SECTION 813
SEWER FLOW CONTROL

813-1 DESCRIPTION: Sewer flow control is a set of methods to adjust the flow in the sewer system to allow for inspection, maintenance, repair or replacement. This is accomplished by either blocking or plugging the incoming lines to restrict flow or through the use of pumps to bypass the flow around the work area until the work is completed.

813-2 SCOPE OF WORK:

a. The Contractor shall be required to furnish all materials, labor, equipment, power, maintenance, etc. to implement the necessary flow control system and control the flow around and/or through the work area for the duration of the work.

b. The design and installation of the necessary systems as well as the operation of the temporary pumping systems (if necessary) shall be the Contractor's responsibility.

c. If bypass pumping and/or pump station shut down is required, the Contractor shall coordinate with the Wastewater Collection Pump Maintenance Superintendent.

d. Flow control will be required to conduct inspection or other maintenance/rehabilitation operations when the existing flow in the lines is above the following levels:

1. Maximum Depth of Flow for CCTV Inspection:

   The entire circumference of the pipe (360 degrees) shall be viewable to the satisfaction of the Engineer. Contractor shall dewater the pipe as necessary to allow the required visibility.

2. Maximum Depth of Flow for Joint Sealing:

6" - 12" Pipe	40% of pipe diameter
15" - 24" Pipe	45% of pipe diameter
>24" Pipe	50% of pipe diameter

e. Public notification and coordination with the homeowners shall be identified in the submittals and accomplished according to the following:

1. At least 7 days prior to any work, shutdown of service, or reduction in service to any line segment, the Contractor shall go door-to-door to distribute an Owner approved Homeowner Door Knocker describing the work to be performed.

2. On the day the service is to be shutdown or reduced, prior to commencing the work, the Contractor shall knock on the doors of all structures potentially impacted by the work and personally notify the occupants.

3. The Contractor shall notify by fax or email to the Owner's designated office the location of line segment in which service is to be shutdown or reduced prior to 7:00 a.m.

813-3 SUBMITTALS: At the request of the Engineer, the Contractor shall submit the following information:

a. Flow Control Plan: At the request of the Engineer, the Plan shall be submitted a minimum of 48 hours prior to controlling flows and shall include the following

information:

1. Estimate of peak flow to be controlled
2. Detailed procedures for handling peak estimated flow
3. Schedule for controlling flow
4. Listing of equipment needed for flow control
5. Operation plan
6. Emergency procedures
7. Permits to close roads or lanes if necessary
8. Drawing of plug, bypass pump and pipeline locations (if bypass pumping is required)
9. Bypass pump sizes, capacities, number of each size to be onsite (including standby equipment) and power requirements (if bypass pumping is required)
10. Bypass pipeline sizes and material types (if bypass pumping is required)

813-4 FLOW CONTROL PRECAUTIONS: Whenever flows in a sewer line are blocked, plugged or bypassed, sufficient precautions shall be taken to protect the sewer lines from damage that might be inflicted by excessive sewer surcharging. Further precautions shall be taken to ensure that sewer flow control operations do not cause flooding or damage to public or private property being served by the sewers involved.

In situations where flow is running through an open trench during a sewer repair or replacement, Contractor shall take precautions to ensure that debris, bedding/backfill material, sediment, etc. do not enter into the sewer system possibly causing damage to downstream pump stations. In the event debris, bedding/backfill material, sediment, etc. does enter the downstream sewer system due to Contractor negligence, the Contractor shall be responsible for cleaning and videoing the downstream system and also any damage to the downstream pump station equipment at no additional cost to the Owner.

813-5 PLUGGING OR BLOCKING:

a. A sewer line plug permanently marked with a Contractor identification tag, shall be inserted into the line upstream of the pipe segment being inspected or repaired. Where necessary, plugs permanently marked with a Contractor identification tag, shall also be installed into the storm sewer pipe. Plugs shall be so designed that all or any portion of the flow can be released. All plugs shall have a tag line attached to them that extends outside of the manhole or wet well in addition to the air line in case of air line rupture. During CCTV inspection and sealing operations, flow shall be reduced to within the limits specified in Subsection 813-2.d.

b. After the Work has been completed and restricting the flow is no longer needed for the work, then the flow shall be restored to normal. Flow shall be restored by removing the plugs in an order that permits flow to slowly return to normal without surcharging or causing other major disturbances downstream.

c. Temporary plugs shall be removed and the flow restored to normal at the end of each working day. If downstream work is not or cannot be completed during the workday then the Contractor shall be required to provide, operate, and maintain bypass pumping system on a 24 hour basis.

d. The Contractor shall use bypass pumping if the work cannot be scheduled or cannot be completed at a time when flow is within the flow levels specified by Subsection 813-2.d.

