

CHAPTER XV. UTILITIES

ARTICLE 3. STORM SEWERS

SECTIONS

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15-301. INCORPORATING HYDRAULIC PERFORMANCE OF SETBACK CURB INLETS. –[Repealed by Ord. No. 2354C]

(Ord. 1841C; 01-03-00)

(Ord. 2354C; 10-20-08)

15-302. INCORPORATING DIVISION V- SECTION 5600 DESIGN CRITERIA FOR STORM DRAINAGE SYSTEMS AND FACILITIES.

There is hereby incorporated by reference that certain "Division V –Section 5600, Storm Drainage Systems & Facilities" of that publication known as "Standard Specifications and Design Criteria" approved and adopted, February 16, 2011, prepared and published by the Kansas City Metropolitan Chapter of the American Public Works Association, save and except such articles, sections, parts or portions as are hereafter omitted, deleted, modified or changed. No fewer than three copies of the Design Criteria for Storm Drainage Systems and Facilities (Division V - Section 5600) shall be marked or stamped "Official Copy as Adopted by Ordinance No. 2827C" with all sections or portions thereof intended to be omitted or changed clearly marked to show any such omission or change and to which shall be attached a copy of this ordinance, and filed with the City Clerk to be open to inspection and available to the public at all reasonable hours; provided further, that the police department, police judge and all administrative departments of the city charged with the enforcement of this ordinance shall be supplied, at the cost of the city, such number of official copies of this publication similarly marked, as may be deemed expedient.

(Ord. 1842C; 01-03-00)
(Code 2000)
(Ord. 2062C; 05-17-04)
(Ord. 2355C; 10-20-08)
(Ord. 2827C; 03-20-17)

15-303. INCORPORATING DIVISION V- DESIGN CRITERIA - DIVISION 5100 EROSION AND SEDIMENT CONTROL.

There is hereby incorporated by reference that certain "Division V –Design Criteria– Division 5100 Erosion and Sediment Control" of that publication known as "Standard Specifications and Design Criteria" approved and adopted, September, 15, 2010, prepared and published by the Kansas City Metropolitan Chapter of the American Public Works Association. No fewer than three copies of the Division V – Design Criteria – Division 5100 Erosion and Sediment Control shall be marked or stamped "Official Copy as Adopted by Ordinance No. 2827C" and to which shall be attached a copy of this ordinance, and filed with the City Clerk to be open to inspection and available to the public at all reasonable hours; provided further, that the police department, police judge and all administrative departments of the city charged with the enforcement of this ordinance shall be supplied, at the cost of the city, such number of official copies of this publication similarly marked, as may be deemed expedient.

(Ord. 1843C; 01-03-00)
(Ord. 2356C; 10-20-08)
(Ord. 2827C; 03-20-17)

15-303a. INCORPORATING DIVISION II – CONSTRUCTION AND MATERIAL SPECIFICATIONS – SECTION 2150 EROSION AND SEDIMENT CONTROL.

There is hereby incorporated by reference that certain "Division II – Construction and Material Specifications – Section 2150 Erosion and Sediment Control" of that publication known as "Standard Specifications and Design Criteria", approved and adopted, May 21, 2008, prepared and published by the Kansas City Metropolitan Chapter of the American Public Works Association. No fewer than three copies of the Division II – Construction and Material Specifications – Section 2150 Erosion and Sediment Control shall be marked or stamped "Official Copy as Adopted by Ordinance No. 2357C" and to which shall be attached a copy of this ordinance, and filed with the City Clerk to be open to inspection and available to the public at all reasonable hours; provided further, that the police department, police judge and all administrative departments of the city charged with the enforcement of this ordinance shall be supplied, at the cost of the city, such number of official copies of this publication similarly marked, as may be deemed expedient.

(Ord. 2357C; 10-20-08)

15-304.

STANDARD SPECIFICATIONS AND DESIGN CRITERIA INCORPORATED.

There is hereby incorporated by reference the "Division II-Construction and Material Specifications, Sewers, Section 2600 Storm Sewers" of the "Standard Specifications and Design Criteria," April 17, 1996 Edition, as amended through December 31, 2007, prepared and published by Kansas City Metropolitan Chapter of the American Public Works Association, save and except such articles, sections, parts or portions as are hereafter omitted, deleted, modified or changed, such incorporation being authorized by K.S.A. § 12-3009 through §12-3012, inclusive, as amended. No fewer than three copies of said Standard Specifications and Design Criteria shall be marked or stamped "Official Copy as Incorporated by Ordinance No. 2358C", with all sections or portions thereof intended to be omitted or changed clearly marked to show any such omission or change and to which shall be attached a copy of this ordinance, and filed with the City Clerk to be open to inspection and available to the public at all reasonable hours.

