SECTION S916 - TEMPORARY BYPASS

S916-1 DESCRIPTION

Work consists of the installation of a temporary bypass water system as required in the Contract Documents and as directed by the Project Manager.

Work is to be in conformance with the requirements of Section S900 General Water Provisions and AWWA C602 Cement Mortar Lining of Water Pipelines in Place – 4 In. and Larger, Section 4.6 Temporary Bypass to Customers.

S916-2 MATERIALS

S916-2.01 General

All materials furnished for use as temporary bypass pipe, service hose, connections and related appurtenances that come into contact with drinking water are to be certified for conformance with American National Standards Institute/National Sanitation Foundation Standard 61 (ANSI/NSF Standard 61) by an American National Standards Institute (ANSI) approved third-party certification program or laboratory. All materials shall be fully adequate to withstand the required water pressure and all other conditions of use, and shall provide adequate water tightness before being put into service.

Temporary bypass pipe must be drawn from water main equipment stocks that are dedicated exclusively for use in pipe projects involving fresh potable water.

Temporary bypass pipe shall be PVC or steel having a minimum working pressure rating of 200 pounds per square inch with restrained couplings.

Water service hose to be used for connection from the temporary bypass pipe to the building/residence shall have a minimum working pressure rating of 200 pounds per square inch and be made of a material that will not have an adverse effect on the taste or odor of the water.

S916-2.02 Bulkhead (Temporary Line Cap)

Bulkhead (temporary line cap) shall consist of a bolted sleeve type pipe coupling with steel end cap capable of sliding over the cut end of the water main pipe.

S916-2.03 Temporary Fire Hydrant

Temporary fire hydrant shall consist of a 4 inch by 4 inch tee or 4 inch 90° bend, with a butterfly valve connected to the end of the tee or bend, and an operating nut to control the valve. Temporary fire hydrant shall be equipped with a 4-1/2 inch diameter National Standard threaded nozzle with hydrant cap installed.

S916-2.04 High Performance Asphalt

High performance asphalt shall be composed of laboratory approved aggregates, plant mixed with QPR 2000 liquid blend from US Pro-Tec, Inc., or approved equivalent. The mix ratio shall be 110 pounds of asphalt blend per 2,000 pounds of high performance asphalt material. The asphalt blend shall not be heated above 300°F. Aggregate shall be crushed limestone per ASTM C-136 and shall conform to the following:

SIEVE SIZE	PERCENT PASSING BY WEIGHT
3/8 inch	90 to 100
No. 4	20 to 55
No. 8	5 to 30
No. 16	0 to 10
No. 50	0 to 5

The mix shall be produced through conventional asphalt plant methods under the direction of a representative of the asphalt blend manufacturer. Before use, the final mix shall be approved by the representative of the asphalt blend manufacturer.

S916-3 CONSTRUCTION DETAILS

S916-3.01 General

One week prior to bypass work, the Contractor shall deliver “door hanger” notices supplied by the City Water Bureau to each affected residence and business.

Temporary bypass system shall include temporary bypass pipe, hoses, connections and related appurtenances necessary to maintain a continuous supply of water. Temporary bypass system shall be maintained in a safe and operative condition at all times.

For protection of the work and the public, flashers and barricades shall be installed at locations as directed by the Project Manager. The flashers and barricades shall be maintained in proper operating condition.

Where required, the Contractor shall install bulkheads (temporary line caps) on the existing water main to keep the section of the existing water main pressurized and capable of supplying a continuous flow of water. The bulkheads shall be fitted with a bolted sleeve type pipe coupling having a steel end cap and outlet fitting so that the temporary bypass pipe can be fed through the end of the bulkhead. The coupling shall be slid over the end of the water main, and braced or restrained so that it will support normal operating line pressure.

To prevent contamination, open cut water main ends that are left unattended shall be wrapped by a double layer of polyethylene plastic and tightly tied or covered with a water tight plug. All fire hydrant nozzles shall be capped when not in use.

