

TITLE FOUR—Engineering Regulations  
Chap. 931. Public Infrastructure Improvements.

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**CHAPTER 931**  
**Public Infrastructure Improvements**

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**931.01 ENGINEERING DRAWINGS.**

(a) Preparation. Developers of private property shall submit to the City Engineer for preliminary and final approval, drawings of engineering details of all existing and proposed facilities and utilities which will become the property of, or maintained by, The City of Springfield, Ohio. Drawings shall be prepared by or under the supervision of a registered professional engineer in the State of Ohio and bear his signature and stamp of the seal prescribed by the State Board of Registration for Professional Engineers and Surveyors. All engineering drawings shall be prepared on sheets 24-inch by 36-inch size out to out of the trimming edges.

(b) Scale. The plan shall be drawn on a scale of one inch equals 50 feet or less, and the profile shall be drawn on the same scale horizontal with a ten to one exaggeration (example, one inch equals 50 foot horizontal, one inch equals five foot vertical). Details of intersections, cul-de-sacs, and miscellaneous special items shall be drawn at a scale of one inch equals 20 foot.

(c) Bench Marks. All elevations shall be on U.S.G.S. datum and a complete description, location, and elevation of at least two bench marks used shall be shown on the plans. Additional bench marks shall be required if spacing exceeds 1,500 foot. All bench marks disturbed during construction shall be re-established by the developer prior to final acceptance of the improvements by the City.

(d) Specifications and Standard Drawings. All construction and materials shall comply with the current City of Springfield specifications and standard drawings on file in the City Engineer's office. City of Springfield specifications and standard drawings shall be referenced on engineering drawings.

(e) Construction. No construction may begin until the final plans are approved by the City Engineer and all fees are paid. The City Engineer's office shall be notified 48 hours in advance of any construction so that inspection may be provided. This notification policy shall be stated on engineering drawings.

(f) As-Built Drawings. After the development has been completed, "as-built drawings" shall be turned over to the City Engineer. The original engineer or surveyor of record shall certify the "as-built drawings". These plans shall show the following items in detail:

- (1) Water and sewer mains located in reference to the curb line.
- (2) Fire hydrants and water valves.
- (3) Water services.
- (4) Plan and profile of all main sewers including manhole locations.
- (5) House connections (sewer location at curb line referenced to the nearest street right-of-way line and measured along the curb line.)
- (6) Final curb elevations and stationing.
- (7) Grading plan including limits and grades of detention/retention areas.
- (8) Typical sections of all pavements.

These plans shall be submitted in one of the following formats: mylar drawings, computer disk in autocad format, or computer disk in a DXF file format.

(Ord. 95-387. Passed 12-5-95.)

### **931.02 EXISTING FACILITIES.**

The existing location of all utilities, buildings, driveways, streets, and topography connecting to the improvement for a distance of at least 200 feet adjacent to the improvement or to the point of connection to existing facilities shall be shown on the plan and profile.

(Ord. 95-387. Passed 12-5-95.)

### **931.03 STREETS.**

(a) The plan shall show the stationing on the centerline of all streets and the station and angle of all intersecting streets. The profile shall show the elevations of the existing ground, the proposed centerline, and the sewer grade as well as the location of all existing and proposed utilities.

(b) All streets within the development shall be improved the full width and length of the proposed street right-of-way to the plat line, and a typical cross section of the new streets shall be shown.

(c) Changes in grade shall be made by vertical curves of minimum length subject to the design standards in the *Ohio Department of Transportation Location and Design Manual*, latest edition. The point of curvature and point of tangency of all vertical curves shall be stationed, and elevations shall be shown on 25-foot stations along the entire length of the vertical curve.

(d) All street grades shall be centerline grades, and details of drainage and elevations at street intersections shall be shown.

(e) Minimum rate of grade on streets shall be .5 percent or 6 inches per 100 feet on streets with curb and gutter.

(f) Concrete curb, gutter, and sidewalk where required shall be constructed in accordance with the standard drawings and specifications on file in the City Engineer's office.

(g) Manholes and water valves must be adjusted to the finished street surface after the placing of the leveling course but prior to the placing of the finished asphalt course.

(h) The entire right-of-way of all streets shall be graded full width regardless of whether or not sidewalks are required. All minor streets shall be paved between curbs as follows:

- (1) 4-1/2 inch (compacted) aggregate base course, minimum 90 percent crushed (Item 304); followed by 4-1/2 inch (compacted) aggregate base course, minimum 90 percent crushed (Item 304); followed by prime coat of a minimum of 0.5 gallon per square yard of MC-0, MC-1 or RT-2 (Item 408); followed by 2 inch asphalt concrete (Item 402); followed by 1 inch asphalt concrete: (Item 404): or
- (2) 4 inch bituminous aggregate base (Item 301); followed by 1-1/2 inch asphalt concrete (Item 402)  
1-1/2 inch asphalt concrete (Item 404)

NOTE: The item numbers referred to are from the *City of Springfield Construction and Material Specifications*, latest edition; and all materials and construction shall comply with these specifications.

