

Chapter 19

FLOODPLAIN

ARTICLE I. IN GENERAL

Sec. 19-1. Statement of purpose.

(a) The purpose of this chapter is to promote the public health, safety and general welfare and to minimize public and private losses due to flood conditions in specific areas by provisions designed to:

- (1) Protect human life and health.
- (2) Minimize the need for rescue and relief efforts associated with flooding and generally undertaken at the expense of the general public.
- (3) Minimize prolonged business interruptions.
- (4) Minimize damage to public facilities and utilities such as water and gas mains, electric, telephone and sewer lines, streets and bridges located in floodplains.
- (5) Provide for the sound use and development of flood-prone areas in such a manner as to minimize the future flood-blight areas.

(b) This chapter provides a regulatory system to monitor the ~~issuance-review~~ of plats and permits to reduce the likelihood that development within this city will increase the dangers of flooding. To accomplish this purpose, this chapter utilizes the following methods:

- (1) Restrictions or prohibitions of land uses that are dangerous to health, safety or property in times of flood, or cause excessive increases in flood heights or velocities.
- (2) Requirements that land uses particularly vulnerable to floods, including facilities that serve such land uses, be protected against flood damage at the time of initial construction.
- (3) Maintenance of control of the alteration of natural floodplains, stream channels, and natural protective barriers, ~~which~~ that are involved in the accommodation of floodwaters.
- (4) Mitigation of filling, grading, dredging and other development ~~which~~ that may increase flood damage.

- (5) Prevention or regulation of the construction of flood barriers ~~which~~ that will unnaturally divert floodwaters or which may otherwise increase flood hazards to other lands.

(c) The degree of regulation for flood protection established by this chapter is considered reasonable for regulatory purposes and is based on maps promulgated by ~~the Federal Emergency Management Agency FEMA~~ FEMA ~~which~~ that are required to be used as a condition of obtaining flood insurance. These maps are based on scientific and engineering considerations. On rare occasions greater floods can and will occur and flood heights may be increased by man-made or natural causes. Neither the regulations ~~established hereunder in this chapter~~ nor the issuance of permits ~~hereunder~~ or other approvals granted pursuant to this chapter are intended to imply that lands outside the areas of special flood hazards or uses permitted within such areas will be free from flooding or flood damage.

(d) These rules and regulations shall be applicable throughout the city. The Houston special flood hazard areas identified by the effective version of the Federal Emergency Management Agency FEMA ~~in the scientific and engineering report entitled, "The Flood Insurance Study for the City of Houston", dated June 18, 2007,~~ with accompanying flood insurance rate maps and flood boundary-floodway maps, and any subsequent revisions or amendments thereto are hereby adopted by reference and declared to be a part of this chapter. The provisions of this chapter shall take precedence over any less restrictive conflicting laws, ordinances, codes, or official determinations. For purposes of this chapter, the city engineer shall determine which of these conflicting laws are most restrictive and ~~his~~ that ~~decision in this regard~~ shall be final.

(e) ~~The flood insurance study FIS and the flood insurance rate map FIRM,~~ and any subsequent revisions or amendments thereto that are being administered as provided in Section 19-4 of this Code, ~~shall be~~ are available for public inspection in the office of the city engineer during normal business hours. The city engineer shall be custodian of these records for all purposes. Maps may also be made available on the City of Houston website, but in the event of any conflict, the maps in the office of the city engineer shall control and are considered the official version.

(f) The director of ~~the public works and engineering department~~ Houston Public Works is authorized to promulgate guidelines for administration of this chapter that are consistent with the requirements of this chapter and applicable state and federal laws and regulations.

Sec. 19-2. Definitions.

As used in this chapter the following words and terms shall have the following meanings unless the context of their usage clearly indicates another meaning:

0.2 percent flood elevation or flood level means the elevation above mean sea level that floodwaters have been calculated to have a 0.2 percent chance of reaching in any given year.

Addition shall mean any alteration to an existing structure that increases its footprint.

AO, AH, or VO Zones (areas of shallow flooding) shall mean those areas designated on the flood insurance rate map with a one percent or greater chance of flooding to an average depth of one to three feet, where a clearly defined channel does not exist, where the path of flooding is unpredictable, and where velocity flow may be evident. Such flooding is characterized by ponding or sheet flow.

~~Addition shall mean any alteration to an existing structure that increases its footprint.~~

Areas of combined probability shall mean an area subject to both riverine and coastal flooding the limits of which are identified on the Flood Insurance Study profiles.

~~Basement shall mean any area of a building having its floor subgrade (below natural ground elevation) on all sides.~~

Base flood shall mean a flood having a one percent chance of being equalled equalled or exceeded in any one year.

Base flood elevation (BFE) or base flood level shall mean the elevation above mean sea level that floodwaters have been calculated to reach during the base flood at a specific location.

~~Base flood level — See definition of "base flood elevation."~~

Basement shall mean any area of a building having its floor subgrade (below natural ground elevation) on all sides.

~~Board — See definition for "general appeals board."~~

Breakaway wall shall mean an open wooden lattice, insect screening or any other suitable building material approved by the city engineer that is not part of the structural support of the associated structure and that is intended to collapse under wind and water loads without causing collapse, displacement or other structural damage to the elevated portion of the structure or damage to the structural integrity of the structure on which breakaway walls are used. In addition, breakaway walls must be designed so that if carried downstream they will not cause damage to any other structure. Breakaway walls must have a design safe loading resistance of not less than ten and not more than 20 pounds per square foot. Use of breakaway walls that exceed a design safe loading resistance of 20 pounds per square foot (either by design or when so required by city or state codes) may be permitted only if a professional engineer, licensed in the State of Texas, certifies that the designs proposed meet the following conditions:

- (1) Wall collapse shall result from a water load less than that which would occur during the base flood; and
- (2) The elevated portion of the building and supporting foundation system shall not be subject to collapse, displacement, or other structural damage due to the effects of wind and water loads acting simultaneously on all building components (structural and nonstructural). Maximum wind and water loading values to be used in this determination shall each have a one percent chance of being equaled or exceeded in any given year (one hundred-year mean recurrence interval).

~~*Certificate of compliance* shall mean a notarized statement, from the applicant for any permit issued under this chapter, to the effect that the applicant has received all permits, licenses, or approvals then required by federal law, statute or regulation, including but not limited to, permits issued under the authority of Section 404 of the Federal Water Pollution Control Act Amendments of 1972, or required by or under any statute, rule or regulation of the State of Texas.~~

Certificate of Compliance shall mean a document issued and filed in the Real Property Records by the city engineer indicating that a property owner has resolved a violation, temporary permit or substantial damage determination that caused a Certificate of Non-Compliance to be issued.

Certificate of Non-Compliance shall mean a document issued and filed in the Real Property Records by the city engineer indicating that a property is in violation one or more provisions of this chapter; has been issued a temporary permit; or for which a substantial damage determination has not been resolved within six (6) months from the date of the first notice of violation.

Coastal high hazard area —See definition of V1 through V30 Zones, VE Zones or V Zones.

Conveyance shall mean, unless otherwise determined by the city engineer, the flow of water during the base flood with a velocity that is greater than one foot per second or a depth that is greater than one foot.

~~*Cost of improvement* shall mean that cost required for any addition, restoration, repair, or other construction that increases the value of the structure based on an estimate prepared, signed, and dated by a professional engineer or architect, each licensed by the State of Texas, or other documentation acceptable to the city engineer.~~

~~*Cost of restoration* shall mean that cost required to restore a structure to its condition prior to the event causing damage, based on an estimate prepared, signed, and dated by an insurance adjustor, professional engineer or architect, each licensed by the State of Texas, or other documentation acceptable to the city engineer.~~

Critical facilities shall mean facilities that materially affect the public health and welfare. Such facilities include, but are not be limited to:

- (1) Hospitals, nursing homes, blood banks, health care facilities including those storing vital medical records, and housing likely to contain occupants who may not be sufficiently mobile to avoid death or injury during a flood;
- (2) Police stations, fire stations, vehicle and equipment storage facilities, and emergency operations centers that are needed for flood response activities before, during, and after a flood;
- (3) Public and private utility facilities that are vital to maintaining or restoring normal services to flooded areas before, during and after a flood;~~and~~
- (4) Structures or facilities that produce, use, treat, store, or dispose of highly volatile, flammable, explosive, toxic, and/or water-reactive materials~~;~~;
- (5) Drinking water plants and facilities, and wastewater treatment plants and facilities; and
- (6) Schools, colleges, universities, and day care centers.

Development shall mean 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, or drilling operations or storage of equipment or materials.

~~*Development permit* shall mean a permit issued under the provisions of this chapter for any development of a site located within a special flood hazard area. The term shall also include a permit for the placement for a recreational vehicle for more than 180 days in Zones A1 A30, AH and AE.~~

Elevated floor construction means an engineered foundation system that is not constructed on natural grade, but uses a combination of vertical and horizontal members to support a structure above natural grade.