(Ord. 1844C; 01-03-00)

(Ord. 2358C; 10-20-08)

15-304a.

SECTION 2602 PIPE SEWER CONSTRUCTION

2602.1 SCOPE: This section governs the construction of pipe storm sewers and appurtenances at the location and to the lines and grades indicated on the Contract Drawings.

2602.2 MATERIALS:

A. Reinforced Concrete Pipe:

1. Pipe: Reinforced concrete pipe shall conform to the following ASTM Standards and be of the minimum strength designated herein or such higher strength as may be required by the Contract Drawings or Special Provisions:

- a. Round Pipe: ASTM C 76, Class III, Wall B.
- b. Elliptical Pipe: ASTM C 507, Class HE-III.
- c. Arch Culvert Pipe: ASTM C 506, Class A-III.

2. Joints:

- a. Flexible Gasket: Flexible gaskets may be either flat gaskets cemented to the pipe tongue or spigot, O-ring gaskets, or roll-on gaskets. All gaskets shall conform to ASTM C 443.
- b. Cement Mortar: Cement mortar shall consist of one part Type 1 portland cement by volume to three parts sand conforming to ASTM C 144 by volume mixed with sufficient water to form a workable stiff mortar paste.

- c. Plastic Compound: This compound shall be a homogeneous blend of bituminous material, inert filler and suitable solvents or plasticizing compounds thoroughly mixed at the factory to a uniform consistency suitable for sealing joints of concrete pipe. The compound shall conform to the following requirements:

Bitumen, soluble in CS ₂ , percent by weight, minimum	45%
Ash, percent by weight	15-50%
Penetration, standard cone, 150g, 5 seconds, 25° C	
Trowel grade, bulk type	110-250mm
Extruded rope or flat tape type	50-120mm

The above penetration ranges include test tolerances.

- d. Preformed Plastic Compound: This compound shall be either rope form or flat tape form conforming to ASTM C 990. Primer, as recommended by the manufacturer, shall be used to maintain the material in position while pipe sections are being joined.

B. *Alternate Material for Private Storm Sewers*

1. Scope. This section defines requirements for the use of HDPE pipe as an alternate material for privately maintained storm sewer systems originating on private property.
2. Definitions. For purposes of this section, the following terms shall have the following definitions:
 - a. HDPE pipe – For the purposes of this section, acceptable HDPE pipe is defined as: Type S, double wall (smooth interior, corrugated outer wall), high density polyethylene pipe utilizing a bell-and-spigot joint system and providing a water tight joint.
 - b. Incidental landscape drainage system – A system which serves landscaping and is minor in nature and where the system is less than a 15" diameter.
 - c. PE – Polyethylene.
 - d. Private storm sewer system – A system which mainly collects and conveys runoff from a single property and is privately maintained by the property owner. The City will make final determinations regarding which systems may be private versus public during the plan review process.
 - e. Roof drain – A pipe system which conveys only runoff from building roofs.
 - f. Storm water detention facility – A facility which controls the maximum release rate from a site. It is considered to be separate by definition from the storm sewer system for regulation and specification purposes.

3. General Requirements.
 - a. 15-inch diameter, 18-inch diameter and 24-inch diameter HDPE pipe is allowed only for private storm sewer systems.
 - b. A private system using HDPE pipe may enter the public right-of-way to connect with a public storm sewer at a structure. However, HDPE pipe is not allowed to be installed underneath public streets.
 - c. Roof drains and Incidental landscape drainage systems may use pipe with a diameter less than 15-inches in size. Pipe material must meet industry standards and the Storm Drainage section of the International Building Code as adopted by the City of Leawood.
 - d. Storm water detention facilities may use 15-inch through 60-inch diameter HDPE circular pipe or chambered type structures if approved by the City Engineer.
 - e. HDPE /plastic storm drainage junction structures and inlets are not allowed as part of the private storm sewer system except as an internal part of a stormwater detention facility or if specifically approved by the City Engineer.

4. Requirements and Specifications
 - a. Certification. All HDPE pipe used in storm sewer applications shall conform to the requirements in the latest edition of AASHTO M294 and ASTM F2306.
 - b. Manufacturers. Pipe shall be provided only by manufacturers that are certified through the Plastic Pipe Institute (PPI) Third Party Certification program and/or the National Transportation Product Evaluation Program (NTPEP).
 - c. Materials.
 - i. Pipe. The manufacturer of HDPE pipe shall be governed by the latest edition of ASTM F2306 and AASHTO M294. Pipe and fittings shall be made from virgin PE compounds which conform to the requirements of cell class 435400C in the latest edition of ASTM D3350.
 - ii. Joints.
 - (1) Pipe joints shall consist of in-line integral bell and spigot with rubber gasket that meets ASTM F477. Bell shall span over three spigot corrugations.
 - (2) Water tight joints shall be provided which meet a 10.8 psi laboratory test in accordance with ASTM Test Method D3212.

