

## TITLE 3: PUBLIC INFRASTRUCTURE

### CHAPTER 1 DRAINAGE

**3-1-100 POLICY OBJECTIVES** - The intent of these storm water regulations is to provide for the orderly development of land in Laramie County; to insure that resulting changes in the quantity and quality of surface water drainage do not conflict with state or federal regulations; and to insure such changes are not detrimental to the County or other properties which are affected by the proposed development.

They are intended to establish the drainage design standards; the administrative procedures for securing approval of proposed drainage facilities and enforcement methods; and a means of coordinating and planning drainage improvements that of necessity involve multiple land parcels and owners.

**3-1-101 DRAINAGE POLICY** - It is recognized that surface water drainage problems are primarily defined by the natural topography of the land, without regard for jurisdictional boundaries, existing improvements or proposed improvements to the land. The County shall work with the City of Cheyenne to prepare a Drainage Plan or Plans which shall serve as a guide for the development of drainage improvements within the City and County. The City/County Drainage Plans shall define and identify the major drainage facilities required to store and transport surface drainage run-off affecting large land areas.

The City/County Drainage Plan shall be prepared based upon the anticipated land uses as established by the official land use plans of the City and County, the measured and recorded historic precipitation data, and the expressed objective of minimizing increases in surface water run-off and reduction in water quality caused by land development. The Drainage Plan may be prepared in several parts and such sections that are complete shall be utilized upon formal adoption.

Until such time as the City/County Drainage Plan has been prepared and adopted by the City and County, and in the absence of such a plan, the City Engineer and County Engineer shall provide the necessary information, opinions, coordination, flow data, recommendations, limitations and other data which could reasonably be expected to be provided by the Drainage Plan. Such information or requirements as provided by the City or County Engineer shall be based upon personal knowledge and judgment of the total situation and in particular their unique capability to understand and analyze the broad-range implications of development proposals on the existing and future drainage systems.

**3-1-102 SPECIAL FLOOD HAZARD AREA** - The drainage requirements and regulations for the development of land which is located in and adjacent to permanent or periodic streams subject to flooding and identified and designated as potential flood areas by the Federal Emergency Management Agency (FEMA), shall be in accordance with the Floodplain Management Regulations.

**3-1-103 LAND DEVELOPMENT**

- a. The primary responsibility for the planning, design and construction of drainage improvements required in conjunction with land development shall be vested in the person or party who is developing the land.
- b. The County shall assume the responsibility of coordinating and reviewing proposals for drainage facilities to insure compliance with these regulations and with approved plans.
- c. Preservation of the existing natural drainage ways, streams, ponds and depressions shall be encouraged, and drainage improvements shall be planned to minimize increases in total volume and rate of flow of surface drainage in any existing way. Historical flow patterns and run-off quantities shall be maintained in such a manner as to reasonably preserve the natural character and appearance existing drainage ways and to prevent property damages and physical changes of the type generally attributed to increases in run-off rate, volume, and velocity, diversions, concentrations and/or unplanned ponding of storm water.
- d. Provisions shall be made in the planning and development of land to provide for the temporary and/or permanent storage of surface water run-off. Storage shall be provided to the extent that the peak rate of flow from the project area after development shall not exceed the specified peak rate of flow prior to development, in accordance with the design standards as established herein. The cumulative effect shall be to preserve the existing flow characteristics.
- e. If it can be demonstrated, subject to County approval, that the increased volume and rate of run-off caused by a proposed development when considered in combination with other existing or planned development or land uses will not cause the historical flow characteristics to be exceeded, or that the cumulative effects of the run-off of the proposed development combined with other existing or planned developments or land uses shall not exceed the anticipated peak flows or volume as provided for in the City/County Drainage Plan, then it shall not be required that the individual project (or projects) provide the storage as outlined above or that a partial amount of the required storage be provided.

- f. If it can be demonstrated, subject to the approval of the City or County Engineer, that due to the physical limitations of the project size, topography or ground slopes, soil or rock conditions, the creation of safety hazards, or excessive maintenance costs, that the storm water storage is not feasible due to such limitations, the Developer shall then have the option of petitioning the County to undertake a public improvement project which would provide for the required storage by an alternate means not located on the project site.

Such an improvement project may include properties beyond the area of the development proposal and provide for the storage of storm waters from a larger area. The County shall not be obligated to proceed with a public improvement upon receipt of a petition from the Developer. The County shall initiate the required local improvement district in accordance with State statutes, but the final determination to proceed with the project shall be based upon the results of the required protest period and public hearing process and the judgment of the Board as to the need for the proposed improvements.

- g. The County shall have the right and option to designate surface water storage areas to serve large land areas, which will include a multiple of subdivisions/developments and/or land owners. Such option shall be exercised when the City/County Drainage Plan has designated such areas for storage as part of the overall surface water plan, or, when in the opinion of the City and County Engineer, a single storage facility serving a large area is more efficient to construct, less expensive to maintain, and more easily adapted to multiple land uses. In such cases, the County shall initiate an Improvement District or other means of implementing the required improvement program.
- h. During the development of land, care shall be exercised by the developer to preserve the quality of surface water run-off. When the earth is disturbed and no vegetation exists, the Subdivider/Developer shall provide the County a plan to control siltation during construction, which may include temporary siltation ponds or dams or other means to prevent soil from being carried off the development area by run-off waters. The developer shall be responsible for the securing of all required permits from State and Federal agencies and shall comply with all applicable statutes pertaining to water quality and water pollution control.
- i. Upon satisfactory completion of the construction of a drainage improvement (ponding area, storm drain, ditch, constructed wetlands etc.) in accordance with previously approved plans, and subject to the approval of the County, and after proper deeding or dedication of the land or easements containing the improvement to the County, the County shall assume ownership of the land and the drainage facility located thereon

and shall become responsible for all repairs and maintenance that are required, except for such defects or repairs that are covered under warranty by the Contractor or Developer who constructed the facility.