Elevation certificate shall mean a statement from an engineer or surveyor licensed by the State of Texas on the most current FEMA form certifying that the lowest floor of the structure has been elevated at least as high as required by this chapter.

Federal Emergency Management Agency (FEMA) shall mean the federal agency under which federal floodplain regulations and related programs are administered.

Fill shall mean any material that is placed in an area and increases the elevation of that area or displaces water volume.

~~FIRM or flood insurance rate map shall mean the official flood insurance rate map promulgated by the federal insurance administrator of the Federal Emergency Management Agency which delineates both the special flood hazard areas and the risk premium zones applicable to the city, as amended and supplemented from time to time. Under certain circumstances as provided in section 19-4 of this Code, the effective FIRM may be supplemented with additional flood elevation data for purposes of the administration of this chapter.~~

~~Fill shall mean any material that is placed in an area and increases the elevation of that area or displaces water volume.~~

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

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

Flood insurance rate map (FIRM) or effective FIRM shall mean the official flood insurance rate map promulgated by the federal insurance administrator of the Federal Emergency Management Agency FEMA which delineates both the special flood hazard areas and the risk premium zones applicable to the city, as amended and supplemented from time to time. Under certain circumstances as provided in section 19-4 of this Code, the effective FIRM may be supplemented with additional flood elevation data for purposes of the administration of this chapter.

Flood insurance study (FIS) shall mean the effective report provided by the Federal Emergency Management Agency FEMA containing current flood profiles of the water surface elevations of the base flood as well as the flood boundary-floodway map.

Floodplain Development development permit shall mean a permit issued under the provisions of this chapter for any development of a site located within a Houston special flood hazard area. The term shall also include a permit for the placement of a recreational vehicle for more than 180 days in Zones A1-A30, AH and AE a Houston special flood hazard area.

Floodproofing shall mean 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.

Floodproofing certificate shall mean a certificate issued by a registered professional engineer licensed in the State of Texas which states that he has developed and/or reviewed the structural design, specifications, and plans for the construction of ~~the~~ a structures or improvements covered by the certificate and that the design and methods of construction are in accordance with accepted standards of practice for meeting the following requirements:

- (1) The floodproofing methods used are adequate to withstand the flood depths, pressures, velocities, impact and uplift forces and other factors associated with the ~~base flood~~ 0.2 percent chance flood; and,
- (2) Together with attendant utility and sanitary facilities, the structures are designed so that below the ~~base~~ 0.2 percent chance flood level the structures are watertight with walls impermeable to the passage of water and with structural components having the capability of resisting hydrostatic and hydrodynamic loads and effects of buoyancy.

Floodway shall mean the channel of a river or other watercourse and the adjacent land areas that must be reserved in order to discharge the base flood without cumulatively increasing the water surface elevation more than the height specified for the site in the flood insurance study.

Floodway conveyance offset volume shall mean the volume of material that must be excavated and removed from the special flood hazard area to provide an equivalent storage volume necessary to reduce loss of conveyance associated with development within the floodway.

~~*Flood insurance rate map* See definition of "FIRM."~~

~~*Flood insurance study* shall mean the effective report provided by the Federal Emergency Management Agency containing current flood profiles of the water surface elevations of the base flood as well as the flood boundary floodway map.~~

Functionally dependent use shall mean 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.

General appeals board shall mean that board organized and created under the provisions of the Building Construction Code.

Highest adjacent grade shall mean the highest natural elevation of the ground surface next to the proposed walls of a structure immediately prior to construction.

Historic structure means any structure that is:

- (1) Listed individually in the National Register of Historic Places 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;~~or~~
- (3) Individually listed on the Texas Inventory of Historic Places;or
- (4) Other historic designation acceptable to the city engineer.

Houston special flood hazard area means the land in the special flood hazard area and in the floodplain within the city that is subject to a 0.2 percent or greater chance of flooding in any given year and is designated as unnumbered A Zones, AE Zones, AO Zones, AH Zones, A1 through A99 Zones, VO Zones, V1 through V30 Zones, VE Zones, V Zones, or X Shaded Zones.

Lake Houston shall mean, for purposes of this chapter, the shoreline of an area bounded on the south by the Lake Houston Dam, on the northwest by the West Lake Houston Parkway Bridge and on the northeast by an imaginary line running generally east to west that intersects the confluence of Luce Bayou and the East Fork of the San Jacinto River, and is more particularly described as beginning at a point located at 30° 2' 31.67" N, 95° 7' 12.09" W and running generally west to 30° 2' 32.02" N, 95° 7' 36.14" W.

Lowest floor means the lowest floor of the lowest enclosed area (including basement) of a structure. An unfinished or flood-resistant enclosure, used 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 design requirements of this chapter or any other state or federal statute, rule, or regulation.

Manufactured home shall mean a structure, transportable in one or more sections, which is built on a permanent chassis and is designed for use with or without a permanent foundation when connected to the required utilities including, but not limited to, a manufactured home as defined in section 29-1 of this Code.

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 including, but not limited to, a manufactured home park or manufactured home subdivision as defined in section 29-1 of this Code.

Market value shall mean the value of a structure as established by one of the following:

- (1) The improvement value assigned to the structure by the central appraisal district for the county in which the structure is located;
- (2) The computed actual cash value as determined by the FEMA-approved Residential—Substantial Damage Estimator (RSDE) methodology;
- (3) An appraisal performed by a certified real estate appraiser licensed by the Texas Appraiser Licensing and Certification Board; or
- (4) Any other similar method acceptable to the city engineer.

Market value shall not include land value.

Mean high tide shall mean the average of all recorded high tides as recorded and reported by the National Weather Service.

Mean sea level shall mean the National Geodetic Vertical Datum (NGVD) of 1929 or other datum, to which base flood elevations shown on the FIRM are referenced.

Minimum flood protection elevation shall mean the ~~base flood elevation plus 42 inches~~ 0.2 percent flood elevation, plus 2 feet.

Modular home shall mean a structure or building module that is manufactured at a location other than the location where it is installed and used as a residence by a consumer, transportable in one or more sections on a temporary chassis or other conveyance device, and designed to be used as a permanent dwelling when installed and placed upon a permanent foundation system. This term shall include the plumbing, heating, air conditioning and electrical systems contained in the structure. This term does not include a manufactured home as defined ~~herein in this chapter~~ or building modules utilizing concrete or masonry as the primary structural component.

New construction shall mean the initial construction of a structure.

Permit shall mean a floodplain development permit issued under the provisions of this chapter.

Plat means any of the following: a Class II or Class III subdivision plat or ~~and~~ a street dedication plat as those terms are defined in chapter 42 of this Code or a manufactured home subdivision plat as that term is used in chapter 29 of this Code.

Recreational vehicle shall mean a vehicle that is:

- (1) Built on a single chassis;
- (2) Four hundred square feet or less when measured at the largest horizontal projections;
- (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.

~~*Repetitive loss* shall mean flood-related damage sustained by a structure on two separate occasions during a 10-year period for which the cost of repairs at the time of each flood event, on the average, equals or exceeds 25% of the market value of the structure before the damage occurred. For the purpose of this definition, the market value of a structure is established on October 1, 2006, or on the date of the first flood-related loss, whichever occurs later.~~

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

Section 1316 shall mean 42 U.S.C. 4023, as amended, the section of the National Flood Insurance Act of 1968, which provides for the denial of flood insurance coverage for any property the FEMA Administrator finds has been declared by a duly constituted State or local authority to be in violation of State or local floodplain management regulations.

~~*Special area* — See definition of "special flood hazard area."~~

~~*Special flood hazard area or special area* shall mean the land in the floodplain within the city, that is subject to a one percent or greater chance of flooding in any given year and is designated as unnumbered A Zones, AE Zones, AO Zones, AH Zones, A1 through A99 Zones, VO Zones, V1 through V30 Zones, VE Zones or V Zones.~~

~~*Start of construction*, {for other than new construction or substantial improvements under the Coastal Barrier Resources Act, 16 U.S.C. § 3501 et seq.} shall include substantial improvement, and shall mean the date the building permit was issued, provided the actual start of construction, repair, reconstruction, placement, or other improvement is or was within 180 days ~~of~~ after the permit date. The actual start means either the first placement of permanent construction of a structure on a site, such as the placement of concrete 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.

Statement of compliance shall mean a notarized statement, from the applicant for any permit issued under this chapter, to the effect that the applicant has received all permits, licenses, or approvals then required by federal law, statute or regulation, including but not limited to, permits issued under the authority of Section 404 of the Federal Water Pollution Control Act Amendments of 1972, or required by or under any statute, rule or regulation of the State of Texas.

Structure shall mean an edifice or building of any kind or piece of work that is artificially built up or composed of parts joined together in a definite manner, including, but not limited to, a modular home, ~~or~~ a manufactured home, or a gas or liquid storage tank when such tank is principally located above ground.

