

Combined Flood Plain Regulations

SECTION 1612 FLOOD LOADS

1612.1 General. Within flood hazard areas as established in Section 1612.3 (*Establishment of flood hazard areas*), all new construction and alterations of buildings, structures and portions of buildings and structures, including substantial improvement and restoration of substantial damage to buildings and structures, shall be designed and constructed to resist the effects of flood hazards and flood loads. When new construction constitutes a substantial improvement or restoration of substantial damage, all aspects of the existing structure shall be brought into compliance with the requirements for new construction for flood design. All elevation requirements noted in this ordinance shall be documented using the Elevation Certificate, FEMA 81-31, and shall be certified by a registered professional engineer, surveyor, or architect, and shall be submitted to the Floodplain Administrator.

Commented [LP1]: 25-12-53(A)

1612.2 Definitions. The following terms are defined in Chapter 2:

Commented [LP2]: 25-12-52

BASE FLOOD

BASE FLOOD ELEVATION

BASEMENT

DESIGN FLOOD

DESIGN FLOOD ELEVATION

DRY FLOODPROOFING

EXISTING STRUCTURE

FLOOD or FLOODING

FLOOD DAMAGE-RESISTANT MATERIALS

FLOOD HAZARD AREA

FLOOD INSURANCE RATE MAP (FIRM)

FLOOD INSURANCE STUDY

FLOODWAY

LOWEST FLOOR

REGULATORY FLOOD DATUM

SPECIAL FLOOD HAZARD AREA

START OF CONSTRUCTION

SUBSTANTIAL DAMAGE

SUBSTANTIAL IMPROVEMENT

1612.3 Establishment of Flood Hazard Areas. Flood hazard areas are:

Commented [LP3]: 25-12-53(B)

1. the areas of special flood hazard areas identified by the Federal Emergency Management Agency in the current scientific and engineering report entitled, "The Flood Insurance Study (FIS) for Williamson County, Texas and Incorporated Areas" dated December 20, 2019, with accompanying Flood Insurance Rate Maps (FIRM) dated December 20, 2019, the current scientific and engineering report entitled "The Flood Insurance Study for Travis County, Texas and Incorporated Areas" dated January 6, 2016, with accompanying Flood Insurance Rate Maps dated January 6, 2016, and any revisions are adopted by reference and declared to be a part of this section; and
2. the 100-year and 25-year floodplains as defined in the Austin City Code and Drainage Criteria Manual are adopted by reference and declared to be part of this section.

1612.4 Design and Construction. The design and construction of buildings and structures, and additions and alterations to buildings and structures located in flood hazard areas, shall be in accordance with ASCE 24, Flood Resistant Design and Construction.

Commented [LP4]: 25-12-53(C)

1612.4.1 Freeboard. A minimum freeboard of two feet shall be added where the design flood elevation or other elevation requirements are specified, unless otherwise specified in [Title 25 \(Land Development\)](#).

Commented [LP5]: 25-12-53(C)(2)

1612.4.2 Provisions of Safe Refuge.

Commented [LP6]: 25-12-53(C)(3)

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 two feet or more above the design flood elevation, and 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 which are enlarged, extended, or altered, or where a change of use or occupancy is made, shall conform to the requirements of Subsection 1.
3. No floor level or portion of a building or structure that is lower than one foot above the design flood elevation, regardless of the structure or space classification, shall be used residentially, or for storage of any property, materials, or equipment that might constitute a safety hazard when contacted by flood waters.

Commented [LP7]: 25-12-53(C)(3)(a-c)

1612.4.3 Means of Egress. Normal access to the building shall be by direct connection with an area that is a minimum of one foot above the design flood elevation, unless otherwise approved by the building official.

Commented [LP8]: 25-12-53(C)(4)(a)

1612.5 Flood Hazard Documentation. The following documentation shall be prepared and sealed by a registered design professional and submitted to the building official:

Commented [LP9]: 25-12-53(D)

1. **For construction in flood hazard areas:**

Commented [LP10]: 25-12-53(D)(1-3)

1.1. The elevation of the lowest floor, including the basement, as required by the lowest floor elevation inspection in Section 110.3.3 (*Lowest floor elevation*) and for the final inspection in Section 110.3.10.1 (*Flood hazard documentation*).

1.2. 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 2.6.2.1 of ASCE 24, construction documents shall include a statement that the design will provide for equalization of hydrostatic flood forces in accordance with Section 2.6.2.2 of ASCE 24.

1.3. For dry flood-proofed nonresidential buildings, construction documents shall include a statement that the dry flood proofing is designed in accordance with ASCE 24.

APPENDIX G FLOOD-RESISTANT CONSTRUCTION

Commented [LP11]: 25-12-54

SECTION G100 STATUTORY AUTHORIZATION

Commented [LP12]: 25-12-54(A)

As a home-rule city, the City of Austin has the responsibility and power to adopt regulations designed to minimize flood losses. The Legislature of the State of Texas has in Sections 16.3145 and 16.315 of the Texas Water Code authorized local government units to adopt regulations designed to minimize flood losses.

