

PART 15

“FP” FLOODPLAIN OVERLAY DISTRICT REGULATIONS

Section 1501. Purpose

- A. The purpose of these provisions is to set forth, by separate ordinance, zoning related floodplain management regulations deemed necessary to prevent the loss of property and life, the creation of health and safety hazards, the disruption of commerce and governmental services, the extraordinary and unnecessary expenditure of public funds for flood protection and relief, and the impairment of the tax base by:
1. regulating uses, activities, and development which, acting alone or in combination with other existing or future uses, activities, and development, will cause unacceptable increases in flood heights, velocities and frequencies;
 2. restricting or prohibiting certain uses, activities, and development from locating within areas subject to flooding;
 3. requiring all those uses, activities, and developments that do occur in flood-prone areas to be protected and/or flood proofed against flooding and flood damage; and
 4. protecting individuals from buying lands and structures which are unsuited for intended purposes because of flood hazards.
- B. These provisions shall apply to all lands within the jurisdiction of the Borough of Highspire in the identified floodplain area, which shall be any areas of the Borough of Highspire, subject to the one hundred (100) year flood, which is identified as Zone A (Area of Special Flood Hazard) in the Flood Insurance Study (FIS) dated December 11, 1981 and the accompanying maps or the most recent revision thereof as issued by the Federal Emergency Management Agency, including all digital data developed as part of the Flood Insurance Study.
- C. No structure or land shall hereafter be used and no structure shall be located, relocated, constructed, reconstructed, enlarged, or structurally altered except in full compliance with the terms and provisions of this Part and any other applicable ordinances and regulations which apply to uses within the jurisdiction of this Chapter.
- D. The degree of flood protection sought by the provisions of this Part is considered reasonable for regulatory purposes and is based on acceptable engineering methods of study. Larger floods may occur on rare occasions. Flood heights may be increased by man-made or natural causes, such as ice jams and bridge openings restricted by debris. This Chapter does not imply that areas outside the identified Floodplain Districts or that land uses permitted within such districts will be free from flooding or flood damages. Further, these provisions shall not create liability on the part of Highspire Borough or any officer or employee thereof for any flood damages that result from reliance on these provisions or any administrative decision lawfully made thereunder.
- E. This Part supersedes any other conflicting provisions which may be in effect in identified floodplain areas. However, any other ordinance provisions shall remain in full force and effect to the extent that those provisions are more restrictive. If there is any conflict between any of the provisions of this Part, the more restrictive shall apply.

Section 1502. Establishment of Flood Districts

A. Basis of Flood Districts. The identified floodplain area shall be any areas of the Borough of Highspire, subject to the one hundred (100) year flood, which is identified as Zone A (Area of Special Flood Hazard) in the Flood Insurance Study (FIS) dated December 11, 1981 and the accompanying maps or the most recent revision thereof as issued by the Federal Emergency Management Agency, including all digital data developed as part of the Flood Insurance Study.

B. Delineation of Flood Districts.

1. FW (Floodway Area) - the areas identified as "Floodway" in the AE Zone in the Flood Insurance Study prepared by the FEMA. The term shall also include floodway areas which have been identified in other available studies or sources of information for those floodplain areas where no floodway has been identified in the Flood Insurance Study.
2. FF (Flood-Fringe Area) - the remaining portions of the one hundred (100) year floodplain in those areas identified as an AE Zone in the Flood Insurance study, where a floodway has been delineated.

The basis for the outermost boundary of this area shall be the one hundred (100) year flood elevations as shown in the flood profiles contained in the Flood Insurance Study.

3. FA (General Floodplain Area) - the areas identified as Zone A in the FIS for which no one hundred (100) year flood elevations have been provided. When available, information from other Federal, State, and other acceptable sources shall be used to determine the one hundred (100) year elevation, as well as a floodway area, if possible. When no other information is available, the one hundred (100) year elevation shall be determined by using a point on the boundary of the identified floodplain area which is nearest the construction site in question.

In lieu of the above, the Borough may require the applicant to determine the elevation with hydrologic and hydraulic engineering techniques. Hydrologic and hydraulic analyses shall be undertaken only by professional engineers or others of demonstrated qualifications, who shall certify that the technical methods used correctly reflect currently accepted technical concepts. Studies, analyses, computations, etc., shall be submitted in sufficient detail to allow a thorough technical review by Borough officials.

