

## Chapter 34 - FLOODS

### ARTICLE I. - IN GENERAL

Secs. 34-1—34-18. - Reserved.

### ARTICLE II. - FLOOD DAMAGE PREVENTION<sup>(1)</sup>

Footnotes:

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**State Law reference**— Soil and water conservation, V.T.C.A., Agriculture Code ch. 201; emergency management, V.T.C.A., Government Code ch. 418; Flood Control and Insurance Act, V.T.C.A., Water Code § 16.311 et seq.; local rules, V.T.C.A., Water Code § 16.318; local governments must adopt ordinances necessary for jurisdiction to qualify for National Flood Insurance Program, V.T.C.A., Water Code § 16.3145; political subdivision to comply with Federal requirements, V.T.C.A., Water Code § 16.315.

#### DIVISION 1. - GENERALLY

Sec. 34-19. - Definitions.

The following words, terms and phrases, when used in this article, shall have the meanings ascribed to them in this section, except where the context clearly indicates a different meaning:

*0.2 percent flood elevation* 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.

*Appeal* means a request for a review of the floodplain administrator's interpretation of any provision of this article or a request for a variance.

*Atlas 14 rainfall* means rainfall frequency data published in the National Oceanic and Atmospheric Administration (NOAA) Atlas 14, Volume 11 Precipitation-Frequency Atlas of the United States, Texas.

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

*Critical feature* means an integral and readily identifiable part of a flood protection system, without which the flood protection provided by the entire system would be compromised.

*Development* means any manmade change in improved and unimproved real estate, including, but not limited to, buildings or other structures, mining, dredging, filling, grading, paving, excavation or drilling operations.

*Elevated building* means a non-basement building built, in the case of a building in zones A1-30, AE, A, A99, AO, AH, B, C, X and D, to have the top of the elevated floor or, in the case of a building in zones V1-30, VE or V, to have the bottom of the lowest horizontal structural member of the elevated floor elevated above the ground level by means of pilings, columns (posts and piers) or shear walls parallel to the flow of the water and adequately anchored so as not to impair the structural integrity of the building during a flood of up to the magnitude of the 500-year flood. In the case of zones A1-30, AE, A, A99, AO, AH, B, C, X and D, the term

"elevated building" also includes a building elevated by means of fill or solid foundation perimeter walls with openings sufficient to facilitate the unimpeded movement of floodwaters. In the case of zones V1-30, VE or V, the term "elevated building" also includes a building otherwise meeting the definition of "elevated building," even though the lower area is enclosed by means of breakaway walls, if the breakaway walls meet the standards of section 60.3(e)(5) of the National Flood Insurance Program regulations.

*Existing construction or existing structures* means, for the purposes of determining rates, structures for which the start of construction commenced before the effective date of the FIRM or before January 1, 1975, for FIRMs effective before that date.

*FEMA* means the Federal Emergency Management Agency.

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

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

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

*Flood hazard boundary map (FHBM)* means an official map of a community on which the Federal Emergency Management Agency has delineated the boundaries of the flood, mudslide (i.e., mudflow) and related erosion areas having special hazards and which have been designated as zones A, M and/or E.

*Flood insurance rate map (FIRM)* means an official map of the city, on which the Federal Insurance Administration has delineated both the areas of special flood hazards and the risk premium zones applicable to the city.

*Flood protection system* means those physical structural works for which funds have been authorized, appropriated and expended, and which have been constructed specifically to modify flooding in order to reduce the extent of the areas within a community subject to flood risk the extent of the depths of associated flooding. Such a system typically includes hurricane tidal barriers, dams, reservoirs, levees or dikes. These specialized flood-modifying works are those constructed in conformance with sound engineering standards.

*Floodplain or flood prone area* means any land area susceptible to being inundated by water from any source (see *Flooding*).

*Floodway or regulatory floodway* means the channel of a river or other watercourse and the adjacent land areas that must be reserved in order to discharge the base flood without cumulatively increasing the water surface elevation more than a designated height.

*Floodway conveyance offset volume* means 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.