SECTION G101 ADMINISTRATION

Commented [LP13]: 25-12-54(B)

G101.1 Purpose. The purpose of this appendix is to promote the public health, safety and general welfare and to minimize public and private losses due to flood conditions in specific *flood hazard areas* through the establishment of comprehensive regulations for management of *flood hazard areas* designed to:

Commented [LP14]: 25-12-54(B)(1)(a-g)

1. Prevent unnecessary disruption of commerce, access and public service during times of flooding.
2. Manage the alteration of natural flood plains, stream channels and shorelines.
3. Manage filling, grading, dredging and other development which may increase flood damage or erosion potential.
4. Prevent or regulate the construction of flood barriers which will divert floodwaters or which can increase flood hazards.
5. Contribute to improved construction techniques in the flood plain.
6. Restrict or prohibit uses that are dangerous to health, safety or property in times of flood, or cause excessive increases in flood heights or velocities; and
7. Require that uses vulnerable to floods, including facilities which serve such uses, be protected against flood damage at the time of initial construction.

G101.2 Objectives. The objectives of this appendix are to protect human life, minimize the expenditure of public money for flood control projects, minimize the need for rescue and relief efforts associated with flooding, minimize prolonged business interruption, minimize damage to public facilities and utilities, help maintain a stable tax base by providing for the sound use and development of flood-prone areas, contribute to improved construction techniques in the flood plain and ensure that potential owners and occupants are notified that property is within *flood hazard areas*.

Commented [LP15]: 25-12-54(B)(2)

G101.3 Scope. The provisions of this appendix shall apply to all proposed development in a *flood hazard area* established in Section 1612 (*Flood Loads*) of this code.

Commented [LP16]: 25-12-54(B)(3)

G101.4 Violations. Any violation of a provision of this appendix, or failure to comply with a permit or variance issued pursuant to this appendix or any requirement of this appendix, shall be handled in accordance with Section 114 (*Violations*).

Commented [LP17]: 25-12-55

SECTION G102 APPLICABILITY

Commented [LP18]: 25-12-54(C)

G102.1 General. This appendix, in conjunction with this code, provides minimum requirements for development located in flood hazard areas, including:

Commented [LP19]: 25-12-54(C)(1)(a-g)

1. The subdivision of land.
2. Site improvements and installation of utilities.
3. Placement and replacement of manufactured homes.
4. Placement of recreational vehicles.
5. New construction and repair, reconstruction, rehabilitation, or additions to new construction.
6. Substantial improvement of existing buildings and structures, including restoration after damage.
7. Installation of tanks.

G102.1.1 Abrogation and Greater Restrictions. This appendix is not intended to repeal, abrogate, or impair any existing easements, covenants, or deed restrictions. However, where this appendix and another city code provision, easement, covenant, or deed restriction conflict or overlap, whichever imposes the more stringent restrictions shall prevail.

Commented [LP20]: 25-12-54(C)(2)

G102.2 Establishment of Flood Hazard Areas. Flood hazard areas are established in Section 1612.3 (*Establishment of flood hazard areas*).

Commented [LP21]: 25-12-54(C)(3)

G102.3. Nonconforming Uses.

Commented [LP22]: 25-12-54(C)(4)(a-d)

A structure, or the use of a structure or premises, which was lawful before the adoption of the Building Code, but which does not conform with the requirements of these regulations, may be continued subject to the following conditions:

1. No such use shall be expanded, changed, enlarged, or altered in a way which increases its nonconformity.

2. No substantial improvement of the structure shall be made unless the structure is changed to conform to these regulations.

3. If a nonconforming use is discontinued for a period of 90 days, any future use of the building or premises shall conform to these regulations.

4. Any nonconforming use or structure which is destroyed by means, including floods, to an extent of 50 percent or more of its market value, shall not be reconstructed except in conformance with the provisions of these regulations.

SECTION G103 POWERS AND DUTIES

Commented [LP23]: 25-12-54(D)

G103.1 Permit Applications. All applications for permits must comply with the following:

Commented [LP24]: 25-12-54(D)(1)(a-b)

1. The *building official* shall review all *permit* applications to determine whether proposed development is located in *flood hazard areas* established in Section 1612.3 (*Establishment of flood hazard areas*).

2. Where a proposed development site is in a *flood hazard area*, all development to which this appendix is applicable as specified in Section G102.1 (*General*) shall be designed and constructed with methods, practices and materials that minimize *flood* damage and that are in accordance with this code and ASCE 24.

G103.2 Other Permits. It shall be the responsibility of the *building official* to ensure that approval of a proposed development shall not be given until proof that necessary approvals and/or permits have been granted by federal, state, or local agencies having jurisdiction over such development.

