

ARTICLE VIII. STORMWATER DRAINAGE FACILITIES AND SYSTEMS [14]

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Sec. 5-421. [Purpose.]

The provisions of this article further supplement ordinances regulating:

(1) The subdivision, layout, and improvement of lands located within the corporate limits of the city.

(2) The excavating, filling, and grading of lots, and other parcels or areas.

(3) The construction of buildings, and the drainage of the sites on which those structures are located, to include parking, and other paved areas.

(4) The design, construction and maintenance of storm water drainage facilities and systems.

(Ord. No. 550-05, § 1, 3-22-05)

Sec. 5-422. Other permits required.

Before starting any activities regulated by this article, an applicant shall comply with the requirements set forth in other applicable ordinances with respect to the submission and approval of preliminary and final subdivision plats, improvement plans, building and zoning permits, inspections, appeals, and similar matters, along with those set forth in this chapter, and as may be required by state statutes, and the regulations of any department of the state.

(Ord. No. 550-05, § 2, 3-22-05)

Sec. 5-423. Definitions.

For the purposes of this article the following definitions are adopted:

Catchment: The subwatershed as identified in the Macon Flood Plain Ordinance.

Detention facility: Any structure which is designed to collect and store surface water for subsequent gradual discharge.

Excess storm water runoff: That portion of storm water that exceeds:

(1) The safe storm drainage capacity of the downstream storm sewers within the catchment; or

(2) The pre-development runoff in the particular tract.

Protected channel: A channel which receives storm water discharge and which is paved, rip-rapped, or otherwise improved by addition of manmade materials so as to reduce the potential for erosion.

Safe storm drainage capacity: The quantity of storm water discharge runoff that can be transported by a channel or conduit without having the water surface rise above the top of the channel or conduit.

Storm water channel: A natural or manmade open water course with definite bed and banks which periodically or continuously contains moving water, or which forms a connecting link between two bodies of water.

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Storm water runoff: Water that results from precipitation which is not absorbed by the soil or vegetation or evaporated and which flows over the ground surface or is collected in channels or conduits.

Storm water runoff release rate: The rate at which storm water runoff is released from dominant to servient land.

25-year, 24-hour frequency rainfall: A precipitation event of 24-hours duration, having four percent chance of occurring in any one year.

(Ord. No. 550-05, § 3, 3-22-05)

Sec. 5-424. Applicability.

A storm water management plan shall be submitted to the building inspector by the owner of any proposed residential, commercial, or industrial development within the city, unless the building inspector waives such requirement for one of the following reasons:

(1) *Off-site facility, two or more developments:* If two or more developments, including that of the applicant, have provided for a common system.

(2) *Off-site facility by city:* If an off-site storm water management system has been either constructed or programmed or identified for construction by the city, and the applicant has agreed to contribute to or participate in the construction thereof.

(3) *Contribution in lieu of facility construction:* If the increased amount of velocity of storm water generated by the development will have minor detrimental effect on the receiving water course, and the applicant has agreed to contribute to the city fund an amount equal to the cost of the otherwise required on-site storm water management facility. For the purpose of establishing an amount to be contributed, the developer shall prepare an estimate of construction cost for detention basin, which shall be reviewed and approved by the building inspector.

(4) *Other management techniques:* Management techniques other than detention facilities may be utilized by the development, provided the techniques proposed meet the intent of this chapter and provide a benefit to the watershed that equals or exceeds the benefit that a detention facility would provide and/or if the building inspector determines there is no significant impact to the current storm water drainage.

No final subdivision or development plat shall be approved and no building permits for said subdivision development plats shall be issued until the storm water management plan has either been waived or reviewed and approved by the building inspector.

(Ord. No. 550-05, § 4, 3-22-05)

Sec. 5-425. Storm water management plans.

The required storm water management plan shall identify means for controlling the storm water runoff release rate from the development and providing storage potential for the excess storm water runoff. All computations, plans, and specifications related to the implementation of this chapter must be prepared, and sealed by a professional engineer registered in the state. The entire catchment shall be studied to determine the runoff impact within the subwatershed. The storm water management plan shall contain, but not be limited to, the following information unless specifically excluded by the building inspector:

(1) A topographic map of the project site and adjacent areas, of suitable scale and contour interval, which shall define the location of streams, the extent of floodplains and calculated high water elevations, the shoreline of lakes, ponds, and detention basins including their inflow and outflow structures, in any within the designated catchment. CODE OF THE CITY OF MACON, MISSOURI

