

FIREHOUSE®

Weekly Drill

DRILL #63: WATER SUPPLIED VIA HYDRANTS

Introduction

We often take our water supply for granted. But when we really think about it, the water used to fight fires can come from a variety of sources. The one that most firefighters can relate to is that of the fire hydrant.

Water comes to the hydrants via underground water mains. These water mains are also known as grids or distribution systems. Breaking it down further, there are three general types of mains: arteries, secondary feeders and minor distributors.

The artery main is the largest main of the three in the grid and is usually configured in a loop system. It begins at the water authority's distribution station and introduces water into the system. The artery main in turn feeds water into the secondary feeder mains. Artery mains generally are found in sizes ranging from 12 inches (in a more rural environment) to 60 inches (in larger urban cities).

The secondary feeders are, as one could guess, smaller in diameter than the artery mains. Similar to the artery, secondary feeders come in different sizes depending on the needs and the size of the artery.

Minor distributor mains are at the end of the system and deliver the water to the end users (this end user can be the fire department if the main is supplying water to the hydrant). Minor distributor mains range between 6 inches and 8 inches. However, where higher consumptions of water are needed, these sizes can be increased to between 12 inches and 16 inches. In any case, sizes smaller than 6 inches are *not* recommended to provide water to any fire protection system.

Some firefighters find it hard to imagine that the hydrant sometimes will not give them the water they need. This can be due to several reasons, all affiliated with the supply system. The carrying capacity of the mains will lose pressure, or head pressure, should there be turbulence in the piping. This turbulence in the flow can be caused by roughness in the walls of the pipe or high velocities. High velocities cause an increase in the effects of the shearing forces that, in turn, places a greater resistance on the flow. The greater the resistance, the higher the friction loss will be in the main



and consequently the larger loss of water coming from the system.

Other objects can also cause this capacity and pressure loss in the system. Over time, rust in some of the old cast iron or steel piping will build up on the inside of the piping, also known as sediment in the system. From time to time, hydrants have been known as a place to dump trash, rocks and other debris. There have even been cases where illegal drugs have been stored in a fire hydrant. Because of the obstructions that can be found in the system, firefighter should quickly open the hydrant and flush it in known areas where hydrants are used in this fashion.

—Prepared by Russell Merrick