Commented [LP25]: 25-12-54(D)(2)

G103.3 Determination of Design Flood Elevations. If design flood elevations are not specified, the *building official* is authorized to require the applicant to:

Commented [LP26]: 25-12-54(D)(4)(a-b)

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

2. Determine the design flood elevation in accordance with the 100-year floodplain based on projected full development in accordance with the City of Austin Drainage Criteria Manual. Such analyses shall be performed and sealed by a Professional Engineer licensed by the State of Texas. Studies, analyses and computations shall be submitted in sufficient detail to allow review and approval by the *building official*. The accuracy of data submitted for such determination shall be the responsibility of the applicant.

G103.4 Activities in Riverine Flood Hazard Areas. In riverine situations, the *building official* shall not permit any new construction, substantial improvement or other development, including fill, unless the applicant submits and engineering analysis prepared by a *registered design professional*, demonstrating that the cumulative effect of the proposed development, when combined with all other existing and anticipated development, will not increase the design flood elevation at any point that results in additional adverse flooding on other property.

Commented [LP27]: 25-12-54(D)(6)

G103.5 Floodway Encroachment. Prior to issuing a permit for any floodway encroachment, including fill, new construction, substantial improvements and other development or land-disturbing activity, the *building official* shall require submission of a certification prepared by a Professional Engineer licensed by the State of Texas, along with supporting technical data in

Commented [LP28]: 25-12-54(D)(11)

accordance with the City of Austin Drainage Criteria Manual, demonstrating that such development will not cause any increase of the level of the design flood.

G103.5.1 Floodway Revisions. A floodway encroachment that increases the level of the design flood may be considered for a variance only if the applicant has applied for a conditional Flood Insurance Rate Map (FIRM) revision and has received the approval of the Federal Emergency Management Agency (FEMA) provided the conditional Flood Insurance Rate Map (FIRM) revision is required by the City of Austin Drainage Criteria Manual.

Commented [LP29]: 25-12-54(D)(12)

G103.6 Watercourse Alteration. Prior to issuing a permit for any alteration or relocation of any watercourse, the *building official* shall require the applicant to provide notification of the proposal to the appropriate authorities of all affected adjacent government jurisdictions, as well as appropriate state agencies. A copy of the notification shall be maintained in the permit records and submitted to FEMA.

Commented [LP30]: 25-12-54(D)(13)

G103.6.1 Engineering Analysis. The *building official* shall require submission of an engineering analysis in accordance with the City of Austin Drainage Criteria Manual performed and sealed by a Professional Engineer licensed by the State of Texas demonstrating that the flood-carrying capacity of the altered or relocated portion of the watercourse will not be decreased. Such watercourses shall be maintained in a manner which preserves the channel's flood-carrying capacity.

Commented [LP31]: 25-12-54(D)(14)

G103.7 Records. The *building official* shall maintain a permanent record of all permits issued in flood hazard areas, including copies of inspection reports and certifications required in Section 1612 (*Flood Loads*).

Commented [LP32]: 25-12-54(D)(15)

G103.9 Inspections. Development for which a *permit* under this appendix is required shall be subject to inspection. The *building official* or the *building official's* designee shall make, or cause to be made, inspections of all development in *flood hazard areas* authorized by issuance of a *permit* under this appendix.

Commented [LP33]: 25-12-54(D)(16)

SECTION G104 PERMITS

Commented [LP34]: 25-12-54(E)

G104.1 Required. Any person, owner or owner's authorized agent who intends to conduct any development in a *flood hazard area* shall first make application to the *building official* and shall obtain the required *permit*.

Commented [LP35]: 25-12-54(E)(1)

G104.2 Application for Permit. The applicant shall file an application in writing on a form furnished by the *building official*. Such application shall:

Commented [LP36]: 25-12-54(E)(2)(a-h)

1. Identify and describe the development to be covered by the *permit*.
2. Describe the land on which the proposed development is to be conducted by legal description, street address or similar description that will readily identify and definitely locate the site.
3. Include a site plan showing the delineation of *flood hazard areas*, *floodway* boundaries, flood zones, design flood elevations, ground elevations, proposed lowest floor elevation, proposed fill and excavation and drainage patterns and facilities.

4. Include in subdivision proposals and other proposed developments with more than 50 lots or larger than 5 acres (20 234 m2), base flood elevation data in accordance with Section 1612.3 (*Establishment of flood hazard areas*).

5. Indicate the use and occupancy for which the proposed development is intended.

6. Be accompanied by construction documents, grading and filling plans and other information deemed appropriate by the *building official*.

7. State the valuation of the proposed work.

8. Be signed by the applicant or the applicant's authorized agent.

G104.3 Validity of Permit. The issuance of a *permit* under this appendix shall not be construed to be a *permit* for, or approval of, any violation of this appendix or any other ordinance of the jurisdiction. The issuance of a *permit* based on submitted documents and information shall not prevent the *building official* from requiring the correction of errors. The *building official* is authorized to prevent occupancy or use of a structure or site which is in violation of this appendix or other ordinances of the City of Austin.

