# SECTION 02555
## SANITARY SEWER BYPASS PUMPING

## PART I: GENERAL

1.1 GENERAL REQUIREMENTS
- A. Bypass pumping of sanitary sewer lines for the purpose of construction, repair, cleaning and television inspection.
- B. Provide full redundancy for the bypass system.

1.2 MEASUREMENT AND PAYMENT
- A. Unit Prices:
  1. No separate measurement or payment shall be made for bypass pumping for any cleaning, CCTV, or rehabilitation/replacement operations in sanitary sewers with an estimated daily flow of less than two million gallons per day (2 mgd). Estimated daily flows shall be provided by the City to the Contractor prior to initiating a specific project.
  2. For sanitary sewers with estimated daily flows of greater than two million gallons per day (2 mgd), the Contractor shall be paid for bypass pumping on a per hour basis. Payment shall include all labor, materials, equipment, tools and incidentals for pump setup, plugging, pumping and diversion of sewage flow, development of the flow control and bypassing plan, setup, pumps, piping, gasoline/diesel fuel, maintenance, transportation and storage, temporary bypass and service piping, confined space entry and equipment, inserting and removing pipe plugs, constructing bulkheads, pumping flows, monitoring water levels, installing bypass/diversion piping, trenching, jacking and boring, abandoning the jacked casing, plating for diversion piping, backfill, compaction, placing temporary pavement, traffic control, and surface restoration. Estimated daily flows shall be provided by the City to the Contractor prior to initiating a specific project.
  3. Refer to Section 01270 – Measurement and Payment for unit price procedures.
- B. Stipulated Price (Lump Sum):
  1. If Contract is Stipulated Price Contract, payment for Work in this Section is included in the Total Stipulated Price.

1.3 REFERENCES
- A. ASTM – American Standards for Testing and Materials.
  1. All materials are to comply with the latest STM Standard Specifications for Materials and Equipment.
- B. CFTS – City of Friendswood Technical Specifications.

C. OHSA – Occupational Health and Safety Administration.
   1. All operations, material, equipment and safety plans shall be in full compliance with all OHSA Standards. It is the Contractors Responsibility to adhere to all these regulations.

D. TCEQ – Texas Commission on Environmental Quality.
   1. The Contractor shall adhere to all rules and regulations of the Texas Commission on Environmental Quality for Sanitary Sewer Systems.

1.4 SUBMITTALS

A. Conform to requirements of Section 01330 – Submittal Procedures.

B. The Contractor shall submit the following:
   1. The Contractor shall submit to the Project Manager a detailed plan and description outlining all provisions and precautions that the Contractor shall take regarding the handling of wastewater flows during sanitary sewer rehabilitation or other operations. The plan shall be submitted to the Project Manager for review and approval at least seven working days (7 Wd) prior to commencing work on each portion of the system to be rehabilitated. The plan must be specific and shall include, but not be limited to, the following details:
      a. Schedule for installation and maintenance of bypass pumping system.
      b. Staging areas for pumps.
      c. Bypass pump sizes, capacity, number of each size to be on site and power requirements.
      d. Calculations of static lift, friction losses, and flow velocity.
      e. Pump curves showing pump operating range.
      f. Road crossing details.
      g. Protection against main breaks.
      h. Sanitary sewer plugging methods and bypass time duration for each sanitary sewer section.
      i. Size, length, material, location and method of installation for suction and discharge piping. This shall include any wet tap or hot tap procedures.
      j. Sections showing suction and discharge pipe depth, embedment, select fill and special backfill.
      k. Method of noise control for each pump and/or generator.
      l. Standby power generator size and location.
      m. Downstream discharging plan.
      n. Methods of protecting discharge manholes or structures from erosion and damage.
      o. Restraining lengths for piping. Thrust blocks shall not be allowed as a method of restraint for bypass pumping systems.

1.5 QUALITY CONTROL

A. It is the Contractor's responsibility to have verification from the manufacturers that all equipment and materials being used are in compliance with this Technical Specification.

B. No spillage of sanitary sewage shall be allowed at anytime. All waste materials shall be removed in conformance of Section 01580 – Waste Material Disposal.

C. Violations due to sanitary sewage spills shall be the sole responsibility of the Contractor.

D. The bypass system shall meet the requirements of all codes and of all regulatory agencies having jurisdiction.

1.6 COORDINATION

A. The estimated daily flow rates for dry weather and wet weather flows shall be provided by the City for specific projects identified in need of Bypass Pumping.

B. If the depth of flow in the sanitary sewer line being televised or repaired is above the maximum allowable for the proposed work, then the Contractor shall reduce the flow to the levels shown in Section 02520 – Television Inspection of Sanitary Sewer Lines, by manual operation of pump stations, plugging or blocking of the flow or by pumping and bypassing of the flow, as acceptable to the Project Manager. Plugging or blocking of the flow shall only be allowed when the Contractor can demonstrate that the upstream gravity collection system can accommodate the surcharging without any adverse impact. Operation of sanitary sewer lift stations must be performed by the City's personnel and scheduled by the Project Manager.

