



# **Denton County Flood** **Damage Prevention Regulations**

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Denton County Public Works

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**ARTICLE 1**  
**Statutory Authorization, Findings of Fact, Purpose and Methods**

**Section A - Statutory Authorization**

These Regulations are adopted by the Commissioners Court of Denton County, Texas, acting in its capacity as the governing body of Denton County. The authority of Denton County to adopt these Regulations and for the contents hereof is derived from the following statutes: The Flood Control and Insurance Act, Subchapter I of Chapter 16 of the Texas Water Code, as amended. These Regulations may be amended at any time by a majority of Commissioners Court as approved by the appropriate federal authorities.

**Section B - Findings of Fact**

- (1) The flood hazard areas of Denton County 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 hazards areas by uses vulnerable to floods and hazardous to other lands because they are inadequately elevated, flood proofed or other-wise protected from flood damage.

**Section C - Statement of Purpose**

The purpose of these Regulations is to provide land use controls necessary to qualify unincorporated areas of Denton County for flood insurance under requirements of the National Flood Insurance Act of 1986, as amended, 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; and
- (7) Insure that potential buyers are notified that property is in a flood area.

#### **Section D - Methods of Reducing Flood Losses**

In order to accomplish its purposes, this order 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 flood waters;
- (4) Control filling, grading, dredging and other development which may increase flood damage; and
- (5) Prevent or regulate the construction of flood barriers which will unnaturally divert flood waters or which may increase flood hazards to other lands.

## **ARTICLE 2**

### **Definitions**

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

**Alluvial Fan Flooding** - means flooding occurring on the surface of an alluvial fan or similar landform which originates at the apex and is characterized by high-velocity flows; active processes of erosion; sediment transport, and deposition; and unpredictable flow paths.

**Apex** - means a point on an alluvial fan or similar landform below which the flow path of the major stream that formed the fan becomes unpredictable and alluvial fan flooding can occur.

**Appurtenant Structure** - means a structure which is on the same parcel of property as the principal structure to be insured and the use of which is incidental to the use of the principal structure.

**Appeal** – means a request for a review of the floodplain administrator’s interpretation of any provision of this chapter or a request for a variance.

**Area of Future Conditions Flood Hazard** - means the land area that would be inundated by the 1-percent-annual chance (100 year) flood based on future conditions hydrology.

**Area of Shallow Flooding** - means a designated AO, AH, or VO zone on a community's Flood Insurance Rate Map (FIRM) with a one percent chance or greater annual 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.

**Area of Special Flood Hazard** - is the land in the floodplain within a community subject to a one percent or greater chance of flooding in any given year. The area may be designated as Zone A on the Flood Hazard Boundary Map (FHBM). After detailed ratemaking has been completed in preparation for publication of the FIRM, Zone A usually is refined into Zones A, AE, AH, AO, A99, VO, V1-30, VE or V.

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

**Base Flood Elevation (BFE)** - The elevation shown on the Flood Insurance Rate (FIRM) and found in the accompanying Flood Insurance Study (FIS) for Zones A, AE, AH, A1-30, AR, V1-V30, or VE that indicates the water surface elevation resulting from the flood that has a 1% chance of equaling or exceeding that level in any given year-also called the Base Flood.

**Basement** - means any area of the building having its floor sub grade (below ground level) on all sides.

**Breakaway Wall** - means a wall that is not part of the structural support of the building and is intended through its design and construction to collapse under specific lateral loading forces, without causing damage to the elevated portion of the building or supporting foundation system.

**Certificate of Approval** - means final approval of projects that meet all requirements of the Denton County Flood Prevention Regulations and other applicable regulations.

**Conditional Letter of Map Amendment (CLOMA)** – means FEMA’s comment or official letter on a proposed structure or group of structures that upon construction would be located on existing natural ground above the base flood elevation on a portion of a legally defined parcel of land that is partially inundated by the base flood.

**Conditional Letter of Map Revision (CLOMR)** - means FEMA’s comment or official letter on a proposed project that upon construction would affect the hydrologic or hydraulic characteristics of a flooding source and thus result in the modification of the existing effective base flood elevations, the special flood hazard area, or the existing regulatory floodway.

**Conditional Letter of Map Revision - Fill (CLOMR-F)** - means FEMA’s comment or official letter on a proposed project that upon construction would result in a modification of the special flood hazard area through the placement of fill outside the existing regulatory floodway.

**Conveyance** – means 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.

**Critical Facility** – means those facilities essential to the preservation of life and property, including, but not limited to, schools, nursing homes, hospitals, police stations, fire and emergency response installations, facilities used for the storage of critical records, and commercial installations which produce, use or store hazardous materials, or hazardous waste.

**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 man-made 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 or storage of equipment or materials. Fences and fence-type walls located within the floodplain are included within this definition.

**Elevated Building** – means, for insurance purposes, a non-basement building, which has its lowest elevated floor, raised above ground level by foundation walls, shear walls, posts, piers, pilings or columns.

**Elevation Certificate** – means a document certified by a licensed professional land surveyor used for the purpose of establishing the lowest floor (including basement) elevation of a building. All new construction or substantial improvements to existing buildings in flood hazard areas shall obtain an “elevation certificate” and provide the necessary information in accordance with the FEMA’s (FEMA) National Flood Insurance Program (NFIP) instructions.

**Existing Construction** - 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. "Existing construction" may also be referred to as "existing structures".

**Existing Manufactured Home Park or Subdivision** - means a manufactured home park or subdivision for which the construction of facilities for servicing the lots on which the manufactured homes are to be affixed (including, at a minimum, the installation of utilities, the construction of streets, and either final site grading or the pouring of concrete pads) is completed before the effective date of the floodplain management regulations adopted by Denton County.

**Expansion to an Existing Manufactured Home Park or Subdivision** - means the preparation of additional sites by the construction of facilities for servicing the lots on which the manufactured homes are to be affixed (including the installation of utilities, the construction of streets, and either final site grading or the pouring of concrete pads for manufactured homes).

**Expansion of a Structure** – means an addition attached to, but outside of, either the vertical or horizontal confines of the existing structure or below the first floor level of a building elevated on posts or piers, but which is not a “substantial improvement” as defined by these Regulations.

**FEMA** – means 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, (2) the unusual and rapid accumulation or runoff of surface waters from any source.

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

**Flood Insurance Rate Map (FIRM)** - means an official map of a community, on which the FEMA has delineated both the areas of special flood hazards and the risk premium zones applicable to the community.

**Flood Insurance Study** - is the official report provided by the FEMA. The report contains flood profiles, water surface elevation of the base flood, as well as the Flood Boundary-Floodway Map.

**Floodplain or Flood-Prone Area** - means any land area susceptible to being inundated by water from any source (see definition of flooding).

**Floodplain Administrator** – is an individual responsible for enforcing the “floodplain management regulations” in this chapter.

**Floodplain Development Permit Application** – means the completed forms provided by the floodplain administrator describing the proposed project located in the floodplain.



**Floodplain Development Permit** – means the floodplain administrator “approved” version of a “floodplain development application”.

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

**Floodplain Management Regulations** - means zoning orders, subdivision regulations, building codes, health regulations, special purpose orders (such as a floodplain order, grading order and erosion control order) and other applications of police power. The term describes such state or local regulations, in any combination thereof, which provide standards for the purpose of flood damage prevention and reduction.

