



To	Raleigh Staff and External Stakeholders
Thru	Raleigh Water Executive Management Team
From	Rene Haagen
Department	Raleigh Water
Date	November 17, 2025
Subject	Update to Section 3.4 – Sewer Material Standards: Removal of Ferrous Materials

Scope

The purpose of this memorandum is to establish updated standards for sanitary sewer construction materials within Raleigh Water’s Design and Construction Specifications. Specifically, this update revises **Section 3.4 – Sewer Material Standards** to limit Ductile Iron Pipe (DIP) as acceptable materials for sewer infrastructure. This change is being implemented due to a history of premature and catastrophic failures associated with DIP installations. The revised language provided herein is effective immediately and shall apply to all new sewer construction, extensions, and rehabilitation projects under Raleigh Water’s jurisdiction.

Background

Raleigh Water has observed a pattern of deterioration and structural failures in existing Ductile Iron Pipe sewer installations, primarily caused by internal and external corrosion. Despite protective linings and coatings, DIP has demonstrated limited longevity in sanitary sewer environments, particularly in areas with high hydrogen sulfide concentrations or corrosive soil conditions. These failures have resulted in significant maintenance challenges, service interruptions, and costly emergency repairs.

In response, Raleigh Water has evaluated alternative non-ferrous materials—such as PVC and HDPE—which have proven to be more reliable and cost-effective for long-term sanitary sewer performance. Based on these findings, ferrous materials are no longer considered suitable for new or replacement sanitary sewer systems and must be limited to applications outlined in the Technical Bulletin.

Implementation

This revision to Section 3.4 – Sewer Material Standards is effective immediately. All design submittals, construction plans, and specifications received after the date of this memorandum shall comply with the updated material requirements.

- Ferrous materials, including Ductile Iron Pipe (DIP) shall be limited in use and evaluated in accordance with DEQ and Raleigh Water Standards.
- Contractors and design professionals must revise projects under review to reflect this change prior to final approval.
- Field inspectors will verify compliance with the updated standards during installation.

Raleigh Water will continue to monitor system performance and update design standards as needed to ensure long-term reliability, public safety, and cost efficiency.

Updated Specification Language – Section 3.4

3.4 Sewer Material Standards (Revised)

1. Permitted Materials

- Polyvinyl Chloride (PVC) Pipe, meeting ASTM D3034 or ASTM F679
- High-Density Polyethylene (HDPE) Pipe, meeting ASTM F714 or equivalent
- Other non-ferrous materials approved by Raleigh Water based on project-specific requirements
- Ductile Iron Pipe (DIP) shall be limited for sanitary sewer construction.

2. Design Considerations

- Pipes shall be designed for the applicable internal pressure, external load, and soil conditions per Raleigh Water design standards.
- Pipe joints, fittings, and appurtenances shall be compatible with the approved pipe material and shall provide watertight performance.

3. Implementation

- This revised standard is effective immediately and applies to all new construction, rehabilitation, or replacement projects.
- Contractors must ensure all submittals, procurement, and installation comply with this revised Section 3.4.