, each area shall have openings on exterior walls.

   2.2. The total net area of all openings shall be at least 1 square inch (645 mm^2) for each square foot (0.093 m^2) of enclosed area, or the openings shall be designed and the construction documents shall include a statement that the design and installation will provide for equalization of hydrostatic flood forces on exterior walls by allowing for the automatic entry and exit of floodwaters.

   2.3. The bottom of each opening shall be 1 foot (305 mm) or less above the adjacent ground level.

   2.4. Openings shall be at least 3 inches (76 mm) in diameter.

   2.5. Any louvers, screens or other opening covers shall allow the automatic flow of floodwaters into and out of the enclosed area.

2.6. Openings installed in doors and windows, that meet requirements 2.1 through 2.5, are acceptable; however, doors and windows without installed openings do not meet the requirements of this section.

R324.2.3 Provisions of Safe Refuge.

1. Buildings or structures constructed in the flood hazard area where the ground surface is below the design flood elevation, or where flood water velocities at the building may exceed five feet per second, shall be provided with an enclosed refuge space one (1) foot or more above the design flood elevation of sufficient area to provide for the occupancy load with a minimum of 12 square feet per person. The refuge space shall be provided to an exterior platform and stairway not less than three feet wide.

2. Existing buildings and structures in flood hazard areas that are enlarged, extended, or altered, or where a change of use or occupancy is made, shall conform to the requirements of Subsection 1.

3. A floor level or portion of a building or structure that is lower than one (1) foot above the design flood elevation, regardless of the structure or space classification, shall not be used for a residential use, or for storage of any property, materials, or equipment that might constitute a safety hazard when contacted by flood waters.

R324.2.4 Means of Egress. Normal access to the building shall be by direct connection with an area that is a minimum of one (1) foot above the design flood elevation, unless otherwise approved by the building official.

R324.2.5 Foundation design and construction. Foundation walls for all buildings and structures erected in flood hazard areas shall meet the requirements of Chapter 4 (*Foundations*).

Exception: Unless designed in accordance with Section R404 (*Foundation and Retaining Walls*):

1. The unsupported height of 6-inch (152 mm) plain masonry walls shall be no more than 3 feet (914 mm).

2. The unsupported height of 8-inch (203 mm) plain masonry walls shall be no more than 4 feet (1219 mm).

3. The unsupported height of 8-inch (203 mm) reinforced masonry walls shall be no more than 8 feet (2438 mm).

For the purpose of this exception, unsupported height is the distance from the finished grade of the under-floor space and the top of the wall.

R602.8 Fireblocking required. Fireblocking shall be provided to cut off all concealed draft openings (both vertical and horizontal) and to form an effective fire barrier between stories, and between a top story and the roof space. Fireblocking shall be provided in wood-frame construction in the following locations:

1. In concealed spaces of stud walls and partitions, including furred spaces, at the ceiling and floor level and at 10 foot (3048 mm) intervals both vertical and horizontal.

2. At all interconnections between concealed vertical and horizontal spaces such as occur at soffits, drop ceilings and cove ceilings.

3. In concealed spaces between stair stringers at the top and bottom of the run. Enclosed spaces under stairs shall comply with Section R311.2.2 (*Under stair protection*).

4. At openings around vents, pipes, and ducts at ceiling and floor level, with an approved material to resist the free passage of flame and products of combustion.

5. For the fireblocking of chimneys and fireplaces, see Section R1003.19 (*Chimney Fireblocking*).

6. Fireblocking of cornices of a two-family dwelling is required at the line of dwelling unit separation.

R602.8.1 Materials. Except as provided in Section R602.8 (*Fireblocking required*), Item 4, fireblocking shall consist of 2-inch (51 mm) nominal lumber, or two thicknesses of 1-inch (25.4 mm) nominal lumber with broken lap joints, or one thickness of 23/32-inch (19.8 mm) wood structural panels with joints backed by 23/32-inch (19.8 mm) wood structural panels or one thickness of ¾-inch (19.1 mm) particleboard with joints backed by ¾-inch (19.1 mm) particleboard, ½-inch (12.7 mm) gypsum board, or ¼-inch (6.4 mm) cement-based mill board.

R702.6 Wood shakes and shingles. Wood shakes and shingles shall conform to CSSB *Grading Rules for Wood Shakes and Shingles* and shall be permitted to be installed directly to the studs with maximum 24 inches (610 mm) on center spacing. Wood shakes and shingles shall comply with the fire-retardant standards in Section R902 (*Roof Classification*).

M1201.3 Solar Heating Solar heating systems shall be installed in accordance with the Residential Code and the Solar Energy Code**.**

> **Exception:** An original electric heater installed before March 1, 1985, may be replaced with an electric heater of the same amperage or less.

M1201.4 Compliance with the Energy Code. Heating, ventilating, and cooling equipment installed after January 14, 1990, in sites served by the City's Electric Utility shall comply with the Energy Code. Replacement electrical equipment shall comply with the Energy Code.

M1305.1.3 Appliances in attics. An upright furnace may be installed in an attic or furred space that is more than five feet in height if the required listings and duct clearances are observed. The clearance between a warm-air furnace and combustibles shall comply with Section M1307.1 (*General*) of the Residential Code.

An access opening shall be provided. The opening shall be of sufficient size to remove appliances but the clear finished opening shall have dimensions of not less than 20 inches by 30 inches. Approved disappearing stairs comply with the Residential Code.

A passageway shall be provided from the access opening to appliances and shall be of sufficient size to remove appliances. The dimensions of the passageway may not be less than 30 inches by 30 inches. The distance from the access opening to an appliance shall not exceed 20 feet measured along the centerline of the passageway. The passageway shall be unobstructed and have a continuous solid floor not less than 24 inches in width from the access opening to an appliance.