**Floodplain Mitigation** – means a hydraulically equivalent volume of floodplain storage sufficient to offset a reduction in floodplain storage or conveyance capacity.

**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 a “special flood hazard” and the extent of the depths of associated flooding. 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.

**Flood Proofing** - means any combination of structural and non-structural 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.

**Floodway (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.

**Functionally Dependent Use** - means a use which cannot perform its intended purpose unless it’s 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.

**Habitable Floor** – means any floor of a building or structure usable for sleeping, living, cooking, working, recreation or any combination thereof. Bathrooms and utility rooms are included in this definition, as are storage areas.

**Highest Adjacent Grade** - means the highest natural elevation of the ground surface prior to construction adjacent to the proposed wall line of a structure.

**Historic Structure** - means any structure that is:

- (a) Listed individually in the National Register of Historic Places (a listing maintained by the Department of Interior) or preliminarily determined by the Secretary of the Interior as meeting the requirements for individual listing on the National Register;
- (b) 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;
- (c) Individually listed on a state inventory of historic places in states with historic preservation programs which have been approved by the Secretary of the Interior; or
- (d) Individually listed on a local inventory or historic places in communities with historic preservation programs that have been certified either:
  - (1) By an approved state program as determined by the Secretary of the Interior or:
  - (2) Directly by the Secretary of the Interior in states without approved programs.

**Letter Of Map Amendment (LOMA)** - means FEMA's comment or official letter of an amendment to the currently effective FEMA Flood Insurance Rate Map (FIRM) which established that a structure or group of structures is not located in a Special Flood Hazard Area (SFHA) as shown on the FIRM. A LOMA is issued only by FEMA.

**Letter Of Map Revision (LOMR)** - means FEMA's modification to an effective FIRM or flood boundary and floodway map or both. LOMRs are generally based on the implementation of physical measures that affect the hydrologic or hydraulic characteristics of a flooding source and thus result in the modification of the existing regulatory floodway, the effective base flood elevations, or the SFHA. The LOMR officially revises the FIRM or flood boundary and floodway map, and sometimes the flood insurance study report, and when appropriate, includes a description of the modifications. The LOMR is generally accompanied by an annotated copy of the affected portions of the FIRM, flood boundary and floodway map, or the flood insurance study report. A LOMR is issued only by FEMA.

**Letter Of Map Revision – Fill (LOMR-F)** - means FEMA's modification of the SFHA shown on the FIRM based on the placement of fill outside the existing regulatory floodway. A LOMR-F is issued only by FEMA.

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

**Levee System** - means a man-made 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 resistance enclosure, usable solely for parking of vehicles, building access or storage in an area other than a basement area is not considered a building's lowest floor; **provided** that such enclosure is not built so as to render the structure in violation of the applicable non-elevation design requirements of 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. The term manufactured home does not include a "recreational vehicle".

**Manufactured Home Park or Subdivision** - means a parcel (or contiguous parcels) of land divided into two or more manufactured home lots for rent or sale.

**Mean Sea Level** - means, for purposes of the National Flood Insurance Program, the National Geodetic Vertical Datum (NGVD) of 1988 or other datum, to which base flood elevations shown on a community Flood Insurance Rate Map are referenced.

**New Construction** - means, for the purpose of determining insurance rates, structures for which the "start of construction" commenced on or after the effective date of an initial FIRM or after December 31, 1974, whichever is later, and includes any subsequent improvements to such structures. For floodplain management purposes, "new construction" means structures for which the "start of construction" commenced on or after the effective date of a floodplain management regulation adopted by a community and includes any subsequent improvements to such structures.

**New Manufactured Home, Park Or Subdivision** - means a manufactured home park or subdivision for which the construction of facilities for servicing the lots on which the manufactured homes are to be affixed (including at a minimum, the installation of utilities, the construction of streets, and either final site grading or the pouring of concrete pads) is completed on, or after, December 31, 1974.

**Permit** – means a permit as required by these Regulations. A Development Permit is issued for any development that is located outside the Special Flood Hazard Area and a Floodplain Development Permit is issued for any development that is located within the Special Flood Hazard Area.

**Recreational Vehicle** - means a vehicle which is

- (i) built on a single chassis;
- (ii) 400 square feet or less when measured at the largest horizontal projections;
- (iii) designed to be self propelled or permanently towable by a light duty truck; and

- (iv) designed primarily not for use as a permanent dwelling, but as temporary living quarters for recreational, camping, travel or seasonal use.

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

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

**Special Flood Hazard Area** - see Area of Special Flood Hazard

**Start of Construction** - (for other than new construction or substantial improvements under the Coastal Barrier Resources Act [Pub. L. 97-348]), includes substantial improvement and means the date the building permit was issued, provided the actual start of construction, repair; reconstruction, rehabilitation, addition, placement or other improvement was within 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 slab or footings, the installation of piles, the construction of columns, or any work beyond the stage of excavation; or the replacement of a manufactured home on a foundation. "Permanent construction" does not include land preparation, such a clearing, grading and filling; nor does it include the installation of streets and/or walkways; nor does it include excavation for basement, footing, piers or foundations or the erection of temporary forms; nor does it include the installation on the property of accessory buildings, such as garages or sheds not occupied as dwelling units or not part of the main structure. For a substantial improvement, the "actual start" of construction means the first alteration of any wall, ceiling, floor or other structural part of a building, whether or not that alteration affects the external dimensions of the building.

**Structure** - means a walled and roofed building, including a gas or liquid storage tank that is principally above ground, as well as a manufactured home. The term includes a building which is in the course of construction, alteration or repair.

**Subdivision** – means a division of any tract of land into two (2) or more parts for the purpose of laying out any subdivision or any tract of land or any addition to the County, or for laying out suburban lots or building lots, or any lots, streets, alleys or parts of other portions intended for public use or the use of the purchasers or owners of lots fronting thereon or adjacent thereto.

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

**Substantial Improvement** - means any 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 "start of construction" of the improvement. This includes structures which have incurred "substantial damage," regardless of the actual repair work performed. The term does not, however, include either:

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

For the purpose of determining the value of the structure before being repaired, reconstructed or improved, the Denton Central Appraisal District's assessed value for the structure will be used. If the applicant wishes to contest this value, an independent certified appraisal may be submitted by the applicant. Upon review and concurrence by the Denton Central Appraisal District, this appraised value for the structure will be used for determining if the improvement is substantial.

The Floodplain Administrator may require the submittal of an independent certified damage assessment in cases where the structure has suffered other than minor damage. In cases where the structure is covered by insurance and the insured losses for damage to the structure (excluding contents) amount to over 95% of the value of the structure, the structure shall be deemed substantially damaged regardless of any other data submitted.

**Unincorporated Area** – means the area in Denton County, Texas, that is not within an incorporated city, town, village or other municipality defined by statute.

**Variance** - is a grant of relief to a person from the requirement of this order when specific enforcement would result in unnecessary hardship. A variance, therefore, permits construction or development in a manner otherwise prohibited by this order (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) is presumed to be in violation until such time as that documentation is provided.

