



Chapter 12

FLOOD DAMAGE PREVENTION AND CONTROL

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Flood protection and control was initially established in Chapter 17A of the 1962 City Code. Participation in the National Flood Insurance Program and building/structure requirements was confirmed in June 1978 (Ordinance O-83-78). The first flood hazard boundary maps for Knoxville were issued February 18, 1981. The flood damage prevention and control ordinance was revised substantially in November 1990 (Ordinance O-347-90), December 2003 (Ordinance O-428-03), April 2007 (Ordinance O-70-07), June 2013 (Ordinance O-112-2013) and February 2018 (Ordinance O-22-2018). This version now dates as July 2019 (Ordinance O-97-2019).

ARTICLE I. FINDINGS OF FACT, PURPOSE AND OBJECTIVES

Section 12-1. Findings of fact.

- (a) The city mayor and council wish to maintain eligibility in the National Flood Insurance Program and in order to do so must meet the requirements of 60.3(d) of the Federal Insurance Administration Regulations found at 44 CFR Ch. 1 (10-1-04 Edition) and subsequent amendments.
- (b) Areas of the city are subject to periodic inundation which could result in loss of life and property, health and safety hazards, disruption of commerce and governmental services, extraordinary public expenditures for flood protection and relief, and impairment of the tax base, all of which adversely affect the public health, safety and general welfare.
- (c) These flood losses are caused by the cumulative effect of obstructions in floodplains, causing increases in flood heights and velocities; and by uses in flood hazard areas which are vulnerable to floods; or construction which is inadequately elevated, floodproofed, or otherwise unprotected from flood damages.

(Ord. No. O-112-2013, § 1, 6-25-13)

Section 12-2. Statement of purpose.

It is the purpose of this chapter to promote the public health, safety and general welfare, and to minimize public and private losses due to flood conditions in specific areas. This chapter is designed to:

- (1) Restrict or prohibit uses which are vulnerable to flooding or erosion hazards, or which result in damaging increases in erosion, flood heights or velocities;
- (2) Require that uses vulnerable to floods, including community facilities, be protected against flood damage at the time of initial construction;
- (3) Control the alteration of natural floodplains, stream channels, and natural protective barriers which are involved in the accommodation of floodwaters;
- (4) Control filling, grading, dredging and other development which may increase flood damage or erosion; and
- (5) Prevent or regulate the construction of flood barriers which will unnaturally divert floodwaters or which may increase flood hazards to other lands.

(Ord. No. O-112-2013, § 1, 6-25-13)

Section 12-3. Objectives.

The objectives of this chapter are:

- (1) To protect human life, health and property;
- (2) To minimize expenditure of public funds for costly flood control projects;
- (3) To minimize the need for rescue and relief efforts associated with flooding and generally undertaken at the expense of the general public;
- (4) To minimize prolonged business interruptions;
- (5) To minimize damage to public facilities and utilities such as water and gas mains, electric, telephone and sewer lines, streets and bridges located in flood-prone areas;
- (6) To help maintain a stable tax base by providing for the sound use and development of flood-prone areas in such a manner as to minimize blight in flood areas;
- (7) To ensure that potential buyers are notified that property is in a flood-prone area; and
- (8) To maintain eligibility for participation in the National Flood Insurance Program.

(Ord. No. O-112-2013, § 1, 6-25-13)

Section 12-3.1. Definitions.

Unless specifically defined below, words or phrases used in this chapter shall be interpreted as to give them the meaning they have in common usage and to give this chapter its most reasonable application given its stated purpose and objectives.

Accessory structure shall represent a subordinate structure to the principal structure on the same lot and, for the purpose of this section, shall conform to the following:

- (1) Accessory structures shall only be used for parking of vehicles and/ or storage.
- (2) Accessory structures shall be designed to have low flood damage potential.
- (3) Accessory structures shall be constructed and placed on the building site so as to offer the minimum resistance to the flow of floodwaters.
- (4) Accessory structures shall be firmly anchored to prevent flotation, collapse and lateral movement which otherwise may result in damage to other structures.
- (5) Utilities and service facilities such as electrical and heating equipment shall be elevated to one (1) foot above the Base Flood Elevation or otherwise protected from intrusion of flood waters.

Act means the statutes authorizing the National Flood Insurance Program that are incorporated in 42 U.S.C. 4001-4128.

Addition (to an existing building) means any walled and roofed expansion to the perimeter or height of a building in which the addition is connected by a common load-bearing wall other than a fire wall. Any walled and roofed addition which is connected by a fire wall or is separated by independent perimeter load-bearing walls shall be considered "new construction."

Appeal means a request for a review of the building official's interpretation of any provision of this chapter or a request for a variance.

Area of shallow flooding means a designated AO or AH zone on a community's flood insurance rate map (FIRM) with one (1) percent or greater annual chance of flooding to an average depth of one (1) to three (3) feet where a clearly defined channel does not exist, where the path of flooding is unpredictable and indeterminate, and where velocity flow may be evident. (Such flooding is characterized by ponding or sheet flow).

Base flood means the flood having a two-tenths of one percent chance of being equaled or exceeded in any given year.

Basement means any portion of a building having its floor subgrade (below ground level) on all sides.

Building means any structure built for support, shelter, or enclosure for any occupancy or storage (see "structure").

Development means any man-made change to improved or unimproved real estate, including, but not limited to, buildings or other structures, mining, dredging, filling, grading, paving, excavation, drilling operations, or storage of equipment or materials.

Elevated building means a non-basement building built to have the lowest floor of the lowest enclosed area elevated above the ground level by means of fill, solid foundation perimeter walls with openings sufficient to facilitate the unimpeded movement of floodwater, pilings, columns piers, or shear walls adequately anchored so as not to impair the structural integrity of the building during a base flood event.