813-6 PERFORMANCE REQUIREMENTS:

a. It is essential that the sewer service have no interruption through the duration of the Work. If the storage capacity of the upstream line is not adequate to store the flow during the duration of the work or if the line is to be shut down for a period greater than 8 hours, then the Contractor shall provide adequate bypass pumping so that there is no interruption in the flow throughout the duration of the work. Therefore, Contractor shall provide, maintain and operate all temporary facilities such as dams, plugs, pumping equipment (both primary and back-up units) as necessary to intercept the flow before it impacts the work area, carry it past the work area and return it to the existing sewer system downstream of the work.

b. Discharge of sewage into the construction trench, private or public property, gutters, streets, sidewalks or storm sewers shall not be permitted.

813-7 FLOW ELIMINATION:

a. The flow shall be completely eliminated when required for sewer pipe replacement, structural concrete repairs in deteriorated manholes, or installation of cured-in-place pipe.

b. Flow elimination may be accomplished by temporary shutdown of pump stations where possible, or by plugging upstream sewers and pumping of flows, if required. Temporary shutdown of pump stations shall be done by Wastewater Maintenance personnel only.

c. All requests of the Contractor to eliminate or adjust the flow within the system shall be made in writing to the Owner. Owner and Contractor recognize and acknowledge that the elimination and/or adjustment of the flow are a cooperative effort and that the time and effort required achieving the desired flow varies. Owner and Contractor declare and agree that Contractor shall not be allowed, due, or paid any additional compensation, whatsoever, for Contractor's work, effort, time, material, labor, rentals, equipment, expenses, etc., during, as a result of, or arising from the elimination or adjustment of the flow.

813-8 PUMPING AND BYPASSING:

a. The Contractor shall obtain approval and secure all permits for placement of temporary bypass pumping system and pipeline within public right-of-way.

b. Bypass pumping may be required whenever pump stations are shut down or flow in gravity sewer lines are restricted or blocked. The Contractor shall supply the necessary pumps, conduits, and other equipment to divert the flow around the pump station, restriction, blockage, or other structure in which work is to be performed. Temporary shutdowns shall be performed by Wastewater Collection Pump Maintenance Personnel only. The bypass system shall be of sufficient capacity to handle existing flows plus additional flow that may occur during periods of a rainfall. Electric pumps or diesel silent pack pumps shall be used. No other type of pump will be acceptable without prior approval of the Owner.

c. The Contractor shall be responsible for furnishing the necessary equipment, power, labor, and supervision to set up and operate the pumping and bypassing system. If pumping is required on a 24-hour basis, all equipment shall be operated in a manner to keep the pump noise at a minimum, and in accordance with City/Parish noise ordinance.

d. The Contractor shall be solely responsible for clean-up, repair, property damage costs

and claims resulting from failure of the diversion system.

e. Bypass pumping shall not damage private or public property, or create a nuisance or public menace. Pumped sewage shall be in an enclosed pipe that is adequately protected from traffic, and shall be redirected into sanitary sewer system or alternatively into an enclosed tank for hauling to the wastewater treatment plant. Dumping or free flow of sewage on private or public property, gutters, streets, sidewalks, or into storm sewers is prohibited. Dumping of storm water may be discharged at a downstream location, as approved by the Engineer.

f. The Contractor shall make all arrangements for bypass pumping during the times when the main is shut down for any reason. The Contractor shall also perform the work during a low-flow period whenever possible.

g. The Contractor shall furnish, install, and maintain power, primary and standby pumps, equipment, and bypass piping required to maintain existing flows and services.

    1. All pumps used shall be fully automatic self-priming units that do not require the use of foot-valves or vacuum pumps 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.

    2. The Contractor shall provide the necessary stop/start controls for each pump.

    3. The Contractor shall included one stand-by pump of each size to be maintained on site. Back-up pumps shall be on-line and isolated from the primary system by a valve.

    4. In order to prevent the accidental spillage of flows, all discharge systems shall be temporarily constructed of a secure, tight, leak free discharge pipe. Under no circumstances will aluminum “irrigation” type piping or glued PVC pipe be allowed.

h. The Contractor shall be responsible for continuity of sewer service to each facility connected to the section of sewer main during the execution of the work, and shall also bypass the main sewer flow around the pipe to be replaced, or into adjacent sewers.

i. The pumps and the bypass lines shall be of adequate capacity and size to handle all flows without backup to private property.

j. Costs of bypass pumping, when needed, shall be included in the Contractors bid and shall be considered incidental to the work, unless a specific bid item is provided in the bid form.