Substantial damage shall mean the damage of any origin sustained by a structure ~~for which whereby~~ the cost of repair or restoration of the structure to its ~~before~~ before-damaged condition would equal or exceed 50 percent of the market value of the structure. For the purpose of this definition, the market value refers to the value of the structure immediately prior to the ~~preceding the event that caused~~ ~~substantial~~ damage.

Substantial improvement shall mean any repair, reconstruction, rehabilitation, addition, or other improvement of a structure, the cost of which equals or exceeds 50 percent of the market value of the structure before the start of construction of the improvement. This term shall include a structures that ~~have~~ has incurred ~~repetitive loss or~~ substantial damage, regardless of the repair work performed. The term shall not include either:

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

Temporary flood damage repair permit shall mean a permit issued to allow limited repairs to and occupancy of a substantially damaged structure based on requirements and conditions promulgated by the city engineer before it is brought into compliance with the provisions of this chapter.

Utilities shall mean all building utilities including, but not limited to, electrical, heating, ductwork, ventilating, plumbing, ~~air~~ air-conditioning equipment, and any other service facilities.

Utility construction permit means a permit issued to a developer under chapter 47 of this Code to construct a water or sewer main.

V1 through V30 Zones or VE Zones or V Zones or coastal high hazard area shall mean ~~an~~ those areas subject to high velocity waters, including but not limited to, hurricane wave wash or tsunamis.

Variance shall mean a grant of relief to a person from the requirements of this chapter that allows development in a manner otherwise prohibited by this chapter.

Watercourse shall mean any river, channel or stream for which base flood elevations have been identified in the flood insurance study for the city.

X Shaded Zone means areas subject to a 0.2 percent chance of flooding in any given year; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile, and areas protected by levees from 1% annual chance flood.

X Unshaded Zone means areas of minimal flood hazard, outside of the 0.2 percent chance of flood.

Sec. 19-3. Certain prohibitions relating to recreational vehicles.

All recreational vehicles placed in ~~Zones A1—30, A99, AH, AE or V, VE, V1—30~~ a Houston special flood hazard area as shown on the FIRM must be:

- (1) On the site for less than 180 consecutive days, and ready for highway use; or
- (2) Be permitted under article IV herein and meet the elevation and anchoring requirements for manufactured homes.

A recreational vehicle is ready for highway use if it is on its wheels or jacking system, is attached to the site by quick disconnect type utilities and security devices, has no permanently attached additions and has current vehicle registration and inspection stickers or tags affixed.

Sec. 19-4. Use of other flood hazard data to supplement the effective ~~firm~~ FIRM.

(a) ~~From time to time~~ New elevation and flooding studies are undertaken by or under the auspices of the ~~Federal Emergency Management Agency FEMA~~ and local political subdivisions, such as the Harris County Flood Control District, ~~that have responsibility to abate flooding~~. Upon determination that the data generated by such a study appears to be reliable and based upon sound engineering and surveying practices and further that the study's data indicate that the effective FIRMs are FIRM is materially inaccurate, the city engineer may cause the study data to be administered for purposes of this chapter as though it were a part of the effective FIRM. Any such determination

shall be issued in writing and a copy shall be placed on file in the office of the city secretary. The city engineer is authorized to utilize updated information from FIS and floodplain models in administering this chapter.

(b) Where the study data are being administered as provided in subsection (a), the following procedures shall apply:

- (1) To the extent of any inconsistencies between the study data and the effective FIRM, the more restrictive base flood or 0.2 percent chance flood elevations and Houston special flood hazard areas shall be controlling, and in no instance may any determination or designation that is based on the effective FIRM be reduced by study data.
- (2) If alternative base flood or 0.2 percent chance flood elevations exist for the property because of the administration of supplemental data as provided in ~~this section 19-4 of this Code~~, the applicant shall provide two surveys, one of which shall be based in the effective FIRM and one of which shall be based on the study data.
- (3) Any applicant for a plat, permit or other approval that is denied because of the application of the study data may appeal the denial of the permit, plat or other approval based on the validity of the study data as applied to the applicant's property or project. The appeal shall be considered in the same manner as a variance application under article II of ~~the this~~ chapter. In any such appeal, the city engineer shall provide the documentation for the study data; however, the burden of demonstrating that the study data are incorrect as applied to the applicant's property shall rest upon the applicant, and must be supported by the agency then responsible for the study data. Any appeal pursuant to this section shall not result in the change in any of the study data. In addition, if the study data being used has been published by ~~the Federal Emergency Management Administration~~ FEMA for comment as a draft or preliminary FIRM:
 - a. The appeal process shall be limited to the application of the study data by the city to the specific application that is the subject of the appeal;
 - b. The appeal process shall not be regarded as an appeal under part 67, or a request for map amendment under part 69, of Title 44 of the Code of Federal Regulations;
 - c. Any outcome of the appeal to the city is in no way binding on ~~the Federal Emergency Management Administration~~ FEMA, nor will it affect or limit any action the agency may take; and
 - d. Any challenge to the use of the study data as the basis for a FIRM should be separately addressed to ~~the Federal Emergency~~

~~Management-Administration~~ FEMA under the applicable federal rules.

(c) For any special flood hazard area for which a floodway has not been designated, the applicant may submit an engineering analysis by a registered professional engineer licensed in the State of Texas that defines the floodway with respect to the site for which a development permit is sought.

Secs. 19-5—19-10. Reserved.

ARTICLE II. REGULATORY SYSTEM FOR PERMITS AND PLATS

DIVISION 1. GENERALLY

Sec. 19-11. In general.

(a) No building permit, paving permit, utility construction permit or other permit required for a structure or development shall be issued, and no plat shall be approved, unless the applicant demonstrates that the one of the following:

- (1) The permit application or plat meets the applicable requirements of this chapter; or unless a
- (2) A variance, excepting such structure or development from the provisions of this chapter, is has been granted under the terms of this chapter, and a drainage plan for the plat has been approved;
- (3) A floodplain development permit has been issued for the structure or development; or
- (4) Sufficient information has been submitted and approved resulting in the removal of a substantial damage determination.

(b) The owner of a substantially damaged structures may request and may be issued a temporary flood damage repair permit for limited repairs based on requirements and conditions promulgated by the city engineer in conformance with guidance from FEMA. A substantial damage determination shall be appealed prior to a request for a temporary flood damage repair permit.

Sec. 19-12. Duties of city engineer.

The city engineer is charged with exercising best engineering ~~judgment~~ judgment in the administration and implementation of the provisions of this chapter. ~~His~~ The duties ~~in this regard~~ shall include, but are not limited to, the following:

- (1) Maintaining and holding open for public inspection all records pertaining to the provisions of this chapter including a record of all floodproofing

certificates filed hereunder with the specific elevation (in relation to mean sea level) to which such structures are floodproofed.

- (2) Reviewing, approving, or denying all applications for floodplain development permits required by the adoption of this chapter.
- (3) Reviewing applications for floodplain development permits to ensure that all necessary licenses, approvals, or permits have been obtained from those federal, state or local governmental agencies from which prior approval is required.
- (4) Where interpretation is needed as to the exact location of the boundaries of the Houston special flood hazard areas (for example, where there appears to be a conflict between a mapped boundary and actual field conditions), making the necessary interpretation of the maps which shall be liberally construed by the city engineer in favor of inclusion of the site in a Houston special flood hazard area.
- (5) Notifying adjacent communities, the Harris County Flood Control District and the Texas Commission on Environmental Quality prior to any alteration or relocation of a watercourse within the city, and submitting evidence of such notification to ~~the Federal Emergency Management Agency~~ FEMA.
- (6) Cooperate with the responsible local, state and federal agency to maintain the flood-carrying capacity of the altered or relocated portion of any watercourse within the city.
- (7) When and where base flood or 0.2 percent chance flood elevation data has not been provided, obtaining, reviewing and reasonably utilizing any base flood or 0.2 percent chance flood elevation data and floodway data available from a federal, state or other source including any information obtained in connection with the provisions of section 19-13(b) of this chapter, as criteria in administering the applicable provisions of this chapter.
- (8) Where an amendment or supplement to a FIRM that is being administered as provided in section 19-4 of this Code expresses base flood or 0.2 percent chance flood elevation based on different data than the FIRM it amends or supplements, reconciling the conflicting data to determine the more restrictive base flood or 0.2 percent chance flood elevation.

DIVISION 2. PLAT PROCEDURE

Sec. 19-13. Plat approval; issuance.

- (a) Any person who is required or elects to obtain a plat shall also comply with the provisions of this chapter, if applicable.

(b) When a person files an application for approval of a plat, the approval of the plat is subject to the approval of a drainage plan for the property that is the subject of the plat application if the property is located in whole or in part in a Houston special flood hazard area within the city. The drainage plan shall include the ~~base~~0.2 percent chance flood elevation data for the property and be certified as true and correct on the face of the drainage plan by a registered professional engineer licensed in the State of Texas. If alternative ~~base~~0.2 percent chance flood elevations exist for the property because of the administration of supplemental data as provided in section 19-4 of this Code, the drainage plan shall include both ~~base~~0.2 percent chance flood elevations.