Valves shall be installed on the temporary bypass pipe at all appropriate locations, Valve spacing should generally not exceed 800 feet.

Temporary bypass pipe crossing streets and sidewalk access ramps shall be installed in a trench and shall not block or otherwise impede access to any sidewalk access ramp. The existing pavement shall be saw cut and excavated to a depth sufficient to contain the temporary bypass pipe. The Contractor shall maintain uninterrupted accessibility to sidewalk access ramps at all times.

Temporary bypass pipe in other areas may also be required to be installed in a trench as required in the Contract Documents and as directed by the Project Manager.

To minimize interference with vehicle and pedestrian traffic, whenever temporary bypass pipe crosses a driveway or sidewalk, the temporary bypass pipe shall be covered with a mound of high performance asphalt material, or suitable ramps.

After completion of the water main work and restoration of the supply of water back to the water main, the Contractor shall remove all temporary bypass pipe and related appurtenances. The street, sidewalks and adjacent property shall be restored to a neat and orderly condition.

S916-3.02 Disinfection

All bypass pipes shall be disinfected per the requirements of Section S900, the Monroe County Department of Public Health and the Contract Documents.

The Contractor shall disinfect the hydrant standpipe prior to connecting the bypass pipe to the hydrant by pouring 1 quart of commercially available bleach (solution containing approximately 5% sodium hypochlorite) into the hydrant. The hydrant shall be filled with clean water and let stand for a minimum of 20 minutes. The hydrant shall then be flushed and the bypass pipe connected to it.

S916-3.03 Temporary Water Service Connection and Restoration of Service

The Contractor shall make all connections to the customer's water service line on a day and at a time that is convenient to the customer.

Connection from the temporary bypass pipe to the water service line shall be made inside the building at the meter, outside at the hose bib, or any suitable area not directly in the street.

Hose shall be run into the building through a window, or a temporary opening shall be made in the building wall of a size just large enough to pass the hose through. Dryer vents are not to be used. The opening shall be secured to prevent any access by unauthorized individuals, and shall be completely sealed to prevent access by rodents, water intrusion, and to minimize heat loss.

Hose connection made at the hose bib shall be done by connecting a 2 hose Y-adaptor with dual shutoff capable of allowing independent use of two hoses from one faucet.

If access into the building is impossible or impractical, and the hose bib is not accessible, the connection shall be made to the water service line in any suitable area not directly in the street. The Contractor shall excavate, expose and cut the water service line, and connect the hose. The Contractor shall either backfill excavated area or install orange construction fencing with flashers around the excavated area. If the area where the excavation is made is paved, the Contractor shall cover the excavation with heavy gauge steel plates capable of supporting an AASHTO H20 Highway Loading.

The Contractor shall make satisfactory arrangements with the customer so that stop and waste valves shall be accessible at all times.

After completion of the water main work, the Contractor shall clear the water service lines by back flushing with potable water. The Contractor shall disconnect the hose, restore the water service line back to normal conditions, and restore water flow. Access points shall be properly restored to pre-construction status. Temporary openings into buildings/residences shall be permanently repaired using a material and method acceptable to the Project Manager.

When temporary bypass is used during a water main cleaning and lining project, and the situation arises where a building is boarded-up and arrangements cannot be made to backflush the building's water service after the water main has been lined, the Project Manager may direct the Contractor to excavate the service at the location where the service is connected to the water main, disconnect the service and clean out any cement mortar that may have accumulated in the service at this location. Once cleaned out, the service shall be reconnected to the water main, the excavation backfilled and the surface restored.

S916-3.04 Temporary Fire Hydrants

Temporary fire hydrants shall be installed where indicated on the plans or as directed by the Project Manager. Temporary fire hydrants shall be required on temporary bypass pipe which is 4 inch in diameter or larger in size. The pipe threads shall be protected with a hydrant cap when not in use. Temporary fire hydrants shall be serviceable at all times. Hydrants are subject to inspection at any time by either the Water Bureau or the City of Rochester Fire Department. If they are found to be unserviceable, immediate correction shall be made.