Urban thoroughfares, rural thoroughfares, collector streets, and special streets shall be designed in accordance with the *Ohio Department of Transportation Location and Design Manual*, latest edition. The asphalt concrete paving shall not be done until all utilities have been installed including all house services. The surface course shall not be paved until all utilities have been accepted by the City.

(i) Cross sections shall be shown every 50 feet and shall be drawn to one inch equals ten foot horizontal and one inch equals five foot vertical.

(j) Signing and pavement markings shall be installed at all appropriate locations. Plans shall be submitted which are designed in accordance with the *Uniform Manual Of Traffic Control Devices*, latest edition. Street name signs conforming to City of Springfield standards shall be placed at all intersections.  
(Ord. 95-387. Passed 12-5-95.)

(k) All traffic signal support devices shall be mast-arm type installations unless deemed impractical by the City Engineer.

(Ord. 03-174. Passed 4-29-03.)

#### **931.04 STORM SEWERS.**

(a) The engineer for the developer shall lay out the street to follow natural drainage as much as possible and avoid low points or pockets between street intersections. If low points between intersections cannot be avoided, drainage easements through the lots shall be provided.

(b) All sewers shall be laid within the street right-of-way wherever possible.

(c) Street storm sewers shall be designed for a ten-year design storm. Storm water management and erosion control for the entire development shall be provided in accordance with Chapter 961. Minimum storm sewer size shall be twelve inch.

(d) Storm sewers shall be constructed at a depth sufficient to serve all the area within the watershed which may drain through the area being developed and deep enough to allow for construction of water mains and sanitary sewers.

(e) Manholes shall be constructed at the junction of two or more sewers at the termini, at all changes in size, alignment, and grade, and at a distance not to exceed 400 feet. For storm sewers 42 inches in diameter and larger, spacing may be increased to 500 feet.

(f) Catch basins shall be constructed on the upstream side of the crosswalks, at all low points in the street, at points where drainage ditches enter the area being developed, at intersections, and on streets at distances not to exceed 400 feet. Cross street drains shall not be used at intersections.

(g) Storm sewers, manholes, catch basins, and appurtenances shall be constructed in accordance with the standard drawings and specifications on file in the City Engineer's office.

(Ord. 95-387. Passed 12-5-95.)

#### **931.05 SANITARY SEWERS.**

(a) Sanitary sewers shall be designed to flow half full. The quantity of sewage shall be determined by use of 100 gallon per day per capita for the entire service or drainage area which may drain through the area being developed, plus wastewater flow from industrial plants and major institutional and commercial facilities. Water use data, or other justification upon which a better flow estimate is based, may be submitted for consideration. In addition, a peaking factor shall be applied which can be calculated using the ratio of peak hourly flow to design average flow chart provided in the *Recommended Standards For Wastewater Facilities*, latest edition. All sanitary sewers shall be designed to have a minimum velocity of two feet per second.

(b) The minimum size of a main sewer shall be eight inches in diameter and shall be constructed in accordance with the specifications for installation of sanitary and storm sewers on file in the City Engineer's office. The minimum size house connection shall be four inch.

(c) Sanitary sewers shall be constructed at a depth sufficient to serve all the tributary area which may drain through the area being developed. The sanitary sewer mains shall be constructed not less than five feet deep and shall be deep enough to provide clearance for storm sewers and water mains and to provide not less than three feet of fall between the hydraulic gradient of the sewer and the basement, but in no case shall the top of the main sewer be less than five feet below the finished street grade.

(d) House connections shall be connected to the main sewer by use of four inch by eight inch, or four inch by twelve inch "Y" branches on eight-inch and twelve-inch sewers and by four inch stubs on sewers larger than twelve inches.

(e) House connections shall be laid on a minimum slope of two percent.

(f) Where a pipe enters a manhole two feet or more above the manhole invert, a drop manhole is necessary. The drop manhole shall have an outside drop connection as shown in the City's standard drawings. Where the difference in elevation between the incoming sewer and manhole invert is less than two feet, the invert shall be filleted to prevent solids deposition.

(g) Standard manholes shall be constructed at all junctions of two or more sewers, at all changes in size of pipe, at all changes in grade, at all changes in alignment, at the ends of all main sewers, and at intervals not to exceed 400 feet.

(h) Manholes, sewers, and appurtenances shall be constructed in accordance with the standard drawings and specifications on file in the City Engineer's office.