(c) The city engineer shall review the drainage plan and determine whether the development will be reasonably safe from flooding and whether such proposed development is:

- (1) Consistent with the need to minimize flood damage within the Houston special flood hazard area;
- (2) To be constructed so that all public utility facilities including, but not limited to, sanitary sewer, gas, water and electrical systems are located and constructed ~~so as to~~ minimize flood damage from the ~~base~~0.2 percent chance flood;
- (3) To be constructed so that drainage is provided to reduce exposure of such development to flood hazards; and
- (4) Would comply with the applicable requirements of article III of this chapter.

(d) If the proposed development satisfies the criteria in subsection (c) of this section, the city engineer shall approve the drainage plan and shall so notify the city planning commission in writing.

(e) The city planning commission shall not approve a final plat until the city engineer has approved the drainage plan for that site. If the proposed development requires mitigation pursuant to section 19-17 or section 19-43 of this Code, the final plat and deed shall identify the location and volume of the mitigation as a feature of the property. The obligation to have a mitigation feature shall run with all the land covered by the development permit. The owner of the land shall have the obligation to have and comply with the development permit unless that obligation is transferred to another person pursuant to rules and regulations promulgated by the director pursuant to subsection (f) of section 19-1 of this Code.

Secs. 19-14, 19-15. Reserved.

DIVISION 3. FLOODPLAIN DEVELOPMENT PERMIT PROCESS

Sec. 19-16. Regulatory process for permits; term.

(a) A floodplain development permit is required in addition to any other permit that may be required for any development activity in a Houston special flood hazard area. Any development within a Houston special flood hazard area shall be unlawful without a floodplain development permit, regardless of whether a plat is required under chapter 42 of this Code. ~~A development permit is required in addition to any other permit that may be required for the development activities.~~

(b) A floodplain development permit will expire if development has not commenced within 18 months ~~of~~ after issuance, and upon completion of the project for which it is granted, or after five years has elapsed from the date of permit issuance, whichever occurs first.

(c) No building permit, floodplain development permit, or plat approval shall be given on properties with existing floodplain violations unless the work permitted will remedy the violation, or the violations have been otherwise removed or corrected. Work permitted with a floodplain development permit must be undertaken in a manner designed to minimize surface runoff, erosion, and sedimentation, and to safeguard life, limb, property, and the public welfare.

Sec. 19-17. Floodplain Ddevelopment permit application.

(a) An applicant for a floodplain development permit shall submit an development permit application on forms furnished by the city engineer ~~for that permit~~ along with plans in duplicate, drawn to scale, showing:

- (1) The existing topography and the location, dimensions, and elevation of any proposed alterations;
- (2) Existing and proposed structures;
- (3) The location of the proposed alterations in relation to Houston special flood hazard areas;
- (4) Elevation in relation to mean sea level of the lowest floor of all proposed structures and substantial improvements;
- (5) Elevation in relation to mean sea level to which any structures will be or have been floodproofed;
- (6) If the site is adjacent to a watercourse or drainage channel, the definition of how that watercourse or drainage channel will be impacted;
- (7) ~~Base-0.2 percent chance~~ 0.2 percent chance flood elevations from effective FIRM-FIS data for all structures and substantial improvements; except that, this information is not required for A Zones-A where base flood elevation data has not been provided and must be developed from federal, state, or other sources; and

- (8) ~~For all new construction, additions to existing structures, and substantial improvements, all base flood elevation lines and corresponding labels, as shown on the FIRM, that intersect the proposed development, as well as the nearest base flood elevation lines and corresponding labels both upstream and downstream of the site. All lettered cross section lines and corresponding labels, as shown on the FIRM that intersect the proposed development, as well as the nearest lettered cross section lines upstream and downstream of the site, for all new construction, additions to existing structures, or substantial improvements. The lettered cross section lines shall be labeled with the corresponding 0.2 percent chance flood elevation as indicated in the effective FIS.~~

Each sheet in the plans on which elevations are marked shall include the vertical datum and adjustment, consistent with the effective FIRM, along with the site benchmark used for vertical control; except that, if the plan elevations are not on the same vertical datum as the base flood elevations shown on the effective FIRM, each sheet in the plans on which elevations are marked shall also show tabulated vertical datum differences.

(b) The applicant shall also provide a ~~certificate~~ statement of compliance with copies of all supporting permits, licenses and approvals, and a floodproofing certificate where floodproofing is or may be required by the applicable provisions of this chapter.

(c) For areas that the city engineer has determined have no conveyance capacity, the applicant shall submit documentation that demonstrates that the proposed development will not, at any time, diminish the storage volume of the Houston special flood hazard area in accordance with the requirements of Sec. 19-34 (a). ~~and:~~

- ~~(1) Identifies an amount of fill associated with pier and beam construction that, although the amount may be approaching zero, is recognized by the city engineer as sufficiently important to be addressed, but for which mitigation is not required, in accordance with rules and regulations promulgated by the director pursuant to subsection (f) of section 19-1 of this Code; or~~
- ~~(2) Demonstrates that any loss of storage volume will be mitigated on-site, such that there is no net fill; or~~
- ~~(3) Demonstrates that any loss of storage volume will be mitigated off-site in accordance with rules and regulations promulgated by the director pursuant to subsection (f) of section 19-1 of this Code; or~~
- ~~(4) Demonstrates any combination of items (1) through (3) of this subsection.~~

(d) For areas that the city engineer has determined to have conveyance capacity and for areas for which the city engineer has made no determination of conveyance capacity, the applicant shall submit an engineering analysis certified by a professional engineer licensed in the State of Texas in accordance with Sec. 19-34(b). ~~that demonstrates that the development will not, at any time, either change the conveyance capacity or diminish storage volume of the special flood hazard area; except~~

~~that, if the applicant submits a Conditional Letter of Map Revision approved by the Federal Emergency Management Agency, the engineering analysis need only demonstrate that the development will not, at any time, diminish storage volume of the special flood hazard area.~~

(e) Fees to be paid under this chapter are set forth in the city fee schedule. Payment of any applicable fees when due is a condition of the processing of any application under this article.

(f) In addition to other responsibilities under this Code or the Construction Code, the city engineer shall review each permit application to verify compliance with the provisions of this chapter.

Sec. 19-18. Additional requirements for floodplain development permit applications.

At the discretion of the city engineer, an applicant may be required to submit any or all of the following:

- (1) Plans with the "official coordinate system" of the city as defined in section 33-81 of this Code as their horizontal datum. Where required, each sheet shall be marked with horizontal datum information and with the combined scale factor required to convert from surface coordinates to grid coordinates;
- (2) ~~Datum~~ Any datum differences between the vertical datum and adjustment of elevations used on the sheet and any other vertical datum~~(s)~~ and adjustment~~(s)~~ typically used in the watershed tabulated on each sheet in the plans on which elevations are marked, or a separate survey~~(s)~~ based on said additional vertical datum~~(s)~~ and adjustment~~(s)~~;
- (3) A survey of property ownership of the site, which is signed and sealed by public surveyor licensed in the State of Texas;
- (4) An interim drainage plan for the site during the activity;
- (5) An indication of the source of fill material and the proposed disposal site, if applicable, and the expected duration of the activity;
- (6) An engineering analysis signed and sealed by a registered professional engineer licensed in the State of Texas as required by the city engineer; and
- (7) Any other relevant documentation requested by the city engineer.

Sec. 19-19. Review.

(a) The city engineer shall review each floodplain development permit applications and the plans and documentation submitted in accordance with sections 19-17 and 19-18 of this Code and shall either approve or deny the issuance of the floodplain development permit. Approval or denial of a floodplain development permit by the city engineer shall be based on compliance with the applicable provisions of this chapter. In addition to employing the standards contained in article III of this chapter, the city engineer may deny a floodplain development permit application if the issuance of the permit could result in:

- (1) Danger to life or property due to flooding or erosion damage in the vicinity of the site;
- (2) Susceptibility of the development and the contents of any structure to flood damage and the effect of such damage on the individual owner;
- (3) Danger that materials may be swept onto other lands to the injury of others;
- (4) Impairment of the access to and exit from the site in times of flood for ordinary and emergency vehicles; or
- (5) Unusually high costs of providing governmental services during and after flood conditions, including maintenance and repair of streets, bridges, public utilities and facilities such as sewer, gas, electrical and water systems.

(b) In connection with this determination, the city engineer shall consider the following factors:

- (1) Unusual circumstances affecting the expected height, velocity, duration, rate of rise and sediment transport of the floodwaters and the effects of wave action, if applicable, expected at the site in the presence of floodwaters;
- (2) The necessity of a waterfront location for the structure, where applicable; and
- (3) The lack of alternative locations not subject to flooding or erosion damage for the proposed use.

(c) A permittee shall submit an elevation certificate to the city engineer before the framing of a structure has started. Failure to do so may result in the revocation of a permit issued hereunder.

