

Requirements for the use of Polypropylene Pipe

The City of Charlotte (City) is temporarily allowing the use of polypropylene pipe through December 2024 based on the conditions and requirements within this document. The City may cancel, modify, or extend this approval at any time.

The conditions and requirements of this document apply to any system subject to the subdivision ordinance, Unified Development Ordinance (UDO) and/or any system conveying runoff into or from a public right of way.

No installation of polypropylene pipe will be permitted prior to formal review and approval of the site development plans by the City.

Bond reduction for storm drainage pipe will not be allowed nor will streets be accepted until all conditions of this document have been met. The final (1) one inch lift of asphalt surface course for Residential Subdivision Streets shall be withheld until a minimum of (100%) Percent of the development is occupied (occupied means a certificate of occupancy has been issued). All known pavement base failures resulting from failed pipe shall be repaired prior to application of the final one-inch lift of asphalt surface course.

The following conditions and requirements shall be met:

- Provide allowable fill height calculations by an engineer, licensed in the state of North Carolina, following AASHTO LRFD standards and considering the effects of groundwater on the pipe.
- Include the following notes on the plans submitted for approval:
 - The installation of flexible pipe is subject to the requirements set forth in the following City of Charlotte documents:
 - *Third-Party Testing for Flexible Pipe Installation*
 - *Requirements for the use of Polypropylene Pipe.*
- The approved plans must show the locations where polypropylene pipe will be utilized and be signed and sealed by a North Carolina Professional Engineer. (PP) is an acceptable abbreviation for referencing.
- Meet all conditions in **Appendix A – Design Requirements for Polypropylene Pipe (PP)**
- All conditions of the City of Charlotte’s requirements for *Third-Party Testing for Flexible Pipe Installation* shall be met and completed

Appendix A

Design Requirements for Polypropylene Pipe (PP)

1. All City of Charlotte design standards shall be met. Polypropylene Pipe is considered a flexible pipe material and shall be installed per NCDOT 300.01 – Method of Pipe Installation – Flexible Pipe.
2. Reinforced concrete pipe is required to be used in embankments for storm water control structures.
3. Polypropylene Pipe shall meet the 2024 NCDOT Standard Specification for Roads and Structures 1032-4 Polypropylene Culvert Pipe.
4. Joints shall be watertight, conforming to ASTM D 3212 and gaskets shall conform to ASTM F477.
5. Gaskets shall be factory installed and include a protective wrap to ensure the gasket is free from debris. If a joint/gasket is to be modified on site, manufacturers processes and procedures shall be followed. A joint lubricant, recommended by the manufacturer shall be used on the bell and gasket during assembly.
6. Polypropylene pipe will not be allowed for pipe diameters greater than 48”.
7. Polypropylene pipe will not be allowed for use within City maintained streets classified as minor and major thoroughfares.
8. Polypropylene pipe will not be allowed for Culvert applications crossing City maintained streets.
9. No polypropylene end treatments are allowed. A NCDOT standard pipe collar or drainage structure is required where pipes from differing manufacturers or materials are joined. Pipes should be on the same grade and alignment and have the same internal diameter where a pipe collar is specified.
10. No tees or elbows are allowed. Standard access structures must be used at any changes in horizontal or vertical alignment, changes in pipe sizes, or changes in material.
11. No polypropylene pipe is to have less than 2’ of cover, measured from the top of pipe to subgrade. Pavement structure (base and surface courses) shall not be used in the calculation of cover height. No fill heights greater than 20’ will be allowed.
12. Do not operate heavy equipment over any polypropylene pipe until the pipe has been properly backfilled and covered with at least 3 feet of approved material.
13. All connections between flexible pipe and storm drainage structures shall be made with a flexible and resilient connector meeting ASTM F2510. All structure connections shall also be supplied and installed with an exterior filter fabric jacket (See Florida DOT 425-001; filter fabric should meet NCDOT Section 1056 - Type 2).
 - a. As an alternate, concrete pipe collars (NCDOT 840.72) may be considered but must be approved by the City prior to implementation.
14. Where polypropylene pipe standards covering the project conditions are not documented in applicable City, NCDOT, ASTM, or AASHTO standards the manufacturers standards shall be followed.
 - a. If shoring/trench boxes are anticipated during construction, consult with pipe manufacture for appropriate sub trenching procedures.