Such maintenance shall include periodic cleaning, weed and grass cutting, repairs to pipe and underground structures and all else which is reasonably expected of a publicly owned and operated utility system. The design of a drainage improvement shall provide for equipment access for maintenance purposes.

### **3-1-104 DESIGN STANDARDS**

**a. Rural Design Standards** - Rural design standards shall be used for those projects which are planned for a permanently rural environment, an area which is not expected ever to be provided normal City services and improvements or be annexed to the City.

**i. General** - The limited amount of ground area that is disturbed by the development of rural developments should result in a minimum of change in the natural or existing drainage patterns. The planning and design of rural developments should attempt to preserve the existing drainage pattern.

**ii. Storage, General** - Developments shall be planned and drainage facilities designed such that after the completion of the development, the peak rate of storm water discharge that shall occur at downstream boundary discharge points shall not exceed the peak rate of storm water discharge that would occur from the undeveloped or existing conditions at the same discharge locations, for an event equal to a 50-year frequency storm.

Storage of storm waters shall be either of the detention type which will temporarily hold the increased quantity of storm water and release it at an acceptable rate, or of the retention type which shall permanently hold the storm water for disposal by evaporation and percolation into the soil. Free board shall be provided for storage impoundments to contain the 100-year frequency storm or pass it through spillways and outlets of sufficient capacity that the downstream flows do not exceed the predevelopment conditions.

Storage facilities shall be designated to be self-operating, reasonably self-cleaning and shall require a minimum of maintenance.

**iii. Storage Methods** - The required storage may be provided by the following methods or other methods as proposed by the developer and approved by the County:

- A. Utilization of natural depression and ponding areas
- B. Excavation of on-site ponding areas
- C. Construction of dams or berms across drainage channels
- D. Enlarging and deepening roadside ditches
- E. Construction of broad flat drainage swales in the subdivision development area

**iv. Storage Volume** - The required storage volume shall be determined by one of the following methods:

- A. For tributary areas of 200 acres or less, the Rational method shall be used, assuming a triangular hydrograph in which the required storage volume is determined by the equation:

$$V=60 T_c (QI-Q2)$$

V Storage Volume in cubic feet

T<sub>c</sub> Time of Concentration in minutes

QI Rate of inflow using T<sub>c</sub> in cubic feet per second

Q2 = Rate of outflow (not to exceed predevelopment V<sub>I</sub>,/discharge rate) in cubic feet per second

- B. For tributary areas in excess of 200 acres, hydrograph methods similar to any of the following:
  1. Colorado Urban Hydrograph Procedure (C.U.H.P.) as specified in the "Urban Storm Drainage Criteria Manual" prepared by Wright- McLaughlin;
  2. "A Method For Estimating Volume and Rate of Run-Off in Small Watershed" prepared by the U.S. Department of Agriculture, Soil Conservation Service;
  3. such other similar methods as approved by the County.

**v. Rainfall data** - Rainfall frequency, duration and intensity data shall be in accordance with these regulations. Provisions for run-off from upstream areas beyond the area of the proposed development shall be made, assuming that the run-off from upstream areas onto the development area shall continue at the existing rates and that future subdivision/development of upstream tributary areas will not result in increased run-off, except as provided for in the City/County Drainage Plan.

**vi. Collection System** - A surface water run-off collection system shall be planned and constructed for all developments. The system shall consist of drainage swales, roadside ditches, and roadway and entrance culverts. The collection system shall be planned and designed to disperse surface water run-off over large areas and to avoid the collection and concentration of surface water run-off.

Roadways which act to intercept the flow of surface water shall be constructed with frequent cross culverts to minimize the concentration of run-off. Collection system facilities shall be designed on the basis of a 5-year storm frequency, except for those parts of the system which also function as major drainage facilities as determined by the City/ County Drainage Plan, in which case the design storm frequency shall be 50 years.

**vii. Drainage Easements** - Permanent drainage easements shall be provided in all areas traversed by a water course, drainage way, stream, storm sewer drainage swale, and ponding or storage area. Such drainage easements shall conform to the location of the drainage facility and shall be of such width and area as required to accommodate the discharge of storage generated by a 50-year frequency storm. Methods used to determine the storage and run-off shall be as specified under Rural Design Standards, Storage and Collection Systems.

**b. Urban Design Standards** - Urban design standards shall be used for all projects located within the City and for projects located in the County but which are planned or may be expected to be annexed to the City. The general nature of the development that is proposed and the City land use plan shall be used as guides to determine whether the area of planned development should be considered as urban or rural.

**i. General** - Urban development projects will create significant changes in the existing drainage patterns and quantity of surface water run-off. The planning and design of urban developments should include drainage facilities which will preserve the existing surface water quality and which will maintain the existing peak rate of run-off from the project area except as otherwise provided.

**ii. Storage-developments** - Storage developments shall be planned and drainage facilities provided such that the peak rate of storm water discharge that shall occur at the downstream boundary discharge points, after the completion of the project, shall not exceed the peak rate of storm water discharge that would occur from the undeveloped land or existing conditions, at the same discharge locations, for an

event equal to a 50-year frequency storm. The resulting required storm water storage methods shall be provided within the project area except as provided under Land Development.

- iii. **Storage of storm waters** - Storage of storm waters shall be either of the detention type which shall temporarily hold the increased quantity of storm water and release it at an acceptable rate, or of the retention type which shall permanently hold the storm water for disposal by evaporation and percolation into the soil.