Emergency flood insurance program or emergency program means the program as implemented on an emergency basis in accordance with section 1336 of the Act. It is intended as a program to provide a first layer amount of insurance on all insurable structures before the effective date of the initial FIRM.

Erosion means the process of the gradual wearing away of land masses. This peril is not per se covered under the program.

Exception means a waiver from the provisions of this chapter which relieves the applicant from the requirements of a rule, regulation, order or other determination made or issued pursuant to this chapter.

Existing construction means any structure for which the "start of construction" commenced before the effective date of the first floodplain management code or ordinance adopted by the community as a basis for that community's participation in the National Flood Insurance Program (NFIP).

Existing manufactured home park or subdivision means a manufactured home park or subdivision for which the construction of facilities for servicing the lots on which the manufactured homes are to be affixed (including, at a minimum, the installation of utilities, the construction of streets, final site grading or the pouring of concrete pads) is completed before the effective date of the first floodplain management code or ordinance adopted by the community as a basis for that community's participation in the National Flood Insurance Program (NFIP).

Existing structures. See "existing construction."

Expansion to an existing manufactured home park or subdivision means the preparation of additional sites by the construction of facilities for servicing the lots on which the manufactured homes are to be affixed (including the installation of utilities, the construction of streets, and either final site grading or the pouring of concrete pads).

500-year flood. See "base flood."

Flood or flooding means a general and temporary condition of partial or complete inundation of normally dry land areas from:

- (1) The overflow of inland or tidal waters.
- (2) The unusual and rapid accumulation or runoff of surface waters from any source.

Flood elevation determination means a determination by the Federal Emergency Management Agency or the City's Floodplain Manager, of the water surface elevations of the base flood, which is the flood level that has a two-tenths of one percent or greater chance of occurrence in any given year.

Flood elevation study means an examination, evaluation, and determination of flood hazards and, if appropriate, corresponding water surface elevations, or an examination, evaluation and determination of mudslide (i.e., mudflow) and/or flood-related erosion hazards.

Flood insurance rate map (FIRM) means an official map of a community, issued by the Federal Emergency Management Agency, delineating the areas of special flood hazard or the risk premium zones applicable to the community.

Flood insurance study is the official report provided by the Federal Emergency Management Agency, evaluating flood hazards and containing flood profiles and water surface elevation of the base flood.

Floodplain or flood-prone area means any land area susceptible to being inundated by water from any source (see definition of "flooding").

Floodplain management means the operation of an overall program of corrective and preventive measures for reducing flood damage, including but not limited to emergency preparedness plans, flood control works and floodplain management regulations.

Flood protection system means those physical structural works for which funds have been authorized, appropriated and expended and which have been constructed specifically to modify flooding in order to reduce the extent of the area within a community subject to a "special flood hazard" and the extent of the depths of associated flooding. Such a system typically includes hurricane tidal

barriers, dams, reservoirs, levees or dikes. These specialized flood modifying works are those constructed in conformance with sound engineering standards.

Floodproofing means any combination of structural and nonstructural additions, changes, or adjustments to structures which reduce or eliminate flood damage to real estate or improved real property, water and sanitary facilities, structures and their contents.

Flood-related erosion means the collapse or subsidence of land along the shore of a lake or other body of water as a result of undermining caused by waves or currents of water exceeding anticipated cyclical levels or suddenly caused by an unusually high water level in a natural body of water, accompanied by a severe storm, or by an unanticipated force of nature, such as a flash flood, or by some similarly unusual and unforeseeable event which results in flooding.

Flood-related erosion area or flood-related erosion-prone area means a land area adjoining the shore of a lake or other body of water, which due to the composition of the shoreline or bank and high water levels or wind-driven currents, is likely to suffer flood-related erosion damage.

Flood-related erosion area management means the operation of an overall program of corrective and preventive measures for reducing flood-related erosion damage, including but not limited to, emergency preparedness plans, flood-related erosion control works and floodplain management regulations.

Floodway means the channel of a river or other watercourse and the adjacent land areas that must be reserved in order to discharge the one (1) percent annual chance flood without cumulatively increasing the water surface elevation more than the designated height.

Floor means the top surface of an enclosed area in a building (including basement), i.e., top of slab in concrete slab construction or top of wood flooring in wood frame construction. The term does not include the floor of a garage used solely for parking vehicles.

Freeboard means a factor of safety usually expressed in feet above a flood level for purposes of floodplain management. "Freeboard" tends to compensate for the many unknown factors that could contribute to flood heights greater than the height calculated for a selected size flood and floodway conditions, such as wave action, blockage of bridge or culvert openings and the hydrological effect of urbanization of the watershed.

Functionally dependent use means a use which cannot perform its intended purpose unless it is located or carried out in close proximity to water. The term includes only docking facilities, port facilities that are necessary for the loading and unloading of cargo or passengers, and ship building and ship repair facilities, but does not include long-term storage or related manufacturing facilities.

Highest adjacent grade means the highest natural elevation of the ground surface, prior to construction, next to the proposed walls of a structure.

Historic structure means any structure that is:

- (1) Listed individually in the National Register of Historic Places (a listing maintained by the U.S. Department of the Interior) or preliminarily determined by the Secretary of the Interior as meeting the requirements for individual listing on the National Register;
- (2) Certified or preliminarily determined by the Secretary of the Interior as contributing to the historical significance of a registered historic district or a district preliminarily determined by the Secretary to qualify as a registered historic district;
- (3) Individually listed on a state inventory of historic places; or
- (4) Individually listed on a local inventory of historic places or within an existing H1 zone.

Levee means a man-made structure, usually an earthen embankment, designed and constructed in accordance with sound engineering practices to contain, control, or divert the flow of water so as to provide protection from temporary flooding.

Levee system means a flood protection system which consists of a levee or levees, and associated structures such as closure and drainage devices, which are constructed and operated in accordance with sound engineering practices.