Commented [LP37]: 25-12-54(E)(3)

G104.4 Time Limitation on Application; Permit Expiration and Reactivation. Time limits on permit applications and requirements for permit expiration and reactivation, including a review fee for expired permits, are set forth in Chapter 25-12, Article 13 (*Administration of Technical Codes*).

Commented [LP38]: 25-12-54(E)(4)

Exception: Permits issued under Section 105.1.1 (*Annual permit*) are only valid for a period of 360 days from the date of issuance and cannot be extended.

G104.5 Suspension or Revocation. The *building official* is authorized to suspend or revoke a *permit* issued under this appendix wherever the permit is issued in error or on the basis of incorrect, inaccurate or incomplete information, or in violation of any ordinance or code of the City of Austin.

Commented [LP39]: 25-12-54(E)(5)

SECTION G105 VARIANCES

Commented [LP40]: 25-12-54(F)

G105.1 General. The City Council shall decide requests for variances from the floodplain regulations in this code and City Code Chapter 25-7 (*Drainage*) after conducting a public hearing. The City Council shall base its determination on technical justifications, and has the right to attach such conditions to variances as it deems necessary to further the purposes and objectives of this appendix and Section 1612 (*Flood Loads*).

Commented [LP41]: 25-12-54(F)(1)

G105.2 Records. The *building official* shall maintain a permanent record of all variance actions, including justification for their issuance.

Commented [LP42]: 25-12-54(F)(2)

G105.3 Historic Structures. A variance may be issued for the repair or rehabilitation of a historic structure upon a determination that the proposed repair or rehabilitation will not preclude the structure's continued designation as a historic structure, and the variance is the minimum necessary to preserve the historic character and design of the structure.

Commented [LP43]: 25-12-54(F)(3)(a)

Exception: Within flood hazard areas, historic structures that are not:

Commented [LP44]: 25-12-54(F)(3)(b)

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

b. 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

c. Designated as historic under a state or local historic preservation program that is approved by the Department of Interior.

G105.4 Functionally Dependent Facilities. A variance may be issued for the construction or substantial improvement of a functionally dependent facility provided the criteria in Section 1612.1 (*General*) are met and the variance is the minimum necessary to allow the construction or substantial improvement, and that all due consideration has been given to methods and materials that minimize flood damages during the design flood and create no additional threats to public safety.

Commented [LP45]: 25-12-54(F)(4)

G105.5 Restrictions. The City Council shall not issue a variance for any proposed development in a floodway if any increase in flood levels would result during the design flood discharge.

Commented [LP46]: 25-12-54(F)(5)

G105.6 Considerations. In reviewing applications for variances, the City Council shall consider all technical evaluations, all relevant factors, all other portions of this appendix, and each of the following:

Commented [LP47]: 25-12-54(F)(6)(a-j)

1. The danger that materials and debris may be swept onto other lands resulting in further injury or damage.
2. The danger to life and property due to flooding or erosion damage.
3. The susceptibility of the proposed development, including contents, to flood damage and the effect of such damage on current and future owners.
4. The importance of the services provided by the proposed development to the community.
5. The availability of alternate locations for the proposed development that are not subject to flooding or erosion.
6. The compatibility of the proposed development with existing and anticipated development.
7. The relationship of the proposed development to the comprehensive plan and flood plain management program for that area.
8. The safety of access to the property in times of flood for ordinary and emergency vehicles.
9. The expected heights, velocity, duration, rate of rise and debris and sediment transport of the floodwaters and the effects of wave action, if applicable, expected at the site.
10. The costs of providing governmental services during and after flood conditions including maintenance and repair of public utilities and facilities such as sewer, gas, electrical and water systems, streets and bridges.

G105.7 Conditions for Issuance. Variances shall only be issued by the City Council upon:

Commented [LP48]: 25-12-54(F)(7)(a-e)

1. A technical showing of good and sufficient cause based on the unique characteristics of the size, configuration or topography of the site;
2. A determination that failure to grant the variance would result in exceptional hardship by rendering the lot undevelopable;
3. A determination that the granting of a variance will not result in increased flood heights, additional threats to public safety, extraordinary public expense, nor create nuisances, cause fraud on or victimization of the public or conflict with existing local laws or ordinances;
4. A determination that the variance is the minimum necessary, considering the flood hazard, to afford relief; and
5. Notification to the applicant in writing over the signature of the *building official* that the issuance of a variance to construct a structure below the base flood level will result in increased premium rates for flood insurance, and that such construction below the base flood level increases risks to life and property.

SECTION G201 DEFINITIONS

Commented [LP49]: 25-12-52

G201.1 General. The following words and terms shall, for the purposes of this appendix, have the meanings shown herein. Refer to Chapter 2 for general definitions.

G201.2 Definitions.