Free board shall be provided for storage impoundments to contain the 100-year frequency storm or pass it through spillways and outlets of sufficient capacity that the downstream flows do not exceed the predevelopment conditions.

Storage facilities shall be designated to be self-operating, reasonably self-cleaning and shall require a minimum of maintenance.

The required storm water storage may be provided by the following methods or other methods that are compatible with the proposed development:

- A. Use of natural depressions and ponding areas.
- B. Excavation of on-site ponds.
- C. Construction of dams or berms across drainage channels.
- D. Broad flat drainage swales within the development area along property lines.
- E. Temporary flooding of parking areas.
- F. Temporary flooding of open space, park and recreation areas.
- G. Rooftops.

- iv. **Storm water storage facility volume requirements** - The required storage volume shall be determined by one of the following methods:

- A. For tributary areas of 200 acres or less, the Rational method shall be used, assuming a triangular hydrograph in which the required storage volume is determined by the following equation:

$$V=60T_c (Q_1- Q_2)$$

V Storage volume in cubic feet

T<sub>c</sub> Time of concentration in minutes

Q<sub>1</sub> = Rate of flow using T<sub>c</sub>, in cubic feet per second

Q<sub>2</sub> = Rate of outflow (not to exceed predevelopment discharge rate) in cubic feet per second

**B.** For tributary areas in excess of 200 acres, hydrograph methods similar to

1. Colorado Urban Hydrograph Procedure (C.U.H.P.) as specified in the "Urban Storm Drainage Criteria Manual," prepared by Wright-McLaughlin;
2. "Urban Hydrology for Small Watersheds" by the U.S. Department of Agriculture Soil Conservation Service;
3. such other methods as approved by the City/County Engineer.

**v. Data used** - Rainfall frequency, duration and intensity data shall be in accordance with Exhibit No.2 of these regulations.

Provisions for upstream run-off onto the project area of the proposed subdivision/development shall be made based upon the assumption that the run-off from upstream areas onto the subdivision/development area shall continue at the historical existing rate, and that subdivision/development of the upstream tributary area will not result in increased run-off, except as provided for in the City/County Drainage Plan.

**vi. Collection system** - A surface water run-off collection system shall be planned and constructed in all subdivisions/developments. The system shall consist of grass drainage swales within the project area, improved and surfaced drainage ditches, curb and gutter along roadways, culverts and storm sewers. Collection system drainage facilities shall be designed on the basis of storm drainage frequencies given in Table 1 (see Exhibit 3) except for those parts of the system which also function as major drainage facilities as determined by the City/County Drainage Plan, in which case the design storm frequency shall be 50 years.

Storm sewers shall be provided within the subdivision/development area if any of the following conditions exist:

- A.** The City/County Drainage Plan has identified the need for such storm sewers;
- B.** Surface drainage would be directed across collector or arterial roadways which would require drainage cross pans; or
- C.** The capacity of surface drainage facilities (swales and curb and gutter) is not adequate to accommodate the storm water flow created by a 10-year frequency storm. The allowable capacity of drainage swales and street curbing without exceeding the depth of

drainage swales or the height of street curb, taking into account both the horizontal and vertical alignment of the drainage swale or curb. Where storm sewers are provided, catch basins or inlets shall be located in the gutter flow line or in drainage swales at locations that will intercept the flow of surface water upstream from roadway and pedestrian crossings.

- vii. Drainage easements** - Permanent drainage easements shall be provided in all areas traversed by a water course, drainage way, stream, drainage swale, and ponding or storage area. Such drainage easements shall conform to the location of the drainage facility and shall be of such width and area as required to accommodate the discharge or storage generated by a 50-year frequency storm. Methods used to determine the storage and run-off shall be as specified under Rural Design Standards-Storage and Collection Systems.
- viii. Water quality** - It shall be the responsibility of the Subdivider/ Developer to protect and preserve the quality of surface water run-off from erosion and siltation. Provisions for control of erosion and siltation shall be provided for the temporary construction period and as part of the final completed subdivision/development.
  - A. Temporary water quality controls** - Temporary erosion and siltation control methods shall be designed as part of the project site improvements. Construction schedules shall be established such that the temporary erosion and siltation control features are provided in advance of other construction activities which would potentially create water quality problems.

Temporary control measures shall be placed along the downstream perimeter of the subdivision/development area as a minimum, with additional facilities to be placed within the project area for large projects. Such temporary control measures shall consist of siltation ponds created by excavations, or placement of earth berms to intercept overland surface flow. The discharge of water from temporary siltation ponds shall be minimized to prevent silt from being carried downstream.

Where it is necessary to discharge water from temporary siltation ponds, it shall be accomplished by means of a pipe flume, or hard surface spillway which shall draw discharge water from a level in the siltation pond at least two (2) feet above the bottom. If, during the construction period, the temporary siltation pond area is filled with eroded soil to the extent that the effectiveness of the pond is

significantly reduced, the Subdivider/Developer shall remove the eroded material from the pond area. Additional temporary erosion control methods such as a continuous line of hay or straw bales across drainage areas, temporary sodding of drainage areas, placement of rip rap, or hard surfacing in the drainage ways shall be used where appropriate.

Care shall be exercised to prevent the deposit of soil and sediment within any storm water inlet, storm sewer or culvert within the project area, or on the perimeter of the projected area.

Storage ponds which are to provide permanent flood water retention or detention, used for temporary siltation control, shall be cleaned to the design capacity required under Urban Design Standards Storage.

**B. Permanent water quality controls** - Permanent erosion and sedimentation control measures shall be provided as part of the planning and construction of all projects. All areas of the natural ground surface which are disturbed as part of the project shall be resurfaced, either with grasses and vegetation natural to the area or with permanent surfacing as part of the project. In areas of steep slopes, or areas that concentrate the flow of surface water, the channel shall be sodded, rip rap shall be placed, or the area shall be paved with a hard surface to prevent erosion. The developer shall be required to maintain the vegetation placed or seeded areas until it has adequately established itself to be effective in erosion control.

