SECTION 01521
TEMPORARY STATION BYPASS

PART 1 – GENERAL

1.1 SCOPE

A. The Contractor shall furnish, maintain, and operate temporary facilities (including but not limited to pumps, piping, diesel supply, temporary power, pipe plugs and ties-in, etc.) to safely divert sewage as required to complete the Work as described herein and as indicated on the Drawings at the Newport News Sanitary Pump Station No. #058. Contractor to assume all temporary bypass operations within 30 days after Notice to Proceed.

B. Temporary bypass pumping shall be used during all required Work in accordance with Contract documents. Temporary bypass pumping shall be continuous from the bypass pumping test period to Substantial Completion.

C. The Contractor shall be responsible for design, installation, and operation of the temporary bypass pumping system and all operation and maintenance costs associated therewith. All labor, materials, tools, equipment and/or temporary facilities required during the performance of the Work shall be provided at no additional cost to the City.

D. Upon completion of the Work, the Contractor shall remove all temporary bypass pumping system components from the Site.

E. No construction of the temporary bypass pumping system shall begin until all provisions and requirements have been reviewed and approved by the Engineer.

F. Any references to the “Engineer” will mean the City of Newport News or their authorized representatives.

1.2 SYSTEM DESCRIPTION

A. The temporary bypass pumping system shall be designed and operated in accordance with the requirements of all codes and regulatory agencies having jurisdiction in the vicinity of the Project Site.

B. The temporary bypass system shall be provided with two pumps (1 duty/1 standby) and installed in such a manner that a loss of a single bypass pump does not prevent the system from meeting the specified system hydraulic performance parameters. The duty pump shall be electrically powered (to reduce noise levels) and the standby pump shall be diesel powered.

C. Bypass pumping system shall be capable of operating at the following design points:
1. Min. Flow: 244 gpm @ 168 ft TDH
2. Secondary Flow: 244 gpm @ 242 ft TDH

D. Provide a system to maintain flow around the work area in a manner that will not cause surcharging of sewers, and that will protect public and private property from damage.

E. Temporary bypass pumping system shall be capable of 24-hour per day operation.

F. Temporary bypass system shall be provided with all of the instrumentation necessary (flow, pressure, level, current, voltage, fuel level, etc.) to maintain, operate and monitor performance of the bypass system, as well as providing a continuous flow record of the bypass system operation.

G. Provide round-the-clock monitoring of temporary bypass pumping system during working hours and non-working hours through remote telemetry system that shall immediately notify the Contractor of alarm conditions.

H. Noise levels associated with the bypass pumping system shall not exceed 60 dba when measured at the property line, while being powered.

I. The pumping units shall be fully automatic self-priming units that do not require the use of foot-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 wastewater flows.

J. Pumps shall be adequately supported or secured.

K. Provide pumps with pressure taps and appropriate gauges on the discharge outlets. Locate gauges as close as possible to the pump casing point of discharge.

L. Each pumping unit shall have a fully automatic control system that allows for variable speed control of the pumps. Control system shall include a unit mounted packaged control panel, submersible pressure transducer, and all necessary engine controls for variable speed operation. Control panel shall include a microprocessor based control unit that monitors engine functions, pressure transducer, and alarm functions.

1. In automatic mode, the microprocessor shall control the pumping unit by variable speed. The speed of the pumping unit will vary by the level in the suction well or manhole. When the pump start level is reached, the pumping unit will run at full speed. As the level in the well or manhole drops, the pumping unit will proportionally lower speed. When the pump stop level is reached, the pumping unit shall shut down.

2. In manual mode, manual “Start” button starts engine and runs until “Stop” button is depressed or an emergency shutdown occurs.

3. Controls shall be adjustable without a change to the panel other than via the keypad.
4. Controls shall function interchangeably from float switches, transducer or manual start/stop by selection at the keypad.

M. Provide straining/screening as necessary for the suction piping.

N. Provide isolation and check valves for each pump discharge piping.

O. Telemetry System:
   1. Provide remote telemetry system dedicated to the temporary bypass pumping system.
   2. System shall include necessary provisions to immediately notify the Contractor of alarm conditions.

P. Security: As this site does not have security fencing, the Contractor may provide a temporary security fence around the bypass pumping system during the times during the construction period that workers are not on the Site and the temporary bypass pumping system is operational.

Q. ACCEPTABLE VENDORS:
   a. Godwin Pumps of America, Inc.
      120 Dorset Avenue
      Virginia Beach, Virginia 23462
      4750 Baxter Road
      Virginia Beach, Virginia 23462
   3. Rain For Rent
      P.O. Box 1077
      Hopewell, Virginia 23860
   4. Of approved equal.

