

City of Raymore Unified Development Code

Chapter 450: Stormwater Management

Section 450.010 Storm Water Detention Requirements

A. Applicability

The provisions of this chapter apply to all land disturbance construction activities including residential (single-family and multi-family), commercial and industrial development. Storm water detention facilities shall be constructed and in operation prior to any construction of impervious surface and so noted on the engineering drawings.

B. Developer Responsibility

There are many methods and/or combination of methods, which may be utilized to provide the amount of storage required. It is the responsibility of the developer to choose which method or combination of methods he/she will use. All required improvements must be designed and built according to the latest edition of the Kansas City Metropolitan A.P.W.A. unless otherwise required by the City of Raymore "Standard Contract Documents and Technical Specifications and Design Criteria for Utility and Street Construction." Whenever these two are in conflict, the more restrictive applies.

C. Methods of Storage

The following is a list of various methods of detention including conditions and limitations, which shall be observed in the selection of a method of detention.

1. Rooftop Storage

- a. Building Codes require roof load designs for rain and snow. The design load may be converted to an equivalent water depth in inches, which can be safely contained on flat roofs.
- b. The maximum storage allowed for design purposes should not exceed this depth unless a building is designed to withstand a greater roof load. The depth of water can be controlled by proper sizing of downspouts and by constructing scuppers through the parapet walls.
- c. Overflow drains should be used to protect against possible roof overloading. Roofwater tightness is required to prevent leakage from water accumulation.

2. Parking Lots

- a. Considerable area in commercial areas is occupied by parking lots. Planned correctly these paved areas can provide adequate detention with minimum inconvenience to the public and without functional interference. This method involves storage of runoff in depressions constructed near drains.
- b. In parking lots, detention is permitted to a maximum depth of seven inches. The maximum limits of ponding may not be designed closer than 10 feet from a building unless waterproofing of the building and pedestrian accessibility are properly documented. The minimum freeboard from the maximum ponding elevation to the lowest sill elevation of a building is one foot.
- c. When detention is used on parking lots by means of retaining walls or curbs, these retaining walls and curbs must be constructed with reinforced concrete.

3. Recreation Areas

- a.** Recreation areas, such as open space or sports fields, generally have a substantial area of grass cover which can have high infiltration rates. A secondary use of such recreation areas can be made by providing for limited detention storage of runoff from adjacent areas. Because these areas are not used during periods of precipitation, detention ponding should not impede their primary use.
- b.** To minimize the effects of detention, the recreation area should be designed so that it will thoroughly drain. Additionally, the vegetation used on the area should be tolerant of periodic inundation and wetness. The developer and the Parks and Recreation Department should work closely to provide open space that can also be used for limited detention storage.

4. Dry Reservoirs

Dry reservoirs shall be designed in accordance with the latest revision of the Standard Specifications of the Kansas City Metropolitan Chapter of the American Public Works Association as modified below:

a. Earth Bottoms

All dry detention facilities shall be constructed with earth bottoms unless there is not sufficient runoff to support a plant community as determined by the Director of Public Works. The pond bottom shall be designed as a wetland and plantings shall be installed in accordance with wetland design criteria as specified in the latest revision of the Mid-America Regional Council and American Public Works Association "Manual for Best Management Practices for Storm Water Quality."

b. Maintenance

- (1)** Stormwater facilities shall be maintained by the owner or other responsible party as outlined in a maintenance agreement approved by the City Council at the time of final plat approval.
- (2)** Disposal of waste from maintenance of facilities shall be constructed in accordance with applicable federal, state and local laws and regulations.
- (3)** Records of installation and maintenance and repair shall be retained by the owner or other responsible party for the current five year period and shall be made available to the City Public Works Department upon request.
- (4)** Any failure to maintain a stormwater facility in accordance with City requirements or to correct problems with a stormwater facility as required by the City after receipt of due notice shall be handled under the procedure for nuisances as outlined in Chapter 220 of the Raymore City Code.

c. Inspection

- (1)** Stormwater systems shall be inspected by the City Public Works Department during and after construction and annually thereafter to assure consistency with the approved stormwater management plan.

- (2) All stormwater systems shall be subject to the authority of the on-site detention inspection program of the City Public Works Department to ensure compliance with this code and may be inspected when deemed necessary.
- (3) Routine or area inspections shall be based upon such reasonable selection processes as may be deemed necessary to carry out the objectives of this chapter, including but not limited to, random sampling and/or sampling in areas with evidence of stormwater pollution, illicit discharges, or similar factors.

d. Existing Dry Reservoirs

- (1) In residential subdivisions where dry reservoirs/wet weather ponds currently exist, if a majority of the lot owners in that subdivision file a written request with the City Council to have the reservoir/pond either filled in or converted to another method of stormwater detention and there are curbs and gutters and a stormwater inlet located nearby to safely control the volume of a 100-year storm event, the City Council shall hold a public hearing and vote on the request.
- (2) In residential subdivisions where dry reservoirs/wet weather ponds have been approved but are less than 25 percent constructed, if a majority of lot owners file a written request with the City Council asking that another method of stormwater detention be used, then the City Council shall hold a public hearing and vote on the request.
- (3) For commercial property, if a majority of the owners of that property file a written request with the City Council asking that another method of stormwater detention be used, then the City Council shall hold a public hearing and vote on the request.

5. Permanent Lakes

Permanent lakes must be constructed according to the Kansas City Metro A.P.W.A. standards and specifications.

6. Underground Storage

- a. Storm water runoff may be controlled by a holding tank or large size pipe. This method should be limited to areas where surface ponding is prohibited due to lack or high cost of available land or areas where the surface topography is not conducive to above-ground storage.
- b. These systems must be designed so that the water surface from the 25-year storm does not exceed the elevation of the top of the storage pipe or vault or come within six inches of the bottom of any inlet grate or exceed the top of any upstream pipe; and provision must be made to safely control the 100-year storm.
- c. Underground storage systems must be designed to be relatively maintenance free by using adequate trash screens at all inlets to the system and at the control structures avoiding the use of moving parts and avoiding the use of small control pipes and narrow weir openings.
- d. Privately maintained underground storage systems located on private property must be constructed of materials which have a similar expected life as that of

the project. Tanks, vaults or oversized pipes and multiple parallel pipes may be used in these private systems.

- e. All underground storage systems must have a reasonable number and type of access locations to allow easy inspection and maintenance.