A level working platform not less than 30 inches in depth and width shall be provided in front of the entire firebox side of the warm-air furnace. If the furnace temperature-limit control, air filter, fuel-control valve, vent collar or air handling unit is not serviceable from the firebox side of the furnace, a continuous floor not less than 24 inches in width shall be provided from the platform in front of the fire box side of the furnace to and in front of the equipment.

> **Exception:** A working platform is not required when the furnace can be serviced from the required access opening.

M1305.1.3.1 Electrical requirements. A permanent electric outlet and lighting fixture controlled by a switch located at the required passageway opening shall be provided at or near the furnace.

A permanent electric outlet and lighting fixture shall be provided within five feet of the appliance. The light shall be controlled by a switch located at the required passageway opening or on the nearest wall leading to the access opening.

M1307.6 Requirements for floodplain areas.

M1307.6.1 Installation of heating, air conditioning and ventilation equipment. Heating, air conditioning, and ventilation equipment shall be installed above the RFD. The equipment may be located in a W-1 or W-2 space with direct access from a location above the RFD if approved as a modification by the building official.

M1307.6.2 Heating systems with gas or oil-fired furnace. A heating system that uses a gas or oil-fired furnace shall have a float-operated automatic control valve installed in the fuel supply line that is set to operate if flood waters reach an elevation equal to the floor level of the space where the furnace equipment is installed. A manually operated gas valve that can be operated from a location above the RFD shall be provided in the fuel supply line to serve as a supplementary safety device for fuel cutoff.

M1307.6.3 Anchoring of heating equipment and tanks. Heating equipment and fuel storage tanks shall be securely anchored to a foundation pad of sufficient mass to overcome buoyancy and prevent movement that could damage the fuel line supply. As an alternative means of protection, elevation of the heating equipment and fuel storage tanks above the RFD is permitted. A fuel line shall be attached to a furnace by flexible swing-type couplings. Heating equipment and fuel storage tanks shall be vented to an elevation of at least three feet above the RFD. For a system installed in a W-1 or W-2 space, the air supply for combustion shall be furnished, if required, at a height of at least three feet above the RFD.

M1307.6.4 Ductwork. Ductwork for a warm-air heating system located below the RFD shall have an emergency opening for internal flooding and drainage of ducts. Each opening shall have a cover with a gravity operator for closure during normal operation. Ductwork passing through a watertight wall or floor below the RFD shall have a shutoff valve to isolate the piping system in the event of a flood. An electric heating system, if used in a flood hazard area, shall be installed in accordance with the Electrical Code.

M1307.6.5 Installation of an air conditioning and ventilation system below the RFD. An air conditioning and ventilation system located below the RFD shall be installed in a W-1 or W-2 space. Installation, piping, ductwork connections, and safety features shall comply with the requirements for heating systems.

M1307.6.6 Automatic shutoff valve for fuel supply lines. A fuel supply line that originates outside of a W-1 or W-2 space or passes through an area that floods shall be equipped with an automatic shutoff valve to prevent loss of fuel. The wall opening shall be flood-proofed by using an embedded collar, sleeve, water stop, or other means approved by the building official.

M1601.1.3 Protection of ducts. If a nonmetallic plenum is protected from the weather, the plenum shall be attached to a coil or furnace with a hard cast system. If a nonmetallic plenum is exposed to the weather, the plenum shall be attached to a coil or furnace with a waterproof hard cast system or its equivalent.

M1601.1.4 Attachment of ducts. A duct shall be cut flush with the top side of ceiling materials or with the back side of wall materials and held in place with a one inch by one inch 26 gauge steel metal angle assembly attached to the duct on all four sides. A grill assembly shall be attached to the angle assembly in accordance with the product listing and shall be airtight.

M1601.1.4.1 Materials. A flexible duct shall be attached to an approved adapter bucket in accordance with the product listing. Each bucket shall be firmly attached to a joist, stud, or grid with one inch by one inch 26 gauge steel angles on at least two sides of the bucket.

M1703.3.1 Size of opening. This section applies only to an existing system. Where communicating with the outdoors by means of a single opening or duct, the opening or duct shall have a free area of at least one square inch per 3,000 Btu/h (0.413 mm^2/W) of total input rating of all appliances in the space, but not smaller than the vent flow area. A duct shall be of the same minimum cross-sectional area as the required free area of the opening to which it connects. The minimum cross-sectional dimension of a rectangular air duct shall be three inches (76 mm).

M2201.6 Flood-resistant installation. In areas prone to flooding as established by Table R301.2(1) (*Climatic and Geographic Design Criteria*), tanks shall be installed a minimum of one foot above the design flood elevation established in Section R323 (*Elevators and Platform Lifts*) or may be installed below grade in accordance with Section M2201.3 (*Underground Tanks*), anchored to prevent flotation, collapse and lateral movement under conditions of the design flood and be designed, constructed and installed to prevent, without necessity of devices which may be easily avoided (e.g. locks, seals requiring tightening after each access to the tank, etc.), intrusion of floodwaters into the tank or escape of oil into the environment. Site plans including

underground tanks placed in flood hazard areas shall be certified by a Texas registered engineer attesting to the requirements of this section.

PART 2. This ordinance takes effect on January 1, 2008.

PASSED AND APPROVED

§
§
_____, 200___ § _____
Will Wynn
Mayor

APPROVED: _____ **ATTEST: _____**
David Smith
City Attorney

Shirley Gentry
City Clerk