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- (2) The location and flowline elevation of all existing sanitary, storm, or combined sewers and other waterways within the catchment.
 - (3) Detailed determination of runoff anticipated for the entire project site following development indicating design volumes, and rates of proposed runoff for each portion of the watershed tributary to the storm drainage system, the calculations used to determine said runoff volumes and rates, and restatement of the criteria which have been used by the project engineer throughout his calculations.
 - (4) A layout of the proposed storm water management system including the location and size of all drainage structures, storm sewers, channels and channel sections, detention basins and analyses regarding the effect said improvements will have upon the receiving channel and its high water elevation.
 - (5) For all detention basins, a plot or tabulation of storage volumes with corresponding water surface elevations, and of the basin outflow rates for those water surface elevations.
 - (6) For all detention basins, design hydrographs of inflow and outflow for both the 25-year, 24-hour, and 50-year, 24-hour design runoff events for the site under pre-developed conditions and the calculated 25-year, 24-hour, and 50-year, 24-hour peak flows from the site under pre-developed conditions.
 - (7) A profile and one or more cross sections of all existing and proposed channels or other open drainage facilities, showing existing conditions, and the proposed changes thereto, together with the high water elevations expected from storm water runoff under the controlled conditions called for by these regulations and the relationship of structures, streets, and other utilities to such channels.
- (Ord. No. 550-05, § 5, 3-22-05)

Sec. 5-426. Design criteria.

The following rules shall govern the design of improvements with respect to managing storm water runoff:

- (1) *Methods of determining storm water runoff rate and volume:* Drainage and storage facilities shall be designed using the Soil Conservation Service Urban hydrology, TR-55, method of calculating runoff discharge rate and the total volume.
- (2) *Release rate:* The controlled release rate of storm water runoff from all developments described in section 5-424 shall not exceed the predevelopment rate. The rate at which storm water runoff is delivered to a designated storm water storage area shall be unrestricted.
In the event the natural downstream channel or storm sewer system is inadequate to accommodate the release rate provided above, then the allowable release rate shall be reduced to that rate permitted by the capacity of the down stream channel or storm sewer system.
- (3) *Development design:* Streets, blocks, lots, parks, and other public grounds shall be located and laid out in such a manner as to minimize the velocity of overland flow, and allow maximum opportunity for infiltration of storm water into the ground, and to preserve and utilize existing and planned streams, channels, and detention basins, and include, whenever possible, streams and floodplains within parks and other public grounds.
- (4) *Detention:* The increased storm water runoff resulting from the proposed development may be accommodated by the provision of appropriate detention facilities including wet or dry bottom reservoirs, flat roofs, parking lots, or streets. The following shall govern the design of detention facilities:
 - a. *Storage volume:* The volume of storage potential provided in detention facilities shall be sufficient to control the excess storm water runoff, as determined to be the difference CODE OF THE CITY OF MACON, MISSOURI

between the storm water quantity from the site in its developed state for a 50-year, 24-hour frequency rainfall as published by the U.S. Weather Bureau less the allowable release rate as set forth in section 5-426(2). The allowable storm water release rate shall not be exceeded regardless of the depth of storm water contained in the required storm water detention facility.

b. *Release rate*: At no time during the design storm shall the storm water runoff release rate exceed the allowable release rate as set forth in section 5-426(2).

c. *Release velocity*: Detention facilities shall release storm water at a nonerosive velocity. Protected channels receiving detention discharge shall incorporate features to reduce velocity to nonerosive levels at the point where such discharge enters the unprotected channel. If release is into a subsurface conduit the energy gradient in the receiving facility shall not be increased beyond the slope of the conduit.

d. *Spillway*: Emergency spillways shall be provided to permit the safe passage of runoff generated from a 100-year, 24-hour storm, or greater, if required by regulations of the state department of natural resources.

e. *Freeboard*: Detention facilities shall have adequate capacity to contain the storage volume of tributary storm water runoff with at least one foot of freeboard above the water surface of flow in the emergency spillway in a 100-year, 24-hour storm.

(Ord. No. 550-05, § 6, 3-22-05)

Sec. 5-427. Performance standards.

(a) *Storm water channel location*. Generally acceptable locations of storm water channels in the design of subdivision may include, but are not limited to, the following:

(1) Adjacent to roadways.

(2) In a depressed median of double roadway, street or parkway provided the median is wide enough to permit slopes of one foot drop in six feet horizontal or flatter.

(3) Centered on lot lines or entirely within the rear yards of a single row of lots or parcels.

(4) In each of the foregoing cases, a drainage easement with sufficient width to facilitate maintenance and design flow shall be provided and shown on the plat.

(b) *Storm sewer outfall*. The storm sewer outfall shall be designed to provide adequate protection against downstream erosion and scouring.

(c) *Lot lines*. Whenever the plans call for the passage and/or storage of storm water runoff along lot lines, the grading of all such lots shall be prescribed and established for the passage and/or storage of waters, and no structure or vegetation which would obstruct the flow of storm water shall be allowed, nor shall any change be made to prescribed grades and contours of the specified storm water channels.

(d) *Manholes*. All utility sewer manholes constructed in an area designed for the storage or passage of storm water shall be provided with either a water-tight manhole cover, or be constructed with a rim elevation of minimum of one foot above the high water elevation of the design storm.

(e) *Easements*. Permanent easements for the detention and conveyance of storm water, including easements of access to structures and facilities, shall be dedicated to the city.