*Friendswood special flood hazard area as defined in Section 34-25, Flood Zones Defined.*

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

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

*Lowest floor* means the lowest floor of the lowest enclosed area, including basement. An unfinished or flood-resistant enclosure, usable solely for parking of vehicles, building access or storage, in an area other than a basement area is not considered a building's lowest floor, provided that such enclosure is not built so as to render the structure in violation of the applicable nonelevation design requirements of section 60.3 of the National Flood Insurance Program regulations.

*Manufactured home* means 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. For floodplain management purposes, the term "manufactured home" also includes park trailers, travel trailers and other similar vehicles placed on a site for greater than 180 consecutive days. For insurance purposes, the term "manufactured home" does not include park trailers, travel trailers and other similar vehicles.

*Mean sea level* means, for purposes of the National Flood Insurance Program, the North American Vertical Datum (NAVD) of 1988, or other datum to which base flood elevations shown on a community's flood insurance rate map are referenced.

*New construction* means, for floodplain management purposes, structures for which the start of construction commenced on or after the effective date of a floodplain management regulation adopted by a community.

*Start of construction* (for other than new construction or substantial improvements under the Coastal Barrier Resources Act (PL 97-348)) includes substantial improvement and means the date the building permit was issued, provided the actual start of construction, repair, reconstruction, placement or other improvement was within 180 days of the permit date. The actual start means either the first placement of permanent construction of a structure on a site, such as the pouring of slabs or footings, the installation of piles, the construction of columns, or any work beyond the stage of excavation, or the placement of a manufactured home on a foundation. The term "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 basements, 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.

*Structure* means anything constructed or erected with a fixed location on the ground or attached to something having a fixed location on the ground.

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

*Substantial improvement* means any repair, reconstruction or improvement of a structure over a period of 10 years, the cost of which equals or exceeds 50 percent of the market value of

the structure either before the improvement or repair is started, or, if the structure has been damaged and is being restored, before the damage occurred. For the purpose of this definition, the term "substantial improvement" is considered to occur when the first alteration of any wall, ceiling, floor or other structural part of the building commences, whether or not that alteration affects the external dimensions of the structure. The term "substantial improvement" does not, however, include either any project for improvement of a structure to comply with existing state or local health, sanitary or safety code specifications which are solely necessary to ensure safe living conditions or any alteration of a structure listed on the national Register of Historic Places or a state inventory of historic places.

*Variance* means a grant of relief to a person from the requirements of this article when specific enforcement would result in unnecessary hardship. A variance, therefore, permits construction or development in a manner otherwise prohibited by this article. (For full requirements, see section 60.6 of the National Flood Insurance Program regulations.)

*Violation* means the failure of a structure or other development to be fully compliant with the community's floodplain management regulations. A structure or other development without the elevation certificate, other certifications or other evidence of compliance required in section 60.3(b)(5), (c)(4), (c)(10), (d)(3), (e)(2), (e)(4) or (e)(5) of the National Flood Insurance Program regulations is presumed to be in violation until such time as that documentation is provided.

*Water surface elevation* means the height, in relation to the North American Vertical Datum (NAVD) of 1988 (or other datum, where specified), of floods of various magnitudes and frequencies in the floodplains of coastal or riverine areas.

#### Sec. 34-20. - Statutory authorization.

The legislature of the state has in V.T.C.A., Water Code § 16.311 et seq., delegated the responsibility to local governmental units to adopt regulations designed to minimize flood losses. Therefore, the city council does ordain the provisions set out in this article to be its regulations governing flood damage prevention.

#### Sec. 34-21. - Findings of fact.

The city finds that:

- (1) The Friendswood special flood hazard areas of the city are subject to periodic inundation which results in loss of life and property, health and safety hazards, disruption of commerce and governmental services, and extraordinary public expenditures for flood protection and relief, all of which adversely affect the public health, safety and general welfare.
- (2) These flood losses are created by the cumulative effect of obstructions in floodplains which cause an increase in flood heights and velocities, and by the occupancy of flood hazard areas by uses vulnerable to floods and hazardous to other lands because they are inadequately elevated, floodproofed or otherwise protected from flood damage.

Sec. 34-22. - Statement of purpose.