**Water Surface Elevation** - means the height, in relation to the National Geodetic Vertical Datum (NGVD) of 1988 (or other datum, where specified), of floods of various magnitudes and frequencies in the floodplain of coastal or riverine areas.

**Zones** Zones on the Flood Insurance Rate Map (FIRM) have the following meanings:

**Zone A:** Areas of the base (1% or 100-year) flood where base flood elevations have not been determined.

**Zone AE:** Areas of the base (1% or 100-year) flood where base flood elevations have been determined.

- Zone AH:** Areas of the base (1% or 100-year) flood where the depths are between 1.0 and 3.0 feet; and base flood elevations are shown.
- Zone AO:** Areas of the base (1% or 100-year) flood where the depths are between 1.0 and 3.0 feet; average depths of inundation are determined.
- Zone A99:** Areas inundated by the (1% or 100-year) flood to be protected by a Federal flood protection system under construction; no base flood elevations are determined.
- Zone V:** Areas of coastal flooding with velocity (wave action); base (1% or 100-year) flood elevations not determined.
- Zone VE:** Areas of coastal flooding with velocity (wave action); base (1% or 100-year) flood elevations determined.
- Zone X:** (Shaded): Areas of the 0.2% flood or 500-year flood, areas of the base (1% or 100-year) flood with average depths of less than 1.0 foot or with drainage areas less than one (1) square mile, and areas protected by levees from the 1% or 100-year flood.
- Zone X:** (Unshaded): Areas determined to be outside both the 1% (100-year) and 0.2% (500-year) floodplains.

For purposes of these Regulations, the term “Any V Zone” includes Zone V and Zones VE and the term “Any A Zone” includes Zone A, AE, AH, AO and A99, but not the floodways within these zones.

**ARTICLE 3**  
**General Provisions**

**Section A - Lands to Which this Order Applies**

The order shall apply to all areas of special flood hazard within the jurisdiction of Denton County, Texas.

**Section B - Basis for Establishing the Areas of Special Flood Hazard**

The areas of special flood hazard identified by the FEMA in a scientific and engineering report entitled, "The Flood Insurance Study for Denton County" revised April 18, 2011 with accompanying Flood Insurance Rate Maps (FIRM) and Flood Boundary Floodway Maps (FBFM) and any revisions thereto are hereby adopted by reference and declared to be a part of this order.

**Section C - Establishment of Development Permit**

A Development Permit shall be required for all development both within and outside the Special Flood Hazard areas to ensure conformance with the provision of these Regulations.

**Section D - Compliance**

No structure or land shall hereafter be located, altered or have its use changed without full compliance with the terms of these Regulations and other applicable regulations or Court Orders.

**Section E -Abrogation and Greater Restrictions**

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

**Section F - Interpretation**

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

- (1) considered as minimum requirements;
- (2) liberally construed in favor of the governing body; and
- (3) deemed neither to limit nor repeal any other powers granted under State statutes.

## **Section G - Warning and Disclaimer of Liability**

The degree of flood protection required by this order 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 man-made or natural causes. This order 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 order shall not create liability on the part of the community or any official or employee thereof for any flood damages that result from reliance on this order or any administrative decision lawfully made there under.



**ARTICLE 4**  
**Administration**

**Section A - Designation of the Floodplain Administrator**

The Denton County Director of Public Works is hereby appointed the Floodplain Administrator to administer and implement the provisions of this order and other appropriate sections of **44 CFR (National Flood Insurance Program Regulations)** pertaining to floodplain management.

**Section B - Duties & Responsibilities of the Floodplain Administrator**

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 order;
- (2) Review permit applications to determine whether a proposed building site, including the placement of manufactured homes, will be reasonably safe from flooding;
- (3) Review, approve or deny all applications for development permits required by adoption of this order;
- (4) Review permits for proposed development to assure 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 U.S.C. 1334) from which prior approval is required;
- (5) Where interpretation is needed as to the exact location of the boundaries of the areas of special flood hazards (for example, where there appears to be a conflict between a mapped boundary and actual field conditions) the Floodplain Administrator shall make the necessary interpretation, which may require the property owner to apply for a LOMR from FEMA;
- (6) Notify, in riverine situations, adjacent communities and the State Coordinating Agency which is Texas Water Development Board (TWDB) and all other appropriate regulatory agencies prior to any alteration or relocation of a watercourse, and submit evidence of such notification to the FEMA;
- (7) Assure that the flood carrying capacity within the altered or relocated portion of any watercourse is maintained;

- (8) When base flood elevation data has not been provided in accordance with Article 3, Section B, the Floodplain Administrator shall obtain, review and reasonably utilize any base flood elevation data and floodway data available from a Federal, State or other source, in order to administer the provisions of these Regulations;
- (9) When a regulatory floodway has not been designated, the Floodplain Administrator must require that no new construction, substantial improvements, or other development (including fill) shall be permitted within Zones A and AE on the community's FIRM, unless it is demonstrated that the cumulative effect of the proposed development, when combined with all other existing and anticipated development, will not increase the water surface elevation of the base flood more than one foot at any point within the community;
- (10) Under the provisions of **44 CFR Chapter 1, Section 65.12**, of the National Flood Insurance Program regulations, a community may approve certain development in Zones A, AE and AH, on the community's FIRM which increases the water surface elevation of the base flood by more than one foot, provided that the community first applies for a conditional FIRM revision through FEMA and completes all of the provisions required by Section 65.12;
- (11) The Floodplain Administrator shall appoint a qualified person to review all permit applications and approve any such permits in the absence of the administrator;
- (12) Review subdivision proposals and other proposed new development, including manufactured home parks or subdivisions, to determine whether such proposals will be reasonably safe from flooding;
- (13) Require within flood hazard areas that new and replacement water supply and sanitary sewerage systems be designed to minimize or eliminate infiltration of flood waters into the systems, and that discharges from the systems into flood waters and onsite waste disposal systems be located to avoid impairment to them or contamination from them during flooding;
- (14) Require proposed development to obtain a LOMA when appropriate in accordance with Article 6; and
- (15) Require proposed development to obtain a conditional letter of map revision (CLOMR) when appropriate prior to any construction in accordance with Article 6. After such construction a formal LOMR shall be required in accordance with Article 6.

## Section C - Permit Procedures

- (1) Application for a Development Permit shall be presented to the Floodplain Administrator on forms furnished by him/her and may include, but not be limited to, plans in duplicate drawn to scale showing the location, dimensions, and elevation of proposed landscape alterations, existing and proposed structures, including the placement of manufactured homes, and the location of the foregoing in relation to areas of special flood hazard.
- (2) A **Class “I” Permit and Certificate of Approval** will be issued when the Director of Public Works or designee determines that the development will be made on land that is located entirely outside the mapped 1% floodplain or 100 year regulatory floodplain and that all other necessary reviews and approvals required by County regulations have been obtained.
- (3) In the absence of evidence to the contrary, the Director of Public Works or designee shall presume that the property shown on any “X” Zone on the FIRM is above the base flood elevation.
- (4) In a “Shaded X” Zone it must be determined that the ground level is above the base flood level before a CLASS “I” permit may be issued. The Director of Public Works may rely on data in his possession to make such a determination or require the submittal of topographical information by the applicant.
- (5) Additionally, the following information is required for structures located in the Special Flood Hazard Areas for a **CLASS “II” PERMIT and Certificate of Approval**.
  - (a) Detailed drawings for the proposed development. Drawings must clearly indicate that all provisions of these regulations will be met. On developments other than residential accessory buildings less than 150 square feet or other insignificant developments (carports, well houses, gazebos, etc.) drawings must be sealed by a licensed professional engineer or registered architect certifying that all provisions of these regulations will be met if the development is completed in accordance with the sealed drawings.
  - (b) A topographic survey of the property to be developed. This requirement may be waived for fences or other insignificant types of development.
  - (c) In cases where a determination must be made as to whether the construction is substantial improvement, additional information may need to be submitted as outlined in these Regulations.
  - (d) Elevation (in relation to mean sea level), of the lowest floor (including basement) of all new and substantially improved structures;
  - (e) Elevation in relation to mean sea level to which any nonresidential structure shall be flood proofed;