(d) The city engineer may enter any structure or premises to perform any duties or responsibilities imposed by this chapter.

Sec. 19-20. Variance procedure.

(a) Any applicant for a permit may apply for a variance from the requirements of this chapter. Except as may be otherwise provided in subsection 19-22(f), a variance may be sought only on the basis that the imposition of the requirements of this chapter for the issuance of a permit to the applicant constitutes an exceptional hardship.

(b) An applicant may file a request for variance at any time. However, no variance may be granted for development on vacant land in a floodway, and no variance may be granted after an applicant has complied with the provisions of this chapter and a permit has been issued. An applicant shall file the application for a variance on a written form to be supplied by the city engineer, and shall include the following information, at a minimum specify in connection therewith:

- (1) The particular requirement from which a variance is sought;
- (2) The nature of the hardship presented by the imposition of the requirements, including specific information on the uniqueness of the property for which the variance is requested;
- (3) The proposed alternative method or procedure to be utilized in lieu of the required method, practice or procedure that is proposed;
- (4) The effect of the proposed construction on flood levels within the city;
- (5) The estimated cost in dollars of complying with the requirement;
- (6) The estimated cost in dollars of construction by the proposed alternative method of procedure;
- (7) The size, in acres, of the land area or the number of lots involved in the permit application; and
- (8) The existence of lots contiguous to or surrounding the land area which are located below the ~~base~~ 0.2 percent chance flood level.

(c) In addition, the applicant shall ~~file~~ submit a verified acknowledgment ~~that~~ stating:

- (1) The granting of a variance for construction below the flood level ~~will~~ may result in increased flood insurance rates commensurate with the increased risk resulting from the reduced lowest floor elevation; and,
- (2) Construction below the ~~base~~ 0.2 percent chance flood level increases risks to life and property to the applicant and the residents of this city and the surrounding area.

Sec. 19-21. Restriction on applicants; fee for application.

A variance application may be filed only by the owner of the property or the attorney-in-fact for the owner of ~~such the property on which a variance is sought, and written authorization to act for an owner must accompany an application.~~ ~~Such~~ The application shall be submitted as a verified statement. Each variance application shall be accompanied by the fee for this provision stated in the city fee schedule.

A variance application and all required information shall be submitted to the city engineer, who will review the information submitted, and may request additional information, or return the application as incomplete. Upon determination that the application is complete, the city engineer will forward the application to the board for review in accordance with section 19-22 of this Code.

Sec. 19-22. Review by the board of variance application; determination by city engineer.

(a) The city engineer shall receive, and transmit to the general appeals board, all applications for variances, except for those applications specified in subsection 19-22(f) of this Code. Except for those applications specified in subsection 19-22(f), the board shall be the body that determines whether a variance is to be granted. The board may consider the granting of a variance under the following circumstances:

- (1) The application is for the reconstruction, rehabilitation, or restoration of an historic structure and the reconstruction, rehabilitation, or restoration of the structure will not preclude the structure's continued designation as an historic structure.
- (2) The application is for improvement of an existing structure that is required to correct an existing violation of a state or local health, sanitary or safety code specification that has been identified by the neighborhood protection official and that is the minimum necessary to ensure safe living conditions.
- (3) The application is for a development for which the city engineer finds that the granting of the variance is consistent with the procedures and standards established for the granting of variances. As the lot size increases, the burden on the applicant to provide a technical justification in favor of a variance under the facts of the case shall increase.
- (4) The application is for an addition to, new construction of, or substantial improvements to, a structure necessary for the conduct of a functionally dependent use provided that:
 - a. The applicable requirements of sections 19-20, 19-21 and 19-22 of this Code are met;
 - b. The structure will be protected by methods designed to minimize flood damage during the ~~base~~ 0.2 percent chance flood; and

- c. The structure will create no additional threats to public safety.
- (5) The variance is in effect an appeal from the application of a Houston special flood hazard area or ~~base-0.2 percent chance~~ flood elevation determination or both being administered on the basis of supplemental data pursuant to section 19-4 of this Code and the applicant demonstrates, with the concurrence of the agency then responsible for the study data, that the determination is scientifically or technically incorrect. The variance shall be limited to approval, with or without conditions, or denial ~~of the permit, plat or other approval that was denied~~ and shall not constitute a change in the study data.

The board shall deny variances to disaggregated lots of proposed larger developments or subdivisions or structures when that larger development has been the subject of or included within a floodplain development permit application that has been previously disapproved by the city engineer.

(b) In addition, in order to grant a variance, the board must affirmatively find that:

- (1) The imposition of the requirements of this chapter constitute an exceptional hardship on the applicant;
- (2) No feasible method or procedure is currently available to comply with the requirement; and
- (3) The imposition of the requirements of this chapter to the particular circumstances would be unjustified in light of ~~a~~ good and sufficient cause which ~~can be~~ has been demonstrated to the board.

(c) In granting a variance, the board must find that the variance, if allowed, will not have the effect of:

- (1) Increasing flood level height due to impedece of the stream of channel flow;
- (2) Introducing or increasing any threat to public safety;
- (3) Creating a nuisance which unreasonably interferes with the use of adjacent property;
- (4) Causing a fraud to be worked upon the public or any individual member of the public;
- (5) Causing extraordinary public expense for any reason; and

(6) Creating conflict with the codes and ordinances of the city, or with any provisions of a state or federal regulation other than the applicable requirements of this chapter.

(d) The board, in granting a variance, shall grant only the minimum variance necessary to afford relief from the complained of hardship.

(e) If the board approves a variance, the chair shall send, by regular mail, a A notice of variance decision shall be addressed to the applicant, and shall be signed by the chairman of the board or in his absence, the vice chairman, and shall state stating that:

(1) The variance has been approved, along with any conditions imposed by the board;

(2) The issuance of a variance to construct a structure below the ~~base~~ 0.2 percent chance flood level will may result in increased premium rates for flood insurance commensurate with the increased risk resulting from the reduced lowest floor elevation; and,

(~~2~~3) The construction under a variance of any structure below the ~~base~~ 0.2 percent chance flood level may increase risks to life and property to the applicant and the residents of this city and the surrounding area.

Upon receipt of the notice of variance, the applicant shall file a copy of ~~that the~~ notice of variance decision, along with the applicant's statement required in section 19-20(c) of this Code, in the permanent ~~deed~~ real property records of the county or counties in which the property is located. Upon the receipt of a copy of the notice of variance certified by the county clerk of the county in which the property is located, the city engineer shall issue a floodplain development permit complying with all provisions of this chapter with the exception of the variance granted.

(f) The city engineer ~~shall~~ may grant a variance for reconstruction of a structure damaged by fire, hail, wind or other event that is not flooding, if the applicant proposes to reconstruct on an existing foundation that is currently below the minimum flood protection elevation, and the reconstruction will not increase the footprint of the foundation.

(g) The city engineer shall maintain a permanent public record of all notices of variance and the variances granted. The written justification for the granting of each variance shall be included in such records.

(h) The denial of a variance by the board shall be final and is not subject to reconsideration.

(i) A variance is unique to and applies to only the property for which it is granted.

(k) Modification to the development scope or detail in an approved variance shall void the variance.

Sec. 19-23. Revocation of floodplain development permits.

(a) In addition to the remedies provided in section 19-91 of this Code, whenever the city engineer finds that there are grounds for revocation of a floodplain development permit, he shall give written notice to the permittee by personal service or by certified mail, return receipt requested, addressed to the applicant at the address set forth in the floodplain development permit application. That notice may require that any work on the property currently underway is required to stop immediately, that a stop order is being issued, and shall set forth:

- (1) The specific grounds upon which the floodplain development permit in question may be revoked;
- (2) The fact that there will be a hearing before the board in which the city will seek the revocation of the floodplain development permit;
- (3) The date, time and place of such hearing; and
- (4) The fact that the permittee may appear in person or be represented by an attorney.

(b) All hearings shall be held by the board. The chair of the board or, in the chair's absence, the vice-chair of the board, shall serve as the hearing officer for all hearings held hereunder, moderating the discussion and ensuring the rules of this section are observed. However, no person shall perform the duties of hearing officer under this section if the person has participated in the investigation or has prior knowledge of the allegations or circumstances discovered in the course of said investigation except as may be set forth in the notice given pursuant to this section.

(c) All hearings shall be conducted under rules consistent with the nature of the proceedings; provided, however, that the following rules shall apply to such hearings:

- (1) All parties shall have the right to representation by a licensed attorney, though an attorney is not required.
- (2) Each party may present witnesses in his own behalf.
- (3) Each party has the right to cross-examine all witnesses.
- (4) Only evidence presented before the board at such hearing may be considered in rendering the final order.

(d) If the permittee fails to appear at the hearing at the date and time specified, the city engineer shall establish a case on behalf of the city that presents sufficient

evidence, that unless it were otherwise rebutted, shows that grounds exist for revocation of the floodplain development permit in question.

