

SEWER MAIN ON BRIDGE

****From Johnson BHO 1448(29)**

- xx. DESCRIPTION. This work shall consist of the installation and testing of a sanitary sewer main on a bridge within the limits indicated on the Plans.

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

- xx. REFERENCE STANDARDS. Information and requirements contained in these provisions are based on the most recent version of the following standards:

- (a) AWWA/ANSI Standard C104/A21.4 for Cement-Mortar Lining for Ductile Iron Pipe and Fittings.
- (b) AWWA/ANSI Standard C110/A21.10 for Ductile Iron Fittings.
- (c) AWWA/ANSI Standard C111/A21.11 for Rubber Gasket Joints for Ductile Iron Pipe and Fittings.
- (d) AWWA/ANSI Standard C150/A21.50 for the Thickness Design of Ductile Iron Pipe.
- (e) AWWA/ANSI Standard C151/A21.51 for Ductile Iron Pipe, centrifugally cast.
- (f) AWWA/ANSI Standard C153/A21.53 for Ductile Iron Compact Fittings.
- (g) AWWA Standard C600 for Installation of Ductile Iron Pipe and appurtenances.

- xx. SUBMITTALS. The Contractor shall submit the following information prior to beginning the work:

- (a) Manufacturers' certified data for each pipe type to be used on the project, including: dimensions, specifications of pipe material, gasket material, pipe class/pressure rating, coatings, and linings.
- (b) Manufacturers' certified data for each fitting type to be used on the project, including: dimensions, specifications of fitting material, gasket material, fitting class/pressure rating, coatings, linings, and joint restraints.
- (c) Manufacturers' certified data for the bridge mounted pipe support, insulation system, and appurtenances.
- (d) 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 insure 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 be thoroughly trained and experienced in the skills and equipment required for installation and testing of wastewater piping.

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:

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- (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.

The Contractor shall protect wastewater piping materials before, during, and after installation. In the event of damage, the Contractor shall immediately make all repairs and replacements necessary to the approval of the Engineer and at no additional cost to the Owner.

Upon direction of the Engineer, the Contractor shall remove, replace, and/or rework all wastewater piping that does not meet the requirements of this Section. The Contractor shall perform all remedial measures at no additional cost to the Owner.

- (e) Gravity Wastewater Piping Testing. Gravity wastewater piping testing shall be subject to the following requirements:
 - (1) Engineer and Owner shall witness all testing.
 - (2) Visual Inspection. The Engineer and the Contractor shall lamp the new piping to check for a full moon to

determine if accurate line was maintained.

(3) Mandrel Test of PVC Piping.

- a. Mandrel testing shall not be completed until at least 30 days after installation of piping to be tested, or as required by the Engineer.
- b. Flush all piping prior to performing mandrel testing.
- c. Testing for deflection shall be done by pulling a properly sized "go, no-go" mandrel through all installed gravity wastewater piping. The mandrel shall be constructed so that it will only pass through piping with deflections of less than 5%. No mechanical pulling devices shall be used. Provisions shall be used during testing to allow mandrel to be "backed out".
- d. Piping exceeding the 5% allowable deflection shall be replaced at no additional cost to the Owner.

(4) Exfiltration Test.

- a. Flush all piping prior to performing exfiltration testing.
- b. Testing shall not be performed until all service connections are installed, but before they are connected.
- c. The Table below indicates minimum test times for various pipe sizes.

<u>Diameter (inches)</u>	<u>Time (sec./100 ft)</u>
3	10
4	18
6	40
8	70
10	110
12	158
15	248
18	356
21	485
24	634

- d. All pipe outlets shall be plugged with test plugs. Brace all plugs securely.
- e. Test equipment shall have pressure relief valves so that piping is not over-pressurized.