C. Overlay Concept.

1. The Floodplain Districts described above shall be overlays to the existing underlying districts as shown on the Official Zoning Map, and as such, the provisions of the Floodplain Districts shall serve as a supplement to the underlying district provisions.
2. Where there happens to be any conflict between the provisions or requirements of any of the Floodplain provisions or requirements of any of the Floodplain Districts and those of any underlying district, the more restrictive provisions shall apply.

D. Zoning Map. The boundaries of the Floodplain Districts are established as incorporated into the Highspire Borough Zoning Map. Refer to the map labeled "Borough of Highspire, Dauphin County, PA: Floodplain Overlay District Map" for reference purposes only. Applicants shall refer to the Flood Insurance Study (FIS) prepared for Highspire Borough dated December 11, 1981 and the accompanying maps or the most recent revision thereof as issued by the Federal Emergency Management Agency, including all digital data developed as part of the Flood Insurance Study for official determination.

E. Flood District Boundary Changes. The delineation of any of the Floodplain Districts may be revised by the Highspire Borough Council where natural or man-made changes have occurred and/or more detailed studies conducted or undertaken by the U.S. Army Corps of Engineers, Susquehanna River Basin

Commission, or other qualified agency or individual documents the need or possibility for such change. However, prior to any such change, approval must be obtained from the Federal Emergency Management Agency.

Section 1503. Flood District Provisions

A. Introduction

1. All uses, activities, and development occurring within any Floodplain District shall be undertaken, only, in strict compliance with the provisions of this Chapter and with all other applicable codes and ordinances, such as the Highspire Borough Building Construction Ordinance (Chapter 5) and the Highspire Borough Subdivision and Land Development Ordinance (Chapter 22).
2. Under no circumstances shall any use, activity and/or development adversely affect the capacity of the channels or floodways of any watercourse, drainage ditch, or any other drainage facility or system.
3. Prior to proposed alteration or relocation of any stream, watercourse, etc., within the Highspire Borough, a permit shall be obtained from the Department of Environmental Resources, Bureau of Dams and Waterway Management. Further, notification of the proposal shall be given to all affected adjacent municipalities. Copies of such notifications shall be forwarded to both the Federal Insurance Administration and the Pennsylvania Department of Community and Economic Development.

B. Floodway District (FW). In the Floodway District (FW), any new construction and/or development that would cause any increase in flood heights shall be prohibited.

1. **Permitted Uses.** In the Floodway District (FW), the following uses and activities are permitted provided they are in compliance with the provisions of the underlying district and are not prohibited by any other Part and provided that they do not require structures, fill, or storage of materials and equipment:
 - a. agricultural uses such as general farming, pasture, grazing, outdoor plant nurseries, horticulture, truck farming, forestry, sod farming, and wild crop harvesting;
 - b. public and private recreational uses and activities such as parks, day camps, picnic grounds, golf courses, boat launching and swimming areas, hiking, and horseback riding trails, wildlife and nature preserves, game farms, fish hatcheries, and hunting and fishing areas;
 - c. accessory residential uses such as yard areas, gardens, play areas, and pervious parking area; and
 - d. accessory industrial and commercial uses such as yard areas, pervious parking and loading areas, etc.
2. **Uses Permitted by Special Exception.** The following uses and activities may be permitted by Special Exception provided that they are in compliance with the provisions of the underlying district and are not prohibited by any other Chapter:
 - a. structures, except for manufactured homes, accessory to the uses and activities in §1503.B.1 above;
 - b. utilities and public facilities and improvements such as railroads, streets, bridges, transmission lines, pipe lines, water and sewage treatment plants, and other similar or related uses;