**3-1-105 PUBLIC IMPROVEMENT PROJECTS** - Drainage improvement projects which are to be carried out by the County, and which are initiated by petition from the developer or by the County, shall proceed in accordance with the appropriate State statutes and County regulations, providing for the creation of local improvement districts, and the planning and construction of public works projects.

**3-1-106 PRIVATE IMPROVEMENT PROJECTS** - Drainage improvement projects which are to be carried out by the developer in conjunction with the development project shall proceed in accordance with the following general procedure:

**a. Preliminary meeting with County Engineer** - Prior to beginning planning of drainage facilities, but after the general nature of the proposed development has been established, the developer shall meet with the County Engineer to review the City/County Drainage Plan and the general requirements for drainage facilities. The County Engineer shall at that time

provide recommendations and requirements relating to drainage facilities.

- b. Preliminary Drainage Plan** - Along with the preliminary development plan review for the project, The developer shall submit a preliminary drainage plan which includes the base data and computations used to prepare the preliminary drainage plan.

The preliminary drainage plan shall contain as a minimum the following information:

- i. Analysis of existing (predevelopment) drainage conditions identifying the drainage areas within the project, tributary areas beyond the project and points of surface water discharge onto and from the project area.
- ii. Peak rates of run-off for a 1-year and 50-year storm event for all surface water entering and leaving the project area.
- iii. Proposed methods of collecting, transporting and storing surface water run-off in addition to the peak design flow for a 1-year and 50-year storm event.
- iv. The type of facility, construction material proposed, size, gradient and location shall be shown.
- v. For all storage facilities, the tributary area, peak discharges into and out of, storage volume and method of controlling the outflow rate shall be shown.
- vi. The general surface drainage pattern within the project area shall be shown by directional arrows, spot elevations or contours. At all roadway intersections, the flow directions shall be clearly identified.
- vii. Drainage computations for peak flow rate, storage volumes and discharge rates from the project area. Computations shall clearly illustrate the capacity of and justify the need for drainage facilities and/or storm sewers or the lack thereof.
- viii. Permanent and temporary erosion and siltation control measures.
- ix. The Preliminary Drainage Plan shall be reviewed by the County for compliance with these regulations. The developer shall be notified of any required modification in the Preliminary Drainage Plan prior to presentation of the preliminary development plan to the Planning Commission. The preliminary development plan shall not be presented to the Planning Commission until the Preliminary Plan has

been approved by the County Engineer.

- c. **Final Plans** - The developer shall submit a complete set of the final plans and specifications for the drainage improvements to the County Engineer. The final plans shall be in substantial agreement with the preliminary plans previously approved. Computations, maps and other data upon which the final designs are based shall be submitted. The final plans shall be reviewed and approved by the County Engineer prior to starting any work on the project.
- d. **Enforcement/Inspection** – (reserved)
- e. **Financial Guarantee** - The Subdivider/Developer shall post with the City or County a performance bond, cash deposit, cashier's check, or other financial guarantee as the City or County will accept, in the amount of \$100 per acre for urban development projects or \$50 per acre for rural development projects for the entire area of the project currently under development. However, the minimum amount shall not be less than \$200.

If the developer shall fail to properly construct the required drainage facilities as contained in the approved plans, or if there should occur erosion or siltation from the project area which is not removed or repaired by the developer within seven (7) days of notification by the Engineer, the County shall then have the right to use such deposit to complete the improvements or to remove eroded material and make repairs to prevent future erosion from occurring.

**3-1-107 ENFORCEMENT OFFICE** - The County Engineer or an appointed representative shall be the public official responsible for the administration, inspections and general enforcement of these requirements. The Engineer shall review the drainage plans for the project, analyze proposals for compliance with the City/County Drainage Plan, coordinate the required drainage improvements for individual projects with those of other projects, both private and public, inspect the construction of drainage improvements and inspect for erosion and siltation conditions.

**3-1-108 BOARD** - The Board shall participate as prescribed by State Statutes in the proceedings for public drainage improvements. In addition, the Board shall make a final determination on any issue in which the recommendations of the County Engineer are contested by the developer.

## **CHAPTER 2 EROSION CONTROL (Reserved)**

## **CHAPTER 3 FLOODPLAIN MANAGEMENT**

### **3-3-100 STATUTORY AUTHORIZATION**

The Legislature of the State of Wyoming has in Wyoming Statute 18-5-201 et. seq. authorized Laramie County to regulate the use, condition of use or occupancy of lands in unincorporated Laramie County. Therefore, the Board of Commissioners of Laramie County, Wyoming does ordain as follows:

### **3-3-101 FINDINGS OF FACT**

- a. The flood hazard areas of Laramie County, Wyoming 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.
- b. 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, floodproofed or otherwise protected from flood damage.

### **3-3-102 STATEMENT OF PURPOSE**

It is the purpose of these regulations 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:

- a. Protect human life and health;
- b. Minimize expenditure of public money for costly flood control projects;
- c. Minimize the need for rescue and relief efforts associated with flooding and generally undertaken at the expense of the general public;
- d. Minimize prolonged business interruptions;
- e. Minimize damage to public facilities and utilities such as water and gas mains, electric, telephone and sewer lines, streets and bridges located in floodplains;
- f. 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

- g. Insure that potential buyers are notified that property is in a flood area.
- h. Insure that those who occupy areas of special flood hazard assume responsibility for their actions.