- (f) A certificate from a licensed professional engineer or architect that the nonresidential flood proofed structure shall meet the flood proofing criteria of these Regulations;
- (g) Description of the extent to which any watercourse or natural drainage will be altered or relocated as a result of proposed development.
- (h) The top of the slab of the lowest habitable floor must be elevated to **two (2) feet** or more above the base flood elevation.
- (i) A **form board survey with elevations** signed by a Registered Public Land Surveyor (R.P.L.S.) will be required before framing begins. Approval must be given by the County to begin framing if the survey meets all requirements. Structures adjacent to U.S. Army Corps Of Engineers (USACE) flowage easements shall show natural ground elevations on the form board surveys. No structures or fill are allowed without written consent from USACE offices.
- (j) A **completed elevation certificate** with the necessary base flood elevations, hydrological and hydraulic data as needed must be submitted when the structure is completed (completed and ready for habitation for residential structures).
- (k) All structures will be constructed and anchored to prevent flotation, collapse or lateral movement of the structure resulting from the hydrodynamic and hydrostatic loads, including the effect of buoyancy.
- (l) Construction shall use methods that will minimize flood damage and construction materials and utility equipment that are resistant to flood damage. FEMA Technical Bulletins will serve as the guideline for this requirement.
- (m) Unless dry-proofed, enclosed areas below the base flood elevation must be equipped with flood openings or vents capable of equalizing water levels and hydrostatic loads. Covers for these openings must not interfere with the equalization of water levels in the event of a flood and should minimize potential blockage by debris. FEMA Bulletin 1 or subsequent revisions shall serve as the guideline for this requirement. A licensed architect or licensed professional engineer shall certify the flood openings.
- (n) Thermal insulation used below the base flood elevation shall be of a type that does not absorb water.
- (o) Water heaters, furnaces, air conditioning systems, electrical distribution panels and any other mechanical or electrical equipment must be elevated at least **two (2) feet** above the base flood elevation. Separate electrical circuits shall serve any level below the base flood elevation and shall be dropped from above.

- (p) All air ducts, loose pipes, propane tanks and storage tanks located at or below the base flood level shall be firmly anchored to prevent floatation. Tanks and ducts shall be vented to at least **two (2) feet** above the base flood elevation.
- (q) Levees may not be used to reclaim a property from any floodplain.
- (r) Construction of critical facilities shall be to the extent possible, located outside the limits of the 0.2% floodplain or 500-year floodplain (Shaded Zone X) and any “A” Zone. Construction of new critical facilities shall be permissible within the base floodplain if no feasible alternative site is available.
  - a. Construction of critical facilities on land located below the base flood elevation in the 0.2% (500-year) floodplain or within the base floodplain shall have the lowest floor elevated to **three (3) feet** or more above the base flood elevation of the site.
  - b. Flood proofing and sealing measures must be taken to ensure that toxic substances will not be displaced by or released into floodwaters.
  - c. Access routes elevated to or above the level of the base flood shall be provided to all critical facilities to the extent possible.
- (s) If the Floodplain Administrator determines that the development is within any “X” Zone and all other necessary reviews and approvals have been issued, he may issue a Class “I” Permit.
- (t) If a CLOMA or a CLOMR has been issued which will place the development in an “X” Zone and all other necessary reviews and approvals have been issued, he may issue a Class “I” Permit. Elevation certificates must be submitted to verify the development is above the required elevation.
- (u) If the development is in, or partially in, any “A” Zone, below the base flood elevation in any Zone or any floodway, the Floodplain Administrator shall determine if a Class “II” Permit should be issued.
- (v) Any reduction in floodplain storage or conveyance capacity must be offset with a hydraulically equivalent (one-to-one) volume of mitigation sufficient to offset the reduction. The reduction may result from development or the placement of fill within the floodplain. Such mitigation shall be within the same watershed and shall be provided on the same property or within the same hydrologic sub-watershed or at an alternate site meeting the approval of the Floodplain Administrator. A full hydrological and hydraulic analysis must be submitted to support a request for mitigation outside the boundaries of the property being developed.

- (w) The Floodplain Administrator shall review the proposed construction or development to assure that all reviews or approvals required by other County Regulations are obtained.
- (6) The floodplain administrator shall maintain a record of all such information in accordance with these Regulations;
- (7) Approval or denial of a Development Permit by the Floodplain Administrator shall be based on all of the provisions of this order and the following relevant factors:
  - (a) The danger to life and property due to flooding or erosion damage;
  - (b) The susceptibility of the proposed facility and its contents to flood damage and the effect of such damage on the individual owner;
  - (c) The danger that materials may be swept onto other lands to the injury of others;
  - (d) The compatibility of the proposed use with existing and anticipated development;
  - (e) The safety of access to the property in times of flood for ordinary and emergency vehicles;
  - (f) 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;
  - (g) The expected heights, velocity, duration, rate of rise and sediment transport of the flood waters and the effects of wave action, if applicable, expected at the site;
  - (h) The necessity to the facility of a waterfront location, where applicable;
  - (i) The availability of alternative locations, not subject to flooding or erosion damage, forth proposed use;
  - (j) The relationship of the proposed use to the comprehensive plan for that area.
- (8) The Floodplain Administrator may require the submission of additional information, drawings, specifications or documents if he is unable to determine whether a permit should be issued from the information submitted. Approved applications will be held for 180 days.
- (9) Developments may require permits from other local, State and Federal agencies. The applicant is responsible for compliance with all applicable regulations and permit requirements.

- (10) Where a conditional letter of map change has been obtained from the FEMA for property which has been elevated by the use of fill above the elevation of the base flood, inspections and elevation certificates will be required.

#### **Section D - Variance Procedures**

- (1) The Commissioners Court shall hear and render judgment on requests for variances from the requirements of this order.
- (2) The Commissioners Court 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 order.
- (3) Any person or persons aggrieved by the decision of the Commissioners Court 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 the 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 the State Inventory of Historic Places, without regard to the procedures set forth in the remainder of this order. However, such variances for the repair or rehabilitation of historic structures shall be based upon a determination that the proposed repair or rehabilitation will not preclude the structure's continued designation as a historic structure and the variance is the minimum necessary to preserve the historic character and design of the structure.
- (6) Variances may be issued for new construction and substantial improvements to be erected on a lot size of one acre, or less, that is contiguous to and surrounded by lots with existing structures constructed below the base flood level, providing the relevant factors in Section C of this Article have been fully considered. As the lot size increases beyond one acre, the technical justification required for issuing the variance increases.
- (7) Upon consideration of the factors noted above and the intent of this order, the Commissioners Court may attach such conditions to the granting of variances as it deems necessary to further the purpose and objectives of this order.
- (8) Variances shall not be issued within any designated floodway, if any increase in flood levels during the base flood discharge would result, including, but not limited to, the base flood water surface elevation.
- (9) Variances may be issued for the repair or rehabilitation of historic structures upon a determination that the proposed repair or rehabilitation will not preclude the structure's continued designation as a historic structure and the variance is the minimum necessary to preserve the historic character and design of the structure.