(e) After completion of the presentation of evidence by all parties appearing, the board shall make written findings and render a written order as to whether or not there are grounds for revocation of the floodplain development permit. If there are such grounds, the board shall revoke the floodplain development permit; provided, the board may, in the interest of justice, take such other lesser actions as the board may deem appropriate including, but not limited to, the temporary suspension of the permit, the revision of the floodplain development permit, or the addition of ~~permit~~-conditions. A true and accurate copy of the board's order shall be personally delivered or mailed by certified mail, return receipt requested, to the permittee.

(f) In the event a floodplain development permit is revoked, suspended, or revised hereunder by the board, the city shall not be liable to any person for any refund of any part of ~~the any~~ permit-fees.

~~(g) The denial of a permit or the revocation, suspension, or revision of a~~ floodplain development permit may be appealed to the city council pursuant to Rule 12 of section 2-2 of this Code and upon the filing of a written application ~~therefor~~ with the city secretary within ten days after the board's written order is rendered; ~~provided, however, that such an~~ An appeal of a revocation, suspension, or revision of a floodplain development permit shall not operate to suspend the board's order pending such an appeal.

Secs. 19-24—19-30. Reserved.

ARTICLE III. STANDARDS FOR FLOOD HAZARD REDUCTION

DIVISION 1. GENERALLY

Sec. 19-31. General construction of structures.

All structures, including modular homes, shall be constructed, regardless of location within the city, ~~so as to be reasonably safe from flooding.~~ In addition, the following provisions shall apply to structures located or to be constructed within various flood zones or areas:

- ~~(1) For those structures located within~~ Within a Houston special flood hazard area, the provisions of the Construction Code and division 2 of this article shall apply. Substantial improvements and substantial damage are regulated only in the special flood hazard area, a subset of the Houston special flood hazard area.
- ~~(2) For those structures to be constructed~~ Within a watercourse or floodway, the provisions of the Construction Code and divisions 2 and 3 of this article shall apply.

- ~~(3) For those structures located within~~ Within a coastal high hazard area, the provisions of the Construction Code and divisions 2 and 4 of this article shall apply.

DIVISION 2. STANDARDS IN HOUSTON SPECIAL FLOOD HAZARD AREAS

Sec. 19-32. General standards.

(a) All new construction in the Houston special flood hazard areas, and or substantial improvement of any existing structure in special flood hazard areas, shall be performed ~~so as to keep the structure reasonably safe from flooding and in accordance with the following standards:~~

- (1) ~~All improvements~~ Improvements shall be designed or ~~so modified so as to be adequately anchored~~ them to prevent flotation, collapse, or lateral movement of the structure in the presence of floodwaters;
- (2) ~~All improvements~~ Improvements shall be constructed by methods and practices ~~so as to minimize flood damage;~~
- (3) ~~All improvements~~ Improvements shall be constructed with materials and equipment resistant to flood damage;
- (4) ~~All electrical~~ Electrical, heating, ventilation, plumbing, and air conditioning equipment and other service facilities shall be designed and ~~or~~ located above minimum flood protection elevation ~~so as to prevent water from entering or accumulating within the components during conditions of flooding;~~
- (5) ~~All water~~ Water supply systems shall be designed to prevent or eliminate infiltration of floodwaters into the system;
- (6) ~~All sanitary~~ Sanitary sewer systems shall be designed to prevent or eliminate infiltration of floodwaters into the structure's systems and discharge of sewage into floodwaters;
- (7) ~~All on-site~~ On-site disposal systems, including but not limited to sewage treatment plants and septic tank systems located on the site of the structure, shall be located ~~so as to prevent impairment of the function of those systems in the presence of floodwaters and to prevent contamination of floodwaters from those systems during flooding; and~~
- (8) Fully enclosed areas below the lowest floor that are used solely for parking, building access or storage in an area other than a basement and that are subject to flooding shall be designed to automatically equalize hydrostatic flood forces on exterior walls by allowing for the entry and exit of floodwaters. Designs for meeting this requirement must either be certified by a registered architect or professional engineer licensed in the State of

Texas or meet or exceed the following minimum criterion: have 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, with the top of all such openings no higher than one foot above grade or BFE, whichever is lower. Openings may be equipped with screens, louvers, valves, or other coverings or devices, provided that they permit the automatic entry and exit of floodwaters.

(b) For a development site partially located in the Houston special flood hazard area, the applicant shall submit a site topographic map to establish the site boundary for the determination of the flood area.

Sec. 19-33. Base flood elevation requirements in Houston special flood hazard areas.

(a) The following additional requirements shall apply in Zones A1—30, AE, AH, A₁ and A99:

(1) ~~All~~ For any additions to, and new construction and substantial improvement of, any residential structures ~~within the special flood hazard areas shall have the:~~

a. The lowest floor and all utilities must be elevated to at least the minimum flood protection elevation, except that additions which are no greater than 33% of the habitable area of the structure shall be permitted to be constructed at one foot above base flood elevation; and

b. If the flood elevation of a garage attached to an addition is lower than the minimum flood protection elevation, the garage must meet the requirements of item (8) of section 19-32 of this Code.

(2) ~~All~~ Any additions to, and new construction and substantial improvement of, any nonresidential structures:

a. Shall be elevated to at least the minimum flood protection elevation measured to the lowest floor; or

b. Shall, along with sanitary sewerage facilities, be floodproofed to the minimum flood protection elevation.

(b) The following additional requirements apply in an X Shaded Zone:

(1) Any addition to, and new construction of any residential structure shall:

a. Have the lowest floor and all utilities elevated to at least the minimum flood protection elevation, except that additions which are no greater than 33% of the habitable area of the structure shall be permitted to

be constructed at the same elevation as the structure it is being added to; and

b. If the flood elevation of a garage attached to an addition is lower than the minimum flood protection elevation, the garage must meet the requirements of item (8) of section 19-32 of this Code.

(2) Any addition to, and new construction of nonresidential structure:

a. Shall be elevated to at least the minimum flood protection elevation measured to the lowest floor; or

b. Shall, along with sanitary sewerage facilities, be floodproofed to the minimum flood protection elevation.

(c) The following additional requirements shall apply in an AO Zone-AØ:

(1) All additions to, and new construction and substantial improvement of, any residential structure within an AO Zone-AØ shall have the lowest floor and all utilities elevated above the highest adjacent grade to at least ~~42 inches~~ two feet above the depth number in feet specified on the FIRM for the site or at least three feet above the highest adjacent grade if no depth number is specified. If the floor elevation of a garage attached to an addition is lower than the minimum flood protection elevation, the garage must meet the requirements of item (8) of section 19-32 of this Code.

(2) All additions to, and new construction and substantial improvement of, any nonresidential structure within an AO Zone-AØ shall have the lowest floor elevated above the highest adjacent grade at least ~~42 inches~~ two feet above the depth number specified in feet on the FIRM or at least three feet above the highest adjacent grade where no depth number is specified or, together with utility and sanitary sewerage facilities, be completely floodproofed to or above that level.

(~~e~~d) All structures to be constructed in whole or in part within these zones shall be designed with adequate drainage paths around structures on slopes to guide floodwaters around and away from those structures.

(~~e~~e) For critical facilities located in an area that is subject to a 0.2 percent or greater chance of flooding in any given year (~~X~~ Shaded Zone-~~X~~), all additions, new construction, and substantial improvements shall have the lowest floor elevated or floodproofed to at least ~~42 inches~~ three feet above the elevation that is subject to a 0.2 percent or greater chance of flooding.

Sec. 19-34. ~~Reserved.~~ Additional standards for design and mitigation.

(a) For areas that the city engineer has determined have no conveyance capacity, proposed development shall not, at any time, diminish the storage volume within

a Houston special flood hazard area. Applicants shall demonstrate compliance with this requirement by submitting plans that demonstrate one or more of the following:

- (1) Demonstrate that any loss of storage volume will be mitigated on-site, such that there is no net fill;
- (2) Demonstrate that any loss of storage volume will be mitigated off-site in accordance with rules and regulations promulgated by the director pursuant to subsection (f) of section 19-1 of this Code;
- (3) Identify an amount of fill associated with elevated floor construction that, although the amount may be approaching zero, is recognized by the city engineer as sufficiently important to be addressed, but for which mitigation is not required, in accordance with rules and regulations promulgated by the director pursuant to subsection (f) of section 19-1 of this Code; or
- (4) In the 0.2 percent chance floodplain, the amount of fill proposed does not impact or impede the 100 year overland sheet flow in the watershed.

(b) For areas that the city engineer has determined to have conveyance capacity, and for areas for which the city engineer has made no determination of conveyance capacity, development shall not, at any time, either change the conveyance capacity or diminish storage volume of the Houston special flood hazard area; except that, if the applicant submits a Conditional Letter of Map Revision approved by FEMA, the engineering analysis need only demonstrate that the development will not, at any time, diminish storage volume of the Houston special flood hazard area.