813-9 SERVICE LATERAL DISCONNECTION:

a. Disconnected sewer service lateral connections shall be accommodated by bypass pumping or containment of the flow from time of disconnection to time of reconnection. This shall be accomplished by a mechanical pump and manifold system or by a storage system such as a bladder tank system. The storage system shall be capable of holding adequate sewage from each sewer service lateral connection for a period of 24 hours. Each storage system shall be emptied or pumped during each 24-hour period and properly disposed of.

b. When a service lateral must be disconnected from the main for more than 1 work day,

the lateral shall be positively drained or pumped a minimum of once every 24 hours. The Contractor shall monitor status of flow and storage, and pump lateral more frequently if flows exceed the storage capacity of the lateral or the temporary storage.

c. Reconnect services in uncompleted sections during times of construction inactivity.

d. Notify building occupants when work is complete and full uninterrupted service restored.

e. No service is to remain shutdown for more than a period of 8 hours, unless Contractor provides substitute services for the residents. If the service is to be shutdown for more than 8 hours and Contractor cannot provide substitute services, then Contractor shall be required to provide temporary living quarters (i.e. hotel) for the resident at no additional cost to Owner or the resident. Temporary living quarters shall be approved by Engineer.

813-10 FIELD QUALITY CONTROL AND MAINTENANCE:

a. Testing: The Contractor shall perform leakage tests of the bypass pumping discharge piping using clean water prior to operation.

b. Inspection: The Contractor shall inspect the bypass-pumping system no less than once every 2 hours to ensure that the system is working correctly.

c. Maintenance of Service: The Contractor shall ensure that the temporary pumping system is properly maintained and a responsible operator shall be on hand at all times when pumps are operating.

813-11 CLEANING:

a. Before the bypass pumping system is dismantled, either to be moved to the next section or at the completion of the work, discharge sewage remaining in the bypass discharge pipeline and pumping equipment into the working sanitary sewer. Storm water is to be discharged at a downstream location, as approved by the Engineer.

b. Upon completion of the bypass pumping operation, disturbed areas shall be cleaned and restored to their original condition. This restoration should restore the site to a condition which is at least equal to or better than the condition which existed prior to the start of the work.

813-12 LIABILITY: The Contractor shall be responsible for damages to private or public property that may result from the sewer flow control operations. The Contractor shall be responsible for any violations of laws, regulations or permits and shall indemnify and hold the Owner harmless for any and all damages, including but not limited to, fines, penalties and law suits which arise from such violations.

813-13 MEASUREMENT: If a pay item for bypass pumping is included in the Contract, measurement will be as follows:

a. **Bypass Pumping Greater than 16” up to 36”:** Measurement for this item shall be per each line segment bypassed.

b. **Bypass Pumping (Capacity):** Measurement for this item shall be per each set-up for an initial operation period of eight (8) hours. Measurement for any operation beyond the initial eight (8) hour period shall be on an hourly basis.

813-14 PAYMENT: If no pay item for bypass pumping is included in the Contract, bypass pumping shall be at no direct cost and the Contractor shall include the cost in the price bid on other items. If a pay item for bypass pumping is included in the Contract, payment will be made as follows:

a. **Bypass Pumping Greater than 16" up to 36":** Payment for this Work will be full compensation for furnishing all labor, materials, equipment, and incidentals required to complete the Work. This work shall include all bypass pumping and temporary flow control when no separate specific Bid Item is included for these functions. Any other miscellaneous Work not specifically included for payment under any other Items in the Bid Form but obviously necessary to complete the Contract and fulfill all requirements of these Specifications and Contract Documents shall be included.

b. **Bypass Pumping (Capacity) per each:** Payment for this Work will be full compensation for furnishing all labor, materials, equipment, set-up, and incidentals required to complete the Work during the initial eight (8) hours of operation. This work shall include all bypass pumping and temporary flow control when no separate specific Bid Item is included for these functions. Any other miscellaneous Work not specifically included for payment under any other Items in the Bid Form but obviously necessary to complete the Contract and fulfill all requirements of these Specifications and Contract Documents shall be included.

c. **Bypass Pumping (Capacity) per hour:** Payment for this Work will be full compensation for furnishing all labor, materials, equipment, and incidentals required to continue the operation of the bypass pumping after the initial eight (8) hours of operation.

813-15 PAY ITEMS:

Item No.	Item	Unit
8130001	Bypass Pumping Greater than 16" up to 36"	Each
8136001	Bypass Pumping (__ - __ GPM Capacity)	Each
8137001	Bypass Pumping (__ - __ GPM Capacity)	Hour