## PART II: PRODUCTS

2.1 EQUPMENT

A. The Contractor shall select pumping/bypassing equipment that shall not have excessive noise levels from pumping/bypassing equipment and shall be restricted to the following conditions in accordance with the City's Ordinances:

1. Residential Properties:
   a. Daytime hours (7 a.m. to 10 p.m.) – maximum sixty-five decibels (65 dB).
   b. Nighttime Hours (10 p.m. to 7 a.m.) – maximum fifty-eight decibels (58 dB).
2. Non-residential Properties – maximum seventy decibels (70 dB).
3. Measurement shall be taken at the nearest right-of-way line or property line.

B. All pumps shall be capable of handling peak flows for the duration of operations.

C. All pipes and fittings shall be able to handle peak flow volumes and pressures plus ten percent (10%).
D. All materials shall be suitable for contact with domestic sanitary sewage. Under no circumstances shall aluminum “irrigation” type piping or glued PVC pipe be allowed. Discharge hose shall only be allowed in short sections and by specific permission from the Project Manager. The bypass pumping system shall be one hundred percent (100%) watertight.

# PART III: EXECUTION

## 3.1 GENERAL

A. The Contractor shall provide the necessary operating controls for each pump.
B. The Contractor shall provide redundancy within the pumping system. Back-up pumps shall be online and isolated from the primary system by a valve.
C. In order to prevent the accidental spillage of flows, all discharge systems shall be temporarily constructed of rigid pipe with positive, restrained joints. Only materials that withstand pressures greater than the peak bypass system pressures shall be used.

## 3.2 CONTRUCTION REQUIREMENTS

A. Preparation:
   1. The Contractor is responsible for locating any existing utilities in the area where the Contractor selects to locate the bypass pipelines. The Contractor shall locate his bypass pipelines to minimize any disturbance to existing utilities and shall obtain approval of the pipeline locations from the Project Manager. All cost associated with relocating utilities and obtaining all approvals shall be paid by the Contractor.
   2. When working inside a manhole or force main, the Contractor shall exercise caution and comply with OSHA requirements when working in the presence of sanitary sewer gases, combustible or oxygen-deficient atmospheres, and confined spaces.
   3. The City shall be responsible for obtaining any approvals for placement of the temporary pipeline within Texas Department of Transportation highways or county roads rights-of-way
B. Plugging and Blocking:
   1. A sanitary sewer line plug shall be inserted into the line upstream of the section being televised or repaired. The plug shall be so designed that all or any portion of the upstream flow can be released. During the television inspections and repair operations, the flow through the line being worked shall be reduced to within the maximum limits established in Section

02520 – Television Inspection of Sanitary Sewer Lines. After the work has been completed, the flow shall be restored to normal.

C. Pumping and Bypassing.

1. When pumping and bypass pumping is required, the Contractor shall supply all necessary pumps, conduits and other equipment to divert the flow around the pipe section or manhole in which work is to be performed. The bypass system shall be of sufficient capacity to handle existing dry-weather flow plus additional flow that may occur during wet-weather (i.e. rainfall or snowmelt events). The Contractor shall be responsible for furnishing the necessary labor and supervision to set up and operate the pumping and bypassing system. Pumps and equipment shall be continuously monitored by the Contractor during the periods that pumping and bypassing are required.

D. Flow Control Precautions

1. When flow in a sanitary sewer line is plugged, blocked or bypassed by the Contractor, the Contractor shall take sufficient precautions to protect the public health and to protect the sanitary sewer lines from damage that might result from sanitary sewer surcharging. Further, the Contractor shall take precautions to ensure that sanitary sewer flow control operations do not cause flooding or damage to public or private property being served by the sanitary Sewer Lines involved. The Contractor shall be responsible for any damage resulting from his flow control operations.
2. When flow in a sanitary sewer line is plugged or blocked by the Contractor, he shall monitor the conditions upstream of the plug and shall be prepared to immediately start bypass pumping, if needed. Any liquid or solid matter which is bypass pumped from the sanitary sewer collection system shall be discharged to another sanitary sewer manhole or appropriate vehicle or container only. No such liquid or solid matter shall be allowed to be discharged, stored or deposited to the open environment. The Contractor shall protect all pumps, conduit and other equipment used for bypass from traffic.
3. Should any liquid or solid matter from the sanitary sewer collection system be spilled, discharged, leaked or otherwise deposited to the open environment as a result of the Contractor's flow control operations, he shall be responsible for all cleanup and disinfection of the affected area and all associated costs. The Contractor shall also be responsible for notifying the Project manager, sanitary sewer system operating personnel and appropriate regulatory agencies and performing all required cleanup operations at no additional cost to the City.

END OF SECTION