- f. Slowly increase air pressure in section of piping being tested until it reaches 4.0 psi greater than the average back pressure of any groundwater that may submerge the pipe.
- g. Allow the air temperature to stabilize for 2 minutes.
- h. When pressure decreases to 3.5 psi greater than the average back pressure of any groundwater that may submerge the pipe, begin timing test.
- i. Determine the amount of time required for the air pressure to drop to 2.5 psi greater than the average back pressure of any groundwater that may submerge the pipe.
- j. If the time required for the pressure to drop from 3.5 psi to 2.5 psi is less than the minimum time required, the test fails.
- k. The Contractor shall make all repairs or replacements necessary to obtain passing test results, at no additional expense to the Owner.
- l. Do not remove plugs until internal line pressure is completely released.

xx. MATERIALS.

(a) Wastewater Piping.

- (1) Pipe material and size for different applications shall be as indicated on the Plans, meeting applicable reference standards and the following requirements, as applicable:
 - a. Ductile Iron Wastewater Pipe shall meet the referenced standards and the following requirements, as applicable:
 - 1. Pipe shall be Pressure Class 350.
 - 2. Pipe and fittings shall be cement mortar lined and seal coated.
 - 3. Pipe and fittings shall be coated on the outside with bituminous coating. Pipe and fittings inside buildings shall have rust inhibitive primer outside coating.
 - 4. Mechanical Joint pipe, where indicated on the Plans, shall be installed with mechanical joint restraints.
 - 5. Restrained Push-On Joint pipe, where indicated on the Plans, shall be "Field

Lock" Gasket System restrained push-on joint type, as manufactured by U.S. Pipe & Foundry Co.

6. Pipe shall be furnished in 18 to 20 foot laying lengths.
 7. Pipe shall be manufactured by Atlantic States Pipe Company, Clow, U.S. Pipe, Griffin, or McWane Pipe Company.
- (2) Each pipe length and fitting shall be clearly marked with the manufacturer's name or trademark, nominal pipe size, material designation, dimension ratio, pressure class, and ASTM designations.

(b) Fittings.

- (1) Provide all necessary fittings, couplings, and accessories, whether or not specifically shown on the Plans.
- (2) Ductile Iron mechanical joint fittings shall be Class 350 compact style as manufactured by Tyler Pipe.
- (3) All mechanical joints and fittings for DI and PVC pipe shall have Mega-Lug mechanical joint restraints as manufactured by EBAA Iron Sales, Inc., or "Uni-Flange Wedge Action" mechanical joint restraints as manufactured by Ford Meter Box Co., of the proper style for the pipe type being restrained.
- (4) Couplings for joining proposed non-pressure pipes to existing pipe of different diameters and/or materials shall be Fernco flexible sewer couplings. Couplings and gaskets shall be of appropriate style and size for the pipes being connected.
- (5) Provide all necessary equipment, gauges, piping, pumps, and personnel required for testing.
- (6) Thermal expansion joints shall be EBAA Iron Works "Extend 200 #208-M1," the equivalent manufactured by Ford Meter Box, or approved equal.

(c) Pipe Insulation.

- (1) The pipes shall be insulated with a factory installed, void free, urethane insulation process, with an integral conduit for electrical heat trace cable and a factory applied jacket by Urecon Pre-Insulated Pipe, the equivalent manufactured by Insul-Tek, or approved equal. System Service Temperature Range: -49⁰F to +185⁰F.
- (2) Pipe insulation shall be 2 inch thick urethane insulation. Insulated pipe shall be installed with a

0.175 inch, UV resistant, high density polyethylene (Type III, Category 5, Class C, Grade P34 resin) jacket as supplied and installed by the insulation manufacturer.