It is the purpose of this article 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 expenditure of public money for costly flood control projects;
- (3) Minimize the need for rescue and relief efforts associated with flooding and generally undertaken at the expense of the general public;
- (4) Minimize prolonged business interruptions;
- (5) Minimize damage to public facilities and utilities such as water and gas mains, electric, telephone and sewer lines, streets and bridges located in floodplains;
- (6) Help maintain a stable tax base by providing for the sound use and development of flood prone areas in such a manner as to minimize future flood blight areas;
- (7) Ensure that potential buyers are notified that property is in a flood area; and
- (8) Preserve floodplain storage through mitigation.

Sec. 34-23. - Lands to which this article applies.

This article shall apply to all areas within the jurisdiction of the city.

Sec. 34-24. - Basis for establishing the areas of special flood hazard and other flood areas.

The areas of special flood hazard and other flood areas identified by FEMA in a scientific and engineering report entitled, "The Flood Insurance Study for Galveston County, Texas and Incorporated Areas," dated August 15, 2019 with accompanying Flood Insurance Rate Map and Flood Boundary-Floodway Maps (FIRM and FBFM) are hereby adopted by reference and declared to be a part of this article. Incorporated Areas includes both Galveston and Harris Counties.

Sec. 34-25. Flood Zones Defined.

Moderate to Low Risk Areas, also known as "other flood areas" or the 500-year floodplain – In communities that participate in the NFIP, flood insurance is available to all property owners and renters in these zones:

*Zones B and X (Shaded)* means areas subject to a 0.2 percent chance of flooding in any given year; areas of 1 percent 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 percent annual chance flood.

*Zones C and X (Unshaded)* means areas of minimal flood hazard, outside of the 0.2 percent chance of flood.

High Risk Areas, also known as “special flood hazard area” or the 100-year floodplain – In communities that participate in the NFIP, mandatory flood insurance purchase requirements apply to all of these zones:

*Zones A, AE, A1-30, AH, AO, AR, A99* means the land in the floodplain within the City, that is subject to a one percent or greater chance of flooding in any given year

High Risk – Coastal Areas – In communities that participate in the NFIP, mandatory flood insurance purchase requirements apply to all of these zones.

*Zones V, VE, V1-30* means coastal areas with a 1% or greater chance of flooding and an additional hazard associated with storm waves.

Friendswood Special Flood Hazard area is hereby established and 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.

Sec. 34-26. - Compliance.

No structure or land shall be located, altered or have its use changed without full compliance with the terms of this article and other applicable regulations.

(Code 1974, § 4-29; Code 1994, § 34-33; Code 2005, § 34-26)

Sec. 34-27. - Abrogation and greater restrictions.

This article is not intended to repeal, abrogate or impair any existing easements, covenants or deed restrictions. However, where this article and another ordinance or regulation conflict or overlap, whichever imposes the more stringent restrictions shall prevail.

Sec. 34-28. - Interpretation.

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

(1) Considered as minimum requirements;

- (2) Liberally construed in favor of the city council; and
- (3) Deemed neither to limit nor repeal any other powers granted under state statutes.

Sec. 34-29. - Warning and disclaimer of liability.

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

Sec. 34-30. - Floodplain administrator—Designation.

The city manager is hereby appointed the floodplain administrator to administer and implement the provisions of this article and other appropriate sections of 44 CFR (National Flood Insurance Program regulations) pertaining to floodplain management.

Sec. 34-31. - Same—Duties and responsibilities.

Duties and responsibilities of the floodplain administrator shall include, but not be limited to, the following:

- (1) Maintain and hold open for public inspection all records pertaining to the provisions of this article.
- (2) Review permit applications to determine whether proposed building sites will be reasonably safe from flooding.
- (3) Review, approve or deny all applications for development permits required by adoption of this article.
- (4) Review permits for proposed development to ensure that all necessary permits have been obtained from those federal, state or local governmental agencies (including section 404 of the Federal Water Pollution Control Act amendments of 1972, 33 USC 1344) from which prior approval is required.
- (5) Make the necessary interpretation where interpretation is needed as to the exact location of the boundaries of the areas of Friendswood special flood hazard areas (for example, where there appears to be a conflict between a mapped boundary and actual field conditions).
- (6) Notify, in riverine situations, adjacent communities and the state coordinating agency, which is the state water commission, prior to any alteration or relocation of a watercourse, and submit evidence of such notification to FEMA.