(c) Mitigation facilities and drainage improvements shown on a subdivision plat, an approved mitigation plan, or a drainage plan for a site are required to be maintained by the property owner. Obstructions within mitigation areas, failure of mitigation facilities, and other impediments to full drainage may be cited as violations of this chapter. The owner of each mitigation facility or drainage improvement shall submit an annual mitigation facility recertification to the city engineer, accompanied by the fee stated in the city fee schedule.

(d) In areas of combined probability, the city engineer may approve a deviation from the standards in Section 19-34 (a) and (b) so long as there is zero net fill below the 0.2% flood elevation.

Secs. 19-35—19-40. Reserved.

DIVISION 3. DEVELOPMENT IN A WATERCOURSE AND FLOODWAY

Sec. 19-41. Generally.

In addition to complying with the standards set out in division 2 of this article, development in a watercourse or a floodway shall comply with the provisions of this division.

Sec. 19-42. Watercourses.

A watercourse maintained by a county or a county agency shall not be altered or relocated unless the county engineer responsible for flood control in the county where the property is located, certifies to the city engineer in writing that the flood-carrying capacity of the altered watercourse will be the same as or greater than the flood-carrying capacity of the original watercourse.

~~—The alteration or relocation of any watercourse maintained by a county or a county agency shall not be permitted unless the county engineer who is responsible for flood control in the county in which the property is located certifies in writing to the city engineer that the flood-carrying capacity of the watercourse will be the same as or greater than the flood-carrying capacity that existed prior to the proposed development.~~

Sec. 19-43. Floodways.

(a) Except as may be otherwise provided in this chapter, no floodplain development permit shall ~~hereafter~~ be issued for a development to be located in any floodway, or any special flood hazard area for which a floodway has not been designated, if that development provides for:

- (1) Encroachment by the deposition of fill, or other similar construction, within the floodway, or the special flood hazard area if no floodway has been designated; or
- (2) New construction, any additions to an existing structures, or substantial improvement of any structure within the floodway, or the special flood hazard area if no floodway has been designated.

The general restriction ~~stated herein shall~~ does not apply to a repair or renovation that is not a substantial improvement.

(b) For those facilities necessary to protect the health, safety and welfare of the general public, the city engineer may issue a floodplain development permit for development of a site or the new construction, addition to an existing structure, or substantial improvement of a structure within the floodway, or any special flood hazard area for which a floodway has not been designated, if a professional engineer licensed in the State of Texas submits supporting documentation or an engineering analysis acceptable to the city engineer and written certification to the effect that:

- (1) The cumulative effect of the proposed development when combined with all other existing development, and if a floodway has not been designated, all anticipated development, will not have an adverse effect on flood levels at any point within the city during occurrence of the base flood;
- (2) The ~~construction~~ development will not impede the flow of floodwaters; and

- (3) The ~~construction-development~~ will not result in an adverse effect on the conveyance capacity during the occurrence of the base flood.

(c) The city engineer shall issue a floodplain development permit for development for an addition to, or for the replacement or substantial improvement of, a structure in a floodway, or any special flood hazard area for which a floodway has not been designated, if the city engineer determines that:

- (1) The bottom of its lowest horizontal structural member will be elevated at least ~~18 inches~~ three feet above the ~~base-0.2 percent chance~~ flood level;
- (2) The foundation system for the structure will be ~~pier and beam~~ elevated floor construction; and
- (3) The applicant has paid all fees required by section 19-17(e) of this Code.

If the city engineer cannot so determine, then the city engineer shall deny the floodplain development permit.

(d) While the community acknowledges the increased risks associated with development on vacant land in the floodway, the city engineer shall issue a floodplain development permit for ~~such a~~ development in a floodway, or any special flood hazard area for which a floodway has not been designated, if the city engineer determines that:

- (1) The bottom of the lowest horizontal structural member of the structure will be elevated at least two feet ~~18 inches~~ above the ~~base-0.2 percent chance~~ flood level;
- (2) The foundation system for the structure will be ~~pier and beam~~ elevated floor construction;
- (3) The applicant has submitted an engineering analysis acceptable to the city engineer, certified by a professional engineer licensed in the State of Texas, that demonstrates that the applicant will provide floodway conveyance offset volume at a rate defined by the city engineer. The floodway conveyance offset volume may be provided on applicant's site or at an off-site mitigation facility located within one-quarter mile upstream and in the same watershed as the site. If the applicant chooses to provide off-site mitigation, the applicant shall also comply with the requirements of section 19-17(c); and
- (4) The applicant has paid all fees required by section 19-17(e) of this Code.

~~If the city engineer cannot so determine, then the city engineer shall deny the permit. If the applicant cannot provide the on-site or off-site mitigation required by item (3) of this subsection, the applicant may request the city to provide mitigation for the development upon payment of the cost of the mitigation as established by the city council.~~

(e) The city engineer shall issue a floodplain development permit for development for the construction of a bridge, or the repair or replacement of an existing bridge in a floodway, or any special flood hazard area for which a floodway has not been designated, if the city engineer determines that:

- (1) The cumulative effect of the proposed construction when combined with all existing development, and if a floodway has not been designated, all anticipated development, will result in a zero increase in flood levels at any point within the city during occurrence of the base flood; and
- (2) The bottom of the lowest horizontal structural member of the bridge, excluding the pilings or columns, will be elevated at least 18 inches above the base flood level, or at least the 0.2 percent chance flood level, whichever is higher. If the city engineer determines that construction to this elevation is not practical based upon the application of sound engineering principles to the proposed construction, the elevation geometry, the attendant roadway geometry, and the necessity for the bridge to be built or reconstructed in the proposed location, the city engineer may approve a deviation from this standard.

If the city engineer cannot so determine, then the city engineer shall deny the floodplain development permit.

(f) ~~Whenever~~ ~~If the city engineer denies a floodplain development permit is denied~~ pursuant to section 19-43 (a), (b), (c) or (e) of this Code, and the general appeals board finds and determines in writing that:

- (1) The improvement is insubstantial;
- (2) ~~This~~ The insubstantial construction will not increase flood levels during occurrence of the ~~base~~ 0.2 percent chance flood; and
- (3) ~~This~~ The insubstantial improvement will not impede the flow of floodwaters,

then the city engineer shall issue a floodplain development permit only if all of the other applicable provisions of this chapter have been met by the applicant for the floodplain development permit.

Sec. 19-44. Boathouses and piers; Lake Houston.

Where a floodway has been designated, the city engineer may issue a floodplain development permit for construction of a boathouse or pier provided the proposed development meets the requirements for bridge construction provided in section 19-43(e) of this Code. No floodplain development permit shall be necessary for construction of a boathouse or pier on Lake Houston.

Secs. 19-45—19-50. Reserved.

DIVISION 4. COASTAL HIGH HAZARD AREAS

Sec. 19-51. Generally.

Within special flood hazard areas, certain areas have been designated as coastal high hazard areas. ~~These areas have~~ There are special flood hazards associated with high velocity waters requiring additional conditions on construction within these areas.

Sec. 19-52. Building restrictions.

(a) In addition to the requirements of division 2 of this article, the following provisions shall apply in coastal high hazard areas:

- (1) All buildings or structures shall be located landward of the reach of the mean high tide.
- (2) All structures shall be elevated so that the bottom of the lowest horizontal structural member of the lowest floor, exclusive of pilings or columns, is elevated to at least the minimum flood protection elevation, with all space below the lowest horizontal structural member open so as not to impede the flow of water.
- (3) All structures shall be elevated on and securely anchored to adequately anchored pilings or columns ~~in order to withstand~~ high velocity waters and hurricane wave wash and ~~to resist~~ flotation, collapse and lateral movement due to ~~the~~ effects of wind and water loads acting simultaneously on all building components.
- (4) Pilings or columns used as structural support shall be designed and anchored ~~so as to withstand~~ high velocity water and hurricane wave wash and to resist flotation, collapse and lateral movement due to ~~the~~ effects of wind and water loads acting simultaneously on all building components. For purposes of this section, ~~(wind and water loading values shall each have are considered as having a one percent chance of being equaled or exceeded in any given year (100-year mean recurrence interval)).~~
- (5) ~~There shall be no~~ No fill shall be used as structural support of any structure.
- (6) There shall be no alteration of the topography prior to development that would increase potential flood damage.
- (7) Breakaway walls are allowed below the base flood elevation but the space enclosed by breakaway walls may be used only for parking of vehicles, building access, or storage.
- (8) If breakaway walls are utilized, the space enclosed by the breakaway walls shall not be used for human habitation.

- (9) No alteration, repair, reconstruction, or improvement to a structure or other obstruction shall enclose or obstruct the space below the lowest floor, except for breakaway walls as provided herein.

(b) When a floodplain development permit application is filed under the provisions of section 19-17, a registered professional engineer licensed in the State of Texas shall develop or review the structural design, specifications and plans for the construction and shall certify that the design and methods of construction of the structure to be built are in accordance with accepted standards of practice for meeting the provisions of subsections (a)(2), (a)(3) and (a)(4) ~~hereof~~ of this section when built. Plans In plans for any structure that includes breakaway walls, the breakaway walls must be specifically identified as such when submitted to the city engineer for approval.