- (3) Form fitting insulation/jacket kits shall be used to field insulate bends and other fittings, according to manufacturer's recommendations.
- (4) Insulated pipe joints shall be completed with the use of pre-fabricated urethane half shells and a pre-rolled sheet stock of the same material and gauge as the outer jacket.
- (5) Bearing plates, as recommended by the insulation manufacturer, shall be installed at all pipe hangers.
- (6) Electric heat tracing system shall consist of the following:
 - a. Heat trace cable shall be Urecon "THERMOCABLE" (Model No. C20-240-COJ), the equivalent manufactured by Insul-Tek, or approved equal. Cable shall be constant watt, cut-to-length, parallel resistance heating strip which uses a thermally stable nichrome heating wire with a series of heating zones. Heating zones shall produce constant, predictable wattage per meter output. Cable shall be suitable for pulling into trace conduits on pre-insulated pipe systems.
 - b. Heat trace system shall include both water and sanitary sewer main bridge crossings. Common electronic thermostat shall control both heat trace cables.
 - c. System shall include a 100 ohm temperature sensor designed for use with trace system manufacturer's electronic thermostats. Provide PVC coated extension lead wire of appropriate length for installation.
 - d. All power wiring, electrical panel, disconnect switch, thermostat, and heat trace control panel shall be completed according to applicable electrical code and local utility standards.
 - e. The Electric Meter/Control Panel Pedestal shall be installed in accordance with the Vermont Utilities Electric Service Requirements Manual standards for "Typical Meter Pedestal" and applicable electrical codes.
 - f. System shall be equipped with an electronic thermostat (Model No. UTC-2230) or approved

equal, designed to control two heating cables (water main and sanitary sewer).

- g. System shall include electric panel with appropriate breakers to supply specified equipment, in full compliance with all applicable codes. Electrical system shall include service outlet located inside enclosure cabinet.
- h. Controls and electrical panel shall be housed in a NEMA 4X fiberglass enclosure, McMaster-Carr Catalog No. 76515K or equal, sized to hold specified equipment and panel.
- i. Controls, power supply, and pedestal for the Sewer Main on Bridge heat trace shall also serve the heat trace for the Water Main on Bridge.
- j. Power supply equipment shall be in compliance with local Electric Department standards and specifications.

(d) Sanitary Sewer Bypass Pumping.

- (1) Bypass sanitary sewer pumping system shall be equivalent to the Godwin "Dri-Prime CD103M," critically silenced, electric drive, primary pump set with a Godwin "Dri-Prime CD103M," standard diesel driven, standby pump set. All pumps used shall be centrifugal, end suction, fully automatic self-priming pumps that do not require the use of foot-valves, vacuum pumps, diaphragm pumps, or isolation valves in the priming system. All pumps used must be constructed to allow dry running for long periods of time to accommodate the cyclical nature of effluent flows and shall immediately develop 25 inches Hg vacuum without adjustment or repair or employ level control devices to regulate on/off or variable speed of the pump.
- (2) Average daily, dry weather, wastewater flows through the existing sanitary sewer is estimated at 60,000 gpd. Peak daily flow rate, based on a multiplier of five, is 300 gpm. Wet weather is estimated to increase the peak flow rate to 500 gpm.
- (3) Sound level of the critically silenced primary pump shall not exceed 70dBa at 30 feet, at any elevation.
- (4) The primary bypass pump shall be equipped with a variable frequency drive (VFD) to vary the speed of the pump to match the incoming flow to the wet well. The VFD shall also limit the starting amps for the primary bypass pump so as to not over tax the power

supply.