- c. water-related uses and activities such as marinas, docks, wharves, piers, etc.;
 - d. temporary uses such as circuses, carnivals, and similar activities;
 - e. storage of materials and equipment provided that they are not buoyant, flammable or explosive, and are not subject to major damage by flooding, or provided that such material and equipment is firmly anchored to prevent flotation or movement, and/or can be readily removed from the area within the time available after flood warning; and
 - f. other similar uses and activities provided they cause no increase in flood heights and/or velocities. All use, activities and structural development, shall be undertaken in strict compliance with the flood proofing provisions contained in all other applicable codes and ordinances.
3. Uses Specifically Prohibited. The following uses shall be specifically prohibited if located partially or entirely within any identified Floodway District (FW)
- a. all residential dwellings
 - b. hospitals - public or private
 - c. nursing homes
 - d. jails
 - e. new manufactured home parks and manufactured home subdivisions, and substantial improvements to existing manufactured home parks and manufactured home subdivisions.
 - f. any structure of the kind described in §1503A.1 and §1503B.1.
- C. Flood-Fringe District (FF) and Approximated Floodplain District (FA).
- 1. Permitted Uses. In the Flood-Fringe District (FF) and Approximated Floodplain District (FA), the development and/or use of land shall be permitted in accordance with the regulations of the underlying district, provided that all such uses, activities, and/or development shall be undertaken in strict compliance with the flood proofing and related provisions contained in all other applicable codes and ordinances.
 - 2. Special Provisions for Certain Uses and Development.

Refer to §1503.A and §1503.B for special requirements and procedures for certain kinds of development within the Flood-Fringe District (FF) and Approximated Floodplain District (FA).

Section 1504. Special Provisions for Certain Kinds of Development Within Floodplain Districts

- A. Development Which May Endanger Human Life.
- 1. In accordance with the Pennsylvania Floodplain Management Act (Act 166), as amended, and the regulations adopted by the Pennsylvania Department of Community and Economic Development as required by the Act, any new or substantially improved structure which will be used for the production or storage of any of the following materials or substances or which will be used for any activity requiring the maintenance of a supply (more than 550 gallons or other comparable volume or any amount of radioactive substances) of any of the following materials or substances on the

premises, shall be subject to the provisions of this section, in addition to all other applicable provisions:

- a. acetone
 - b. ammonia
 - c. benzene
 - d. calcium carbide
 - e. carbon disulfide
 - f. celluloid
 - g. chlorine
 - h. hydrochloric acid
 - i. hydrocyanic acid
 - j. magnesium
 - k. nitric acid and oxides of nitrogen
 - l. petroleum products (gasoline, fuel, oil, etc.
 - m. phosphorus
 - n. potassium
 - o. sodium
 - p. sulphur and sulphur products
 - q. pesticides (including insecticides, fungicides and rodenticides
 - r. radioactive substances, insofar as such substances are not otherwise regulated.
2. Within any Floodway District (FW) any structure of the kind described in §1504.A.1, above, shall be prohibited.
 3. Where permitted in any Flood-Fringe District (FF) or Approximated Floodplain District (FA), any structure of the kind described in §1504.A.1, above, shall be:
 - a. elevated or designed and constructed to remain completely dry up to at least one and one-half (1 1/2) feet above the one hundred (100) year flood elevation, and
 - b. designed to prevent pollution from the structure or activity during the course of a one hundred (100) year flood.
 4. Any such structure, or part thereof, that will be built below the Regulatory Flood Elevation shall be designed and constructed in accordance with the standards for completely dry flood proofing contained in the publication "Flood Proofing Regulations" (U.S. Army Corps of Engineers, June 1972) or with some other equivalent water-tight standard.

B. Special Requirements for Manufactured Homes.

1. Within any Floodway District (FW), manufactured homes shall be prohibited.
2. Where permitted within any Flood-Fringe District (FF) or Approximated Floodplain District (FA), all manufactured homes, including those which have incurred "substantial damage" as the result of a flood, and any improvements thereto shall be:
 - a. Anchored to resist flotation, collapse, or lateral movement by providing over-the-top and frame ties to ground anchors in accordance with the American National Standards as specified in the Standard for the Installation of Manufactured Homes including Manufactured Home Park Requirements (NFPA No. 501A-1974 (ANSI A119.3-1975) as amended, for Manufactured Homes in Hurricane Zones or other appropriate standards such as the following:
 - (1). over-the-top ties shall be provided at each of the four (4) corners of the manufactured home, with two (2) additional ties per side at intermediate locations for units fifty (50) feet or more in length, and one (1) additional tie per side for units less than fifty (50) feet in length;
 - (2). frame ties shall be provided at each corner of the manufactured home, with five (5) additional ties per side at intermediate locations for units fifty (50) feet or more in length, and four (4) additional ties per side for units less than fifty (50) feet in length; and
 - (3). all anchoring systems shall be designed by a Registered Professional Engineer and all calculations shall be submitted to the Borough for review,
 - b. Elevated on a permanent foundation in accordance with the following requirements:
 - (1). the stands or lots shall be elevated on compacted fill, or on pilings so that the lowest floor of the manufactured home will be one and one-half (1 1/2) feet or more above the one hundred (100) year flood elevation.
 - (2). adequate surface drainage is provided.
 - (3). adequate access for a hauler is provided.
 - (4). where pilings are used for elevation, the lots shall be large enough to permit steps; piling foundations shall be placed in stable soil no more than ten (10') feet apart; reinforcement shall be provided for pilings that will extend for six (6) feet or more above the ground level.
 - (5). an evacuation plan indicating alternate vehicular access and escape routes shall be filed with the appropriate Borough officials for manufactured home parks.