Secs. 19-53—19-60. Reserved.

ARTICLE IV. MANUFACTURED HOMES

DIVISION 1. REQUIREMENTS IN ADDITION TO MANUFACTURED HOME CODE

Sec. 19-61. Generally.

(a) The provisions of this chapter shall be in addition to all other requirements, standards, and restrictions contained in ~~the this Code of Ordinances~~ relating to manufactured homes, including, but not limited to, chapter 29 of ~~the Code of Ordinances~~ this Code. In the event of conflict between the requirements of this chapter and any other requirement of ~~the Code of Ordinances~~ this Code, the provisions of this chapter shall prevail.

(b) ~~The~~ An applicants for a city manufactured home permit where the manufactured home will be located within a Houston special flood hazard area shall submit a floodplain development permit application and shall comply with the standards set forth in this chapter specifically including those standards contained in this article.

Secs. 19-62—19-70. Reserved.

DIVISION 2. PLACEMENT STANDARDS

Sec. 19-71. Generally.

~~All~~ Each manufactured homes shall be placed in a locations in the city that ~~are~~ is reasonably safe from flooding, and the city engineer is hereby authorized to promulgate such written standards as may be deemed appropriate to determine such flood safety. In addition to ~~such standards~~ the promulgated standards within Houston special flood hazard areas, the requirements of this division 2 shall apply.

Sec. 19-72. Flood safety.

The manufactured home and its site and any substantial improvements to a manufactured home sites shall:

- (1) Be designed or modified to prevent flotation, collapse, or lateral movement of the manufactured home in the presence of floodwaters;
- (2) Be constructed with materials and types of utility equipment which are resistant to flood damage; and
- (3) Be constructed by methods and practices that minimize flood damage.

Sec. 19-73. Utility systems protection.

(a) ~~All-Each~~ new and replacement water supply systems for a manufactured homes shall be designed to prevent or eliminate the infiltration of floodwaters into the water supply system and the utility system supplying water to the manufactured homes.

(b) ~~All-Each~~ new and replacement sanitary sewage systems for a manufactured homes shall be designed to prevent:

- (1) The infiltration of floodwaters into such system; and
- (2) Discharge from such systems into floodwaters.

(c) ~~All-Each~~ on-site disposal systems, including but not limited to, any sewage treatment plants and any septic tanks located on the lot or site of the manufactured home or connected by a utility system to the manufactured home, shall be located ~~se-as-to~~:

- (1) Prevent impairment of the function of the system during flooding; and
- (2) Prevent contamination of floodwaters from the system during flooding.

Sec. 19-74. Special requirements for manufactured homes.

~~All-Each~~ manufactured homes placed in, and ~~all-any~~ substantial improvements to a manufactured home sites within a Houston special flood hazard areas shall be secured as follows:

- (1) *Anchors:* ~~All-Each~~ manufactured homes shall be elevated and anchored to resist flotation, collapse, or lateral movement in the presence of floodwaters by providing over-the-top or frame ties to ground anchors. ~~All-Each~~ ground anchors shall be set in concrete poured to a depth resistant to natural erosion caused by floodwater. In addition, ~~all-each~~ anchoring systems shall comply with all applicable provisions of state law or regulations. ~~All-Each~~ components of the anchoring system for a manufactured homes shall be capable of carrying a force of 4,800 pounds.

- (2) *Tie-downs:*
- a. Over-the-top ties shall be provided at each of the four corners of the manufactured home.
 - b. ~~Manufactured~~ A manufactured homes in excess of 50 feet in length shall have two side ties in addition to the above-described corner ties, ~~which~~ that shall be placed at intermediate locations; manufactured homes less than 50 feet in length shall have one additional tie per side.
- (3) *Frame ties:*
- a. A frame tie shall be placed at each corner of the manufactured home.
 - b. ~~Manufactured~~ A manufactured homes in excess of 50 feet in length shall have five additional ties placed on each side at intermediate locations; manufactured homes less than 50 feet in length shall have four additional ties per side placed at intermediate locations.
- (4) *Additions to manufactured homes: All* Each additions to a manufactured home shall be anchored in the same manner as a manufactured home.
- (5) *Flood elevation of manufactured home:*
- a. The stand or lot on which a manufactured home is placed shall be elevated on a permanent foundation so that the lowest floor of the manufactured home is at least at the minimum flood protection elevation.
 - b. Adequate surface drainage and access for a hauler shall be provided at each manufactured home lot or stand and at the entrance of a manufactured home park or subdivision.
 - c. A manufactured home placed on pilings shall be placed on a lot large enough to permit steps wholly on the manufactured home lot.
 - d. Pilings shall be placed in stable soil not more than ten feet apart, center to center, and shall be reinforced if they extend more than six feet above ground level. A registered professional engineer licensed in the State of Texas must certify in writing that the size, strength, and treatment processes for wooden pilings and methods of reinforcement for those pilings are sufficient to prevent flotation, collapse or lateral movement of the manufactured home in the presence of floodwaters.

Sec. 19-75. Manufactured home placement in a floodway or coastal high hazard area.

~~Manufactured~~ A manufactured homes to be placed in a floodway or a coastal high hazard area shall also specifically comply with divisions 3 and 4 of article III of this chapter.

Secs. 19-76—19-80. Reserved.

DIVISION 3. SUBDIVISIONS AND DEVELOPMENT

Sec. 19-81. Plats for manufactured home parks and subdivisions.

No plat shall be issued for a manufactured home park or subdivision unless it complies with the provisions of section 19-13 and the provisions of this article.

Sec. 19-82. Evacuation plan.

~~All persons~~ Any person who operates a manufactured home park or subdivision within any Houston special flood hazard area and who ~~are~~ is licensed by the city under chapter 29 of the ~~Code of Ordinances~~ this Code shall file an evacuation plan with the fire chief indicating alternate vehicular access and escape routes for ~~such~~ the park or subdivision prior to ~~the granting of~~ being issued a floodplain development permit.

Secs. 19-83—19-90. Reserved.

ARTICLE V. ENFORCEMENT

Sec. 19-91. Actions authorized to enforce chapter.

(a) The city, acting through the city attorney or any other attorney representing the city, is hereby authorized to file an action in a court of competent jurisdiction to:

- (1) Enjoin any person from violating the terms, conditions and restrictions of any floodplain development permit issued under this chapter;
- (2) Enjoin the violation of the provisions of this chapter;
- (3) Recover civil penalties for violation of the terms, conditions and restrictions of any floodplain development permit issued under this chapter ~~article~~;
- (4) Recover civil penalties for violation for the provisions of this chapter ~~article~~;
or
- (5) Recover damages from the owner of a site in an amount adequate for the city to undertake any construction or other activity necessary to bring about compliance with this chapter.

This authority is in addition to all provisions of this Code and the Construction Code relative to the definition of offenses and the provision of penalties for violations of ~~such ordinances~~ those Codes.

(b) The city, acting through the city attorney or any other attorney representing the city, is hereby authorized to enter into an agreements in lieu of litigation to achieve compliance with the terms, conditions and restrictions of any floodplain development permit issued under this article or the provisions of this ~~article~~ chapter.

(c) The city engineer is authorized to:

(1) Whenever any work authorized by a floodplain development permit is being performed contrary to the provisions of this chapter, or other pertinent laws or ordinances implemented through the enforcement of this ~~chapter article~~, order the work (other than work to cure a violation) stopped by notice in writing served on any persons performing the work or causing the work to be performed. Any such persons shall forthwith stop the work until authorized by the city engineer to proceed with the work.

(2) At the time a stop order is issued, the person performing the work and the ~~permitee holder~~ shall be given notice of a right to a hearing on the matter pursuant to Section ~~446~~117.2 of the Building Construction Code for permits authorized by that Code. Upon request, such a hearing shall be held within three business days unless the ~~permitee holder~~ or person who was performing the work requests an extension of time. Any stop order that has been issued shall remain in effect pending any hearing that has been requested unless the stop order is withdrawn by the city engineer.

~~(3) File a certificate of non-compliance in the county deed records for properties the city engineer determines to be in violation of the provisions of this chapter, for which a temporary damage repair permit is issued, or for which a substantial damage determination persists for six months or more.~~

~~(4) File a certificate of compliance in the county deed records for properties which have resolved a floodplain violation, obtained a permit to replace a temporary flood damage repair permit, or appealed or otherwise resolved a substantial damage determination.~~

~~(5) As authorized by Section 1316 of the National Flood Insurance Act of 1968, as amended, request that FEMA deny flood insurance coverage for any property that has been determined to be in violation of the provisions of this Chapter.~~

Sec. 19-92. Criminal sanctions.

Any person violating any provision of this chapter within the corporate limits of the city shall be guilty of a misdemeanor punishable by a fine of not less than \$250.00 nor

more than \$2,000.00. Each day that any violation continues shall constitute a separate offense.