- (7) Ensure that the flood-carrying capacity within the altered or relocated portion of any watercourse is maintained.
- (8) When base flood elevation and Zone X (Shaded) data has not been provided in accordance with section 34-24, obtain, review and reasonably utilize any base flood elevation data, Zone X (Shaded) data and floodway data available from a federal, state or other source in order to administer the provisions of division 2 of this article.

Sec. 34-32. - Development permit—Establishment.

A development permit shall be required to ensure conformance with the provisions of this article. The permit fee shall be set by resolution and printed in Appendix D to this Code. A development permit is required for all development-related activity in the floodplain, including, but not limited to:

- (1) Construction of new structures;
- (2) Modifications or improvements to existing structures;
- (3) Excavation;
- (4) Filling;
- (5) Paving;
- (6) Drilling;
- (7) Driving of piles; and
- (8) Grading.

Sec. 34-33. - Same—Procedures.

- (a) Application for a development permit shall be presented to the floodplain administrator on a form furnished by him and may include, but not be limited to, plans in duplicate, drawn to scale, showing the location, dimensions and elevation or proposed landscape alterations, existing and proposed structures, and the location of the foregoing in relation to areas of Friendswood special flood hazard areas. Additionally, the following information is required:
  - (1) Elevation, in relation to mean sea level, of the lowest floor, including basement, of all new and substantially improved structures.
  - (2) Elevation in relation to mean sea level to which any nonresidential structure shall be floodproofed.
  - (3) A certificate from a registered professional engineer or architect that the nonresidential floodproofed structure shall meet the floodproofing criteria of section 34-61(2).
  - (4) Description of the extent to which any watercourse or natural drainage will be altered or relocated as a result of proposed development.
  - (5) Maintenance of a record of all such information in accordance with section 34-30(1).

- (6) A mitigation plan identifying all cut and fill activities occurring within the areas of Friendswood special flood hazard areas. This mitigation plan will include all necessary calculations and shall be signed and sealed by a registered professional engineer.
  - (7) Mitigation activities shall be fully implemented prior to any other development-related activities commenced on any given site.
- (b) Approval or denial of a development permit by the floodplain administrator shall be based on all of the provisions of this article and the following relevant factors:
- (1) The danger to life and property due to flooding or erosion damage.
  - (2) The susceptibility of the proposed facility and its contents to flood damage and the effect of such damage on the individual owner.
  - (3) The danger that materials may be swept onto other lands to the injury of others.
  - (4) The compatibility of the proposed use with existing and anticipated development.
  - (5) The safety of access to the property in times of flood for ordinary and emergency vehicles.
  - (6) The costs of providing governmental services during and after flood conditions, including maintenance and repair of streets and bridges, and public utilities and facilities such as sewer, gas, electrical and water systems.
  - (7) The expected heights, velocity, duration, rate of rise and sediment transport of the floodwaters and the effects of wave action, if applicable, expected at the site.
  - (8) The necessity to the facility of a waterfront location, where applicable.
  - (9) The availability of alternative locations, not subject to flooding or erosion damage, for the proposed use.
- (10) The relationship of the proposed use to the comprehensive plan for the area.

Sec. 34-34. - Variance procedures.

The following shall regulate variances from the provisions of this article:

- (1) The appeal board, as established by the city, shall hear and render judgment on requests for variances from the requirements of this article.
- (2) The appeal board shall hear and render judgment on an appeal only when it is alleged there is an error in any requirement, decision or determination made by the floodplain administrator in the enforcement or administration of this article.
- (3) Any person aggrieved by the decision of the appeal board may appeal such decision in the courts of competent jurisdiction.
- (4) The floodplain administrator shall maintain a record of all actions involving an appeal and shall report variances to FEMA upon request.