### **3-3-103 METHODS OF REDUCING FLOOD LOSSES**

In order to accomplish its purposes, these regulations use the following methods:

- a. 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;
- b. Require that uses vulnerable to floods, including facilities that serve such uses, be protected against flood damage at the time of initial construction;
- c. Control the alteration of natural floodplains, stream channels, and natural protective barriers, which are involved in the accommodation of floodwaters;
- d. Control filling, grading, dredging and other development that may increase flood damage;
- e. Prevent or regulate the construction of flood barriers which will unnaturally divert flood waters or which may increase flood hazards to other lands.

### **3-3-104 DEFINITIONS**

Unless specifically defined below, words or phrases in these regulations should be interpreted applying their common usage.

**Appeal** – A request for a review of the Floodplain Administrators interpretation of any provision of these regulations or a request for a variance.

**Appeal Board** – The Laramie County Board of Commissioners.

**Area of Shallow Flooding** - A designated AO, AH, or VO zone on a community's Flood Insurance Rate Map (FIRM) with a one (1) percent chance or greater annual chance of flooding to an average depth of one (1) to three (3) feet where a clearly defined channel does not exist, where the path of flooding is unpredictable and where velocity flow may be evident. Such flooding is characterized by ponding or sheet flow.

**Area of Special Flood Hazard** - The land in the floodplain within a community subject to a one (1) percent or greater chance of flooding in any given year. After detailed ratemaking has been completed in preparation for publication of the FIRM, Zone A

usually is refined into Zones A, AE, AH, AO, A1-99, VO, V1-30, VE or V.

**Base Flood** - The flood having a one (1) percent chance of being equaled or exceeded in any given year.

**Base Flood Elevation** - The elevation shown on the Flood Insurance Rate Map for Zones AE, AH, A1-A30, AR, AR/A, AR/AE, AR/A1-A30, AR/AH, AR/AO, V1-V30, and VE that indicates the water surface elevation resulting from a flood that has a one (1) percent or greater chance of being equaled or exceeded in any given year.

**Basement** - Any area of the building having its floor sub-grade (below ground level) on all sides. Does not include crawlspace.

**Board** – The Surface Water Management Review Board that is established by the Laramie County Board of Commissioners by these regulations.

**Critical Feature** - 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** - 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.

**Elevated Building** - A non-basement building (i) built, in the case of a building in Zones A1-30, AE, A, A99, AO, AH, B, C, X, and D, to have the top of the elevated floor adequately anchored so as not to impair the structural integrity of the building during a flood of up to the magnitude of the base flood. *Elevated building* also includes a building elevated by means of fill or solid foundation perimeter walls with openings sufficient to facilitate the unimpeded movement of floodwaters.

**Elevation Certificate** - A certified statement that verifies a building's elevation information. This certificate must be completed on the most current certificate, as published by the U.S. Department of Homeland Security Federal Emergency Management Agency, by a qualified land surveyor, engineer or architect.

**Existing Construction** - For the purposes of determining rates, *existing construction* are structures for which the "start of construction" commenced before the effective date of the Flood Insurance Rate Map. *Existing construction* may also be referred to as "existing structures."

**Existing Manufactured Home Park or Subdivision** - A manufactured home park or subdivision for which facilities 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) are completed before the effective date of the floodplain management regulations adopted by a community.

**Expansion to an Existing Manufactured Home Park or Subdivision** - 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).

**Flood or Flooding** - A general and temporary condition of partial or complete inundation of normally dry land areas from:

- a. the overflow of inland waters.
- b. the unusual and rapid accumulation or runoff of surface waters from any source.

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

**Flood Insurance Study** - The official report provided by the Federal Emergency Management Agency. 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** - Any land area susceptible to being inundated by water from any source (see definition of flooding).

**Floodplain Management** - 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 Maps** - Any and all mapping on which Laramie County has delineated as Areas of Special Flood Hazard.

**Floodplain Management Regulations** - Zoning regulations, subdivision regulations, building codes, health regulations, and special purpose Regulations (such as a Floodplain Regulations, Grading Regulations and Erosion Control Regulations) 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.

**Flood Protection System** - Those physical structural works for which funds have been authorized, appropriated, and expended and which have been constructed specifically to modify flooding, thereby reducing the depth of the flooding and the extent of the areas within a community that are subject to a "special flood hazard"

Such a system typically includes constructed channels, dams, reservoirs, levees or dikes. These specialized flood-modifying works are those constructed in conformance with sound engineering standards.

**Flood Proofing** - 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)** - 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.

**Highest Adjacent Grade** - The highest natural elevation of the ground surface prior to construction next to the proposed walls of a structure.

**Historic Structure** - 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 Interior; or
- d. Individually listed on a local inventory of historic places in communities with historic preservation programs that have been certified either:
  - i. by an approved state program as determined by the Secretary of the Interior or;
  - ii. directly by the Secretary of the Interior in states without approved programs.

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

**Lowest Floor** - The lowest floor of the lowest enclosed area (including basement). An unfinished or flood resistant enclosure, usable solely for parking or 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 requirement of Section 60.3 of the National Flood Insurance Program regulations.

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

**Mean Sea Level** - For the purposes of the National Flood Insurance Program, the National Geodetic Vertical Datum (NGVD) of 1929 or other datum, the level to which base flood elevations shown on a community's Flood Insurance Rate Map are referenced.

**New Construction** - For the purpose of determining insurance rates, *new construction* refers to 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** - A manufactured home park or subdivision for which facilities 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) are completed on or after the effective date of the floodplain management regulations adopted by a community.

**Recreational Vehicle** - A vehicle which is:

- a. built on a single chassis;
- b. 400 square feet or less when measured at the largest horizontal projections;
- c. designed to be self-propelled or permanently towable by a light duty truck; and
- d. designed primarily not for use as a permanent dwelling but as temporary living

quarters for recreational, camping, travel, or seasonal use.