Lowest floor means the lowest floor of the lowest enclosed area (including basement). An unfinished or flood-resistant enclosure, usable solely for parking of vehicles, building access or storage in an area other than a basement area is not considered a building's lowest floor; provided that such enclosure is not built so as to render the structure in violation of the applicable non-elevation design requirements of this chapter.

Manufactured home means a structure, transportable in one or more sections, which is built on a permanent chassis and designed for use with or without a permanent foundation when attached to the required utilities. The term "manufactured home" does not include a "recreational vehicle."

Manufactured home park or subdivision means a parcel (or contiguous parcels) of land divided into two or more manufactured home lots for rent or sale.

Map means the flood hazard boundary map (FHBM) or the flood insurance rate map (FIRM) for a community issued by the Federal Emergency Management Agency

Mean sea level means the average height of the sea for all stages of the tide. It is used as a reference for establishing various elevations within the floodplain. For purposes of this chapter, the term is synonymous with, the North American Vertical Datum (NAVD) of 1988, or other datum, to which base flood elevations shown on a community's flood insurance rate map are referenced.

National Geodetic Vertical Datum (NGVD) is the vertical control datum of orthometric height established for vertical control surveying in the United States of America based upon the General Adjustment of the North American Datum of 1988.

New construction means any structure for which the "start of construction" commenced on or after the effective date of the first floodplain management ordinance and includes any subsequent improvements to such structure.

New manufactured home park or subdivision means a manufactured home park or subdivision for which the construction of facilities for servicing the lots on which the manufactured homes are to be affixed (including at a minimum, the installation of utilities, the construction of streets, and either final site grading or the pouring of concrete pads) is completed on or after the effective date of the first floodplain management ordinance and includes any subsequent improvements to such structure.

North American Vertical Datum (NAVD) as corrected in the 1988, is a vertical control used as a reference for establishing varying elevations within a floodplain.

Person includes any individual or group of individuals, corporation, partnership, association, or any other entity, including state and local governments and agencies.

Reasonably safe from flooding means base flood waters will not inundate the land or damage structures to be removed from the Special Flood Hazard Area and that any subsurface waters related to the base flood will not damage existing or proposed structures.

Recreational vehicle means a vehicle which is:

- (1) Built on a single chassis;
- (2) Four hundred (400) square feet or less when measured at the largest horizontal projection;
- (3) Designed to be self-propelled or permanently towable by a light duty truck; and
- (4) Designed primarily not for use as a permanent dwelling but as temporary living quarters for recreational, camping, travel, or seasonal use.

Regulatory floodway means the channel of a river or other watercourse and the adjacent land areas that must be reserved in order to discharge the one hundred-year flood without cumulatively increasing the water surface elevation more than a designated height.

Riverine means relating to, formed by, or resembling a river (including tributaries), stream, brook, etc.

Special hazard area means an area having special flood, mudslide (i.e., mudflow) and/or flood-related erosion hazards and shown on an FHBM or FIRM as zone A, AO, A1-30, AE, A99 or AH.

Special flood hazard area means the floodplain within a community subject to a one percent or greater chance of flooding in a given year. The area may be designated as zone A on the FIRM. Zone A is usually refined into zones A, AO, AH, A1-30, AE or A99.

Start of construction includes substantial improvement, and means the date the building permit was issued, provided the actual start of construction, repair, reconstruction, rehabilitation, addition, placement or other improvement was within one hundred eighty (180) days of the permit date. The actual start means either the first placement of permanent construction of a structure (including a manufactured home) on a site, such as the pouring of slabs or footings, the installation of piles, the construction of columns or any work beyond the stage of excavation; or the placement of a manufactured home on a foundation. Permanent construction does not include land preparation, such as clearing, grading and filling; nor does it include the installation of streets and/or walkways; nor does it include excavation for a basement, footings, piers or foundations or the erection of temporary forms, nor does it include the installation on the property of accessory buildings, such as garages or sheds not occupied as dwelling units or not part of the main structure. 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.

State coordinating agency means the Tennessee Department of Economic and Community Development, Local Planning Assistance Office as designated by the governor of the state at the request of FEMA, to assist in the implementation of the National Flood Insurance Program for the state.

Structure for purposes of this chapter, means a walled and roofed building that is principally above ground, a manufactured home, a gas or liquid storage tank, or other man-made facilities or infrastructures.

Substantial damage means damage of any origin sustained by a structure whereby the cost of restoring the structure to its before-damaged condition would equal or exceed fifty (50) percent of the market value of the structure before the damage occurred.

Substantial improvement means any repairs, reconstruction, rehabilitation, addition, alteration or other improvement to a structure in which the cumulative cost of which equals or exceeds fifty (50) percent of the market value of the structure before the "start of construction" of the initial improvement. The market value of the structure is determined by:

- (1) The appraised value of the structure prior to the start of the initial repair or improvement, or
- (2) In the case of damage, the value of the structure prior to the damage occurring.

This term includes structures which have incurred substantial damage, regardless of the actual repair work performed.

The term does not, however, include either:

- (1) Any project for improvement of a structure to correct existing violations of state or local health, sanitary, or safety code specifications which have been identified by the local code enforcement official and which are the minimum necessary to assure safe living conditions and not solely triggered by an improvement or repair project; or
- (2) Any alteration of a historic structure, provided that the alteration will not preclude the structure's continued designation as a historic structure.

Substantially improved existing manufactured home parks or subdivision is where the repair, reconstruction, rehabilitation or improvement of the streets, utilities and pads equals or exceeds fifty (50) percent of the value of the streets, utilities and pads before the repair, reconstruction or improvement commenced.

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

Violation means the failure of a structure or other development to be fully compliant with the community's floodplain management regulations. A structure or other development without the elevation certificate, other certification, or other evidence of compliance required in this chapter is presumed to be in violation until such time as that documentation is provided.