- (5) Variances may be issued for the reconstruction, rehabilitation or restoration of structures listed on the National Register of Historic Places or a state inventory of historic places without regard to the procedures set forth in the remainder of this section.
- (6) Variances may be issued for new construction and substantial improvements to be erected on a lot of one-half acre or less in size contiguous to and surrounded by lots with existing structures constructed below the base flood level, provided the relevant factors in section 34-32(b) have been fully considered. As the lot size increases beyond the one-half acre, the technical justification required for issuing the variance increases.
- (7) Upon consideration of the factors noted in this section and the intent of this article, the appeal board may attach such conditions to the granting of variances as it deems necessary to further the purpose and objectives of this article.
- (8) Variances shall not be issued within any designated floodway if any increase in flood levels during the base flood discharge would result.
- (9) Prerequisites for granting variances are as follows:
  - a. Variances shall only be issued upon a determination that the variance is the minimum necessary, considering the flood hazard, to afford relief.
  - b. Variances shall only be issued upon:
    1. Showing a good and sufficient cause;
    2. A determination that failure to grant the variance would result in exceptional hardship to the applicant; and
    3. A determination that the granting of a variance will not result in increased flood heights, additional threats to public safety, or extraordinary public expense, or create nuisances, cause fraud on or victimization of the public, or conflict with existing local laws or ordinances.
  - c. Any applicant to whom a variance is granted shall be given written notice that the structure will be permitted to be built with the lowest floor elevation below the base flood elevation, and that the cost of flood insurance will be commensurate with the increased risk resulting from the reduced lowest floor elevation.
- (10) Variances may be issued by the city for new construction and substantial improvements and for other development necessary for the conduct of a functionally dependent use, provided that the criteria outlined in subsections (1) through (9) of this section are met, and the structure or other development is protected by methods that minimize flood damages during the base flood and create no additional threats to public safety.

Sec. 34-35. - Stormwater management.

- (a) Prior to the issuance of any development permit, except for permits for developments in areas wholly outside areas of Friendswood special flood hazard areas where it is determined by the city engineer as unnecessary due to the existence of sufficient available data, the

applicant shall submit a hydrological analysis showing the impact and potential adverse effects of increased runoff attributable to such proposed development from an Atlas –14 100-year frequency storm on downstream areas. Drainage improvements shall be required in accordance with the following:

- (1) Where new developments do not aggravate downstream flooding problems, they shall not be required to provide either on-site storage or off-site improvements. (2) Where new developments may aggravate downstream flooding, the developer shall compensate for the increased flood flows by providing downstream improvements which provide capacity to handle the increased flows.
- (3) Where downstream improvements may be so extensive as to be uneconomical for the proposed development or not be feasible because of right-of-way or other limitations, new developments may provide on-site storage improvements sized and constructed as to eliminate any adverse drainage impact downstream.
- (4) If it is not feasible for new development to analyze all downstream conditions, such new development may provide on-site storage of sufficient capacity to limit the developed peak discharge from the storage systems to that which would have flowed from the development in its natural undeveloped state. The stormwater runoff rate from a development after its completion shall not exceed the runoff rate for the land area prior to its development as determined by the 100-year frequency storm. Drainage calculations modeled to accomplish this purpose and the inflow-outflow hydrographs supplied for the area will be supplied with construction drawings and along with all other calculations for drainage.
- (5) Hydrograph timing may not be used as a substitution for providing detention.

The storage systems designed to accomplish this purpose shall not be closer to any water-bearing strata than one foot and shall have soil borings from a certified laboratory to substantiate this fact, and these results will be supplied with the design engineer's stamp on them to the city engineer before construction can begin. The type and geometrical shape of the storage system is independent and left to the design of the developer's engineer, but should include a cross section for flow up to a five-year frequency storm and the second cross section should be for the storage of additional stormwater to the 100-year interval. The area used for this purpose is to be maintained by the developer.

- (b) No development shall proceed until approval has been granted by the city engineer for the plans, specifications and flood control measures for such development as required under this section.”

## DIVISION 2. - FLOOD HAZARD REDUCTION

### Sec. 34-59. - Methods of reducing flood losses.

In order to accomplish its purposes, this division uses the following methods:

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

Sec. 34-60. - General standards.