Section 1505. Existing Structures in Floodplain Districts

- A. A structure or use of a structure or premises which lawfully existed before the enactment of this Chapter, but which is not in conformity with this Chapter may be continued subject to the following conditions:
1. no expansion or enlargement of an existing structure and/or use shall be allowed within any floodway district that would cause any increase in flood heights.

2. any modification, alteration, reconstruction, or improvement of any kind to an existing structure and/or use to an extent or amount of fifty (50%) percent or more of its market value shall constitute a substantial improvement and shall be undertaken only in full compliance with the provisions of this Chapter.
3. any modifications, alteration, reconstruction, or improvement of any kind to an existing structure and/or use to an extent or amount of less than fifty (50%) percent of its market value, shall be elevated and/or floodproofed to the greatest extent possible.

Section 1506. Special Exceptions in Floodplain Districts

- A. Review Factors. In passing upon applications for Special Exceptions, the Zoning Hearing Board shall consider all relevant factors and procedures specific in other sections of the Zoning Chapter and:
1. the danger to life and property due to increased flood elevations or velocities caused by encroachments.
 2. the danger that materials may be swept onto other lands or downstream to the injury of others.
 3. the proposed water supply and sanitation systems and the ability of these systems to prevent disease, contamination, and unsanitary conditions.
 4. the susceptibility of the proposed facility and its contents to flood damage and the effect of such damage on the individual owners.
 5. the importance of the services provided by the proposed facility to the community.
 6. the requirements of the facility for a waterfront location.
 7. the availability of alternative locations not subject to flooding for the proposed use.
 8. the compatibility of the proposed use with existing development and development anticipated in the foreseeable future.
 9. the relationship of the proposed use to the comprehensive plan and floodplain management program for the area,
 10. the safety of access to the property in time of flood of ordinary and emergency vehicles.
 11. the expected heights, velocity, duration, rate of rise, and sediment transport of the flood waters expected at the site.
 - a. such other factors which are relevant to the purposes of this Chapter.
- B. Supplemental Technical Review. The Zoning Hearing Board may refer any application and accompanying documentation pertaining to any request for a special exception to any engineer or other qualified persons or agency for technical assistance in evaluating the proposed project in relation to flood heights and velocities, and the adequacy of the plans for protection and other related matters.
- C. Conditions For Approving Special Exceptions.
1. Special exceptions shall only be issued after the Zoning Hearing Board has determined that the granting of such will not result in:
 - a. unacceptable or prohibited increases in flood heights,

- b. additional threats to public safety,
 - c. extraordinary public expense,
 - d. the creation of nuisances,
 - e. any fraud or victimization of the public, or
 - f. any conflict with local laws or ordinances.
2. No special exception shall be granted for any proposed use, development, or activity within any floodway district (FW) that will cause any increase in flood elevations.