"Water Surface Elevation" means the height, in relation to the National Geodetic Vertical Datum (NGVD) of 1929, the North American Vertical Datum (NAVD) of 1988 (or other datum where specified), of floods of various magnitudes and frequencies in the floodplains of coastal or riverine areas.

(Ord. No. O-112-2013, § 1, 6-25-13; Ord. No. O-97-2019, § 1, 7-02-19)

Section 12-4. Application.

This chapter shall apply to all areas within the incorporated area of the city.

(Ord. No. O-112-2013, § 1, 6-25-13)

Section 12-5. Basis for establishing the special flood hazard areas and shaded X zones.

The areas of special flood hazard identified on the city Federal Emergency Management Agency flood insurance study (FIS), dated August 5, 2013, and flood insurance rate maps (FIRM), Community 475434, Panel Numbers: 47093C0120F, 47093C0134F, 47093C0136F, 47093C0137F, 47093C0142F, 47093C0144F, 47093C0162F, 47093C0169F, 47093C0170F, 47093C0188F, 47093C0189F, 47093C0254F, 47093C0256F, 47093C0258F, 47093C0262F, 47093C0263F, 47093C0264F, 47093C0266F, 47093C0268F, 47093C0269F, 47093C0282F, 47093C0284F, 47093C0287F, 47093C0288F, 47093C0289F, 47093C0291F, 47093C0292F, 47093C0301F, 47093C0302F, 47093C0303F, 47093C0304F, 47093C0306F, 47093C0307F, 47093C0310F, 47093C0311F, 47093C0312F, 47093C0313F, 47093C0327F, 47093C0330F, 47093C0380F, 47093C0385F, 47093C0405F, dated May 2, 2007 and 47093C0133G, 47093C0138G, 47093C0139G, 47093C0141G, 47093C0143G, 47093C0161G, 47093C0163G, 47093C0164G, 47093C0242G, 47093C0243G, 47093C0244G, 47093C0257G, 47093C0259G, 47093C0267G, 47093C0276G, 47093C0277G, 47093C0278G, 47093C0279G, 47093C0281G, 47093C0283G and 47093C0286G, together also dated August 5, 2013, along with all supporting technical data and any subsequent amendments or revisions, are adopted by reference and declared to be a part of this chapter.

(Ord. No. O-112-2013, § 1, 6-25-13; Ord. No. O-22-2018, § 1, 2-27-18; Ord. No. O-97-2019, § 1, 7-02-19)

Section 12-6. Requirement for development permit.

A development permit shall be required in conformity with this chapter prior to the commencement of any development activity.

(Ord. No. O-112-2013, § 1, 6-25-13)

Section 12-7. Compliance.

No land, structure or use shall hereafter be located, extended, converted, or structurally altered without full compliance with the terms of this chapter and other applicable regulations.

(Ord. No. O-112-2013, § 1, 6-25-13)

Section 12-8. Abrogation and greater restrictions.

This chapter is not intended to repeal, abrogate, or impair any existing easement, covenant, or deed restriction, existing ordinances and regulations. However, where this chapter conflicts or overlaps with another, whichever imposes the more stringent restrictions shall prevail.

(Ord. No. O-112-2013, § 1, 6-25-13)

Section 12-9. Interpretation.

In the interpretation and application of this chapter, all provisions shall be:

- (1) Considered as minimum requirements;
- (2) Liberally construed in favor of the governing body; and
- (3) Deemed neither to limit nor repeal any other powers granted under state statutes.

(Ord. No. O-112-2013, § 1, 6-25-13)

Section 12-10. Warning and disclaimer of liability.

The degree of flood protection required by this chapter is considered reasonable for regulatory purposes and is based on scientific and engineering considerations. Larger floods can and will occur on rare occasions. Flood heights may be increased by man-made or natural causes. This chapter does not imply that land outside the areas of special flood hazard, or uses permitted within such areas, will be free from flooding or flood damages. This chapter shall not create liability on the part of the city or by any officer or employee thereof for any flood damages that result from reliance on this chapter or any administrative decision lawfully made hereunder.

(Ord. No. O-112-2013, § 1, 6-25-13)

Section 12-11. Penalties for violation.

Violation of the provisions of this chapter or failure to comply with any of its requirements, including violation of conditions and safeguards established in connection with grants of variance or special exceptions, shall constitute a violation. Any person who violates this chapter or fails to comply with any of its requirements shall, upon adjudication thereof, be assessed civil penalties and fines as provided by Tennessee law and in addition shall pay all costs and expenses involved in the case. Each day such violation continues shall be considered a separate violation. Nothing herein contained shall prevent the city from taking such other lawful actions to prevent or remedy any violation.

(Ord. No. O-112-2013, § 1, 6-25-13)

Sections 12-12—12-30. Reserved.

ARTICLE II. ADMINISTRATION

Section 12-31. Designation of the engineering department.

The engineering department is hereby appointed to administer and implement the provisions of this chapter.

(Ord. No. O-112-2013, § 1, 6-25-13)

Section 12-32. Permit procedures.

Application for a development permit shall be made to the engineering department on forms furnished by the department prior to any development activity. The development permit may include, but is not limited to, the following: plans in duplicate drawn to scale, showing the nature, location, dimensions, and elevations of the area in question; existing or proposed structures, earthen fill

placement, storage of materials or equipment, and drainage facilities. Specifically, the following information is required:

- (1) Application stage.
 - a. Elevation in relation to mean sea level of the proposed lowest floor, including basement, of all buildings where base flood elevations are available, or to the required height above the highest adjacent grade when applicable under this chapter.
 - b. Elevation in relation to mean sea level to which any non-residential building will be floodproofed, where base flood elevations are available, or to the required height above the highest adjacent grade when applicable under this chapter.
 - c. A FEMA floodproofing certificate from a Tennessee-registered professional engineer or architect that the proposed nonresidential floodproofed building will meet the floodproofing criteria in article II, section 12-32(2).
 - d. Description of the extent to which any watercourse will be altered or relocated as a result of proposed development.
- (2) Construction stage. Within AE zones, where base flood elevation data is available, any lowest floor certification made relative to mean sea level shall be prepared by, or under the direct supervision of, a Tennessee-registered land surveyor and certified by same. The engineering department shall record the elevation of the lowest floor on the development permit. The elevation of the lowest floor shall be determined as the measurement of the lowest floor of the building relative to the highest adjacent grade. When floodproofing is utilized for a non-residential building, said certification shall be prepared by, or under the direct supervision of, a Tennessee-registered professional engineer or architect and certified by same.