1.3 SUBMITTALS

A. Submit a Temporary Bypass Pumping Plan to the Engineer for review and approval at least two weeks (14 calendar days) prior to commencing work in accordance with Section 01300, Submittals. The plan must be specific and complete, include all layouts of the bypass piping, and shall include, but not be limited to, the following details:
   1. Site Plan with Equipment Layout
   2. Monitoring Plan
   3. Listing of Equipment
   4. Sewer pipe plugging method and types of plugs
   5. Equipment Capacity (Including but not limited to pump curves verifying the bypass pump is capable of meeting the peak flow and head requirements)
6. Material and method of installation of suction and discharge piping
7. Description of Equipment Operational Controls. Telemetry and security system description
8. Construction sequence
9. Repair and restoration plans for damaged infrastructure including, but not limited to, pavement, sidewalks, curb, gutter and sewer system
10. Noise abatement and connection details associated with primary and secondary power systems
11. Spill Contingency Plans and Protection against pipe breaks

1.4 SPECIAL PRECAUTIONS

A. The Contractor shall provide all necessary means to safely convey sewage, to bypass the normal station inlet. The temporary mechanical bypass system shall meet the requirements of all codes and regulatory agencies having jurisdiction. All consequences, including fines, resulting from any spillage due to the failure to successfully maintain or operate the temporary system are the sole responsibility of the Contractor.

PART 2 – PRODUCTS

Not Used.

PART 3 – EXECUTION

3.1 INSTALLATION

A. Install equipment in accordance with the approved Shop Drawings and the Manufacturer’s installation instructions.

B. Locate all piping, pumping, and equipment so as to provide the least amount of disruption to pump station access.

C. Provide a pressure gauge in the discharge piping from each pump for startup testing.

D. All pipe joints shall be free of leakage.

E. All piping, hoses, and connections shall be secured and durable.

F. Provide all required piping supports and thrust blocking at all changes of direction.

3.2 TESTING
Prior to 24 hour demonstration testing the Contractor shall field verify the capacity of each pump operating independently, operate pumps in the hand and automatic modes, test pumps in lead, lag and bypass pump fail modes, test alarm conditions notification system, and measure and record pump discharge pressure.

Perform leakage tests at full range of operating pressures for discharge piping using clean water from tank truck or other clean water source prior to actual operation with sewage.

Provide 72 hours advance Notice to the Engineer prior to testing.

After successful field and leakage testing, begin the 24 hour demonstration testing on a Monday. Pump test shall demonstrate 24 hours of continuous satisfactory bypass pump system operation (without the need to energize the existing pumping units) before being allowed to disconnect or de-energize any portion of the existing station which would prevent the station from resuming its normal operation.

Any failure of the bypass system shall cause the demonstration testing period to cease and to not be restarted until all repairs are completed and with written City approval.

Leakage from pipes or pumps is strictly prohibited. Any leakage, including the low volume “spit” that may be released from the dry-prime vacuum system or other system must be captured and properly disposed.

The Contractor shall furnish the Engineer with a Manufacturer's Certificate certifying the bypass pumping system has been operated in a complete and satisfactory manner and is ready for operation.

Pumps manufacturer’s field services shall be provided to witness initial leakage tests, and pump capacity tests.

3.3 MAINTENANCE

Inspect temporary bypass pumping system at least twice daily to ensure that the system is working correctly.

Straining/screening for the suction piping must be inspected, monitored and cleaned as necessary.

Sufficient repair parts, tools, and equipment shall be available at all times on-Site to assure rapid emergency troubleshooting and repair of any pump or equipment.

3.4 SYSTEM REMOVAL

When removing piping or equipment from service, the Contractor shall flush all temporary bypass piping with water and allow the piping to drain naturally.
or be pumped to its lowest level prior to disassembly. All remaining fluids shall be removed by the Contractor at no additional cost to the City. Solids shall be disposed of off-Site by the Contractor at no additional cost to the City. Disposal of these solids must be in accordance with federal, state and local codes.

B. Following the completion of the temporary bypass pumping operation, disturbed areas utilized during pump around operations shall be restored to their original condition.

3.5 LEAKAGE, SPILLS AND DAMAGES

A. Leakage of sewage and sewage spills are strictly prohibited. Contractor shall be responsible for compliance with all permit regulations, and shall immediately respond with necessary equipment to stop all leaks and spills of sewage and clean up spillage due to human or mechanical failure. Contractor shall be responsible for all damage.

B. Any spillage that occurs shall be immediately cleaned up by the Contractor and the site returned to a clean sanitary condition, at no cost to the City. Any fines associated with such a spill will be the responsibility of the Contractor.

C. The Contractor shall submit a spill action plan for approval by the Engineer. The plan shall detail actions to be taken in the event of a sewage spill.

D. In the event of any spillage (wastewater, diesel fuel or other liquid) as a result of a failure of the temporary system, the Contractor shall notify the City immediately.
   1. In making this notification, an estimate of the amount of sewage discharge must be provided as well as estimated time of limitation of the discharge. All telephone notifications shall be confirmed in writing by five business days.
   2. Overflows/spills shall be contained and removed in accordance with Health Department regulations. Overflows should be prevented as much as possible from entering nearby waters, lakes, rivers, or adjacent properties. It should be isolated and treated with lime or chlorine if exposed for a long period of time.

END OF SECTION