- (5) The standby pump set shall be wired to a Godwin Auto Start Controller, or approved equal. The bypass pumping equipment shall include all floats, controls, alarms, and other components necessary to provide primary and back-up pumping under normal power and back-up pumping under diesel power with automatic transfer in the event of a power outage.
 - (6) The system shall include an automatic alarm system and telephone dialer. Contractor is responsible for all connections and monthly charges for telephone system.
 - (7) The pumps shall tie together via a common wye discharge header to a single 6 inch force main with check valves to prevent backflow. Force mains shall be steel or rubber, appropriate to the application, with drip-tight joints.
 - (8) Pumps shall be capable of handling solids up to 3 inches in diameter.
 - (9) The pumps shall be self priming and capable of dry-running.
 - (10) Allowable piping materials will be fused, high density polyethylene pipe, Godwin Quick Disconnect Pipe, or Flanged Composite Pressure Class Hose. Discharge piping shall be suitable for the calculated discharge pressures plus 50% margin at the pipe rated working pressure. The vendor fusing the pipe must have a minimum of five (5) years experience fusing HDPE pipe of the same diameter required for the project.
- (e) Material Storage and Handling. Material storage and handling shall be performed in accordance with the following requirements:
- (1) Furnish slings, straps, and other devices to support pipe and fittings when lifted. Do not drop or drag pipe or fittings from trucks onto the ground or into the trench.
 - (2) Handle and transport pipe and fittings to insure they are in sound, undamaged condition and to prevent damage to coating and lining.
 - (3) Examine all pipe and fittings before installing. Defective or damaged materials shall be rejected.
 - (4) Pipe or fittings with damaged coatings and/or linings shall be rejected.
 - (5) Cracked or chipped pipe or fittings shall be

rejected.

- (6) If defective pipe or fittings are discovered after installation, the Contractor shall remove and replace the defective piece(s) at no additional cost to the Owner.
- (7) Plastic pipe and fittings shall be protected from direct sunlight for prolonged periods, to avoid deterioration of the material.
- (8) Extra care shall be taken when handling plastic pipe and fittings in freezing conditions, due to the reduced impact resistance and flexibility.

xx. GENERAL CONSTRUCTION REQUIREMENTS.

- (a) Maintenance of Existing Wastewater Flows. Maintenance of existing wastewater flows shall be performed in accordance with the following requirements:
 - (1) Contractor shall assure that construction activities do not interrupt wastewater flows, throughout the construction period.
 - (2) Prior to disconnection and removal of the existing gravity 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). Contractor shall provide all materials, water, trucks, equipment, and labor for flushing.
 - (3) Contractor shall provide all labor, material, tools, and equipment necessary to maintain the existing gravity wastewater piping including structural supports, as necessary, and/or install, protect, and maintain a temporary gravity sewer or bypass pumping system.
 - (4) 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.
 - (5) 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.
 - (6) 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.
 - (7) 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. Upon the date of initial operation of the bypass pumping equipment, the Contractor shall have 90 calendar days to complete the new wastewater utility work.

- (8) Bypass pumping systems shall meet the following minimum standards:
- a. 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.
 - b. 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.
 - c. 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.
 - d. 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.
 - e. 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.
 - f. 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.
 - g. 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.

- h. The Contractor is responsible for all fuel expenses for the back-up pump.
 - i. 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.
 - j. The Contractor shall test operate all control, float, alarm, and dialer systems prior to interconnection with the Owner's sanitary sewer system.
 - k. 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.
- (9) 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.
- (10) 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.
- (11) Any fines assessed by regulatory agencies, due to failure of the bypass pumping system, shall be the responsibility of the Contractor.
- (b) Control of Grade and Alignment. Control of grade and alignment shall be performed in accordance with the following requirements:

- (1) Levels and transits shall be used to establish line and grade for wastewater piping.
 - (2) Pipe lasers shall be used to maintain gravity wastewater piping on line and grade.
 - (3) Pipe and fittings shall be laid accurately to the lines, grades, and locations indicated on the Plans.
- (c) Installation. Installation shall be performed in accordance with the following requirements:
- (1) Wastewater piping, building services, and appurtenances shall be installed according to the Plans.
 - (2) Pipe shall be laid accurately to the lines and grades indicated on the Plans.
 - (3) All pipe shall be assembled per the manufacturer's recommendations.
 - (4) Pipe shall be fully supported along its length. Point contact at fittings, joints, or along the pipe length is not allowed.
 - (5) All field cut pipe ends shall be chamfered to avoid damage to the gasket and facilitate assembly. When cutting of pipe is required, the cutting shall be done with power saws. Cut ends shall be smooth and at right angles to the pipe. Cut pipe ends shall be beveled and de-burred on interior and exterior.
 - (6) Do not joint pipe or fittings under water.
 - (7) Open ends of pipe shall be temporarily plugged or capped to keep deleterious material out. When pipe laying is not in progress, the open ends of the pipe shall be closed with a water tight plug.
 - (8) Install fittings, bends, service connections, and couplings as necessary. All fittings shall be adequately supported to prevent undue strain on the pipe, fittings, gaskets, and bolts.
 - (9) Check pipe for alignment and grade before placing initial backfill material.
 - (10) Test pipe and fittings as specified.
 - (11) Where wastewater piping are required to cross water mains, the installation shall comply with the following requirements:
 - a. Water and sewer pipes shall have a minimum vertical clearance of 18 inches.