**Start of Construction** – Includes substantial improvement and means the date the building permit was issued, provided the actual start of construction, repair, reconstruction, rehabilitation, addition, placement, or other improvement was within 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 placement of a manufactured home on a foundation. Permanent construction does not include land preparation, such as clearing, grading and filling; nor does it include the installation of streets and/or walkways; nor does it include excavation for basement, footings, piers or foundations or the erection of temporary forms; nor does it include the installation on the property of accessory buildings, such as garages or sheds not occupied as dwelling units or not part of the main structure. For a substantial improvement, the actual start of construction means the first alteration of any wall, ceiling, floor, or other structural part of a building, whether or not that alteration affects the external dimensions of the building.

**Structure** - A walled and roofed building, including a gas or liquid storage tank that is principally above ground. Includes a manufactured home.

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

**Substantial Improvement** - Any reconstruction, rehabilitation, addition, or other improvement of a structure, the cost of which equals or exceeds fifty (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 of the following:

- a. 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
- b. Any alteration of an *historic structure*, provided that the alteration will not preclude the structure's continued designation as an *historic structure*.

**Variance** - A grant of relief to a person from the requirement of these Regulations when specific enforcement would result in unnecessary hardship. A variance, therefore, permits construction or development in a manner otherwise prohibited by these regulations.

**Violation** - The failure of a structure or other development to be fully compliant with this regulation.

**Water Surface Elevation** - The height, in relation to the National Geodetic Vertical Datum (NGVD) of 1929 (or other datum, where specified), of floods of various magnitudes and frequencies in the floodplains of coastal or riverine areas.

### **3-3-105 LANDS TO WHICH THESE REGULATIONS APPLY**

These regulations shall apply to all areas of special flood hazard within the jurisdiction of Laramie County, Wyoming but not to include areas within incorporated municipalities.

### **3-3-106 BASIS FOR ESTABLISHING THE AREAS OF SPECIAL FLOOD HAZARD**

- a. The areas of special flood hazard identified by the Federal Emergency Management Agency in a scientific and engineering report entitled "The Flood Insurance Study for Laramie County, Wyoming," dated January 17, 2007, with accompanying Flood Insurance Rate Maps (FIRM) and any revisions thereto are hereby adopted by reference and declared to be a part of these regulations.
- b. Laramie County Floodplain Management Maps, a certain set of maps marked and designated by Laramie County is hereby referred to, adopted, and made a part hereof as if fully set out in these regulations. This set of maps depicts Areas of Special Flood Hazard based on engineering and technical data from various sources.
- c. The documents are on file available for inspection by the public.

### **3-3-107 ESTABLISHMENT OF DEVELOPMENT PERMIT**

- a. A Development Permit shall be required to ensure conformance with the provisions of these regulations. A Development Permit shall be obtained before construction or development begins within any Area of Special Flood Hazard as defined in section 3-3-104.
- b. Application for a Development Permit shall be made in a format determined by the Floodplain Administrator. If a zoning certificate, address affidavit, plat, site plan, or construction plans are required by other regulations of Laramie County, the application for such approvals will constitute an application for a development permit, provided the application contains, as a minimum, the information described in this section. In cases where other permits or review is not otherwise required, a separate application for a development permit is required.

### **3-3-108 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.

### **3-3-109 ABROGATION AND GREATER RESTRICTIONS**

These regulations are not intended to repeal, abrogate, or impair any existing easements, covenants, or deed restrictions. However, where these regulations and another regulations, easement, covenant, or deed restriction conflict or overlap, whichever imposes the more stringent restrictions shall prevail.

### **3-3-110 INTERPRETATION**

In the interpretation and application of these regulations, all provisions shall be:

- a. Considered as minimum requirements;
- b. Liberally construed in favor of the interpretation made by the governing body; and
- c. Deemed neither to limit nor repeal any other powers granted under State statutes.

### **3-3-111 WARNING AND DISCLAIMER OR LIABILITY**

The degree of flood protection required by these regulations 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. These regulations do 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. These regulations 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 these regulations or any administrative decision lawfully made thereunder. Laramie County retains all applicable immunities, including but not limited to its governmental immunity provided by common law and W.S. § 1-39-101 et seq.

### **3-3-112 DESIGNATION OF THE FLOODPLAIN ADMINISTRATOR**

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

### **3-3-113 DUTIES & RESPONSIBILITIES OF THE FLOODPLAIN ADMINISTRATOR**

Duties and responsibilities of the Floodplain Administrator shall include, but not be limited to, the following:

- a. Maintain and hold open for public inspection all records pertaining to the provisions of these regulations.
- b. Review permit application to determine whether proposed building site, including the placement of manufactured homes, will be reasonably safe from flooding.
- c. Review, approve or deny all applications for development permits required by adoption of these regulations.
- d. Review permits for proposed development to assure that all necessary permits have been obtained from those Federal, State or local governmental agencies.
- e. 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.
- f. Assure that the flood carrying capacity within the altered or relocated portion of any watercourse is maintained.
- g. When base flood elevation data as defined in section 3-3-104 has not been provided, the Floodplain Administrator shall obtain, review and reasonably use any base flood elevation data and floodway data available from a Federal, State or other source, in order to administer the provisions of Chapter 3.
- h. 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 A1-30 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.

- i. 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 A1-30, AE, AH, on the community's FIRM which increases the water surface elevation of the base flood by more than one (1) foot, provided the community first applies for a conditional FIRM revision through FEMA (Conditional Letter of Map Revision). The Floodplain Administrator is authorized to require that those proposing such development prepare and submit all necessary documentation supporting such a revision.

### **3-3-114 PERMIT PROCEDURES**

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.