For all new construction and substantial improvements, the permit holder shall provide to the Engineering Department an as-built certification of the lowest floor elevation or floodproofing level upon the completion of the lowest floor or floodproofing.

Within approximate A zones, where flood elevation data is not available, the elevation of the lowest floor shall be determined as the measurement of the lowest floor of the building relative to the highest adjacent grade. The engineering department shall record the elevation of the lowest floor on the development permit. Any lowest floor certification made relative to mean sea level shall be prepared by, or under the direct supervision of a Tennessee-registered land surveyor and certified by same. When floodproofing is utilized for a non-residential building, said certification shall be prepared by, or under the direct supervision of, a Tennessee-registered professional engineer or architect and certified by same.

Any work undertaken prior to submission of the certification shall be at the permit holder's risk. The engineering department shall review the above-referenced certification data. Deficiencies detected by such review shall be corrected by the permit holder immediately and prior to further work being allowed to proceed. Failure to submit the certification or failure to make said corrections required hereby, shall be cause to issue a stop-work order for the project.

(Ord. No. O-112-2013, § 1, 6-25-13)

Section 12-33. Duties and responsibilities of the engineering department.

Duties of the engineering department shall include, but not be limited to:

- (1) Review of all development permits to assure that the requirements of this chapter have been satisfied, and that proposed building sites will be reasonably safe from flooding.
- (2) Advice to permittee that additional federal or state permits may be required, and if specific federal or state permit requirements are known, require that copies of such permits be provided and maintained on file with the development permit. This shall include Section 404 of the Federal Water Pollution Control Act Amendments of 1972, 33 U.S.C. 1334
- (3) Notification to adjacent communities and the Tennessee Department of Economic and Community Development, local planning office, prior to any alteration or relocation of a watercourse, and submission of evidence of such notification to the Federal Emergency Management Agency.
- (4) For any altered or relocated watercourse, submit engineering data/analysis within six (6) months to the Federal Emergency Management Agency to ensure accuracy of community flood maps through the letter of map revision process. Assure that the flood carrying capacity within an altered or relocated portion of any watercourse is maintained.
- (5) Record the actual elevation (in relation to mean sea level or highest adjacent grade, whichever is applicable) of the lowest floor (including basement) of all new or substantially improved buildings, in accordance with article II, section 12-32(2).
- (6) Record the actual elevation (in relation to mean sea level or highest adjacent grade, whichever is applicable) to which the new or substantially improved buildings have been floodproofed, in accordance with article II, section 12-32(2).
- (7) When floodproofing is utilized for a non-residential structure, the engineering department shall obtain certification of design criteria from a Tennessee-registered professional engineer or architect, in accordance with article II, section 12-32(2).
- (8) Where interpretation is needed as to the exact location of boundaries of the areas of special flood hazard (for example, where there appears to be a conflict between a mapped boundary and actual field conditions) the engineering department shall make the necessary interpretation. The person contesting the location of the boundary shall be given a reasonable opportunity to appeal the interpretation as provided in section 12-34
- (9) When base flood elevation data and floodway data have not been provided by the Federal Emergency Management Agency, then the engineering department shall obtain, review and reasonably utilize any base flood elevation and floodway data available from a federal, state or other source, including data developed as a result of these regulations, as criteria for requiring that new construction, substantial improvements, or other development in zone A on the community FHBM or FIRM meet the requirements of this chapter.
- (10) All records pertaining to the provisions of this chapter shall be maintained in the office of the engineering department and shall be open for public inspection. Permits issued under the provisions of this chapter shall be maintained in a separate file or marked for expedited retrieval within combined files.

(Ord. No. O-112-2013, § 1, 6-25-13)

Section 12-34. Variance procedure.

- (a) The city board of zoning appeals, as established by the city council, shall hear and decide appeals and requests for variances from the requirements of this chapter. Notice requirements shall be as established by the board for appeals of the zoning ordinance.

- (b) The city board of zoning appeals shall hear and decide when it is alleged there is an error in any requirement, decision, or determination made by the engineering director in the enforcement or administration of this chapter.
- (c) Any person aggrieved by the decision of the city board of zoning appeals may appeal such decision by petition to the court of record, as provided in the state enabling legislation.
- (d) Variances may be issued for the reconstruction, rehabilitation or restoration of structures listed on the National Register of Historic Places or the state inventory of historic places without regard to the procedures set forth in the remainder of this section, except for subsections (h)(1) and (h)(2), provided the proposed reconstruction, rehabilitation, or restoration will not result in the structure losing its historical designation.
- (e) In passing upon such application, the city board of zoning appeals shall consider all technical evaluations, all relevant factors, and standards specified in other sections of this chapter and:
 - (1) The danger that materials may be swept onto other lands to the injury of others.
 - (2) The danger of life and property due to flooding or erosion damage.
 - (3) The susceptibility of the proposed facility and its contents to flood damage and the effect of damage on the individual owner.
 - (4) The importance of the services provided by the proposed facility to the community.
 - (5) The necessity to the facility of a waterfront location, where applicable.
 - (6) The availability of alternate locations, not subject to flooding or erosion damage, for the proposed use.
 - (7) The compatibility of the proposed use existing and anticipated development.
 - (8) The relationship of the proposed use to the comprehensive plan and floodplain management program for that area.
 - (9) The safety of access to the property in times of flood for ordinary and emergency vehicles.
 - (10) The expected heights, velocity, duration, rate of rise and sediment transport of the floodwaters and the effects of wave action, if applicable, expected at the site.
 - (11) 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, and streets and bridges.
- (f) Upon consideration of the factors listed above and the purposes of this chapter, the city board of zoning appeals may attach such conditions to the granting of variances as it deems necessary to further the purposes of this chapter.
- (g) Variances shall not be issued within any designated floodway if any increase in flood levels during the base flood discharge would result.
- (h) Conditions for variances are as follows:
 - (1) Variances shall only be issued upon a determination that the variance is the minimum necessary, considering the flood hazard, to afford relief, and in the instance of an historical building, a determination that the variance is the minimum necessary so as not to destroy the historic character and design of the building.
 - (2) Variances shall only be issued upon a showing of good and sufficient cause, determination that failure to grant the variance would result in exceptional hardship to the applicant, and a determination that the granting of a variance will not result in increased flood heights or floodway widths, additional threats to public safety, extraordinary public expense, create nuisances, cause fraud on or victimization of the public, or conflict with existing local laws or ordinances.

