CHAPTER 5 FIRE PROTECTION AND ACCESS

General Requirements, Fire Protection Requirements, and Access Requirements

A. GENERAL REQUIREMENTS

Specifications used in this section are from the NC Fire Code and 15A NCAC Water Supply - Section .0900 Water Distribution Systems

B. FIRE PROTECTION REQUIREMENTS

1. **Fire Hydrants**:
   a. Applicants shall install fire hydrants in accordance with Kannapolis Fire Department specifications and requirements.
   b. The City may contract with a developer to install fire hydrants as required, but in all cases, the full cost of providing for such hydrants shall be borne by the developer.
   c. Any hydrant connected to the Kannapolis water system constructed pursuant this subsection, shall constitute dedication to the Kannapolis Water Resources Department of such hydrant.
   d. All newly installed fire hydrants shall Hydrants shall have a Storz connection and be 5-1/4" barrel hydrants. All foot valves shall be 5-1/4" diameter. Only 3-way hydrants shall be installed with steamer connections. All hydrants shall be delivered with a primer coat. After hydrant installation, the primer shall be touched up and then painted red with reflective top (2 coats).
   e. Fire hydrants shall be installed on minimum 6" water mains.
   f. Fire Hydrant Spacing:
      i. Residential = 800'
      ii. Commercial, Industrial, and Multi-Family = 400' (within 100' of an FDC). Structures having sprinkler systems may provide yard hydrants to meet this requirement. Mains shall be sized to provide 500 gpm exterior hose streams
   g. All newly installed fire hydrants shall be tested by the Kannapolis Fire Department, or the fire department in whose jurisdiction it is located. The water authority shall notify the Kannapolis Fire Department, upon completion of the system and its availability for testing. No construction shall be allowed in the protected area until the water system has been tested and approved unless otherwise allowed by the authority having jurisdiction
2. **Fire Protection Facilities**
   a. **Connections:** Connections for fire protection systems shall be made in compliance with the City of Kannapolis Backflow Prevention and Cross-Connection Control Policy. Fire protection water facilities installed upon the owner's private property are for the use of the owner, and Kannapolis Water Resources Department assumes no responsibility for such facilities. No water service, other than fire protection, will be taken from water mains intended to provide fire protection only. Metering may be required of systems that are run periodically for testing with the water going to waste. Notification of testing shall be given a minimum of 48 hours prior to testing. Violation of this notification may require the installation of approved metering devices and appurtenances as specified by the City of Kannapolis. The City reserves the right to make necessary inspections to ensure compliance with these regulations. No pumps may be directly connected to the Kannapolis system.
   b. **Cold Water Meters - Fire Service Type Size 6", 8", and 12":** All meters shall fully comply with the AWWA specification C-703-79. Fire service meters shall consist of a combination of main line meter of the proportional type, having an unobstructed waterway of essentially the full pipe size for measuring high rates of flow, and a by-pass meter of appropriate size for measuring low rates of flow. The meter shall have an automatic valve mechanism for diverting low rates of flow through the by-pass meter. Meters must be approved by the National Fire Protection Association and listed by the Underwriters Laboratories. Loss in head not to exceed 4 psi.

c. **Casing:** Main casing shall be either of copper alloy containing ≥ 75% copper or of cast iron protected by a corrosion resistant coating or other anti-corrosion treatment. Main-case connections shall be flanged. Flanges shall be of the round type, faced and drilled, and shall conform to ANSI B16.1, Class 125. Companion flanges are not required.

d. **Registers:** Registers shall be straight reading type and shall read in cubic feet. Registers will be provided with a center-sweep test hand. Registers will be perma-sealed.

e. **Automatic Valves:** The automatic valve shall be of a type suitable for the purpose. It shall close by force. The weight of the valve and any supplemental force imposed on it shall offer sufficient resistance to the incoming water to diver all small flows through the by-pass meter until such time as the rate of flow through the meter is great enough to ensure efficient operation of the main measuring section. Test plugs must be comparable to meter size.

f. **Test Outlet:** A minimum 2” outlet shall be provided on the downstream side of the meter.

g. **Piping Sizes**

i. 3/4" - 2" piping shall be brass

ii. 3" - 10" piping shall be ductile iron (cement lined).

3. **Fire Service Requirements**

a. **Residential Districts:**

i. The minimum size fire service water mains in residential developments shall be 6” looped or 8” dead-end main.

ii. Mains shall be designed to provide the following flow rates at 20 psi:

a. R1, R2, R4, R8, and R18 zoning: 1,000 gpm

b. **Non-Residential Districts:**

i. The minimum size of fire service water mains in commercial and multi-family developments shall be 8” looped or 12” dead-end main.

a. Mains shall be designed to provide the following flows at 20 psi:
b. AG zoning: 1,000 gpm
c. MU and O-I zoning: 1,750 gpm
d. C-1, GC, CD and LI zoning: 2,000 gpm
e. HI zoning: 2,500 gpm
f. All other districts: 1,500 gpm

ii. The minimum size fire service water mains in industrial developments shall be 12” looped. No dead-end mains are allowed in industrial developments.

c. **Individual Large Structures:** Individual large structures with life safety hazards or extra hazardous operations shall, where required, by provided with on-site hydrants and water mains designed to provide the required fire flow as determined by the ISO formula and the Kannapolis Fire Department.

d. **Exceptions:** Notwithstanding the foregoing, mains installed may meet minimum performance specifications for the expected demand upon the system in lieu of the minimum size requirement.

4. **Fire Service Construction Plan Requirements**

a. All Fire service plans must be reviewed and approved by KFD.

b. Show ingress and egress fire truck turning movements through developments. Use a Bus-45 vehicle template to mimic a fire ladder truck.

c. FDC’s are to be a minimum of 10’ from the face of a building.

d. Proposed hose pulls from hydrants across any street must be reviewed and approved by KFD.

e. Fire truck turnarounds must be encompassed in dedicated R/W.

C. FIRE SERVICE ACCESS REQUIREMENTS

1. **Separate Fire Access Road** is required:
   a. # of dwelling units > 100 (exception: sprinklered developments)
   b. Turnaround movement exceeds 150’
2. **Design Criteria**:
   a. Width = 20’ (26’ w/ a fire hydrant)
   b. Height clearance = 13.5’
   c. Maximum grade = 10%
   d. Capacity = 75,000 lbs
   e. Provide positive drainage away from the road section
   f. Turnaround type:
      i. Turnaround lengths 150’ – 750’: 1) 60’ “Y”, 2) 96’ dia cul-de-sac, or 3) 120 hammerhead
      ii. Turnaround length > 750’ requires prior KFD approval