Section 1507. Variances Within the Floodplain Districts

- A. General. If compliance with any of the requirements of this Chapter would result in an exceptional hardship for a prospective builder, developer, or landowner, the Zoning Hearing Board may, upon request, grant relief from the strict application of the requirements.
- B. Variance Procedures and Requirements. Requests for variances shall be considered by the Zoning Hearing Board in accordance with the following:
 1. No variance shall be granted for any construction, development, use or activity within any floodway area that would cause any increase in the one hundred (100) year flood elevation,
 2. Except for a possible modification of the freeboard requirements involved, no variance shall be granted for any of the other requirements pertaining specifically to Development Which May Endanger Human Life (§1504.A)
 3. If granted, a variance shall involve only the least modification necessary to provide relief.
 4. In granting any variance, the Zoning Hearing Board shall attach whatever reasonable conditions and safeguards it considers necessary in order to protect the public health, safety, and welfare, and to achieve the objectives of this Chapter.
 5. Whenever a variance is granted, the Zoning Hearing Board shall notify the applicant in writing that:
 - a. the granting of the variance may result in increased premium rates for flood insurance.
 - b. such variances may increase the risks to life and property.
 6. In reviewing any request for a variance, the Zoning Hearing Board shall consider, but not be limited to the following:
 - a. that there is good and sufficient cause.
 - b. that failure to grant the variance would result in exceptional hardship to the applicant.
 - c. that the granting of the variance will not result in an unacceptable or prohibited increase in flood elevations, additional threats to public safety, extraordinary public expense, create nuisances, cause fraud on, or victimization of the public or conflict with any other applicable local or State ordinance and regulations.
 - d. refer to criteria presented in §1506.

- e. notwithstanding any of the above, however, all structures shall be designed and constructed so as to have the capability of resisting the one hundred (100) year flood.
7. A complete record of all variance requests and related actions shall be maintained by the Zoning Hearing Board. In addition, a report of all variances granted during the year shall be included in the annual report to the Federal Insurance Administration.

Section 1508. Building Permit Requirements

- A. A building permit shall be required for all construction and development within any Floodplain District, which shall include, but not be limited to, buildings or other structures, paving, grading, filling, excavation, mining, dredging, or drilling activities.
- B. Issuance of Building Permits.
 1. The Zoning Officer shall issue a Building Permit only after it has been determined that the proposed work to be undertaken will be in conformance with the requirements of this and all other applicable codes and ordinances.
 2. Prior to the issuance of any Building Permit, the Zoning Officer shall review the application for permit to determine if all other necessary governmental permits required by State and Federal Laws have been obtained, such as those required by the Pennsylvania Sewage Facilities Act (Act 1966-537, as amended); the Dam Safety and Encroachments Act (Act 1972-325, as amended); the U.S. Clean Water Act, Section 404, 33, U.S.C. 1334; and the Pennsylvania Clean Streams Act (Act 1937-394, as amended). No permit shall be issued until this determination has been made.
 3. No encroachment, alteration, or improvement of any kind shall be made to any watercourse until all adjacent municipalities which may be affected by such action have been notified by the Borough and until all required permits or approvals have been first obtained from the Pennsylvania Department of Environmental Protection, Bureau of Dams and Waterway Management.

In addition, the Federal Insurance Administrator and Pennsylvania Department of Community and Economic Development, shall be notified by the Borough prior to any alteration or relocation of any watercourse.
- C. Application Procedure and Requirements. In addition to the information and documentation ordinarily required for Building Permits, applicants shall also include the following specific information along with any application for construction or development within any floodplain district:
 1. If any proposed construction or development is located entirely or partially within any identified floodplain district, applicants for Building Permits shall provide all the necessary information in sufficient detail and clarity to enable the Zoning Officer to determine that:
 - a. all such proposals are consistent with the need to minimize flood damage and conform with the requirements of this and all other applicable codes and ordinances;
 - b. all utilities and facilities, such as sewer, gas, electrical and water systems are located and constructed to minimize or eliminate flood damage; and
 - c. adequate drainage is provided so as to reduce exposure to flood hazards.
 2. Applicants shall file the following minimum information plus any other pertinent information as may be required by the Zoning Officer to make the above determination:
 - a. A completed Building Permit Applicant Form.

