

MAINTENANCE OF EXISTING WASTEWATER FLOWS

**\*\*From Barre Town BRF 6100 (7)**

- xx. DESCRIPTION. This work shall consist of maintaining existing wastewater flows during construction as required by the Contract Documents and as directed by the Engineer.

The work under this Section shall be performed in accordance with these provisions, the Plans, and Section 628 of the Standard Specifications.

- xx. SUBMITTALS. The Contractor shall submit to the Engineer and Owner detailed plans and descriptions outlining all provisions and precautions to be taken by the Contractor regarding the handling of existing wastewater flows. This plan must be specific and complete, including such items as schedules, locations, elevations, capacities of equipment, materials, and all other incidental items necessary and/or required to ensure proper protection of the facilities, including protection of the access and bypass pumping locations from damage due to the discharge flows, and compliance with the requirements and permit conditions specified in the Contract Documents. No construction shall begin until all provisions and requirements have been reviewed and approved by the Engineer and Owner.

The submitted plan shall include, but not be limited to, the following items:

- (1) Staging areas for pumps.
- (2) Sewer plugging method and types of plugs.
- (3) Number, size, material, location, and method of installation of suction piping; maximum velocity of water in the suction piping at maximum wet weather flow shall not exceed 10 fps.
- (4) Number, size, material, method of installation, and location of installation of discharge piping; maximum velocity of discharge flow at maximum wet weather flow shall not exceed 12 fps.
- (5) Bypass pump sizes, capacity, number of each size to be on site, and power requirements.
- (6) Calculations of static lift, friction losses, and flow velocity (pump curves showing pump operating range shall be submitted); system curve with suction lift performance including suction and discharge line velocity at peak flow.
- (7) Downstream discharge plan and method of protecting discharge manholes or structures from erosion and damage.
- (8) Method of noise control for each pump.
- (9) Temporary pipe supports and anchoring.
- (10) Schedule for installation of and maintenance of bypass pumping lines.

xx. QUALITY ASSURANCE. The Contractor shall employ the services of a Vendor who can demonstrate to the Engineer a specialization in the design and operation of temporary bypass pumping systems. Specifically, the Vendor shall provide/demonstrate the following:

- (a) At least five (5) references of successful projects that operated of similar size and complexity in wastewater applications performed by the Vendor within the past three years within New England.
- (b) Sufficient inventory to perform normal rentals, including this project, and maintain at least 100% reserve equipment for this project for immediate delivery.
- (c) Sufficient service and repair parts in stock to fulfill any service or repair of all rental equipment within three hours of any service call.
- (d) Sufficient service staff and trucks to mobilize to repair or service equipment within one hour of a service call, twenty-four hours per day, seven days per week.

It is essential to the operation of the existing sewerage system that there be no interruption in the flow of sewage throughout the duration of the project. To this end, the Contractor shall provide, maintain, and operate all temporary facilities such as dams, plugs, pumping equipment (both primary and back-up units as required), conduits, all necessary power, and all other labor and equipment necessary to intercept the sewage flow before it reaches the point where it would interfere with the work, carry it past the work, and return it to the existing sewer downstream of the work.

The Contractor shall provide all necessary means to safely convey the sewage past the work area. The Contractor will not be permitted to stop or impede the main flows under any circumstances.

The Contractor shall maintain sewer flow around the work area in a manner that will not cause surcharging of sewers or damage to sewers and that will protect public and private property from damage and flooding.

xx. CONSTRUCTION REQUIREMENTS. Maintenance of existing wastewater flows shall be performed in accordance with the following requirements:

- (a) The Contractor shall assure that construction activities do not interrupt wastewater flows throughout the construction period.
- (b) Prior to disconnection and removal of the existing sewer main mounted to the bridge, the main shall be flushed with clean water and drained, so as to prevent wastewater from discharging into adjacent waterway(s). The Contractor shall provide all materials, water, trucks, equipment, and labor for flushing.
- (c) The Contractor shall provide all labor, material, tools, and equipment necessary to install and maintain temporary wastewater piping including structural supports, as necessary, and/or

install, protect, and maintain a temporary gravity sewer or bypass pumping system.