In all Friendswood special flood hazard areas, the following provisions are required for all new construction and substantial improvements:

- (1) All new construction or substantial improvements shall be designed or modified and adequately anchored to prevent flotation, collapse or lateral movement of the structure resulting from hydrodynamic and hydrostatic loads, including the effects of buoyancy;
- (2) All new construction or substantial improvements shall be constructed by methods and practices that minimize flood damage;
- (3) All new construction or substantial improvements shall be constructed with materials resistant to flood damage;
- (4) All new construction or substantial improvements shall be constructed with electrical, heating, ventilation, plumbing and air conditioning equipment and other service facilities that are designed and/or located so as to prevent water from entering or accumulating within the components during conditions of flooding;
- (5) All new and replacement water supply systems shall be designed to minimize or eliminate infiltration of floodwaters into the system;
- (6) New and replacement sanitary sewage systems shall be designed to minimize or eliminate infiltration of floodwaters into the system and discharge from the system into floodwaters; and
- (7) On-site waste disposal systems shall be located to avoid impairment to them or contamination from them during flooding.

Sec. 34-61. - Specific standards.

In all Friendswood special flood hazard areas where base flood elevation and 0.2 percent flood elevation data has been provided as set forth in section 34-33, the following provisions are required:

- (1) *Residential construction.* New construction and substantial improvement of any residential structures shall have the lowest floor, including basement, elevated to 24 inches above the base flood elevation or at or above the 0.2 percent flood elevation, whichever is greater.. A registered professional engineer, architect or land surveyor shall submit a certification to the floodplain administrator that the standard of this subsection, as proposed in article, is satisfied.
- (2) *Nonresidential construction.* New construction and substantial improvements of any commercial, industrial or other nonresidential structure shall either have the lowest floor, including basement, elevated to 24 inches above the base flood level at or above the -.2 percent flood elevation, whichever is greater, or together with attendant utility and sanitary facilities, be designed so that below the base flood level the structure is watertight with walls substantially impermeable to the passage of water and with structural components having the capability of resisting hydrostatic and hydrodynamic loads and effects of buoyancy. A registered professional engineer or architect shall develop and/or review the structural design, specifications and plans for the construction and shall certify that the design and methods of construction are in accordance with accepted standards of practice as outlined in this subsection. A record of such certification, which includes the specific elevation in relation to mean sea level to which such structures are floodproofed, shall be maintained by the floodplain administrator.
- (3) *Manufactured homes.*
  - a. All manufactured homes to be placed within zone A shall be installed using methods and practices which minimize flood damage. For the purpose of this requirement, manufactured homes must be elevated and anchored to resist flotation, collapse or lateral movement. Methods of anchoring may include, but are not limited to, use of over-the-top or frame ties to ground anchors. This requirement is in addition to applicable state and local anchoring requirements for resisting wind forces.
  - b. All manufactured homes shall be in compliance with subsection (1) of this section.

Sec. 34-62. - Maintenance of on-site stormwater storage facilities.

- (a) In each case where an on-site stormwater storage facility is provided pursuant to this article, the developer shall furnish evidence of acceptance for maintenance of such storage facility to the Galveston County Consolidated Drainage District (GCCDD), having authority to perform such service. The Galveston County Consolidated Drainage District (GCCDD) will agree to assume such responsibility, provided the developer:
  - (1) Dedicates to the city and GCCDD an easement over and across such facility;
  - (2) Dedicates an access easement to such facility to the city and GCCDD; and
  - (3) Pays to the entity who is maintaining such facilities, whether the city or GCCDD, the estimated cost of maintaining such storage facility for a period of ten years, as stated on the fee schedule in the Drainage Criteria Manual.

Provided further, if the on-site stormwater storage facility is designed to be a "dry" facility and not an amenity or a private recreational facility. Amenity ponds shall be defined as any pond whose land area has been deeded to the homeowners/landowners for the benefit of the homeowners/landowners and are to be maintained by the homeowners'/landowners' association. These ponds shall include "wet ponds" and ponds used for recreational purposes.