- iii. Fittings.
 - (1) Fittings shall not reduce or impair the overall integrity or function of the pipeline system.
 - (2) Fittings shall meet the requirements of AASHTO M294 and ASTM F2306.
 - (3) Fittings may be either molded or fabricated.
 - (4) Only fittings supplied or recommended by the manufacturer shall be used.
 - d. Installation.
 - i. Installation shall be per ASTM D2321 and the manufacturer's specifications. In the case of a discrepancy between the two, the more restrictive requirements shall govern.
 - ii. Exception: The minimum cover over the pipe shall be 18-inches for pipes up to 24-inches in diameter. The minimum cover for pipes larger than 24 inches in diameter and up to 60 inches in diameter shall be 24-inches.
5. Construction.
- a. All pipe, pipe couplings, and accessories shall be unloaded, stockpiled, hauled, distributed, and otherwise handled in a manner which will prevent damage thereto.
 - b. Special care shall be taken to lay all pipe to exact grade and line. All pipe, when jointed, shall form a true line of sewer. Any pipe that has a grade or joint disturbed after laying shall be taken up and re-laid.
 - c. All pipes shall be laid with the separate sections joined firmly together, with outside laps of circumferential joints pointing upstream, and the center line of the invert coinciding with the specified alignment of the pipe.
 - d. The interior surfaces of all pipes shall be thoroughly cleaned of all foreign matter before being lowered in the trenches and shall be kept clean during laying operations.
 - e. Joints shall be constructed to attain a watertight joint.
 - f. Marking. Each pipe, fitting, or special section shall have markings per AASHTO M294. Required information shall be plainly and permanently marked on each item. Markings shall include: specification designation, the nominal size, the manufacturer's name, trade name or trademark, plant designation code, and date of manufacture (or appropriate code).
 - g. Deflection. Maximum deflection (reduction of the barrel base inside diameter) is 5%. Time of measurement shall be not less than 30 days nor more than 60 days following installation. Deflections in excess of 5% may require the pipe to be removed and new pipe installed.

6. Field Quality Control & Testing
 - a. Prior to backfilling the pipe, all storm sewer shall be inspected by a licensed engineer hired by the owner or developer.
 - b. Mandrel testing (or other approved method) shall be required when inspection reveals excessive deflection as determined by the engineer and/or the City. Testing shall be at the expense of the contractor.

C. Granular Bedding Material:

Granular bedding material shall be crushed stone or pea gravel conforming to MCIB, Section No. 4 (Materials), Column No. 3, (Coarse Aggregate), or as approved by the Engineer.

(Ord. 2358C; 10-20-08)

15-305. PUBLIC AND PRIVATE RESPONSIBILITIES UNDER THE STORMWATER MANAGEMENT SYSTEM.

(a) **Public Responsibilities:**

- (1) ***Administration*** - The administration of these regulations shall be the responsibility of the Director of Public Works who shall review and approve Stormwater Management Plans as provided herein.
- (2) ***Operation and Maintenance of Publicly Owned Facilities*** - The City Public Works Department shall be responsible, during and after construction, for the operation and maintenance of all drainage structures and improved courses which are part of the stormwater runoff management system under public ownership and which are not constructed and maintained by or under the jurisdiction of any state or federal agency.

(b) **Private Responsibilities:**

- (1) Each developer of land within the City of Leawood has the responsibility to provide on the developer's property all approved stormwater runoff management facilities to ensure the adequate drainage and control of stormwater on the developer's property both during and after construction of such facilities.
- (2) Each developer or owner has the responsibility and duty before and after construction to properly maintain any on-site stormwater runoff control facility which has not been accepted for maintenance by the public. Such responsibility is to be transmitted to subsequent owners through appropriate covenants.

(Ord. 1048C; 04-04-88)

15-306.

PROCEDURE FOR APPROVAL OF STORMWATER MANAGEMENT PLAN.

No development shall increase the quantity and rate of stormwater emanating from said land areas except in accordance with an approved Stormwater Management Plan as provided in Article 5 of the Code of the City of Leawood, 2000, as amended. No building permits shall be issued until and unless the Stormwater Management Plan has been approved by the Director of Public Works.

(Ord. 1048C;04-04-88)

(Code 2000)

(Ord. 2062C; 05-17-04)

15-307.

DESIGN CRITERIA AND PERFORMANCE STANDARDS. The Design Criteria as provided in Division V, Section 5600 of the Kansas City Metropolitan APWA shall govern the design of improvements with respect to managing stormwater runoff.

(Ord. 1048C; 04-04-88)