- b. Water and sewer pipe joints shall be located as far apart as possible.
 - c. The Contractor shall provide structural support for exposed water and sewer lines.
- (12) The minimum horizontal clearance between water and sanitary sewer piping is 10 feet, and the minimum horizontal clearance to storm sewers is 5 feet.
- (13) In the event that the minimum vertical or horizontal clearances between water and sewer piping cannot be maintained, the sewer piping must be upgraded and tested to water pipe standards.
- (14) Pipe insulation shall be installed on the wastewater piping as shown on the Plans. All overlaps at the joints and fittings shall be 2 inch minimum and shall be field positioned in such a way as to shed water. All exposed ends of insulation shall be coated with an approved waterproofing sealant, as recommended by the supplier, after field cutting or trimming has been carried out.
- (15) Heat Trace System.
- a. Heat trace system, including heat trace cable, sensor and thermostat controls, and all appurtenances shall be installed according to the manufacturer's recommendations.
 - b. Heat trace temperature sensors shall be secured as recommended by the manufacturer with aluminium foil adhesive tape as supplied by the manufacturer.
 - c. Heat trace system shall be installed by a licensed electrician in compliance with all applicable electrical codes and regulations.
 - d. Power supply equipment shall be installed by the Contractor in compliance with local Electric Department standards and specifications.
- xx. METHOD OF MEASUREMENT. The quantity of Special Provision (Sewer Main on Bridge) to be measured for payment will be on a unit basis for each sewer main installation on a bridge performed in the complete and accepted work.

The quantity of Special Provision (Electric Heat Trace System) to be measured for payment will be on a unit basis for each electric heat trace system installed in the complete and accepted work.

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xx. BASIS OF PAYMENT. The accepted quantity of Special Provision (Sewer Main on Bridge) 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, heat trace cable, pipe supports, and testing the sewer main system; for making all necessary connections; and for furnishing all labor, tools, equipment, and incidentals necessary to complete the work.

The accepted quantity of Special Provision (Electric Heat Trace System) will be paid for at the Contract lump sum price. Payment will be full compensation for furnishing and installing the heat trace sensor, thermostat controls, power supply, and appurtenances; testing the system; and for furnishing all labor, tools, equipment, and incidentals necessary to complete the work. Payment for heat trace cable will be paid separately under Contract item 900.645 Special Provision (Sewer Main on Bridge).

Payment for these items will be made as follows:

A payment of 90% of the Contract lump sum price will be made when the new sewer main on bridge has been installed on the bridge, all necessary adjustments have been made, all tests have been successfully completed, and the sewer main has been placed in service to the satisfaction of the Engineer and the Owner.

The remaining 10% of the Contract lump sum price will be paid once the new sewer main has provided continuous trouble-free service for a period of 30 calendar days as determined by the Engineer.

Payment will be made under:

<u>Pay Item</u>	<u>Pay Unit</u>
900.645 Special Provision (Electric Heat Trace System)	Lump Sum
900.645 Special Provision (Sewer Main on Bridge) (<input checked="" type="checkbox"/> MM)(<input checked="" type="checkbox"/> ")	Lump Sum