- (i) Any applicant to whom a variance is granted shall be given written notice specifying the difference between the base flood elevation and the elevation to which the structure is to be built and stating the cost of flood insurance will be commensurate with the increased risk resulting from the reduced lowest floor elevation.
- (j) The engineering director shall maintain the records of all appeal actions and report any variances to the Federal Emergency Management Agency upon request.

(Ord. No. O-112-2013, § 1, 6-25-13)

Sections. 12-35—12-50. Reserved.

ARTICLE III. PROVISIONS FOR FLOOD HAZARD REDUCTION

Section 12-51. General standards.

In all special flood hazard areas and shaded x zones, the following provisions are required:

- (1) New construction and substantial improvements shall be anchored to prevent flotation, collapse, or lateral movement of the structure.
- (2) Manufactured homes must be installed using methods and practices that minimize flood damage. They shall be elevated and anchored to prevent flotation, collapse or lateral movement. Methods of anchoring may include, but are not limited to, use of over-the-top or frame ties to ground anchors. This standard shall be in addition to and consistent with applicable state requirements for resisting wind forces.
- (3) New construction and substantial improvements to existing buildings shall be constructed with materials and utility equipment resistant to flood damage.
- (4) New construction or substantial improvements to existing buildings shall be constructed by methods and practices that minimize flood damage.
- (5) All electrical, heating, ventilation, plumbing, air conditioning equipment, and other service facilities shall be designed and/ or located so as to prevent water from entering or accumulating within the components during conditions of flooding.
- (6) All new and replacement water supply systems shall be designed to minimize or eliminate infiltration of floodwaters into the system.
- (7) New and replacement sanitary sewage systems shall be designed to minimize or eliminate infiltration of floodwaters into the systems and discharge from the systems into floodwaters.
- (8) On-site waste disposal systems shall be located and constructed to avoid impairment to them or contamination from them during flooding.
- (9) Any alteration, repair, reconstruction or improvements to a building which is in compliance with the provisions of this chapter shall meet the requirements of "new construction" as contained in this chapter.
- (10) Any alteration, repair, reconstruction or improvements to a building which is not in compliance with the provisions of this chapter shall be undertaken only if said nonconformity is not extended or replaced.
- (11) All new construction and substantial improvement proposals shall provide copies of all necessary federal and state permits, including section 404 of the Federal Water Pollution Control Act Amendments of 1972, 33 U.S.C. 1334.
- (12) All subdivision proposals and other proposed new development proposals shall meet the standards of section 12-52.

- (13) When proposed new construction or substantial improvements are partially located a special flood hazard area or shaded x zone, the entire structure shall meet the standards for new construction.
- (14) When proposed new construction or substantial improvements are located in multiple flood hazard risk zones or in a flood hazard risk zone with multiple base flood elevations, the entire structure shall meet the standards for the most hazardous flood hazard risk zone and the highest base flood elevation.

(Ord. No. O-112-2013, § 1, 6-25-13; Ord. No. O-97-2019, § 1, 7-02-19)

Section 12-52. Specific standards.

In all special flood hazard areas, the following provisions, in addition to those set forth in section 12-5, are required:

- (1) *Residential construction.* In AE and shaded x zones where base flood elevation data is available, new construction or substantial improvement of any residential building (or manufactured home) shall have all utilities [including electrical (utility meters not included), heating, ductwork, ventilating, plumbing, and air conditioning equipment] and the lowest floor, including basement, elevated to no lower than one (1) foot above the base flood elevation. Should solid foundation perimeter walls be used to elevate a structure, openings sufficient to facilitate equalization of flood hydrostatic forces on both sides of exterior walls and to ensure the unimpeded movement of floodwaters shall be provided in accordance with standards of article III, section 12-52(3).

Within approximate A zones, where baseflood elevations have not been established and where alternative data is not available, the engineering department shall require the lowest floor of a building to be elevated to a level of at least three (3) feet above the highest adjacent grade (lowest floor and highest adjacent grade being defined in section 12-3.1 of this chapter). All applicable data including elevations or flood proofing certifications shall be recorded as set forth in article II, section 12-32. Should solid foundation perimeter walls be used to elevate a structure, openings sufficient to facilitate equalization of flood hydrostatic forces on both sides of exterior walls shall be provided in accordance with the standards of the section herein entitled "Enclosures."