(10) Prerequisites for granting variances:

- (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,
  - a. showing a good and sufficient cause;
  - b. a determination that failure to grant the variance would result in exceptional hardship to the applicant, and
  - c. a determination that the granting of a variance will not result in increased flood heights, additional threats to public safety, extraordinary public expense, create nuisances, cause fraud on or victimization of the public, or conflict with existing local laws or orders.
- (c) Any application to which 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.

(11) Variances may be issued by Commissioners Court for new construction and substantial improvements and for other development necessary for the conduct of a functionally dependent use provided that:

- (a) the criteria outlined in Article 4, Section D (1)-(9) are met; and
- (b) 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.



**ARTICLE 5**  
**Provisions for Flood Hazard Reduction**

**Section A - General Standards**

In all areas of special flood hazards 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 flood waters into the system;
- (6) New and replacement sanitary sewage systems shall be designed to minimize or eliminate infiltration of flood waters into the system and discharge from the systems into flood waters; and
- (7) On-site waste disposal systems shall be located to avoid impairment to them or contamination from them during flooding.

**Section B - Specific Standards**

In all areas of special flood hazards where base flood elevation data has been provided as set forth in these Regulations, the following provisions are required:

- (1) **Residential Construction** - new construction and substantial improvement of any residential structure shall have the lowest floor (including basement), elevated **two (2) feet** or above the base flood elevation. A licensed professional engineer, architect, or land surveyor shall submit a certification to the Floodplain Administrator that the standard of these Regulations are satisfied.

- (2) **Nonresidential Construction** - new construction and substantial improvements of any commercial, industrial or other non-residential structure shall either have the lowest floor (including basement) elevated to **two (2) feet** or above the base flood level 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 component having the capability of resisting hydrostatic and hydrodynamic loads and effects of buoyancy. A licensed professional engineer or architect shall develop and/or review 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 flood proofed shall be maintained by the Floodplain Administrator.
- (3) **Enclosures** - new construction and substantial improvements, with fully enclosed areas below the lowest floor that are usable solely for parking of vehicles, building access or storage in an area other than a basement and which 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 licensed professional engineer or architect or meet or exceed the following minimum criteria:
- (a) A minimum of two openings on separate walls having a total net area of not less than one square inch for every square foot of enclosed area subject to flooding shall be provided.
  - (b) The bottom of all openings shall be no higher than one foot above grade.
  - (c) Openings may be equipped with screens, louvers, valves or other coverings or devices provided that they permit the automatic entry and exit of floodwaters.
- (4) **Manufactured Homes**
- (a) Require that all manufactured homes to be placed within Zone A on a community's FHBM or FIRM shall be installed using methods and practices which minimize flood damage. For the purposes 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) Adequate surface drainage and access for the hauler must be provided.
  - (c) If the homes will be elevated on pilings, lots must be large enough to permit steps. Piling foundations must be placed in stable soil no more than 10 feet apart, and reinforcement must be provided for piers more than six feet above the ground level.

- (d) Each manufactured home with the park shall be placed on a permanent foundation and anchored to resist flotation, collapse or lateral movement by providing an anchoring system installed in accordance with the Texas Department of Housing and Community Affairs and the Housing and Urban Development (HUD) standards for manufactured housing. Any additions to the manufactured home must be similarly anchored. This paragraph applies to manufactured homes to be placed or substantially improved in an expansion to an existing manufactured home park or subdivision. This paragraph does not apply to manufactured homes to be placed or substantially improved in an existing manufactured home park or subdivision, except where the repair, reconstruction or improvement of the streets, utilities and pads equals or exceeds 50 percent of the value of the streets, utilities and pads before the repair, reconstruction or improvements has commenced.
- (e) All utilities and common facilities including gas, electrical systems, sewage systems and water supply systems must be located and elevated or constructed to avoid or minimize flood damage.
- (f) The fact that the manufactured home park or subdivision is located below the base flood elevation must be disclosed on a form furnished by the Floodplain Administrator and completed by the owner of the manufactured home park or subdivision and provided to the manufactured home lot purchaser or lessee.
- (g) The owner of the manufactured home park or subdivision shall forward a copy of each notice to the Floodplain Administrator. The manufactured home park or subdivision may not be in a floodway.
- (h) An evacuation plan must be developed for evacuation of all residents of all new, substantially improved or substantially damaged manufactured home parks or manufactured home subdivisions located within an area of special flood hazard. This plan shall be filed with and approved by the Floodplain Administrator and the Emergency Management Coordinator prior to permit issuance.
- (i) All manufactured homes shall be in compliance with subsection (1) of this section and cannot be placed in areas which have been identified as regulatory floodways.
- (j) Require that manufactured homes that are placed or substantially improved within Zones A, AH and AE on the community's FIRM on sites (i) outside of a manufactured home park or subdivision, (ii) in a new manufactured home park or subdivision, (iii) in an expansion to an existing manufactured home park or subdivision, or (iv) in an existing manufactured home park or subdivision on which a manufactured home has incurred "substantial damage" as a result of a flood, be elevated on a permanent foundation such that the lowest floor of the manufactured home is elevated to, or above the base flood elevation and be securely anchored to an adequately anchored foundation system to resist flotation, collapse and lateral movement.

- (k) Require that manufactured homes be placed or substantially improved on sites in an existing manufactured home park or subdivision with Zones Al-30, AH and AE on the community's FIRM that are not subject to the provisions of paragraph (4) of this section be elevated so that either:
  - (i) The lowest floor of the manufactured home is elevated to a minimum of **two (2) feet** above the base flood elevation, or
  - (ii) The manufactured home chassis is supported by reinforced piers or other foundation elements of at least equivalent strength that are no less than 36 inches in height above the grade and be securely anchored to an adequately anchored foundation system to resist flotation, collapse, and lateral movement.
- (5) **Recreational Vehicles** - Require that recreational vehicles placed on sites within Zones A, AH and AE on the community's FIRM either: (i) Be on the site for fewer than 180 consecutive days, or (ii) Be fully licensed and ready for highway use, or (iii) Meet the permit requirements of these Regulations, and the elevation and anchoring requirements for "manufactured homes" in paragraph (4) of this section. A recreational vehicle is ready for highway use if it is on its wheels or jacking system, is attached to the site only by quick disconnect type utilities and security devices and has no permanently attached additions.

