Special Specification 7076
Grouting of Water Mains

1. DESCRIPTION

This item will govern the grouting of existing water mains for the purposes of abandonment underneath roadways, paved areas, and at other designated locations. The location of this Work is as shown on the Contract Document plans and/or encountered in the field during construction. The Contractor will, unless otherwise specified, furnish all labor, materials, equipment, tools and all other appurtenances necessary to abandon water lines segments in place by filling them with flowable cementious low strength grout including plugs, bulkheads, excavation and backfill at locations as required to completely fill the line to be abandoned in place with grout to protect against future collapse of the line.

2. SUBMITTALS

A. Proposed Mix Design Report
B. Submit manufacturers data for proposed plugs and detail of bulkhead
C. Technical information for equipment and operations procedures including projected injection rate, grout pressure, method of controlling grout pressure, bulkhead and vent design and number of stages of grout application.
D. Submit project specific plan for abandonment at least 15 days prior to commencing grouting activities, describe proposed sequence and other information pertinent to completion of Work.

3. MATERIALS

A. Cement-based grout/ flowable fill with self-leveling and non-shrink characteristics.
B. Unconfined compressive strength: Minimum 100 psi at 56 days as determined based on average of three tests for same placement. Present at least three acceptable strength tests for proposed mix design in mix design report.

4. CONSTRUCTION

Abandoning and grouting of water lines must not occur until all existing water mains and services have been transferred to a relocated water line or another line as designated in the Contract Documents. The Contractor will be responsible for the satisfactory coordination of the pipe abandonments with other construction and activities in the area. Delays in work resulting from lack of coordination will not be cause for additional compensation. Any work involving or impacting asbestos concrete pipe must be in accordance with the procedures outlined in the approved specifications for this project and will comply with all federal, state, and local laws, ordinances and regulations regarding the management of asbestos containing materials.

Remove all water line appurtenances, such as hydrants, valves and valve casing and castings. These appurtenances must be returned to the designated utility representative.

Make cuts, install bulkheads, vents to allow for air release

Remove any free standing water prior to starting fill placement.
Place grout/flowable fill using concrete or grout pumps capable of continuous delivery at planned placement rate to fill volume between placement points not to exceed 500 linear ft. at a time. Pump flowable fill through bulkheads constructed for placement of PVC pipes or other methods to contain grout in line to be abandoned. These pipe will be used for injection points or vents during placement. Place grout under pressure into property vented open system until grout emerges from vent pipes indicating pipe is completely filled. Pumping grout must be completed under sufficient pressure to overcome friction and to fill water main from downstream to upstream end. Remediate areas where flowable fill did not fill voids in water main by pressure grouting from inside water main or from surface if necessary. Plug each end of the water main being abandoned. Ensure that concrete is around plug/bulkhead and around pipe including bedding area such that it is not penetrable by groundwater and that bedding at this location is not a conduit for groundwater. The method of installation must be able to meet the requirement of completely filling the existing water main and any voids adjacent to it.

Backfill to grade above pipe left in place. Place and compact backfill in compliance with the Special Specifications.

Remove, transport, and, dispose of spoils. Spoils including pipe must be hauled to a facility permitted to accept the material. The method must provide for the release of air. When intermediate points are required to be constructed for the abandonment of the system, they must be a part of the abandonment project process. The method must provide for the isolation of water mains to be grouted from water mains that are abandoned in place without grouting as shown on the plans.

Water mains that are not under proposed pavement are generally not required to be grouted unless it is specified in the contract documents. Mains to be abandoned must be grouted only if required by the contract documents and payment as per these specifications is provided.

5. MEASUREMENT

This Item will be measured by the linear foot of water main to be abandoned regardless of depth.

6. PAYMENT

The work performed and materials furnished in accordance with this Item and measured as provided under “Measurement” will be paid for at the unit price bid for “Grout Abandonment Water Main of the size of water main specified. This price will be full compensation for the removing of the content within the pipe, cleaning, grouting, plugging, capping and abandoning all pipe, pipe bend section and all other appurtenance, and of dewatering, trenching, excavation and backfill, removal, transportation and disposal and all material or work necessary to properly abandon the pipe and must include all materials, labor, equipment, tools and incidentals necessary to complete the work.