- (d) Temporary bypass gravity sanitary sewer shall be installed so as to maintain a consistent positive slope over its entire length, provide equivalent hydraulic capacity as the existing main, and have adequate structural support.
- (e) The Contractor's work shall include the scheduling and rental of the pumping system and suction and discharge lines, as well as electrical and mechanical connections, start-up, and removal.
- (f) The Contractor shall install suction and discharge lines under the oversight of the Owner and shall protect and maintain the bypass pumping system throughout construction.
- (g) The Contractor shall provide the Owner with a minimum notice of 14 calendar days before installation of the bypass pumping system is to be operational.
- (h) Bypass pumping systems shall meet the following minimum standards:
  - (1) A primary bypass pump which shall be an electric, variable speed drive, solids handling pump with a rated capacity range of zero to the estimated for peak wet weather flow. Hydraulic suction lift and head conditions shall be evaluated by the pump supplier based on field conditions and force main configuration. The primary pump shall be fully automatic and controlled by flow levels.
  - (2) A standby bypass pump with a diesel drive engine capable of matching the flow and hydraulic characteristics of the primary pump. The standby pump shall be fully automatic and controlled by flow levels.
  - (3) Controls for the primary and standby pumps capable of operating the pumping systems based on the full range of estimated wastewater flows. Standby pump shall operate as a "lag" pump during high flow conditions or primary pump failure. Standby "pump on" condition shall annunciate alarm and be set so as to provide adequate emergency storage capacity to allow operator response prior to overflow condition.
  - (4) Alarm system with telephone autodialer shall report alarm conditions to system operator. Alarm conditions shall include primary and secondary pump failure, power failure, and high wet well water level. Contractor shall be responsible for a consistent and reliable cellular or land line telephone service to the autodialer and all associated fees. Alarm system shall include a local warning light and horn.
  - (5) The temporary forcemain shall be installed as appropriate for the Contractor's operations; however, it shall be adequately supported and protected from damage at all

times.

- (6) The Contractor/Bypass Pump system supplier shall configure the system wet well so as to not surcharge the existing sanitary sewer up gradient or down gradient of the project.
  - (7) The municipality will provide a three phase electric service to the vicinity of the bypass pumping station. The Contractor shall coordinate this work with the Owner. Electrical energy costs for the operation of the bypass pumping system will be paid by the municipality.
  - (8) The Contractor is responsible for all fuel expenses for the back-up pump.
  - (9) The Contractor shall test operate all bypass sewers and pump stations with clean water prior to interconnection with the Owner's sanitary sewer system. Water for testing shall be provided by the Contractor. The Engineer and the Owner's wastewater system operator shall witness testing. System shall be subject to full flow conditions and inspected for leaks. Bypass system shall be drip tight.
  - (10) The Contractor shall test operate all control, float, alarm, and dialer systems prior to interconnection with the Owner's sanitary sewer system.
  - (11) Upon satisfactory completion of start-up, Owner's personnel shall be trained in the operation and troubleshooting of the system so as to be prepared in the event of an alarm call-out.
- (i) The Contractor shall be responsible for operating the bypass system in a manner that will prevent any illicit discharge of wastewater. The Contractor shall have all operational and maintenance responsibilities and provide all equipment, tools, material, labor, and fuel necessary to keep the system fully operational for the duration of its operation. In the event that it is necessary for the Owner's wastewater operators to respond to alarms, system failures, or other operational issues, the Contractor shall be responsible for all reasonable expenses for time, equipment, and materials as invoiced by the Owner.
  - (j) Failure of the system due to operational, mechanical, or control malfunction resulting in the bypasses, overflows, or surcharges into surrounding structures shall be the responsibility of the Contractor.
  - (k) Any fines assessed by regulatory agencies, due to failure of the bypass pumping system, shall be the responsibility of the Contractor.

xx. METHOD OF MEASUREMENT. The quantity of Special Provision (Maintenance of Existing Wastewater Flows) to be measured for payment will be on a lump sum basis for maintaining existing wastewater flows in the complete and accepted work.

9/13/2010

xx. BASIS OF PAYMENT. The accepted quantity of Special Provision (Maintenance of Existing Wastewater Flows) will be paid for at the Contract lump sum price. Payment will be full compensation for furnishing, transporting, handling, and installing the materials specified; all appurtenant work and materials necessary for a complete installation, including but not limited to pipe, fittings, joint restraints, expansion joints, insulation, jacket, pipe supports, and testing the system; for making all necessary connections; for making the required submittals; and for furnishing all labor, tools, equipment, and incidentals necessary to complete the work.

Payment will be made under:

<u>Pay Item</u>	<u>Pay Unit</u>
900.645 Special Provision (Maintenance of Existing Wastewater Flows)	Lump Sum