Additionally, the following information is required:

- a. Elevation (in relation to mean sea level) of the lowest floor (including basement) of all new and substantially improved structures;
- b. Elevation in relation to mean sea level to which any nonresidential structure shall be flood proofed;
- c. An Elevation Certificate verifying that the nonresidential flood proofed structure shall meet the flood proofing criteria of 3-4-101(b).
- d. Description of the extent to which any watercourse or natural drainage will be altered or relocated as a result of proposed development.
- e. Maintain a record of all such information in accordance with 3-3-113(a).
- f. Approval or denial of a Development Permit by the Floodplain Administrator shall be based on all of the provisions of these regulations and the following relevant factors:
  - i. The danger to life and property due to flooding or erosion damage;
  - ii. The susceptibility of the proposed facility and its contents to flood damage and the effect of such damage on the individual owner;
  - iii. The danger that materials may be swept onto other lands to the injury

of others;

- iv. The compatibility of the proposed use with existing and anticipated development;
- v. The safety of access to the property in times of flood for ordinary and emergency vehicles;
- g. 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;
- h. The expected heights, velocity, duration, rate of rise and sediment transport of the flood waters expected at the site;
- i. The availability of alternative locations not subject to flooding or erosion damage for the proposed use;

### **3-3-115 VARIANCE PROCEDURES**

- a. The Board shall hear and render judgment on requests for variances from the requirements of these regulations.
- b. The Board shall hear and render judgment on an appeal only when it is alleged there is an error in any requirement, decision, or determination made by the Floodplain Administrator in the enforcement or administration of these regulations.
- c. Any person or persons aggrieved by the decision of the Board may appeal such decision in the courts of competent jurisdiction.
- d. The Floodplain Administrator shall maintain a record of all actions involving an appeal and shall report variances to the Federal Emergency Management Agency upon request.
- e. 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 these Regulations.
- f. Variances may be issued for new construction and substantial improvements to be erected on a lot of one-half acre or less in size contiguous to and surrounded by lots with existing structures constructed below the base flood level, providing the relevant factors of this Chapter have been fully considered. As the lot size increases beyond the one-half

acre, the technical justification required for issuing the variance increases.

- g.** Upon consideration of the factors noted above and the intent of these regulations, the Board may attach such conditions to the granting of variances as it deems necessary to further the purpose and objectives of these regulations.
- h.** Variances shall not be issued within any designated floodway if any increase in flood levels during the base flood discharge would result.
- i.** 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.
- j.** Prerequisites for granting variances:
  - i.** Variances shall only be issued upon a determination that the variance is the minimum necessary, considering the flood hazard, to afford relief.
  - ii.** 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 regulations.
  - iii.** Any application to whom a variance is granted shall be given written notice that the structure will be permitted to be built with the lowest floor elevation below the base flood elevation, and that the cost of flood insurance will be commensurate with the increased risk resulting from the reduced lowest floor elevation.
- k.** Variances may be issued for new construction and substantial improvements provided that:
  - i.** the criteria outlined in 3-3-115 are met, and

- ii. 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.

## **CHAPTER 4 PROVISIONS FOR FLOOD HAZARD REDUCTION**

### **3-4-100 GENERAL STANDARDS**

In all areas of special flood hazards the following provisions are required for all new construction and substantial improvements:

- a. 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;
- b. All new construction or substantial improvements shall be constructed by methods and practices that minimize flood damage;
- c. All new construction or substantial improvements shall be constructed with materials resistant to flood damage;
- d. 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.
- e. All new and replacement water supply systems shall be designed to minimize or eliminate infiltration of floodwaters into the system;
- f. 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,
- g. On-site waste disposal systems shall be located to avoid impairment to them or contamination from them during flooding.

### **3-4-101 SPECIFIC STANDARDS**

The County shall not approve zoning certificates or certificates of compliance until the requirements of this section have been met. In all areas of special flood hazards where base flood elevation data has been provided the following provisions are required:

- a. Residential Construction** - new construction and substantial improvement of any residential structure shall have the lowest floor (including basement), elevated to or above the base flood elevation. An Elevation Certificate shall be submitted to the Floodplain Administrator certifying that the standard of this subsection as proposed in 3-3-114 is satisfied.
- b. Nonresidential Construction** - New construction and substantial improvements of any commercial, industrial or other nonresidential structure shall either have the lowest floor (including basement) elevated to or above the base flood level or, together with attendant utility and sanitary facilities, shall be designed so that below the base flood level the structure is watertight with walls substantially impermeable to the passage of water and with structural components having the capability of resisting hydrostatic and hydrodynamic loads and effects of buoyancy. A registered professional engineer or architect shall develop and/or review 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 that includes the specific elevation (in relation to mean sea level) to which such structures are flood proofed shall be maintained by the Floodplain Administrator.
- c. 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 registered professional engineer or architect or meet or exceed the following minimum criteria:
- i. A minimum of two openings having a total net area of not less than one (1) square inch for every square foot of enclosed area subject to flooding shall be provided.
  - ii. The bottom of all openings shall be no higher than one (1) foot above grade.
  - iii. Openings may be equipped with screens, louvers, valves, or other coverings or devices, provided they permit the automatic entry and exit of floodwaters.
- d. Manufactured Homes** –The following requirements shall be met:

- i. All manufactured homes must be placed within Zone A on a community's FIRM and 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 County anchoring requirements for resisting wind forces.
- ii. Manufactured homes that are placed or substantially improved within Zones A1-30, AH, and AE on the community's FIRM must 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. This requirement applies to manufactured homes placed on all of the following sites:
  - A. outside of a manufactured home park or subdivision,
  - B. in a new manufactured home park or subdivision,
  - C. in an expansion to an existing manufactured home park or subdivision, or
  - D. in an existing manufactured home park or subdivision on which a manufactured home has incurred "substantial damage" as a result of a flood,
- iii. All manufactured homes placed or substantially improved on sites in an existing manufactured home park or subdivision with Zones A1-30, AH and AE on the community's FIRM that are not subject to the provisions of this section shall be elevated so that either:
  - A. the lowest floor of the manufactured home is at or above the base flood elevation, or
  - B. the manufactured home chassis is supported by reinforced piers or other foundation elements of at least equivalent strength that are no less than thirty-six (36) inches in height above grade and be securely anchored to an adequately anchored foundation system to resist flotation, collapse, and lateral movement.
- e. **Recreational Vehicles** - Recreational vehicles placed on sites within Zones A1-30, AH, and AE on the community's FIRM must:

- i. be on the site for fewer than 180 consecutive days,
  - ii. be fully licensed and ready for highway use, or
  - iii. meet the permit requirements of 3-4-101d. and the elevation and anchoring requirements for manufactured homes. A recreational vehicle is ready for highway use if it is on its wheels or jacking system, is attached to the site only by quick disconnect type utilities and security devices, and has no permanently attached additions.
- f. Below-grade Residential Crawl Space Construction** – New Construction and substantial improvement of any below-grade crawl space shall meet the following minimum provisions:
- i. An interior grade elevation that is below base flood elevation no lower than two (2) feet below the lowest exterior adjacent grade.
  - ii. A height of the below-grade crawl space, measured from the interior grade of the crawl space to the top of the foundation wall, no higher than four (4) feet at any point.
  - iii. An adequate drainage system that allows floodwaters to drain from the interior area of the crawl space following a flood.
  - iv. Anchorage sufficient to prevent floatation, collapse, or lateral movement of the structure and resist the hydrostatic and hydrodynamic loads.
  - v. Construction materials and utility equipment resistant to flood damage.
  - vi. Constructed with methods and practices that minimize flood damage.
  - vii. 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 components during conditions of flooding.
  - viii. A design which automatically equalizes 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 Wyoming registered professional engineer, or must meet or exceed the following minimum criteria:
    - A.** A minimum of two (2) openings having a total net area of not less than one (1) 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 (1) foot above the lowest adjacent exterior grade.
- C.** Openings may be equipped with screens, louvers, or other coverings or devices provided that they permit the automatic entry and exit of floodwaters.

### **3-4-102 STANDARDS FOR SUBDIVISION PROPOSALS**

- a.** All subdivision proposals including the placement of manufactured home parks and subdivisions shall be consistent with 3-5-101d. of these regulations.
- b.** All proposals for the development of subdivisions including the placement of manufactured home parks and subdivisions shall meet Development Permit requirements of 3-3-107, 3-3-114; and the provisions of Chapter 4 of these regulations.
- c.** Base flood elevation data shall be generated for subdivision proposals and other proposed development, including the placement of manufactured home parks and subdivisions, greater than fifty (50) lots or five (5) acres, whichever is lesser, if not otherwise provided pursuant to section 3-3-106 or 3-3-113(h).
- d.** All subdivision proposals including the placement of manufactured home parks and subdivisions shall have adequate drainage provided to reduce exposure to flood hazards.
- e.** 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.

### **3-4-103 STANDARDS FOR AREAS OF SHALLOW FLOODING (AO/AH ZONES)**

Located within the areas of special flood hazard established in 3-1-102 are areas designated as shallow flooding. These areas have special flood hazards associated with base flood depths of one (1) to three (3) feet where a clearly defined channel does not exist and where the path of flooding is unpredictable and velocity flow may be evident. Such flooding is characterized by ponding or sheet flow; therefore, the following provisions apply:

- a.** All new construction and substantial improvements of residential structures must have the lowest floor (including basement) elevated above

the highest adjacent grade at least as high as the depth number specified in feet on the community's FIRM (at least two (2) feet if no depth number is specified).

- b.** All new construction and substantial improvements of non-residential structures shall have the following:
  - i.** the lowest floor (including basement) elevated above the highest adjacent grade at least as high as the depth number specified in feet on the community's FIRM (at least two (2) feet if no depth number is specified), or;
  - ii.** together with attendant utility and sanitary facilities a design such that below the base flood level the structure is watertight with walls substantially impermeable to the passage of water and with structural components having the capability of resisting hydrostatic and hydrodynamic loads of effects of buoyancy.
- c.** A registered professional engineer or architect shall submit an Elevation Certificate to the Floodplain Administrator that the standards of this Section, as proposed in 3-3-114 are satisfied.
- d.** Require within Zones AH or AO adequate drainage paths around structures on slopes, to guide flood waters around and away from proposed structures.

#### **3-4-104 FLOODWAYS**

Floodways are located within areas of special flood hazard established in 3-1-102. Since the floodway is an extremely hazardous area due to the velocity of floodwaters that carry debris, potential projectiles and erosion potential, the following provisions shall apply:

- a.** 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 the community during the occurrence of the base flood discharge.
- b.** If the provisions above are satisfied, all new construction and substantial improvements shall comply with all applicable flood hazard reduction provisions.
- c.** Under the provisions of 44 CFR Chapter 1, Section 65.12, of the National

Flood Insurance Regulations, a community may permit encroachments within the adopted regulatory floodway that would result in an increase in base flood elevations, provided the community first applies for a conditional FIRM and floodway revision through FEMA.

- d. The regulatory floodway is included in Areas of Special Flood Hazard. Therefore, in addition to the restrictions in this chapter, all provisions of these regulations that apply to Areas of Special Flood Hazard also apply to the regulatory floodway.

## **CHAPTER 5    ROADS/STREET DESIGN STANDARDS (Reserved)**