(f) *Obstruction of drainage*. The keeping or disposal of grass clippings, trash, debris, obstructions, or unwanted materials into the storm sewers or within or along storm water channels, or in adjacent floodplain areas that may wash into sewers and channels is prohibited. CODE OF THE CITY OF MACON, MISSOURI

(g) *Maintenance*. Provisions acceptable to the city for perpetual maintenance of detention facilities, outlet works, and appurtenances shall be made, as provided in section 5-429 of these regulations.

(Ord. No. 550-05, § 7, 3-22-05)

Sec. 5-428. Bonds, maintenance assurance and fees.

Performance bonds and other assurances for completion and operation of storm water management improvements.

Upon approval of the storm water management plan, but before the issuance of a building permit or subdivision plat approval, the building inspector shall require the applicant to post a performance bond, cash escrow, certified check, or other acceptable form of performance security in an amount sufficient to ensure the execution of the plan. After determination by the building inspector that all facilities are constructed in compliance with the approved plan, the performance bond or other securities shall be released.

(Ord. No. 550-05, § 8, 3-22-05)

Sec. 5-429. Maintenance agreement.

A maintenance agreement, approved by the city council assuring perpetual maintenance of storm water management improvements shall be executed by the city and the applicant.

(Ord. No. 550-05, § 9, 3-22-05)

Sec. 5-430. Fees.

A fee of \$20.00 per plot shall accompany the submittal of each storm water management plan for review.

(Ord. No. 550-05, § 10, 3-22-05)

Sec. 5-431. Responsibility.

The administration of this chapter shall be the responsibility of the office of the building inspector.

(Ord. No. 550-05, § 11, 3-22-05)

Sec. 5-432. Variances.

(a) *Standards*. Variations from these standards, provisions, and specifications may be granted when it is demonstrated to the satisfaction of the building inspector that, owing to special conditions, a strict adherence to the provisions of this chapter will result in unnecessary hardship, and that the spirit and intent of the chapter will be observed.

(b) *Procedure*. A request for variation shall be filed by the owner, seeking to develop or change the use of this property, or his agent with the building inspector who shall refer to it, together with his recommendation, to the city council for decision. The request for variation shall be written, and shall state specifically what variation is sought, and the public's interest in granting the variation. CODE OF THE CITY

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(Ord. No. 550-05, § 12, 3-22-05)

Sec. 5-433. Official maps and profiles.

Responsibility for all changes to official maps and profiles remains with the city council.

(Ord. No. 550-05, § 13, 3-22-05)

Sec. 5-434. Interpretation.

In the interpretation and application of this chapter, the provisions expressed herein shall be held to be the minimum requirements, and shall be liberally construed in favor of the city, and shall not be deemed a limitation or repeal of any other powers granted by state statutes.

(Ord. No. 550-05, § 14, 3-22-05)

Sec. 5-435. Enforcement and inspection.

(a) *Inspection.* The building inspector shall be responsible for determining whether the storm water management plan is in conformance with requirements specified in section 5-424 of this chapter, and whether development is proceeding in accordance with approved storm water management plan. Periodic inspection of the development site shall be made by the building inspector to ensure that the storm water management plan is properly implemented. The building inspector, and other duly authorized employees bearing proper credentials and identification, shall be permitted to enter upon all properties for the purpose of inspection, observation, and measurement in accordance with the provisions of this chapter.

(b) *Enforcement.*

(1) *Work suspension.* In the event that work performed does not conform to the provisions of the approved storm water management plan and specifications, a written notice to comply shall be served upon the developer. Such notice shall set forth the nature of the correction required, and the time within which corrections shall be made. Failure to comply with such notice shall result in the issuance of a stop-work order applicable to all construction activity except that necessary for correction of the violation. Upon correction of the violation, the stop-work order shall be voided and construction may resume.

(2) *Bond forfeiture.* In the event of continued violation of the approved storm water management plan, a public hearing on the matter shall be conducted by the city council. Written notice of such hearing shall be served upon the developer by registered mail, and shall state:

a. The grounds for complaint.

b. The time and place such hearing is to be held.

Such notice shall be served at least 15 days prior to the date set for the hearing. At any such hearing, the developer shall be given an opportunity to be heard, and he may call witnesses, and present evidence on his behalf. After such hearing, if the city council concludes that the issuance of additional correction notices would be futile, and bonds or cash deposits posted with the city shall be forfeited, whereupon said security shall be used for completion of the storm water management plan as approved.

(Ord. No. 550-05, § 15, 3-22-05) CODE OF THE CITY OF MACON, MISSOURI

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Sec. 5-436. Penalties.

Any person, firm, or corporation who violates or fails to comply with any of the provisions of this chapter shall be guilty of a misdemeanor, and upon conviction, shall be subject to a fine of not less than \$25.00, nor more than \$200.00. A separate offense shall be deemed committed upon each day during, or on which a violation occurs or continues.