DEVELOPMENT. Any man-made change to improved or unimproved real estate, including but not limited to, buildings or other structures, temporary or permanent storage of materials, mining, dredging, filling, grading, paving, excavations, operations and other land disturbing activities.

FUNCTIONALLY DEPENDENT FACILITY. A facility which cannot be used for its intended purpose unless it is located or carried out in close proximity to water, such as a docking or port facility necessary for the loading or unloading of cargo or passengers, shipbuilding or ship repair. The term does not include long-term storage, manufacture, sales or service facilities.

MANUFACTURED HOME. A structure that is transportable in one or more sections, built on a permanent chassis, designed for use with or without a permanent foundation when attached to the required utilities, and constructed to the Federal Mobile Home Construction and Safety Standards and rules and regulations promulgated by the U.S. Department of Housing and Urban Development. The term also includes mobile homes, park trailers, travel trailers and similar transportable structures that are placed on a site for 180 consecutive days or longer.

MANUFACTURED HOME PARK OR SUBDIVISION. A parcel (or contiguous parcels) of land divided into two or more manufactured home lots for rent or sale.

RECREATIONAL VEHICLE. A vehicle that is built on a single chassis, 400 square feet (37.16 m²) or less when measured at the largest horizontal projection, designed to be self-propelled or permanently towable by a light-duty truck, and designed primarily not for use as a permanent dwelling but, as temporary living quarters for recreational, camping, travel or seasonal use. A recreational vehicle is ready for highway use if it is on its wheels or jacking system, is attached to the site only by quick disconnect-type utilities and security devices and has no permanently attached additions.

VARIANCE. A grant of relief from the requirements of this section which permits construction in a manner otherwise prohibited by this section where specific enforcement would result in unnecessary hardship.

VIOLATION. A development that is not fully compliant with this appendix or Section 1612 (*Flood Loads*), as applicable.

Commented [LP50]: 25-12-55

SECTION G301 SUBDIVISIONS

Commented [LP51]: 25-12-54(G)

G301.1 General. Any subdivision proposal, including proposals for manufactured home parks and subdivisions, or other proposed new development in a flood hazard area shall be reviewed to verify all of the following:

Commented [LP52]: 25-12-54(G)(1)(a-c)

1. All such proposals are consistent with the need to minimize flood damage;
2. All public utilities and facilities, such as sewer, gas, electric and water systems are located and constructed to minimize or eliminate flood damage; and
3. Adequate drainage is provided to reduce exposure to flood hazards.

G301.2 Subdivision Requirements. The following requirements shall apply in the case of any proposed subdivision, including proposals for manufactured home parks and subdivisions, any portion of which lies within a *flood hazard area*:

Commented [LP53]: 25-12-54(G)(2)(a-d)

1. The *flood hazard area*, including *floodways*, as appropriate, shall be delineated on tentative and final subdivision plats.
2. Design flood elevations shall be shown on tentative and final subdivision plats.
3. Residential building lots shall be provided with adequate buildable area outside the *flood hazard area*.
4. The design criteria for utilities and facilities set forth in this appendix, Section 1612 (*Flood Loads*), ASCE 24, the City of Austin Drainage Criteria Manual, and applicable FEMA design criteria shall be met.

SECTION G401 SITE IMPROVEMENT

Commented [LP54]: 25-12-54(H)

G401.1 Development in Floodways. Development or land disturbing activity shall not be authorized in the *floodway* unless it has been demonstrated through hydrologic and hydraulic analyses performed and sealed by a Professional Engineer licensed by the State of Texas in accordance with the City of Austin Drainage Criteria Manual, that the proposed encroachment will not result in any increase in the level of the design flood.

Commented [LP55]: 25-12-54(H)(1)

G401.2 Sewer Facilities. All new or replaced sanitary sewer facilities, private sewage treatment plants (including all pumping stations and collector systems) and on-site waste disposal systems shall be designed in accordance with Chapter 7, ASCE 24, to minimize or eliminate infiltration of floodwaters into the facilities and discharge from the facilities into floodwaters, or impairment of the facilities and systems.

Commented [LP56]: 25-12-54(H)(2)

G401.3 Water Facilities. All new replacement water facilities shall be designed in accordance with the provisions of Chapter 7, ASCE 24, to minimize or eliminate infiltration of floodwaters into the systems.

Commented [LP57]: 25-12-54(H)(3)

G401.4 Storm Drainage. Storm drainage shall be designed to convey the flow of surface waters to minimize or eliminate damage to persons or property.

Commented [LP58]: 25-12-54(H)(4)

G401.5 Streets and Sidewalks. Streets and sidewalks shall be designed to minimize potential for increasing or aggravating flood levels.

Commented [LP59]: 25-12-54(H)(5)

SECTION G501 MANUFACTURED HOMES

Commented [LP60]: 25-12-54(I)

G501.1 Elevation. All new and replacement manufactured homes to be placed or substantially improved in a *flood hazard area* shall be elevated such that the lowest floor of the manufactured home is elevated to a minimum of one (1) foot above the design flood elevation. Elevation certification required by Section 1612.5 (*Flood hazard documentation*) shall be submitted to the building official.