- b. A plan of the entire site, clearly and legibly drawn at a scale of one (1) inch being equal to one hundred (100) feet or less, showing the following:
 - (1). north arrow, scale, and date;
 - (2). topographic contour lines, if available
 - (3). all property and lot lines including dimensions, and the size of the site expressed in acres or square feet;
 - (4). the location of all existing and proposed buildings, structures, and other improvements, including the location of any existing or proposed subdivision and land development;
 - (5). the location of all existing streets, drives, and other accessways; and
 - (6). the location of any existing bodies of water of watercourses, identified floodplain areas, and if available, information pertaining to the floodway, and the flow of water including direction and velocities.
- c. Plans of all proposed buildings, structures and other improvements, drawn at suitable scale showing the following:
 - (1). the proposed lowest floor elevation of any proposed building based upon National Geodetic Vertical Datum of 1929 or the datum referenced on the maps;
 - (2). the elevation of the one hundred (100) year flood The accurate location and elevation of the one hundred (100) year floodplain and floodway;
 - (3). if available, information concerning flood depths, pressures, velocities, impact and uplift forces and other factors associated with a one hundred (100) year flood and
 - (4). detailed information concerning any proposed flood proofing measures,
- d. The following data and documentation:
 - (1). When any part of a proposed structure or a substantial improvement to an existing structure is to be built below the elevation of the one hundred (100) year flood, the applicant must submit a document, certified by a registered professional engineer or architect, which states that the proposed construction has been adequately designed to withstand the one hundred (100) year flood elevations, pressures, velocities, impact and uplift forces associated with the one hundred (100) year flood.

Such statement shall include a description of flood-proofing measures which have been incorporated into the design of the structure and/or the development.
 - (2). Detailed information needed to determine compliance with §1509.C.6 Storage, and §1504.A Development Which May Endanger Human Life, including:
 - i. the amount, location and purpose of any materials or substances referred to in §1509.C.6 and §1504.A which are intended to be used, produced, stored or otherwise maintained on site.

- ii. a description of the safeguards incorporated into the design of the proposed structure to prevent leaks or spills or of the dangerous materials or substances listed in §1504.A during a one hundred (100) year flood.
 - (3). The appropriate component of the Pennsylvania Department of Environmental Protection “Planning Module for Land Development.”
 - (4). Where any excavation or grading is proposed, a plan meeting the requirements of the Pennsylvania Department of Environmental Protection, to implement and maintain erosion and sedimentation control.
- D. Review by County Conservation District.
 - 1. A copy of all applications and plans for any proposed construction or development in any floodplain district to be considered for approval shall be submitted by the Zoning Officer to the Dauphin County Conservation District for review and comment prior to the issuance of a building permit. The recommendations of the Conservation District shall be considered by the Zoning Officer for possible incorporation into the proposed plan.
- E. Review of Application by Others.
 - 1. A copy of all plans and application for any proposed construction or development in any floodplain district to be considered for approval may be submitted by the Zoning Officer to any other appropriate agencies and/or individuals (e.g Planning Commission, Borough Engineer, FEMA, etc.) for review and comment.

Section 1509. General Technical Provisions

In order to prevent excessive damage to buildings and structures due to flooding, the following provisions shall apply to all proposed construction or development occurring in any of the floodplain districts identified in the Borough Zoning Chapter, as amended:

- A. Residential Structures.
 - 1. Within any Floodway (FW), Flood-Fringe District (FF), or Approximated Floodplain District (FA), the lowest floor (including basement) of any new construction of, or substantial improvement to residential structures shall be at least one and one-half (1 1/2) feet above the one hundred (100) year flood elevation.
- B. Nonresidential Structures.
 - 1. Within any Floodway (FW) or Flood-Fringe District (FF), or Approximated Floodplain District (FA), the lowest floor (including basement) of any new construction of, or substantial improvement to nonresidential structures shall be at least one and one-half (1 1/2) feet above the one hundred (100) year flood elevation or be designed and constructed so that the space enclosed by such structures remain either completely or essentially dry during any flood up to the height.
 - 2. Any nonresidential structure, or part thereof, which will not be completely or adequately elevated, shall be designed and constructed to be completely or essentially dry in accordance with the standards contained in the publication entitled “Flood Proofing Regulations” (U.S. Army Corps of Engineers, June 1972), or some other equivalent standard for that type of construction.
- C. General Design and Construction Standards. The following minimum standards shall apply for all construction and development proposed to be undertaken within any identified floodplain district:

1. Fill. If fill is used, it shall:
 - a. extend laterally at least fifteen (15') feet beyond the building line from all points;
 - b. consist of soil or small rock materials only. Sanitary landfills shall not be permitted;
 - c. be compacted to provide necessary permeability and resistance to erosion, scouring, or settling;
 - d. be no steeper than one (1) vertical to two (2) horizontal, unless substantiated data, justifying steeper slopes are submitted to, and approved by the Zoning Officer; and
 - e. to be used to the extent to which it does not adversely affect adjacent properties.
2. Drainage. Storm drainage facilities shall be designed to convey the flow of storm water runoff in a safe and efficient manner. The system shall insure proper drainage along streets, and provide positive drainage away from buildings. The system shall also be designed to prevent the discharge of excess runoff onto adjacent properties.
3. Water and Sanitary Sewer Facilities and Systems.
 - a. All new or replacement water and sanitary sewer facilities and systems shall be located, designed and constructed to minimize or eliminate flood damages and the infiltration of flood waters.
 - b. Sanitary sewer facilities and systems shall be designed to prevent the discharge of untreated sewage into flood waters.
 - c. No part of any on-site sewage system shall be located within any identified floodplain district, except in strict compliance with all State and local regulations for such systems. If any such system is permitted, it shall be located so as to avoid impairment to it, or contamination from it, during a flood.
4. Other Utilities. All other utilities such as gas lines, electrical and telephone systems shall be located, elevated (where possible) and constructed to minimize the chance of impairment during a flood.
5. Streets. The finished elevation of all new streets shall be no more than one (1) foot below the Regulatory Flood Elevation.
6. Storage. All materials that are buoyant, flammable, explosive or, in times of flooding, could be injurious to human, animal, or plant life, and not listed in §1504.A Development Which May Endanger Human Life, shall be stored at or above the Regulatory Flood Elevation and/or floodproofed to the maximum extent possible.
7. Placement of Buildings and Structures. All buildings and structures shall be designed, located, and constructed so as to offer the minimum obstruction to the flow of water and shall be designed to have a minimum effect upon the flow and height of flood water.
8. Anchoring.
 - a. All buildings and structures shall be firmly anchored in accordance with accepted engineering practices to prevent flotation, collapse, or lateral movement,

- b. All air ducts, large pipes, storage tanks, and other similar objects or components located below the Regulatory Flood Elevation shall be securely anchored or affixed to prevent flotation.
9. Floors, Walls, and Ceilings.
 - a. Wood flooring used at or below the Regulatory Flood Elevation shall be installed to accommodate a lateral expansion of the flooring, perpendicular to the flooring grain without causing structural damage to the building.
 - b. Plywood used at or below the Regulatory Flood Elevation shall be of a “marine” or “water-resistant” variety.
 - c. Walls and ceilings at or below the Regulatory Flood Elevation shall be designed and constructed of materials that are water-resistant and will withstand inundation.
 - d. Windows, doors, and other components at or below the Regulatory Flood Elevation shall be made of metal or other water-resistant material.
10. Paints and Adhesives.
 - a. Paints or other finishes used at or below the Regulatory Flood Elevation shall be of a “marine” or water-resistant quality.
 - b. Adhesives used at or below the Regulatory Flood Elevation shall be of a “marine” or water-resistant quality.
 - c. All wooden components (doors, trim, cabinets, etc.) shall be finished with a “marine” or water-resistant paint or other finishing material.
11. Electrical Components.
 - a. Electrical distribution panels shall be at least three (3) feet above the one hundred (100) year flood elevation.
 - b. Separate electrical circuits shall serve lower levels and shall be dropped from above.
12. Equipment. Water heaters, furnaces, air conditioning and ventilating units, and other electrical, mechanical or utility equipment or apparatus shall not be located below the Regulatory Flood Elevation.
13. Fuel Supply Systems. All gas and oil supply systems shall be designed to prevent the infiltration of flood waters into the system and discharges from the system into the flood waters. Additional provisions shall be made for the drainage of these systems in the event that flood water infiltration occurs.
14. Space below the lowest floor.
 - a. Fully enclosed space below the lowest floor (including basement) is prohibited.
 - b. Partially enclosed space below the lowest floor (including basement) which will be used solely for the parking of a vehicle, building access, or incidental storage in an area other than a basement, shall be designed and constructed to allow for the automatic entry and exit of flood waters for the purpose of equalizing hydrostatic forces on exterior walls. The term "partially enclosed space" also includes crawl spaces. Designs for meeting this

requirement must either be certified by a registered professional engineer or architect, or meet or exceed the following minimum criteria:

- (1) a minimum of two openings having a net total area of not less than one (1) square inch for every square foot of enclosed space.
- (2) the bottom of all openings shall be no higher than one (1) foot above grade.
- (3) openings may be equipped with screens, louvers, etc. or other coverings or devices provided that they permit the automatic entry and exit of floodwaters.