7.8. FLOODPLAIN MANAGEMENT DESIGN PROCESS GUIDE

The following section outlines the design approach to minimize floodplain damage to new development.

DRAINAGE AND FLOODPLAIN MANAGEMENT PRACTICES

1. Build outside the floodplain and floodway to the maximum extent practical, if floodplain development is proposed, apply the guidance in this Chapter to maximize safety, avoid community impacts, and minimize risk.

2. Minimize flow path alteration in the development design process to attempt to maintain the existing time of concentration.

3. The owner or developer of a site is responsible for conveyance of all existing stormwater flow through the property, even for storm events up to the 100-year storm. Design of on-site conveyance systems including channel, culvert, and drainage easements shall account for future anticipated upstream development.

4. Easements shall be dedicated to the public drainage system to convey the design storm from the upstream contributing drainage area through the property. Maintenance access shall be provided to all drainage improvements including stormwater detention basins or other structural BMPs.

5. Open channels are the preferred conveyance system and shall be designed with 4:1 side slopes where practicable with established vegetation.

6. Develop drainage standards for storm drain systems, culverts, and channels and require the design engineer to apply appropriate hydrologic and hydraulic modeling techniques to demonstrate compliance. Examples include:

    - Five-year design storm for storm drain systems such that the hydraulic grade line is below the top of curb or contained within the channel when the drainage area is less than 200 acres.

    - Twenty-five or 100-year design storm for cross culverts with a contributing drainage area greater than 100 acres such that the hydraulic grade line is below the top of road. Recommend the inclusion of freeboard of at least one foot as cross culverts are prone to debris blockage during large storm events.

7. Require that new development does not increase peak flow rates or floodplain elevations on adjacent or downstream property owners. This can be accomplished by requiring that the developed site peak flow rates remain equal to or less than the existing land use peak flow rates.

    - Common practices include the demonstration that peak flow rates are not increased by development for the 2-, 10-, 25-, and 100-year storms through detention basins, low impact development, and on-site measures.

Drainage Criteria Manual resources to guide proper hydrologic and hydraulic design include:

- City of Corpus Christi
- Aransas County
- Harris County Flood Control District – Hydrology and Hydraulics Guidance Manual

The Harris County Flood Control District also provides numerous other guidance documents relating to drainage, low impact development design, slope protection, detention basins, and other measures including CAD standards. These guidance documents can be found here.