- (2) *Nonresidential construction.* In AE and shaded x zones, new construction and / or substantial improvement of any commercial, industrial, or nonresidential building, when base flood elevation data is available, shall have all utilities (including electrical (utility meters not included), heating, ductwork, ventilating, plumbing, and air conditioning equipment) and the lowest floor, including basement, elevated or floodproofed to no lower than one (1) foot above the level of the base flood elevation. Should solid foundation perimeter walls be used to elevate a structure, openings sufficient to facilitate equalization of flood hydrostatic forces on both sides of exterior walls shall be provided in accordance with the standards of the section herein entitled "Enclosures."

Within approximate A zones, where baseflood elevations have not been established and where alternative data is not available, new construction and substantial improvement of any commercial, industrial, or non-residential building shall have the lowest floor of a building, including the basement, to be elevated or floodproofed to a level of at least three (3) feet above the highest adjacent grade (lowest floor and highest adjacent grade being defined in section 12-3.1 of this chapter). Should solid foundation perimeter walls be used to elevate a structure, openings sufficient to facilitate equalization of flood hydrostatic forces on both sides of exterior walls shall be provided in accordance with the standards of the section herein entitled "Enclosures."

Non-residential buildings located in all A zones may be floodproofed in lieu of being elevated, provided that all areas of the building below the required elevation are watertight with walls substantially impermeable to the passage of water, and are built with structural components having the capability of resisting hydrostatic and hydrodynamic loads and the effects of

buoyancy. A registered professional engineer or architect shall certify that the design and methods of construction are in accordance with accepted standards of practice for meeting the provisions above and shall provide such certification to the engineering department as set forth in article II, section 12-32(2).

- (3) *Enclosures.* All new construction or substantial improvements to existing buildings that include any fully enclosed areas formed by foundation and other exterior walls below the lowest floor that is subject to flooding, shall be designed to preclude finished living space and designed to allow for the entry and exit of floodwaters to automatically equalize hydrostatic flood forces on exterior walls.
 - a. Designs for complying with this requirement must either be certified by a Tennessee-registered professional engineer or architect, to meet or exceed the following minimum criteria:
 1. Provide a minimum of two openings having a total net area of not less than one square inch for every square foot of enclosed area subject to flooding;
 2. The bottom of all openings shall be no higher than one foot above the finished grade; and,
 3. Openings may be equipped with screens, louvers, valves or other coverings or devices provided they permit the automatic flow of floodwaters in both directions.
 - b. The enclosed area shall be the minimum necessary to allow for parking of vehicles, storage or building access.
 - c. The interior portion of such enclosed area shall not be partitioned or finished into separate rooms in such a way as to impede the movement of floodwaters and all such partitions shall comply with the provisions of article III, section 12-52 of this chapter.
- (4) *Standards for manufactured homes and recreational vehicles.*
 - a. All manufactured homes placed, or substantially improved, on:
 1. Individual lots or parcels;
 2. In expansions to existing manufactured home parks or subdivisions; or
 3. In new or substantially improved manufactured home parks or subdivisions, must meet all the requirements of new construction, including elevations and anchoring.
 - b. All manufactured homes placed or substantially improved in an existing manufactured home park or subdivision must be elevated so that either:
 1. In AE and shaded x zones with base flood elevations, the lowest floor of the manufactured home is elevated on a permanent foundation no lower than one (1) foot above the level of the base flood elevation; or
 2. In approximate A zones without base flood elevations, the manufactured home chassis is elevated and supported by reinforced piers (or other foundation elements of equivalent or greater strength) at least three (3) feet in height above the highest adjacent grade.
 - c. Any manufactured home which has incurred "substantial damage" as the result of a flood, or that has substantially improved must meet the standards of article III, section 12-52(4) b 1 and 2 of this chapter.
 - d. All manufactured homes must be securely anchored to an adequately anchored foundation system to resist flotation, collapse and lateral movement.
 - e. All recreational vehicles in an area of special flood hazard must either:
 1. Be on the site for fewer than one hundred eighty (180) consecutive days;
 2. Be fully licensed and ready for highway use. (A recreational vehicle is ready for highway use if it is licensed, 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 structures or additions); or

3. The recreational vehicle must meet all the requirements for new construction, including anchoring and elevation requirements of article V, section 12-52(4)(a) or section 12-52(4)(b) i and ii above.

(5) *Standards for subdivisions and other proposed new development proposals.* Subdivisions and other proposed new development, including manufactured home parks, shall be reviewed to determine whether such proposals will be reasonably safe from flooding.

- a. All subdivisions and other proposed new development proposals shall be consistent with the need to minimize flood damage.
- b. All subdivisions and other proposed new development proposals shall have public utilities and facilities such as sewer, gas, electrical and water systems located and constructed to minimize or eliminate flood damage.
- c. All subdivisions and other proposed new development proposals shall have adequate drainage provided to reduce exposure to flood hazards.
- d. In all approximate A zones, base flood elevation data shall be provided by the project engineer for subdivision proposals and other proposed development (including manufactured home parks and subdivisions), which are greater than fifty (50) lots or five (5) acres in area.

(Ord. No. O-112-2013, § 1, 6-25-13; Ord. No. O-97-2019, § 1, 7-02-19)

Section 12-53. Standards for special flood hazard areas, zones AE with established base flood elevation but without floodways designated.

Located within the special flood hazard areas established in article III section 12-5, where streams exist with base flood data but where no floodways have been designated (zones AE), the following provisions apply:

- (1) No encroachments, including fill material, new construction or substantial improvements shall be located within special flood hazard areas, unless certification by a Tennessee-registered professional engineer is provided demonstrating that the cumulative effect of the proposed development, when combined with all other existing and anticipated development, will not increase the water surface elevation of the base flood more than one (1) foot at any point within the community. The engineering certification should be supported by technical data that conforms to standard hydraulic engineering principles.
- (2) New construction or substantial improvements of buildings, where permitted, shall comply with all applicable flood hazard reduction provisions in article III, section 12-52.

(Ord. No. O-112-2013, § 1, 6-25-13; Ord. No. O-97-2019, § 1, 7-02-19)

Section 12-54. Standards for areas of shallow flooding (AO and AH zones).

