

## SECTION C8

### TEMPORARY BY-PASS SYSTEM

#### GENERAL

The Contractor shall furnish, install, chlorinate, maintain and remove bypass and temporary service pipe of the size required to adequately service water customers.

The Contractor shall provide temporary services for the customers whose permanent service line is:

- a. Out of service due to the main pipe to which it is connected to being replaced
- b. Out of service due to the main pipe to which it is connected to being cleaned and cement lined
- c. Out of service due to the main pipe to which it is connected being served only by the main being rehabilitated or replaced, including dead end pipes and pipes ending at division gates.
- d. Out of service for any other reason in connection with work under this contract

The Contractor shall locate all services to be fed by the by-pass system. Customer's service lines, which will be out of service for a limited period of time, in the opinion of the Engineer, need not be by-passed but all other provisions regarding adequate notice and hours of shut down shall be strictly adhered to.

The Contractor will be responsible for the adequate temporary feed of all fire service lines in accordance with the following:

#### Fire Systems with Fire Pump

1. The Contractor will **not be** allowed to connect to the siamese connection except as noted in item 3 below.
2. The Contractor shall dig, tap and connect to the fire pipe below grade. The following minimum requirements shall apply depending upon the size of the existing connection.
  - a. 8" fire pipe shall be fed at a minimum with (three) 2½" hoses or equivalent
  - b. 6" fire pipe shall be fed at a minimum with (two) 2½" hoses or equivalent

- c. 4" fire pipe shall be fed at a minimum with (one) 2 ½" hose
3. The Contractor shall provide an additional temporary hydrant on the by-pass system at each building that has a siamese connection. This temporary hydrant connection shall only be used as a feed to the siamese connection as an interim fire protection when the contractor is installing new pipe work or valves that require the closure of the existing feed.  
NOTE: This hydrant is in addition to those required to replace existing hydrants.
4. The Contractor shall notify the District Chief and Fire Alarm in writing upon installation of the temporary bypass and schedule a site visit with the District Chief. A copy of this notice shall be provided to the Commission's Project Engineer.
5. The Contractor shall notify the District Chief and Fire Alarm in writing of the date and item for any disconnection of a fire pipe as noted in Item 3 above.
6. The Contractor shall coordinate with each building owner and the building owner's sprinkler contractor for the connection of the fire service on a temporary basis as outlined in Item 3 above.

#### Fire Systems without Fire Pump

1. The Contractor shall install temporary by-pass to the siamese connection. The following requirements shall apply depending upon the size of the existing connection:
  - a. 8" fire pipe shall be fed at a minimum with (two) 2-½" hoses or equivalent via a wye connection at one connection at the siamese
  - b. 6" fire pipe shall be fed at a minimum with (two) 2-½" hoses or equivalent via a wye connection at one connection at the siamese
  - c. 4" fire pipe shall be fed at a minimum with (one) 2-½" hose at the siamese
2. One nozzle at the siamese connection shall always be available for connection by the Boston Fire Department.
3. The Contractor shall notify the District Chief and Fire Alarm in writing upon installation of the temporary bypass and schedule a site visit with the District Chief. A copy of this notice shall be provided to the Commission's Project Engineer.

4. The Contractor shall coordinate with each building owner and the building owner's sprinkler contractor the disconnection of the fire service on a temporary basis as outlined in Item 3 above.

#### **General Conditions**

1. The contract drawings shall provide the size and location of each known fire pipe impacted by the construction, including side streets, which may require a one-day shutdown. However, the Contractor will be required to locate all fire pipes affected by the work. There will be no additional compensation for bypass of fire pipes not shown on the plans.
2. The Contractor shall provide temporary connection to fire pipes impacted by a one-day shutdown except where buildings are substantially vacant at night or weekends. At these locations a representative of the building owner must be at the building during the shutdown period. This may require the work to be performed during off peak hours.
3. The bypass plan submitted shall demonstrate compliance with these provisions.
4. Buildings that have backup fire service for the entire building that will remain active do not need to be bypassed. The contractor shall coordinate this closure with the building owner.

The Contractor shall review Commission water distribution plans, available at the Commission's offices, to determine the extent of the by-pass, especially where dead ends and division gates may require by-pass piping. No additional payment shall be considered for the extension of the by-pass to feed services fed from dead ended pipe or pipe where flow is interrupted by a division gate. This may or may not be noted on the plan. In either case the Contractor is responsible for determining the locations of all dead ends.

All by-pass shall be fed from two (2) sources unless allowance is made for in writing by the Engineer for a submitted by-pass plan.

In the event a bypass pipe is dead-ended, it shall terminate with a 2-inch valve for flushing and chlorination.

No by-pass pipe will be activated prior to approval by the Engineer. The Contractor will be responsible for written

notification to the Boston Fire Department that by-pass has been installed and to provide a copy to the Engineer.

