

Flood Control and Water Quality Protection Manual

Summary of Proposed Changes

The City of Springfield has been working with a Stormwater Technical Committee on proposed changes to the Flood Control and Water Quality Protection Manual that are primarily technical updates and clarifications to stormwater design standards. The proposed water quality requirement for redevelopment sites in Chapter 10 is the most significant change. The following is a summary of the major changes in each chapter. This summary is intended to give an overview and does not include all minor changes.

[Chapter 1 – Stormwater Drainage Principles](#)

No changes were made to this chapter.

[Chapter 2 – Authority and Law](#)

Minor changes were made to this chapter to correct hyperlinks.

[Chapter 3 – Stormwater Planning](#)

Changes were made to Section 2.3.3 to require drainage and detention easements and documentation of maintenance responsibility between the developer and off-site landowner if modifying an existing off-site basin or constructing a new off-site basin to meet detention requirements.

[Chapter 4 – Plan Submittal and Inspections](#)

- Section 5.3 – Added language to explain the factors considered in the decision to require construction of detention basins prior to issuance of a building permit.
- Section 7.0 – Clarification that an operation and maintenance plan and agreement is required for both water quality and flood control detention stormwater control measures consistent with current City Code Chapter 96 and required for stormwater control measures used to meet zoning conditions in City Code Sec. 36-482(8)(b).
- Section 9.0 – Minor changes to as-built requirements.

[Chapter 5 – Calculation of Runoff](#)

- Minor changes were made to this chapter to correct hyperlinks.
- Section 2.0 – Updated precipitation data from Bulletin 71 to Atlas 14
- Section 5.1 – Updated USGS regression equations.

[Chapter 6 – Streets, Inlets, and Storm Drains](#)

Minor clarifications and corrections were made to this chapter.

[Chapter 7 – Culverts and Bridges](#)

Minor clarifications and corrections were made to this chapter.

[Chapter 8 – Open Channels](#)

- Section 4.1.6 – Clarifications regarding tree replacement when using buffer width averaging and for removal of dead, diseased, or invasive trees.

- Section 4.1.13 – Revised the language for mitigation of required stream buffers and the requirements for submittal of an alternative compliance request for consideration.

Chapter 9 – Detention for Flood Control

- City Code - Updated fee in lieu of detention rate table.
- Section 4.1 – Added language to allow for ponding in parking lots as part of the storage for the detention volume.
- Section 4.4 – Restricted the use of riprap in detention basins to only those locations where required to prevent erosion.
- Section 4.5 – Added requirement for maintenance access.

Chapter 10 – Water Quality

- Section 2.0 – Added water quality requirement for redevelopment sites, including a fee in lieu option for sites with extraordinarily difficult site conditions.
- Section 2.0 – Clarification on when exceptions may be made for not treating small areas of a site when water quality is provided for off-site drainage area.
- Section 7.0 – Clarification that an operation and maintenance plan and agreement is required for both water quality and flood control detention stormwater control measures consistent with current City Code Chapter 96, and required for stormwater control measures used to meet zoning conditions in City Code Sec. 36-482(8)(b).
- Section 8.3 – Clarification that vegetated filter strips shall not be used in areas where there will be vehicular traffic or heavy, routine pedestrian use.
- Pervious Pavement Changes:
 - Section 10.1 – Removed pervious asphalt as a pervious pavement option that may be acceptable on a case by case basis.
 - Section 10.3 – Changes to pervious pavement performance criteria including reduced maximum ratio of impervious area to pervious pavement, and increased thickness of rock storage when an underdrain is used. Added a minimum infiltration rate of 10 inches/hour for in-service pervious pavement that shall be tested in accordance with a frequency established as part of operation and maintenance plan requirements. Note: Some items appear as redline changes in this section but are existing requirements that were moved from Section 10.5 for ease of reading.
 - Section 10.4 – Added a threshold of 0.5 inches/hour for the existing subgrade infiltration rate to clarify when an underdrain is required. Changed the procedure for conducting infiltration soil testing.
 - Section 10.6 – Removed the general design procedure as it is not needed.
 - Section 10.7 – Removed requirement for a pre-construction meeting.
 - Section 10.8 – Reduced minimum infiltration rate for new pervious pavement from 200 inches/hour (currently in Section 12.6.6.3) to 100 inches/hour. Removed documentation of pervious concrete density and void content testing as part of the as-built submittal.
 - Section 11.5 – Changed contractor qualifications for permeable interlocking concrete pavers from required to recommended.
 - Section 12.2 – Removed plan notes that are covered by ACI 522.1-13.

- Sections 12.3 and 12.4 – Removed these sections as they are covered by ACI 522.1-13.
- Section 12.5 – Added language that if pervious concrete contractor qualifications in this section differ from ACI 522.1-13, this section shall govern. Note: The qualifications are more stringent in ACI 522.1-13.
- Section 12.6 – Removed this section as it is covered by ACI 522.1-13.
- Bioretention Changes:
 - Replaced typical drawing with a new drawing showing sections with and without an underdrain.
 - Section 13.3.1 – Added a threshold of 0.5 inches/hour for the existing subgrade infiltration rate to clarify when an underdrain is required. Changed the procedure for conducting infiltration soil testing.
 - Section 13.3.2 – Reduced the maximum velocity for larger flows passing through bioretention.
 - Section 13.3.3 – Revised to no longer allow volume to be counted in the bioretention soil mix as this layer may still be saturated when the next rain event occurs for frequent events. Specified maximum porosity of 0.4 for gravel layer, consistent with studies of porosity testing of specified rock size.
 - Section 13.3.3 – Increased allowable slope to 3:1 for side slopes.
 - Section 13.3.3 – Changed equation for minimum surface area of filter bed, consistent with the common design procedure used in other communities in Missouri.
 - Section 13.3.4 – Specified a minimum thickness of bioretention soil mix for sections without an underdrain.
 - Section 13.3.5 – Modified the thickness of graded filter and gravel layers for an overall reduction.
 - Section 13.3.7 – Clarified requirement and definition for pretreatment.
 - Section 13.3.9 – Added planting plan requirements.
 - Section 13.3.11 – Removed the design procedure as it is not needed.
 - Section 13.3.5 – Revised as-built procedure to require a survey of specified components as part of the as-built certification.
- Section 14.5 – Clarified that detention basins shall have a vegetated bottom and side slopes.
- Section 19.4 – Added requirement for inspection ports and cleanout access per manufacturer's recommendations for proprietary systems.
- Section 19.6 – Added outlet structure measurements and verification of location of inspection ports and cleanouts as part of the as-built certification for proprietary systems.

[Chapter 11 – Sinkholes and Karst Features](#)

A minor change was made to this chapter to correct a code reference.

[Chapter 12 – Easements and Maintenance](#)

- Section 2.0 - Added language to restrict the construction of buildings and other structures over the public stormwater system.