### **Section C - Standards for Subdivision Proposals**

- (1) All subdivision proposals including the placement of manufactured home parks and subdivisions shall be consistent with this order and shall comply with the Denton County Subdivision Rules & Regulations.
- (2) All proposals for the development of subdivisions including the placement of manufactured home parks and subdivisions shall meet Development Permit requirements of this order and shall comply with the Denton County Subdivision Rules and Regulations.
- (3) Base flood elevation data shall be generated for subdivision proposals and other proposed development including the placement of manufactured home parks and subdivisions which is greater than 50 lots or 5 acres, whichever is less, if not otherwise provided pursuant to these Regulations.
- (4) Base flood elevation shall be generated by a detailed engineering study for all Zone A Areas within 100 feet of the contour lines of Zone A areas and other streams not mapped by FEMA, as indicated on the FIRM.
- (5) All subdivision proposals including the placement of manufactured home parks and subdivisions shall have adequate drainage provided to reduce exposure to flood hazards.

- (6) All subdivision proposals including the placement of 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.
- (7) The subdivision must be planned to provide adequate drainage, so as to reduce flood hazards.
- (8) The following conditions must be met if the proposed development for which a Class “II” Permit is sought is an expansion of a structure, as the term defined by these Regulations, located in any “A” Zone but not within a floodway:
  - (a) The expansion must be constructed of materials resistant to water damage below the base flood elevation and the expansion must be designed to minimize flood damage in accordance with the FEMA approved flood-resistant materials list (Technical Bulletin 2-93).
  - (b) The expansion shall be inspected to determine that the drawings and specifications for the construction have been followed.
- (9) Notwithstanding any other provision of these Regulations, no permit will be issued if the Floodplain Administrator determines that the development will increase flood hazards.
- (10) The following conditions must be met if the proposed development for which a Class “II” Permit is sought includes a water or sanitary sewer system:
  - (a) The proposed system must be designed and constructed to minimize or eliminate infiltration of flood water into the system and to eliminate discharge of untreated waste from the system into the flood waters.
  - (b) All joints must be water tight.
  - (c) On-site sewage disposal systems, if they meet Environmental Health Regulations, are allowed.
  - (d) Individual water wells or wastewater disposal systems must be located to avoid impairment to them or contamination from them during flooding.

#### **Section D - Standards for Areas Of Shallow Flooding (AO/AH Zones)**

Located within the areas of special flood hazard established in Article 3, Section B, are areas designated as shallow flooding. These areas have special flood hazards associated with base flood depths of 1 to 3 feet where a clearly defined channel does not exist and where the path of flooding is unpredictable and where velocity flow may be evident. Such flooding is characterized by ponding or sheet flow, therefore, the following provisions apply:

- (1) All new construction and substantial improvements of **residential** structures have the lowest floor (including basement) or top of concrete slab elevated above the highest adjacent grade at least as high as the depth number specified in feet on the FIRM (At least two feet if no depth number is specified) or;
- (2) All new construction and substantial improvements of **non-residential** structures:
  - a. have the lowest floor (including basement) or top of concrete slab elevated above the highest adjacent grade at least as high as the depth number specified in feet on the FIRM (at least two feet if no depth number is specified); or
  - b. together with attendant utility and sanitary facilities be designed so that below the base flood level the structure is water-tight with walls substantially impermeable to the passage of water and with structural components having the capability of resisting hydrostatic and hydrodynamic loads of effects of buoyancy.
- (3) A licensed professional engineer or architect shall submit a certification to the Floodplain Administrator that the standards of these Regulations are satisfied.
- (4) Require within zones AH or AO adequate drainage paths around structures on slopes, to guide flood waters around and away from proposed structures.

## **Section E - Floodways**

**Floodways** - located within areas of special flood hazard established in Article 3, Section B, are areas designated as floodways. Since the floodway is an extremely hazardous area due to the velocity of flood waters which carry debris, potential projectiles and erosion potential, the following provisions shall apply:

- (1) Encroachments are prohibited, including fill, new construction, substantial improvements and other development within the adopted regulatory floodway, **unless** it has been demonstrated through hydrologic and hydraulic analyses performed in accordance with standard engineering practice that the proposed encroachment would not result in any increase in flood levels within Denton County during the occurrence of the base flood discharge.
- (2) New structures for human habitation are prohibited in the floodway.
- (3) An engineering report sealed by a Texas licensed professional engineer containing as a minimum the following information;
  - (a) A soils report which includes the results of a soil boring(s) to a depth of five (5) feet below the depth of any proposed piles and the geotechnical engineer's recommendations for the proposed structure signed and sealed by a Texas licensed professional engineer; and

- (b) A hydraulic analysis of pre- and post-development conditions showing that a no increase in the elevation of the base flood will occur as a result of the development.
- (4) Structures shall be elevated on posts or pilings so that the entire structure, exclusive of the posts or pilings, is at least two (2) feet above the base flood elevation. Fill may not be used to elevate the structure. The drawings and specifications for said posts or pilings shall be prepared by a Texas licensed professional engineer qualified in structural design and he shall certify thereon that the posts or piling have been designed to prevent undermining and structural damage resulting from erosive velocities of the base flood. Minimum pile depth shall be established using historical scour depth, stream velocity and soil conditions. As a minimum piles shall be embedded ten (10) feet below the historical scour depth. Pile design must take into account hydraulic and debris loading imposed by the base flood. If no historical data is available a Texas licensed professional engineer shall perform a scour analysis using the “Texas Secondary Evaluation and Analysis for Scour” methodology. After the placement or installation of the posts or pilings, or during or prior to the final inspection or approval of the structure, the applicant shall furnish to the Floodplain Administrator a certificate from the said engineer that the posts or pilings have been constructed in the manner set forth in the drawings and specifications attached to the permit application. All other requirements must be met, but must not increase the base flood elevation.

The foundation design requirements present minimum foundation design requirements. Foundations must meet or exceed these minimum design requirements, regardless of the type of scour protection provided for the foundation.

- (a) Design Loads. The structural system of the building shall be designed, connected and anchored to the foundation system to prevent flotation, collapse and permanent lateral movement resulting from wind loads, impact loads, hydrodynamic loads and hydrostatic loads, including the effects of buoyancy from flooding equal to the base flood elevation.
- (b) Foundation Type. The foundation system shall consist of a driven pile or a drilled pier foundation system.
- a. Driven Piles. Driven piles may extend above natural grade and act as the columns supporting the elevated portion of the building above the base flood elevation, or the piles may be terminated near natural grade and a reinforced cap shall be cast on top of the pile.
  - b. Drilled Piers. Drilled piers shall be terminated below natural grade, and a reinforced concrete cap shall be cast on top of each pier. Columns for the building may consist of cast-in-place concrete connected by dowels to the pier cap.