Located within the special flood hazard areas established in article I, section 12-5 may be areas designated as shallow flooding areas. These areas have special flood hazards associated with base flood depths of one (1) to three (3) feet where a clearly defined channel does not exist and where the path of flooding is unpredictable and indeterminate. Therefore, the following provisions apply:

- (1) All new construction and substantial improvements of non-residential and residential buildings shall have the lowest floor, including basement, elevated to at least one (1) foot above as many feet as the depth number specified on the flood insurance rate map, in feet, above the highest adjacent grade. If no flood depth number is specified on the FIRM, the lowest floor, including basement, shall be elevated at least three (3) feet above the highest adjacent grade. Openings

sufficient to facilitate automatic equalization of hydrostatic flood forces on exterior walls shall be provided in accordance with standards of article III, section 12-52, and "enclosures."

- (2) All new construction and substantial improvements of non-residential buildings may be flood-proofed in lieu of elevation. The structure together with attendant utility and sanitary facilities must be flood proofed and designed watertight to be completely flood-proofed to at least one (1) foot above the flood depth number specified on the FIRM, with walls substantially impermeable to the passage of water and with structural components having the capability of resisting hydrostatic and hydrodynamic loads and the effects of buoyancy. If no depth number is specified, on the FIRM, the structure shall be flood proofed to at least three (3) feet above the highest adjacent grade. A Tennessee-registered professional engineer or architect shall certify that the design and methods of construction are in accordance with accepted standards of practice for meeting the provisions of this ordinance and shall provide such certification to the engineering department as set forth above and as required in article II, section 12-32.
- (3) Adequate drainage paths shall be provided around slopes to guide floodwaters around and away from proposed structures.

(Ord. No. O-112-2013, § 1, 6-25-13; Ord. No. O-97-2019, § 1, 7-02-19)

Section 12-55. Reserved.

Section 12-56. Standards for special flood hazard areas with established base flood elevations and with floodways designated.

Located within the special flood hazard areas established in article I, section 12-5 are areas designated as floodways. A floodway may be extremely hazardous area due to the velocity of floodwaters, debris or erosion potential. In addition, the area must remain free of encroachment in order to allow for the discharge of base flood without increased flood heights and velocities. Therefore, the following provisions apply:

- (1) Encroachments, including fill material, new construction, substantial improvements or other developments are prohibited within the regulatory floodway. Development may be permitted however, provided it is demonstrated through hydrologic and hydraulic analyses performed in accordance with standard engineering practiced that the cumulative effect of the proposed encroachments or new development, when combined with all other existing and anticipated development, shall not result in any increase the water surface elevation of the base flood level, velocities or floodway widths during the occurrence of a base flood discharge at any point within the community. A Tennessee- registered professional engineer must provide supporting technical data and certification thereof, using the same methodologies as in the effective flood insurance study for the city and certification thereof.
- (2) New construction or substantial improvements of buildings shall comply with all applicable flood hazard reduction provisions of article III.

(Ord. No. O-112-2013, § 1, 6-25-13; Ord. No. O-97-2019, § 1, 7-02-19)

Section 12-57. Standards for streams without established base flood elevations and floodways (A zones).

In areas located within the special flood hazard areas established in article I, where streams exist, but no base flood data has been provided and where a floodway has not been delineated, the following shall apply:

- (1) The engineering department shall obtain, review and reasonably utilize any base flood elevation, scientific or historic base flood elevation and floodway data available from federal, state or other sources, including data developed as a result of these regulations (see 2, below)

as criteria for requiring that new construction, substantial improvements, or other development in approximate A zones meet the requirements of this chapter.

- (2) Require that all new subdivision proposals and other proposed developments (including proposals for manufactured home parks and subdivisions) greater than fifty (50) lots or five (5) acres, whichever is the lesser, include within such proposals base flood elevation data.
- (3) Within approximate A zones, where base flood elevations have not been established and where such data is not available from other sources, require the lowest floor of a building to be elevated or floodproofed to a level of at least three (3) feet above the highest adjacent grade. All applicable data, including elevations or floodproofing certifications, shall be recorded as set forth in this chapter. Openings sufficient to facilitate automatic equalization of hydrostatic flood forces on exterior walls shall be provided in accordance with the standards of section 12-52.
- (4) Within approximate A zones, where base flood elevations have not been established and where such data is not available from other sources, no encroachments, including structures or fill material, shall be located within an area equal to the width of the stream or twenty (20) feet, whichever is the greater, measured from the top of the stream bank, unless certification by a Tennessee-registered professional engineer is provided demonstrating that the cumulative effect of the proposed development, when combined with all other existing and anticipated development, will not increase the water surface elevation of the base flood more than one (1) foot at any point within the community. The engineering certification should be supported by technical data that conforms to standard hydraulic engineering principles.
- (5) New construction or substantial improvements of existing buildings, where permitted, shall comply with all applicable flood hazard reduction provisions of section 12-51 and 12-52. Within approximate A zones, require that these sections dealing with the alteration and relocation of a watercourse, assuring watercourse carrying capacities are maintained and manufactured home provisions are complied with as required.

(Ord. No. O-112-2013, § 1, 6-25-13; Ord. No. O-97-2019, § 1, 7-02-19)

Section 12-58. Standards for unmapped streams.

Located within the city are unmapped streams along which special flood hazard areas are neither indicated nor identified. Adjacent to such streams, the following provisions shall apply:

- (1) No encroachments including fill material or other development including structures shall be located within the riparian buffer zone as defined in the stormwater and street ordinance.
- (2) When a new flood hazard risk zone, and base flood elevation and floodway data is available, new construction and substantial improvements shall meet the standards established in accordance with this chapter.

(Ord. No. O-112-2013, § 1, 6-25-13; Ord. No. O-97-2019, § 1, 7-02-19)