#### MATERIALS

All by-pass shall be galvanized steel, H.D.P.E. or polyvinylchloride (PVC) pipe. All plastic pipe or hose shall bear the imprint of the National Sanitary Foundation approval for potable water NSF-PW or shall be capable of meeting the standards established by the NSF for this use.

The materials selected shall be adequate to operate at the pressure to which they will be subject to and adequate to withstand whatever forces, such as traffic loading, they will encounter. Joints for all pipe shall be watertight.

The Commission reserves the right to reject at any time materials that do not meet the requirements set forth herein.

#### CONSTRUCTION METHODS

In general, by-pass piping shall be laid along the side of the roadway adjacent to the curb line edge of pavement line.

At locations where the pipe is subject to minimal traffic, such as at driveways, the pipe shall be adequately protected by excavating and setting the pipe below grade or "ramping" it with stone dust or other suitable material.

All by-pass pipes that cross handicapped ramps, intersections, or extends around the radius of an intersecting street shall be installed below the surface grade.

Where necessary to feed large services, the Contractor may be required to excavate the sidewalk or other areas adjacent to a building to cut into the existing service or fire pipe. The cost of this work will be included in the bid price for Temporary By-pass Pipe including backfill and paving.

In addition, the Contractor will be required, where necessary, to ramp over all by-pass piping to provide for wheelchair access on

affected sidewalks. Ramping shall be in accordance with ADA (Americans with Disabilities Act) regulations.

For all bypass pipe used to feed temporary hydrants, an intermediate main line valve shall be provided after every third hydrant and shall be required on each street regardless of the number of hydrants.

At locations where the pipe is subject to regular traffic, such as where it crosses traveled lanes; the pipe MUST be set below grade and the trench adequately filled to withstand the traffic loads. At such areas all work must be done in accordance with the applicable sections contained herein relating to trench excavation and paving. These requirements shall include, but are not limited to, cutting the pavement neatly to avoid excess damage to existing pavement.

The interior of all by-pass pipe, temporary service pipe and service hoses shall be flushed to remove any dirt or other objects and shall be disinfected in accordance with AWWA C651-86 "AWWA Standard for Disinfecting Water Mains". The appropriate section of the Pressure Testing and Disinfection Report in the Appendix of these specifications shall be completed by the Contractor and approved by both the BWSC Engineer and Inspector prior to any payments being made for by-pass piping.

At all locations where hydrants are out of service due to work under this contract, the contractor shall provide temporary hydrants. A hydrant being used to feed temporary hydrants must be fed by 6-inch by-pass pipe including whip connections and must be fitted with a butterfly valve with pentagonal operating nut, which can be turned with a hand wrench. The valve shall be painted blue for easier identification. The valve shall be equipped with a 1/4-turn stop, which will not allow the operating nut to go beyond the closed position. All temporary hydrants shall have one 4 1/2-inch outlet, located with the centerline of the outlet parallel with the curblineline, the face of the nozzle perpendicular to the road surface, and between 1 1/2 and 2 1/2 feet above the road surface. A threaded cap with a standard pentagonal nut is to be installed at the end of each 4 1/2" hydrant connection. The outlet pipe shall have a 1"x 1/2" diameter steel rod welded to it, which will allow for a spanner wrench to be fitted to the pipe to prevent the pipe from spinning in the coupling.

Adequate precautions shall be taken to protect all vehicular and pedestrian traffic from injury due to by-pass piping and temporary service lines. These precautions shall include, but are not limited to "ramping", barricades and other devices.

All by-pass pipe and service hoses shall be bubble tight at all times. No leakage shall be acceptable.

No by-pass pipe shall remain in place after November first, and none shall be put in service prior to March first.

## MEASUREMENT AND PAYMENT

ITEM C8-1 Temporary By-Pass System LUMP SUM

When by-pass is bid under this item, partial payments shall be made in accordance with the following procedure:

- a. Each street being rehabilitated shall be considered one location
- b. The lump-sum price bid shall be divided into segments based upon the proportion of the linear footage of mainline pipe to be lined or relayed as served by the by-pass.(i.e. if the contract contains 10,000 feet of pipe to be relined, and 1000 feet of pipe is lined on one street, than the contractor will be paid 10% of the total bid price for by-pass.)
- c. Where the existing main is used for the temporary by-pass, the Contractor will be required to maintain this pipe he will be compensated for the proportion of the main replaced as described in item b. above.

Payments made for the installation of by-pass shall include furnishing all pipe, fittings, temporary hydrants, valves, hoses, stone-dust, cold patch, barricades, temporary meter pit covers, chlorine and other materials necessary to install the by-pass system. This payment shall also include all labor, tools and equipment necessary to adequately temporarily serve all water customers with domestic and fire service lines, including the removal of all meters as required.

Payments made for the maintenance and removal of all by-pass piping shall include all labor, tools and equipment necessary to remove all temporary piping, hydrants, fittings, valves and hoses and all else installed to temporarily serve all water customers.