Commented [LP61]: 25-12-54(I)(1)

G501.2 Foundations. All new and replacement manufactured homes, including substantial improvement of existing manufactured homes, shall be placed on a permanent, reinforced foundation that is designed in accordance with Section R322 of the *International Residential Code*.

Commented [LP62]: 25-12-54(I)(2)

G501.3 Anchoring. All new and replacement manufactured homes to be placed or substantially improved in a *flood hazard area* shall be installed using methods and practices which minimize flood damage. Manufactured homes shall be securely anchored to an adequately anchored foundation system to resist flotation, collapse and lateral movement. Methods of anchoring are authorized to include, but are not limited to, use of over-the-top or frame ties to ground anchors. This requirement is in addition to applicable state and local anchoring requirements for resisting wind forces.

Commented [LP63]: 25-12-54(I)(3)

G501.4 Protection of Mechanical Equipment and Outside Appliances. Mechanical equipment and outside appliances shall be elevated to or above the *design flood elevation*.

Commented [LP64]: 25-12-54(I)(4)(a-b)

Exception: Where such equipment and appliances are designed and installed to prevent water from entering or accumulating within their components and the systems are constructed to resist hydrostatic and hydrodynamic loads and stresses, including the effects of buoyancy, during the occurrence of flooding up to the elevation required by Section R322 of the *International Residential Code*, the systems and equipment shall be permitted to be located below the elevation required by Section R322 of the *International Residential Code*. Electrical wiring systems shall be permitted below the *design flood elevation* provided they conform to the provisions of NFPA 70.

G501.5 Enclosures. Fully enclosed areas below elevated manufactured homes shall comply with the requirements of Section R322 of the *International Residential Code*.

Commented [LP65]: 25-12-54(I)(5)

SECTION G601 RECREATIONAL VEHICLES

Commented [LP66]: 25-12-54(J)

G601.1 Placement Prohibited. The placement of recreational vehicles shall not be authorized in *floodways*.

Commented [LP67]: 25-12-54(J)(1)

G601.2 Temporary Placement. Recreational vehicles in flood hazard areas shall be fully licensed and ready for highway use, and shall be placed on a site for less than 180 consecutive days.

Commented [LP68]: 25-12-54(J)(2)

G601.3 Permanent Placement. Recreational vehicles that are not fully licensed and ready for highway use, or that are to be placed on a site for more than 180 consecutive days, shall meet the requirements of Section G501 (*Manufactured Homes*) for manufactured homes.

Commented [LP69]: 25-12-54(J)(3)

SECTION G701 TANKS

Commented [LP70]: 25-12-54(K)

G701.1 Tanks. Underground and above-ground tanks shall be designed, constructed, installed and anchored in accordance with ASCE 24.

Commented [LP71]: 25-12-54(K)(1)

Section G702 Referenced Standards

IRC - Local Amendments

R322.1 General. Within a flood hazard area, new construction of a building, addition or alteration to a building or structure, including portions of a building or structure, and substantial improvements or ~~restoration~~-repair of substantial damage must be designed and constructed to resist the effects of flood hazards and flood loads.

Commented [LP72]: 25-12-53(A)(1)

R322.1.4 Establishing the Design Flood Elevation. The design flood elevation defines areas prone to flooding and describes, at a minimum, the base flood elevation at the depth of peak elevation of flooding based upon:

Commented [LP73]: 25-12-54(D)(3)

1. For areas amended to incorporate Atlas 14 data, the 100-year floodplain calculated under fully developed conditions in accordance with the City of Austin Drainage Criteria Manual as amended to incorporate Atlas 14 data;
2. For areas not yet amended to incorporate Atlas 14 data, the 500-year floodplain either as depicted on the FEMA Flood Insurance Rate Map as of January 6, 2016, as subsequently revised, or as calculated under existing conditions as prescribed by the Drainage Criteria Manual using data predating Atlas 14; or
3. For the Colorado River, the 100-year floodplain as depicted on the FEMA Flood Insurance Rate Map dated January 6, 2016, or as subsequently revised.

R322.1.4.1 Determination of Design Flood Elevation. If a design flood elevation is not specified, the building official may require the applicant to:

Commented [LP74]: 25-12-54(D)(4)

1. obtain and reasonably use data available from a federal, state, or other source; or
2. determine, using a professional engineer registered with the State of Texas, the design flood elevation in accordance with accepted hydrologic and hydraulic engineering practices that define special flood hazard areas. Studies, analyses, and computations must reflect

currently accepted engineering practice and must be submitted to the building official and must include sufficient detail to allow thorough review and approval.

R322.1.4.2 Determination of Impacts. In a riverine flood hazard area where design flood elevations are specified but floodways have not been designated, an applicant must demonstrate that the effect of the proposed building or structure 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.