- (b) For the purposes of this section, the term "stormwater storage facility" means a stormwater storage facility serving primarily as a collection device and not as a transmission system, and which is designed and constructed for the purpose of providing on-site detention for the benefit of a multiparcel development, and not for a single lot or single parcel development.

Sec. 34-63. - Special lowest floor elevation requirements.

- (a) Notwithstanding any other provision contained in this article to the contrary, in zone AE, lowest floor elevations shall be a minimum of 24 inches above the elevation given on the latest FEMA FIRM panel for the city or at or at or above the 0.2 percent flood elevation whichever is greater. When building location falls between elevations, the elevation may be interpolated to the nearest one-half foot.
- (b) Notwithstanding any other provision contained in this article to the contrary, in zone AO, lowest floor elevations shall be 36 inches higher than the centerline of the road in curb and gutter streets, or the high bank of a roadside ditch on streets with open ditch drainage or at or above the 0.2 percent flood elevation, whichever is greater.
- (c) Notwithstanding any other provision contained in this article to the contrary, in zone X shaded, lowest floor elevations shall be a minimum of 24 inches higher than the adjacent natural grade or at or above the 0.2 percent flood elevation, whichever is greater.
- (d) Notwithstanding any other provision contained in this article to the contrary, in zone X unshaded, lowest floor elevation shall be as follows:
  - (1) On curb and gutter streets, the elevation shall be a minimum of 18 inches above the top of curb or a minimum of 12 inches above the adjacent natural grade or at or above the 0.2 percent flood elevation, whichever is greater.
  - (2) On streets with open ditches, slab elevations shall be a minimum of 18 inches higher than the center of the street or a minimum of 12 inches higher than the adjacent natural grade or at or above the 0.2 percent flood elevation,, whichever is greater.
- (e) For the purposes of this section, the term "adjacent natural grade" means the natural ground adjacent to the slab at its centerline paralleling the front of the structure. Natural ground is assumed to be the ground surface existing prior to placement of the building pad.
- (f) Any person who shall violate any provision of this section shall be deemed guilty of a misdemeanor.

Sec. 34-64. - Standards for subdivision proposals.

- (a) All subdivision proposals, including manufactured home parks and subdivisions, shall be consistent with sections 34-21, 34-22 and 34-59.
- (b) All proposals for the development of subdivisions, including manufactured home parks and subdivisions, shall meet the development permit requirements of sections 34-32 and 34-26, and the provisions of this division.
- (c) Base flood elevation data and 0.2 percent flood elevation data shall be generated for subdivision proposals and other proposed development, including manufactured home parks and subdivisions, which is greater than 50 lots or five acres, whichever is lesser, if not otherwise provided pursuant to section 34-24.
- (d) All subdivision proposals, including manufactured home parks and subdivisions, shall have adequate drainage provided to reduce exposure to flood hazards.
- (e) All subdivision proposals, including manufactured home parks and subdivisions, shall have public utilities and facilities, such as sewer, gas, electrical and water systems, located and constructed to minimize or eliminate flood damage.

Sec. 34-65. - Floodways.

Property located within areas of special flood hazard as established in section 34-24 are areas designated as floodways. The council finds that floodways are extremely hazardous areas due to the velocity of floodwaters which carry debris, potential projectiles and erosion potential, and the following provisions shall therefore apply to these areas in order to protect the public health, safety, and welfare and to protect private property:

- (1) Encroachments into the floodway shall be prohibited, including fill, new construction, substantial improvements and other development within the adopted regulatory floodway unless it has been demonstrated through a no-rise certificate using hydrologic and hydraulic analyses performed in accordance with standard engineering practices that the proposed encroachment would not result in any increase in flood levels within the community during the occurrence of the base flood discharge.
- (2) If subsection (1) of this section is satisfied, all new construction and substantial improvements shall comply with all applicable flood hazard reduction provisions of sections 34-60 through 34-64, and other applicable regulations of the city or provisions of this article.
- (3) Under the provisions of 44 CFR 65.12 of the National Flood Insurance Program regulations, a community may permit encroachments within the adopted regulatory floodway that would result in an increase in base flood elevations, provided that the community first applies for a conditional FIRM and floodway revision through FEMA.