

## **ND-05 FLOW CONTROL AND BYPASS PUMPING REQUIREMENTS**

The Contractor is solely responsible for bypass operations and maintaining sanitary sewer flows within the sewer system at all times and under all weather conditions during the performance of work on the District's collection system in accordance with Utah State Code R317-801.

The Contractor must provide documentation and calculations proving adequacy of the bypass operation for District review.

Working drawings, plans, and calculations demonstrating the bypass system (pumps, redundant pumps, and pipes) has adequate capacity, considering static head, dynamic head, friction losses, and minor hydraulic losses, must be provided to the District at least 30 days prior to the set-up of the bypass operation. Bypass pumping plan, drawings, calculations, and documentation shall be prepared, stamped, and signed by a UTAH Licensed Professional Engineer.

### **1) BYPASS REQUIREMENTS**

- a) The Contractor must control and maintain sanitary sewer flows within the sewer system, including service to customers at all times throughout the duration of the Project.
- b) The bypass pumping system shall be maintained by qualified personnel with at least one individual on site at all times when the system is in operation. Qualified personnel shall be capable of operating, maintaining, repairing, refueling, or otherwise keeping the bypass pumping system functioning at all times. The system shall be inspected at least once per hour while in operation. The Contractor must provide the District emergency contact information for the site superintendent and site operators in case of bypass system malfunction.
- c) The bypass system shall be designed to maintain wastewater flow below the top of the pipe where the flow is being intercepted. No surcharging of the sewer will be allowed.
- d) Plugging of sewer pipelines shall not be permitted without bypassing, except where approved in writing by the District.
- e) The Contractor is cautioned that hydrogen sulfide, methane, and other potentially hazardous and/or explosive gases or materials may be present in existing or new sanitary sewers. There also may not be sufficient oxygen in the sanitary sewer system to support life. Therefore, the Contractor is advised to take suitable precautions to protect its work forces and the general public from exposure and shall provide safety measures, odor control, and other systems as necessary for such conditions.
- f) Notifications, flyers, or door hangers must be provided to properties impacted by and adjacent to the collection system, including up to 2 lots or 200 feet from intersections with roadways entering or exiting public rights-of-way. Notification must be made 14 days prior to commencement of the bypass operation.



## 2) BYPASS SYSTEM CAPACITY:

The Contractor must perform flow monitoring on each portion of the collection system to be bypassed in accordance with the following requirements:

- a) Monitor flows for a minimum of 10 consecutive days, encompassing 2 weekends. The flow data shall be collected and recorded at 15-minute intervals without any upstream diversions in place.
- b) Required capacity shall be calculated, using the highest flow determined from the following criteria:
  - i) 1.50 times the Peak 15 Minute Flow.
  - ii) Or 1.25 times the full pipe capacity of the existing incoming sewer, whichever is greater.

## 3) BYPASS OPERATION

The Contractor shall be solely responsible for any damage to public or private property, and any legal actions taken by regulatory agencies and/or others if such overflows, stoppages, or backups occur during Project. Contractor shall immediately contact the agency, state regulatory agencies, and others, as appropriate, should a sanitary sewer overflow occur, regardless of the flow rate or flow volume discharged.

Bypass operation must comply with Local, State, and Federal noise ordinances. Equipment must have sound attenuation when in normal operation.

## 4) BYPASS PUMPING SYSTEMS

Bypass pumping shall be performed in accordance with the following criteria:

- a) CRITERION 1 - BYPASS PUMPING SYSTEM WITH FLOWS EQUAL TO OR LESS THAN 2.5 MGD AND PIPE LENGTHS LESS THAN 1,200 LF. The Contractor shall maintain on site, the following minimum requirements for all bypass pumping systems:
  - i) Sufficient equipment and materials to ensure continuous and successful operation of the bypass system.
  - ii) A system of pumps and piping operating on site to maintain a minimum 50% excess capacity of the anticipated maximum flow.
  - iii) A standby pump, equal in capacity to the largest pump in the system, piped, plumbed, and ready for operation.
  - iiii) A sufficient number of repair clamps, valves, tees, elbows, connections, tools, sewer plugs, piping, hoses, and other parts of system hardware to ensure immediate repair or modification of any part of the system as necessary.



- b) **CRITERION 2 - BYPASS PUMPING SYSTEM WITH FLOWS GREATER THAN 2.5 MGD AND PIPE LENGTHS GREATER THAN 1,200 LF.** The following criteria shall be met, in addition to Criterion 1:
- i) All bypass piping shall be fused HDPE pipe, unless approved otherwise.
  - ii) Pumps shall be capable of passing at least a 3-inch solid sphere and bypass piping shall be a minimum of 4-inches in diameter.
  - iii) Pipe velocity shall be at least 3 fps but not exceed 10.5 fps for determining the required pumping and piping capacity.
  - iv) The bypass piping system shall include multiple pipelines to convey 150% of the maximum anticipated flow. A minimum of one redundant (spare) pipeline must be constructed, plumbed, and available for immediate operation, which is equal in diameter to the largest pipe in the bypass system. All other requirements shall be as identified in Criterion 1.
- c) Piping fittings and accessories shall be pressure tested with water in the presence of the District prior to the commencement of pumping operations. Test pressure shall be twice the maximum operating pressure of the bypass pumping system or 50 psi, whichever is greater. Piping shall maintain at least 90-percent of the test pressure for a minimum of two hours after initial pressurization and there shall be no visible leaks from the system at any time.
- d) Gas- and liquid-phase odor control systems must be provided to prevent nuisance odors from escaping the pumping or sewer construction operations.
- e) Bypass pipe shall be located with the least impact on vehicular and pedestrian traffic and shall be restrained to prevent any movement of the pipe.
- f) Pipe placed perpendicular to traffic, across traveled roadways, driveways, and other points requiring access, shall be ramped or buried. Contractor shall coordinate requirements as part of the approved traffic control plans.

**5) DISTRICT NOTIFICATION OF OPERATION:**

The Contractor must notify the District not less than two working days prior to the setup of bypass operations.

