



Policy 16

STORMWATER PIPE MATERIALS

In order to reduce flooding, promote adequate drainage, and reduce maintenance, the City of Knoxville requires certain pipe materials depending upon usage and location of the pipes. Material for pipe used for conveyance of stormwater within the City of Knoxville shall be in accordance with the following:

- Stormwater pipes installed under City streets, private rights-of-way, joint permanent easements (JPEs), or within the roadway prism of City streets and JPEs shall be reinforced concrete pipe (RCP).
- Driveway pipes shall be RCP. However, High-density polyethylene pipe (HDPE), corrugated double-walled polyvinyl chloride pipe (PVC), or corrugated metal pipe (CMP) may be used for single family and duplex development where:
 - A pipe only conveys water under non-heavily traveled driveways,
 - A pipe is located outside of the roadway prism, and
 - The installation would not cause flooding of adjacent properties or rights-of-way in the event of pipe failure.
- RCP is required for all stormwater systems located within new residential developments (includes residential condominium developments).
- RCP, HDPE, PVC, and CMP may be used to convey stormwater generated on the particular property (on-site drainage), i.e. parking lots, buildings, etc.
- Any pipe, culvert, or drainage system dedicated to the City, or installed with the intent of dedication to the City, whether inside or outside the right-of-way, shall be constructed of RCP.
- RCP is required for all stormwater pipes and culverts that carry water generated on adjacent properties or areas (off-site water).
- RCP is required if the failure of the pipe would cause flooding or potential property damage on adjacent properties.
- RCP is required for all stormwater basin outlet structures and for all stormwater outlet pipes that drain through the berm of a stormwater basin continuing to its terminus or the connection to a downstream system. Underground detention facilities that do not have a berm associated with their construction may use HDPE for the pipe material downstream of the outlet structure provided that in the event of a failure of the pipe, no offsite properties will be adversely affected.
- Ductile Iron (DI) is an acceptable alternative pipe material for RCP.
- The Director may approve the use of alternative pipe materials in overlapping rights of way or easements when necessary to accommodate special conditions presented by railroads, pipelines, utilities, unique facilities, or other sensitive areas.

Installation Standards

All stormwater pipes must be installed correctly with adequate pipe bedding, backfill and stormwater joint techniques. See the following for proper installation practices:

Reinforced Concrete Pipe (RCP) – ASTM C 1479-01

Double Walled High-Density Polyethylene (HDPE) – ASTM D 2321

Corrugated Double Walled Polyvinyl Chloride (PVC) – ASTM D 2321

Corrugated Metal Pipe (CMP) – ASTM A 798

Non-Reinforced Concrete Pipe (NRCP) – ASTM C-14

All installations must be per ASTM standard or the manufacturers specifications, whichever is more stringent. At a minimum, all pipe installations must have soil tight gasketed joints.

The following documents are additional references available from the Civil Engineering Division website:

- City of Knoxville Standard Detail COK-5 (Storm Pipe Bedding and Backfill)
- City of Knoxville Technical Specifications TS-05 (Mineral Aggregate Base)
- City of Knoxville Technical Specifications TS-20 (Storm Sewers and Pipe Culverts)