S916-3.05 High Performance Asphalt

High performance asphalt material shall be used for all trenches used in burying temporary bypass pipe, for covering temporary bypass pipe that crosses a driveway or sidewalk, and for forming a ramp over edges of steel road plates.

High performance asphalt material shall be compacted with the use of a plate tamper to provide for an asphalt patch that is both cohesive and firm, and that adheres tightly to the existing asphalt pavement. The high performance asphalt material shall be maintained at all times in a reasonably smooth and hard condition. The high performance asphalt surface shall be well drained, free of potholes, bumps, irregularities and depressions. The Contractor shall provide extra maintenance of the high performance asphalt material on holidays, weekends and during the winter season.

S916-3.06 24 Hour Maintenance

The Contractor shall be responsible for maintenance and repair of the temporary bypass system. The Contractor shall be equipped to make all repairs necessary, at the Project site, for the duration of the installation. The Bureau of Water shall be provided with a 24 hour emergency telephone number at which the Contractor may be reached, in case it is necessary to make any repairs.

S916-4 METHOD OF MEASUREMENT

S916-4.01 Temporary Bypass Pipe

The quantity to be measured for payment shall be the number of linear feet of temporary bypass pipe installed.

No payment will be made for temporary bypass pipe that is installed by the Contractor solely for the Contractor's convenience.

S916-4.02 Temporary Service Connections

The quantity to be measured for payment shall be the number of temporary water service connections made.

S916-4.03 Temporary Fire Hydrants

The quantity to be measured for payment shall be the number of temporary fire hydrants installed.

S916-5 BASIS OF PAYMENT

S916-5.01 Temporary Bypass Pipe

The unit price bid shall include the cost of: distribution of service interruption notices; pavement saw cutting; bulkheads; furnishing, installing and removing temporary bypass pipe, valves and appurtenances; covering and burying temporary bypass pipe; connections to water sources; high performance asphalt; temporary surface restoration; furnishing, installing, ramping edges and removing steel plates; disinfection; flushing; bacteriological sampling and associated fees; obtaining approval from Monroe County Department of Public Health; protection including but not limited to flashers and barricades; 24 hour maintenance; excavation; backfill; surface restoration; and furnishing all labor, material and equipment necessary to complete the work.

S916-5.02 Temporary Water Service Connection

The unit price bid shall include the cost of: distribution of service interruption notices; furnishing, installing and removing water service hose and appurtenances; connections; making, securing, sealing and permanent closure of temporary openings into buildings; two hose Y adaptor; shutoff of water service;

disinfection; flushing; 24 hour maintenance; and furnishing all labor, material and equipment necessary to complete the work.

S916-5.03 Temporary Service Connection Requiring Excavation

The unit price bid shall include the cost of: distribution of service interruption notices; furnishing, installing and removing water service hose and appurtenances; excavating, exposing and cutting existing water service pipe; connections; shutoff of water service; temporary surface restoration; disinfection; flushing; protection including but not limited to fencing; 24 hour maintenance; excavation; backfill; surface restoration; and furnishing all labor, material and equipment necessary to complete the work.

S916-5.04 Temporary Fire Hydrant

The unit price bid shall include the cost: of: furnishing, installing, and removing temporary fire hydrants; connections; and furnishing all labor, material and equipment necessary to complete the work.

Payment will be made under:

ITEM NO.	ITEM	PAY UNIT
S916.01XX	X" Temporary Bypass Pipe	Linear Foot
S916.0201	Temporary Water Service Connection - 2" and Smaller	Each
S916.0202	Temporary Water Service Connection - 2" and Smaller (Requiring Excavation)	Each
S916.0301	Temporary Water Service Connection - Larger than 2"	Each
S916.0302	Temporary Water Service Connection - Larger than 2" (Requiring Excavation)	Each
S916.04	Temporary Fire Hydrant	Each

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