Commented [LP75]: 25-12-54(D)(5)

R322.1.5 Lowest Floor. The lowest floor shall be the floor of the lowest enclosed area, including basement. The lowest floor does not include any unfinished flood-resistant enclosure that is used only for vehicle parking, building access, or limited storage, unless the enclosure is built to cause the building or structure to violate this section.

Commented [LP76]: 25-12-54(D)(7)

Exception: An unfinished enclosure used for storage of property, materials, or equipment that constitute a safety hazard if contacted by flood waters is a lowest floor.

R322.2 Establishment of Flood Hazard Areas (including A Zones). A flood hazard area is:

Commented [LP77]: 25-12-53(B)

1. the areas of special flood hazard area identified by the Federal Emergency Management Agency in the current scientific and engineering report entitled, "The Flood Insurance Study (FIS) for Williamson County, Texas and Incorporated Areas" dated December 20, 2019, with accompanying Flood Insurance Rate Maps (FIRM) dated December 20, 2019, the current scientific and engineering report entitled "The Flood Insurance Study for Travis County, Texas and Incorporated Areas" dated January 6, 2016, with accompanying Flood Insurance Rate Maps dated January 6, 2016, and any revisions are adopted by reference and declared to be a part of this section; or
2. a 100-year or 25-year floodplain as defined in the Austin City Code.

R322.2.1 Elevation Requirements.

Commented [LP78]: 25-12-53(C)(1)(a-d)

1. Unless otherwise specified in the Land Development Code, the lowest floor of a building or structure must be elevated a minimum of two feet above the design flood elevation.
2. Where the design flood elevation or other elevation requirement specifies, a minimum freeboard of two feet shall be added.
3. In areas of shallow flooding (AO Zones), the lowest floor (including a basement) of a building or structure must be elevated higher than the highest adjacent grade as the depth number specified in feet (mm) on the FIRM plus two feet, or at least three feet (915 mm) if a depth number is not specified.
4. A basement floor that is below grade on all sides must be elevated at least two feet above the design flood elevation.

Exception: An enclosed area, including a basement, which is below the design flood elevation but not below grade on all sides must meet the requirements in Section R322.2.2 (*Enclosed area below design flood elevation*).

R322.2.2 Enclosed Area Below Design Flood Elevation. An enclosed area, including a crawl space, that is below the regulatory flood datum must:

Commented [LP79]: 25-12-53(C)(2)

1. be used only for parking vehicles, building access or storage excluding property, material, or equipment that may constitute a safety hazard when contacted by flood waters;
2. include flood openings that meet the following criteria:
 - 2.1. the enclosed area must have a minimum of two openings located on different sides of the enclosed area; if a building includes more than one enclosed area below the design flood elevation, each area must have openings on exterior walls;
 - 2.2. the total net area of all openings must be at least 1 square inch (645 mm^2) per square foot (0.093 m^2) of the enclosed area, or the openings are designed and the construction documents state that the design and installation will provide for the equalization of hydrostatic flood forces on exterior walls by allowing for the automatic entry and exist of floodwaters;
 - 2.3. the bottom of each opening is 1 foot (305 mm) or less above adjacent ground level;
 - 2.4. each opening is at least 3 inches (76 mm) in diameter;
 - 2.5. any louvers, screens or other opening covers allow the automatic flow of floodwaters into and out of the enclosed areas;
 - 2.6. a door or window that does not meet the requirements in 2.1 through 2.5 does not comply with this section; and
 - 2.7. constructed of flood damage-resistant materials.

R322.2.3 Foundation Design and Construction. A foundation wall in a building or structure erected in a flood hazard area must meet the requirements in Chapter 4 (*Foundations*).

Commented [LP80]: 25-12-54(L)

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

1. the unsupported height of a 6-inch (152 mm) plain masonry wall shall not exceed 3 feet (914 mm);
2. the unsupported height of an 8-inch (203 mm) plain masonry wall shall not exceed 4 feet (1219 mm); and
3. the unsupported height of an 8-inch (203 mm) reinforced masonry wall shall not exceed 8 feet (2438 mm).

For purposes of this exception, unsupported height is measured from the finished grade of the under-floor space to the top of the wall.

R322.2.5 Provisions of Safe Refuge.

Commented [LP81]: 25-12-53(C)(3)(a-c)

1. A building or structure constructed in a 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 provide an enclosed refuge space two feet or more above the design flood elevation with sufficient area to allow an occupancy load of 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. An existing building or structure in a flood hazard area that is substantially improved or where a change of use or occupancy is made must comply with the requirements in Subsection 1.
3. Regardless of the structure or space classification, a floor level or portion of a building or structure that is lower than one foot above the design flood elevation shall not be used for a residential use or for storage of property, material, or equipment that may constitute a safety hazard when contacted by flood waters.

R322.2.6 Means of Egress.