- (c) Type and Size of Driven Pile. Driven piles shall consist of either twelve inch (minimum) square pre-stressed concrete piles or fourteen inch (minimum) diameter steel pipe piles with a closed end.
- a. Closure Plate. The tip of pipe piles shall be closed prior to driving by welding a circular steel plate over the tip of the pile. The closure plate shall be flush with the outside of the pile, i.e. the diameter of the closure plate shall not be greater than the outside dimensions of the pipe pile. The minimum thickness of the closure plate shall be  $\frac{3}{8}$  inch. The weld shall be continuous, and the closure shall be waterproof.
  - b. Minimum Wall Thickness. The minimum wall thickness of the pipe pile shall be  $\frac{1}{4}$  inch.
- (d) Type and Size of Drilled Pier. Drilled piers shall be 18 inch diameter (minimum) and straight-sided (no belled or underreamed base) and shall be installed using a slurry displacement technique in accordance with the ACI Standard Specification for the Construction of Drilled Piers (ACI 336.1-94).
- (e) Minimum Pile and Drilled Pier Embedment. The minimum embedment below natural grade for driven piles and drilled piers shall be 25 feet if a geotechnical investigation is not performed at the building site. If a site specific geotechnical investigation is performed for the building, the minimum embedment may be reduced to 20 feet if the computed allowable axial capacity for the driven pile or drilled pier (factor of safety of at least 2.0 with respect to ultimate axial capacity) is equal to or greater than the design axial load transmitted to the pile.
- (f) Lateral Restraint of Foundations at Groundline. The individual piles or piers shall be braced horizontally with reinforced concrete tie beams connecting the pile/pier caps each way (not diagonally). For piles that extend above natural grade and act as column supports for the structure, a reinforced concrete collar shall be connected each way with reinforced concrete tie beams. The purpose of the horizontal bracing at the groundline is to enhance the lateral restraint of the individual piles or piers when scour around a pile or pier reduces the lateral stiffness of the pile or pier.



- (g) Anchorage of Timber Building Columns to Concrete Pile/Pier Cap. The timber column to concrete pile/pier cap connection should develop the full moment capacity of the timber column. The timber column shall be bolted into a steel sleeve with a welded steel base plate that is bolted to the concrete pile/pier cap using anchor bolts cast into the cap. The steel sleeve shall be oversized with the inside sleeve dimension at least 1½ inch greater than the column dimension. The gap between the sleeve and column should be filled with a high strength non-shrink grout. The bolt(s) connecting the column to the sleeve should be designed for uplift forces and shall be ¾ inch diameter minimum. The sleeve assembly and bolts shall be galvanized.
- (h) Driven Pile Installation Techniques. Driven piles shall be installed by driving alone. Jetting with water or air to create a pilot hole or to loosen the foundation soils before or during driving to aid driving will not be permitted. Piles may be driven with a vibratory pile driving hammer, a drop hammer or a diesel or compressed air-operated pile driving hammer. To aid in stabbing and aligning piles, pilot holes may be drilled with a dry auger to a maximum depth of 10 feet. The pilot hole diameter shall not exceed the pile diameter or width.
- (i) Drilled Pier Reinforcement and Concrete. Reinforcement and concrete for drilled piers shall be accordance with ACI Standard Specification for the Construction of Drilled Piers (ACI 336.1-94).
- a. Minimum Reinforcement. The minimum steel area shall be one (1) percent which is equivalent to six (6) No. 6 reinforcing bars for an 18 inch diameter pier.
  - b. Concrete. The minimum 28-day compressive strength of the concrete shall be 3000 psi. The maximum nominal coarse aggregate size shall be ¾ inch and the minimum concrete slump shall be seven inches.
  - c. Inspection and Testing. The Texas licensed professional engineer who designed the foundation shall observe the installation of each pier or pile foundation element and shall furnish the Floodplain Administrator with a certificate that the piers or piles have been constructed in accordance with the plans and specifications submitted with the permit application. Testing in connection with the drilled pier installation shall be in accordance with ACI 336.1-94.
  - d. The area below the base flood elevation shall not be enclosed unless it meets the all the provisions of these Regulations.
  - e. Fences and fence-type walls may be allowed in the floodway provided it can be demonstrated the flow of the base flood will not be impaired and that base flood elevations will not be increased during the discharge of the base flood.

- (5) If Article 5, Section E(1), above is satisfied, all new construction and substantial improvements shall comply with all applicable flood hazard reduction provisions of Article 5.
- (6) Under the provisions of **44 CFR Chapter 1, Section 65.12**, of the National Flood Insurance Regulations, Denton County may permit encroachments within the adopted regulatory floodway that would result in an increase in base flood elevations, provided that the community **first** completes all of the provisions required by 65.12.

### **Section F - Severability**

If any section, clause, sentence or phrase of these Regulations is held to be invalid or unconstitutional by any court of competent jurisdiction, then said holding shall in no way affect the validity of the remaining portions of these Regulations.

### **Section G - Penalties for Non Compliance**

No structure or land shall hereafter be constructed, located, extended, converted or altered without full compliance with the terms of this Commissioners Court Order and all other applicable regulations. Violation of the provisions of this Court Order by failure to comply with any of its requirements (including violations of conditions and safeguards established in connection with conditions) shall constitute a Class C misdemeanor. Any person who violates this Court Order, or fails to comply with any of its requirements, shall upon conviction thereof be fined in accordance with the Texas Water Code for each violation and in addition shall pay all costs and expenses involved in the case. Each day a violation occurs is a separate offense. Nothing herein contained shall prevent Denton County from taking such other lawful action as is necessary to prevent or remedy any violation.

**ARTICLE 6**  
**Procedures for Map Changes**

**Section A - Letter of Map Amendment (LOMA)**

- (1) **Existing structure or structures** - Upon the determination of the Floodplain Administrator that the ground elevation below a structure or structures on a property is at an elevation greater than the base flood elevation, a property owner may apply to FEMA for a letter of map amendment (LOMA) in accordance with 44 CFR Chapter 1, Section 70. Such a determination shall be based on a professional survey and/or the hydraulic computer model (HEC-2 or HEC RAS) used by a professional engineer to define the SFHA. In this instance, no portion of the existing structure or structures (including any basements) shall be below the adjoining ground elevation.
- (2) **Proposed structure or structures** - Upon the determination of the Floodplain Administrator that the ground elevation below a proposed structure or structures (including any basements) on a property is at an elevation greater than the base flood elevation, a property owner may apply to FEMA for a conditional letter of map amendment (CLOMA) in accordance with 44 CFR Chapter 1, Section 70. Such a determination shall be based on a professional survey and/or the hydraulic, computer model (HEC-2 or HEC-RAS) used by a professional engineer to define the SFHA. In this instance, such a property owner shall not begin construction of the proposed structure or structures until FEMA issues a CLOMA or such structure or structures are constructed in accordance with these Regulations.

**Section B - Letter of Map Revision (LOMR)**

- (1) **Existing structure or structures** - Upon the determination of the Floodplain Administrator that the ground elevation of a property is not in accordance with the approved FIRM, a property owner may apply to FEMA for a letter of map revision (LOMR) or letter of map revision—Fill (LOMR-F) in accordance with 44 CFR Chapter 1, Section 72. Such a determination shall be based on a professional survey and the hydraulic computer model (HEC-2 or HEC-RAS) used by a professional engineer to define the SFHA. All supporting documentation shall be submitted to the Floodplain Administrator for review and approval prior to submission to FEMA for review and approval.