(i) All sanitary sewer plans shall be submitted to the Environmental Protection Agency (EPA) for approval. The developer shall prepare all forms and pay all fees necessary for submission of the plans to the EPA. All sanitary sewer plans shall be prepared in accordance with the *Recommended Standards For Wastewater Facilities*, latest edition. (Ord. 95-387. Passed 12-5-95.)

#### **931.06 WATER MAINS.**

(a) Water mains shall be designed in accordance with this section. Water main materials shall conform to *City of Springfield Construction and Material Specifications*, latest edition, on file in the City Engineer's office. The developer shall consult the City's master water plan before preparing plans.

(b) All streets in the development shall be provided with water mains, valve boxes, and fire hydrants. All single-family residential developments shall be provided with house services and meter boxes. Curb boxes, meter boxes, and valve boxes shall be installed at finished grade and in accordance with City standard drawings.

(c) All water mains shall be sized a minimum of eight inches in diameter as well as to meet usage and fire flow demands unless otherwise specified as follows:

- (1) Lines may be required to be larger than eight inch if identified in the City's master water or facilities plan. Lines may also be required to be larger if an identified need can be documented based on flow or pressure

deficiencies or if the City desires to enter into an oversize agreement.

- (2) If a line segment is to be installed that completes a loop, grid, or extends lines of uniform size and no current deficiencies for pressure or flow can be identified, a like diameter pipe size will be installed.
- (3) Should it be determined by the Service Department that inadequate cycling of the water would occur, thus resulting in nonconformance with water quality standards and regulations, alternative line sizing and connection configurations will be identified by the City Engineer. The City Engineer shall cooperate with the fire official in determining the main size to ensure adequate fire flow demands.  
(Ord. 00-456. Passed 12-18-00.)
- (4) Waterlines in one- and two-family residential subdivisions may be six-inch diameter if interconnected and looped in segments unless a segment of a main functions as a transmission or supply main through the subdivision.

(d) All water mains and water services shall have a minimum of 48 inches of cover.

(e) All water distribution systems in a subdivision shall be designed with looping for proper water flow. Dead end lines shall be approved by the City Engineer, after consultation with the fire official, only if the developer can show no feasible means to loop the lines.

(f) Fire hydrants shall be installed as designated by the City's Fire Division based on the following guidelines:

- (1) Installed along public and/or private water mains at distances no greater than 400 feet apart, as measured along the main, except in areas of one- and two-family residential buildings. Such distances shall be no greater than 500 feet. All fire hydrants shall be placed on lot lines.
- (2) Installed at the end of six-inch lines or greater.
- (3) Installed at street corners ten foot from end of radius.
- (4) Installed as required for maintenance and operational purposes.
- (5) All cul-de-sacs shall have a fire hydrant at the end for fire flow demands.

(g) All water main plans shall be submitted to the Environmental Protection Agency for review. The developer shall prepare all forms and pay all fees necessary for submission of the plans to the Environmental Protection Agency.

(Ord. 95-387. Passed 12-5-95.)

### **931.07 STREET LIGHTS.**

(a) A street lighting plan shall be submitted with final construction drawings for any development. The lighting plan may be a separate drawing, or the proposed layout may be shown on the overall plan drawing.

- (1) Street lighting shall be provided on all public roadways in the development.
- (2) Lighting shall be installed to provide for the following lighting levels.
  - (A) Major and Secondary: 1.0 minimum maintained foot-candles.
  - (B) Collector Streets: 0.6 minimum maintained foot-candles.
  - (C) Local Streets: 0.35 minimum maintained foot-candles.
- (3) All lighting plans must be designed and/or approved by the public utility

which shall provide power to illuminate and maintain the luminaire, who will assume ownership of the street lighting system after construction.

- (4) The standard lighting unit and support is equivalent to the luminaire manufactured by Holophane Co., a Division of Johns-Manville, mounted on a round tapered post, painted black. Detailed specifications are available from the public utility.
- (5) Approval of the lighting layout must be secured from the City Engineer's office prior to installation and after approval of the street lighting construction plans by the public utility.  
(Ord. 95-387. Passed 12-5-95.)

#### **931.08 GRADING PLANS.**

- (a) A grading plan shall be developed for all proposed developments.
- (b) The grading plan shall show the proposed grading of every lot as well as the proposed finished floor elevations of buildings. This may be shown in one of the following ways:
  - (1) Proposed elevations shown on lot corners with drainage swales shown where applicable.
  - (2) Proposed contours.
- (c) If the entire lot will not be disturbed, show a work limit line.
- (d) Grading plans shall be one-inch-equals-50-foot scale or less.  
(Ord. 95-387. Passed 12-5-95.)