Commented [LP82]: 25-12-53(C)(4)(a-d)

1. Unless otherwise approved by the building official, normal access to the building shall be by direct connection with an area that is a minimum of one foot above the design flood elevation.
2. For a building that is part of a single-family condo regime residential building permit application and part of a site plan that was approved between December 1, 2017, and November 25, 2019, compliance with this section shall be determined at the time of site plan approval.
3. For a building that is part of a single-family building permit application and part of (a) a preliminary plan that was submitted for approval between December 1, 2014, and November 25, 2019 or (b) a final plat that was approved between December 1, 2017, and November 25, 2019, compliance with this section shall be determined at the time of preliminary plan or final plat approval, respectively.
4. For all other buildings, compliance with this section shall be determined at the time of building permit application.

Exception: This section does not apply to an addition or alteration to an existing building or structure that is not a substantial improvement as defined in Section R202 (*Definitions*).

IRC – Published Code

R322.1.1 Alternative provisions.

As an alternative to the requirements in Section R322, ASCE 24 is permitted subject to the limitations of this code and the limitations therein.

R322.1.2 Structural systems.

Structural systems of 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.

R322.1.3 Flood-resistant construction.

Buildings and structures erected in areas prone to flooding shall be constructed by methods and practices that minimize flood damage.

Commented [LP83]: 25-12-54(B)(4-6)

R322.1.6 Protection of mechanical, plumbing and electrical systems.

Commented [LP84]: 25-12-54(D)(8)

Electrical systems, *equipment* and components; heating, ventilating, air-conditioning; plumbing *appliances* and plumbing fixtures; *duct systems*; and other service *equipment* shall be located at or above the elevation required in Section R322.2 or R322.3. If replaced as part of a substantial improvement, electrical systems, *equipment* and components; heating, ventilating, air-conditioning and plumbing *appliances* and 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: Locating electrical systems, *equipment* and components; heating, ventilating, air-conditioning; plumbing *appliances* and plumbing fixtures; *duct systems*; and other service *equipment* is permitted below the elevation required in Section R322.2 or R322.3 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 required elevation in accordance with ASCE 24. Electrical wiring systems are permitted to be located below the required elevation provided that they conform to the provisions of the electrical part of this code for wet locations.

R322.1.7 Protection of water supply and sanitary sewage systems.

Commented [LP85]: 25-12-54(D)(9)

New and replacement water supply systems shall be designed to minimize or eliminate infiltration of flood waters into the systems in accordance with the plumbing provisions of this code. New and replacement sanitary sewage systems shall be designed to minimize or eliminate infiltration of floodwaters into systems and discharges from systems into floodwaters in accordance with the plumbing provisions of this code and Chapter 3 of the *International Private Sewage Disposal Code*.

R322.1.8 Flood-resistant materials.

Commented [LP86]: 25-12-54(D)(10)

Building materials and installation methods used for flooring and interior and exterior walls and wall coverings below the elevation required in Section R322.2 or R322.3 shall be flood damage-resistant materials that conform to the provisions of FEMA TB-2.

R322.1.9 Manufactured homes.

Commented [LP87]: 25-12-54(I)(1)

The bottom of the frame of new and replacement *manufactured homes* on foundations

that conform to the requirements of Section R322.2 or R322.3, as applicable, shall be elevated to or above the elevations specified in Section R322.2 (flood hazard areas including A Zones) or R322.3 in coastal high-hazard areas (V Zones and Coastal A Zones). The anchor and tie-down requirements of the applicable state or federal requirements shall apply. The foundation and anchorage of *manufactured homes* to be located in identified floodways shall be designed and constructed in accordance with ASCE 24.

R322.1.10 As-built elevation documentation.

A registered *design professional* shall prepare and seal documentation of the elevations specified in Section R322.2 or R322.3.

Commented [LP88]: 525-12-3(D)

R322.2.1 Elevation Requirements.

Exception: Enclosed areas below the elevation required in this section, including basements with floors that are not below grade on all sides, shall meet the requirements of Section R322.2.2

Commented [LP89]: 25-12-53(C)(1)

R322.2.2.1 Installation of openings.

The walls of enclosed areas shall have openings installed such that:

1. There shall be not less than two openings on different sides of each enclosed area; if a building has more than one enclosed area, each area shall have openings.
2. The bottom of each opening shall be not more than 1 foot (305 mm) above the higher of the final interior grade or floor and the finished exterior grade immediately under each opening.
3. Openings shall be permitted to be installed in doors and windows; doors and windows without installed openings do not meet the requirements of this section.

Commented [LP90]: 25-12-53(C)(5)

Underground tanks shall be anchored to prevent flotation, collapse and lateral movement under conditions of the base flood. Above-ground tanks shall be installed at or above the elevation required in Section R322.2.1 or shall be anchored to prevent flotation, collapse and lateral movement under conditions of the base flood.

Commented [LP91]: 25-12-54(K)