- (2) **Proposed structure or structures** – Upon determination of the Floodplain Administrator that property currently indicated in a SFHA could be removed from the SFHA through modifications of the floodplain as identified on the FIRM, a property owner may apply to FEMA for a conditional letter of map revision (CLOMR) or conditional letter of map-revision—fill (CLOMR-F) in accordance with 44 CFR Chapter 1, Section 72. Such modifications and the determination shall be based on a professional survey and the hydraulic computer model (HEC-2 or HEC-RAS) used by a professional engineer to define the SFHA. In this instance, the property owner shall not begin construction within the existing floodplain or the area of the proposed floodplain until FEMA issues a CLOMR or CLOMR-F. Additionally, after FEMA’s issuances of a CLOMR or CLOMR-F and such modifications have been completed, the property owner shall apply to FEMA for a LOMR or LOMR-F. Such property owner shall not begin any construction of any development in the existing floodplain or proposed floodplain until FEMA has issued the LOMR or LOMR-F

## ARTICLE 7

### Permittee

#### Section A – Responsibilities of all Permittees

All permittees, regardless of the type of permit held, must:

- (1) Remove all soil deposits resulting from runoff and/or from vehicular construction traffic and/or from site operations from the road and drainage facility on a daily or more frequent basis in accordance with the Stormwater Management Regulations.
- (2) Post the permit on the jobsite in a place visible from the nearest road or street.
- (3) Allow the Floodplain Administrator to inspect the work pursuant to a Permit. The Floodplain Administrator may make as many scheduled and unscheduled inspections as he may deem necessary to enforce these Regulations. If no specific inspection standards are set by any part of these Regulations, the inspection shall only be to determine that the drawings and specifications furnished with the permit application are met.
- (4) All holders of a Class “II” Permit, or persons holding a Class “I” Permit issued pursuant to a conditional letter of map amendment or revision who wish to make a change to the development, must submit supplemental drawings and/or specifications to the Floodplain Administrator for his review. If the changes do not comply with these Regulations, the Floodplain Administrator shall not approve the change. If a change complies with these Regulations and is approved, a copy of the supplemental information shall be added to the permittee’s file and the permit shall be amended by the Floodplain Administrator.

#### Section B – Inspections

- (1) Class “II” Permit holders or persons holding a Class “I” Permit pursuant to a conditional letter of map amendment or a Class “I” Permit issued for a stormwater detention or retention system shall have the following inspections conducted by a licensed professional engineer, registered public land surveyor or registered architect as applicable and the results of said inspections submitted to the Floodplain Administrator:
- (2) A **completed elevation certificate** with the necessary base flood elevations, hydrological and hydraulic data as needed must be submitted when the structure is completed (completed and ready for habitation for residential structures).
- (3) The permittee will be responsible for determining whether inspections have been made prior to proceeding with work.

- (4) Once all applicable certifications have been submitted to the Floodplain Administrator's office, a final inspection will be conducted. A certificate of approval will be issued by the Floodplain Administrator or his representative if all provisions of the permit have been met. Should the Floodplain Administrator determine that the applicable certifications have not been provided in a timely manner and the provisions of Section B of this Article were not followed, then enforcement procedures as outlined in Article 5, Section G, of these Regulations shall commence.

### **Section C – Suspension of Permits**

Permit suspensions are handled in accordance with the following provisions:

- (1) A permit is suspended when the Floodplain Administrator or his inspector advises the permittee or some responsible person on the job that the permit is suspended and posts a written suspension notice over the Permit at the jobsite.
- (2) The following actions by the Permittee are grounds for suspension of a permit:
  - a. Non-compliance with Article 7.
  - b. Deviating from drawings and specifications filed with the Floodplain Administrator and refusing to make corrections required by the Floodplain Administrator.
  - c. Any grounds for revocation of a permit as outlined in these Regulations.
- (3) When the suspension notice is posted, the permittee must immediately suspend all work on the job except that work necessary to abate the suspension. The suspension will be abated when the corrective work is performed and has passed inspection. The abatement will be evidenced by the removal of the suspension notice by the Floodplain Administrator or his inspector, and the notation on the Permit Notice by the Floodplain Administrator or his inspector that the work has now been re-inspected and passed. The suspension notice may not be removed by any other person other than the Floodplain Administrator or his inspector and removal by any other person will be ineffective.

### **Section D – Permit Revocation**

Grounds for permit revocation are as follows:

- (1) Material deviation from the drawings and specifications on file with the Floodplain Administrator, or a pattern of consistent deviation from such drawings and specifications which would demonstrate an intention to avoid conformity with the requirements of the permit.

- (2) Refusal to uncover work for a mandatory inspection;
- (3) Removal of a permit suspension notice;
- (4) Proceeding with work while a permit is suspended, other than such work necessary to abate a suspension;
- (5) An act, or acts, of violence, or threat or threats of violence against the Floodplain Administrator or his staff either on, or off, the job for the purpose of intimidating the Floodplain Administrator, or his staff, so that he will not perform his inspection duties;
- (6) Falsifying information in the permit application; and
- (7) Failing to submit all required certifications as outlined in these Regulations.

### **Section E – Permit Revocation Procedures**

Permits shall be revoked in the following manner:

- (1) The Floodplain Administrator must file a complaint stating the reason for permit revocation with the Denton County Misdemeanor Section of the Criminal District Attorney's Office.

**ARTICLE 8**

**Certification of Adoption**

The existing Flood Damage Prevention Order approved July 21, 2001 by Denton County Commissioners Court is hereby amended by the adoption of these new regulations.

CERTIFICATION

It is hereby found and declared by the Denton County Commissioners Court

That severe flooding has occurred in the past within its jurisdiction and will certainly occur within the future; that flooding is likely to result in infliction of serious personal injury or death, and is likely to result in substantial injury or destruction of property within its jurisdiction; in order to effectively comply with minimum standards for coverage under the National Flood Insurance Program and in order to effectively remedy the situation described herein, it is necessary that this order become effective immediately.

Therefore, an emergency is hereby declared to exist, and this order, being necessary for the immediate preservation of the public peace, health and safety, shall be in full force and effect from and after its passage and approval.

APPROVED: \_\_\_\_\_

Mary Hain  
Denton County Judge

PASSED: \_\_\_\_\_

March 15, 2011

(Date)

I, the undersigned, Ashley Bounton do hereby certify that the above is a true and correct copy of an order duly adopted by the Denton County Commissioners Court at a regular meeting duly convened on March 15, 2011.

(Date)





10.B

# Denton County Commissioners Court

Mar 15, 2011

Date

11-0194

**Court Order Number**

### The Order:

Approval of the revised Floodplain Regulations due to changes in FEMA's floodplain maps and revised regulations, and any appropriate action.

Motion by Eads Seconded by Mitchell

County Judge

Mary Horn

Yes

Abstain

No

Absent

Commissioner Pct No 1

Hugh Coleman

Yes

Abstain

No

Absent

Commissioner Pct No 2

Ron Marchant

Yes

Abstain

No

Absent

Commissioner Pct No 3

Bobbie J. Mitchell

Yes

Abstain

No

Absent

Commissioner Pct No 4

Andy Eads

Yes

Abstain

No

Absent

Motion Carried 5-0-0

Other Action: Pulled from Consent  No Action  Postponed

BY ORDER OF THE COMMISSIONERS COURT:

ATTEST:

Mary Horn  
Presiding Officer

Cynthia Mitchell, County Clerk  
and Ex-Officio Clerk of the  
Commissioners Court of  
Denton County, Texas

APPROVED AS TO FORM:

John Redd  
Assistant District Attorney

BY [Signature]  
Deputy County Clerk

