Coffee Break Training - Fire Protection Series

Inspection Techniques: Flushing Underground Fire Protection Water Mains

No. FP-2010-29 July 20, 2010

Learning Objective: *The student shall be able to identify the minimum flushing requirements for underground fire protection water mains.*

Today's photograph has not been enhanced: the water flowing onto the parking lot really is the color of cocoa.

Underground water mains supplying fire protection systems should be flushed to remove sediment.

Underground water mains that supply water-based fire protection systems are vulnerable to contaminants when they are installed. Dirt, rocks, bird nests, oyster shells, sticks, and even workers' tools can find their way into the pipe during installation. Every attempt should be made to remove these potential obstructions in the water system.

One method to increase the reliability of underground water supplies is to perform a controlled flush before the pipe is connected to a fire protection system or fire hydrants. The flush is intended to remove small objects and identify any potential obstructions that may require the pipe to be excavated and inspected.

National Fire Protection Association (NFPA) 24, *Standard for the Installation of Private Fire Service Mains and Their Appurtenances*, provides the following options for flushing underground mains:

1. Flushing at the hydraulically calculated water demand flow rate of the system, including any hose requirements.
2. Flushing at the maximum flow rate available to the system under fire conditions.
3. Flushing to provide a velocity of 10 ft/sec (3.1 m/sec) in accordance with the following table:

Pipe Size		Flow Rate	
in	mm	gpm	L/min
4	102	390	1,476
6	152	880	3,331
8	203	1,560	5,905
10	254	2,440	9,235
12	305	3,520	13,323

For additional information, refer to NFPA 24 or the American Water Works Association (AWWA).