

**Item No. 330
Wastewater By-Pass Pumping****330.1 Description**

This item shall govern the construction, labor, materials, equipment and incidentals necessary to implement a temporary bypass pumping system for the purpose of diverting existing sewer flows around the work area regardless of number of locations, set-ups, length and duration, and shall be for the duration of the Project.

330.2 Submittals

The submittal requirements of this specification item must include:

- A. Manufacturer's product data, instructions, recommendations, Shop Drawings, and necessary certifications in order for the proposed Bypass Pumping Plan to be reviewed. The plan shall include, but not be limited to, the following:
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.
 4. Number, size, material, location and method of installation of discharge piping.
 5. Bypass pump sizes, capacity, number of each size to be on site, including spare pump, and power requirements.
 6. Calculations of static lift, friction losses, and flow velocity (pump curves showing pump operating range shall be submitted based on bypass pumping schedule at the end of this Section).
 7. Standby power generator size and location.
 8. Downstream discharge plan.
 9. Calculations for selection of bypass pumping pump size.
 10. Method of noise control for each pump and/or generator if required.
 11. Method of protecting discharge manholes or structures from erosion and damage.
 12. Schedule for installation and maintenance of bypass pumping lines.
 13. Schedule and emergency contact information for on-site operator or staff in responsible charge.

330.3 Quality Assurance

- A. Contractor shall demonstrate that the temporary bypass pumping system is in good working order and is sufficiently sized to successfully handle all sanitary sewer flows by performing a test run for a period of 24 hours prior to beginning Work.

- B. Contractor shall be required to have all materials, equipment and labor necessary to complete the repair and/or replacement on the Site prior to isolating the sewer manhole or line segment and beginning flow diversion or pumping operations.
- C. Contractor shall provide both a strobe light type, high level alarm, as well as alarm notification to their cell phones, as well as other appointed personnel to be identified by the Owner and ensure adequate alarm notification is attained prior to actual startup of the test period.
- D. During active operations, Contractor shall have personnel on the Site 24/7. If multiple locations are active within a project site, Contractor must maintain a ratio of 2 to 1, active bypass pumping areas to personnel. If the two sites are more than 500 feet away from each other or the high-level strobe alarm cannot be seen from each location, then the Contractor must provide dedicated personnel at every site.
- E. Contractor shall coordinate all activities through Engineer and Owner.
- F. It is anticipated that bypass pumping shall be required at the following locations:
 - 1. **[Specify project specific information for locations that will require bypass pumping. This is not meant to be a bypass pumping plan.]**

330.4 Materials

- A. Contractor shall provide all necessary pumping equipment, piping and all other necessary appurtenances in order to maintain adequate and reliable sanitary sewer flow in the sewer system (excluding manholes) at all times during construction. All materials, equipment, etc., must be in good condition and should not have visible damage such as cracks, holes, foreign material, blisters, etc. Contractor must place a sign and provide an emergency contact on site stating, "In the event of a sewer overflow for other issue, call the emergency contact listed" for citizens to report issues.
- B. High-Density Polyethylene (HDPE) is the preferred pipe material for all bypass piping. HDPE must be used when bypass discharge piping will be going through streams, storm water culverts, and/or environmentally sensitive areas.
 - 1. HDPE pipe must be assembled and joined using couplings, flanges or fusion welding in order to avoid joint leakage.
 - 2. HDPE fusion welding must be performed by personnel certified as fusion technician(s) by the manufacturer of HDPE pipe and/or fusing equipment.
 - 3. The bypass pumping plan shall indicate the proposed DR of the pipe to be used.
- C. Pipe material other than HDPE shall be submitted to the Engineer for approval. Neither "irrigation type" pipe nor glued PVC pipe will be permitted.
- D. Plugs must be selected and installed according to the size of the line to be plugged. An additional plug must be on-site and ready to be installed in the event a plug fails or becomes dislodged. Plug(s) will be reviewed by the inspector and/or Engineer for defects that might lead to failure prior to being installed. It is also imperative that the Contractor notify the inspector at the completion of the Work in order to verify that all plugs have been removed from the system.

330.5 Equipment

- A. Pumps must be fully automatic self-priming units that do not require the use of foot-valves or vacuum pumps to prime the system. Pumps may be electric or diesel powered. The primary pump must be a grinder or chopper pump, in order to reduce the potential for debris to complicate the safe operation of the pumps.
- B. Contractor shall have one backup pump, equal in capacity to the largest pump in the system, connected to the temporary bypass pumping system and ready for operation in case any of the primary pumps fail. The backup pump shall not be used in Contractor's calculations for determining the pumping capacity requirements for the stated flow conditions.
- C. Sound-attenuated pump enclosures shall be required on all projects where the bypass pumps are located within 100 feet of any residence, business, park, or other presence of people. If a pump is not located within 100 feet of a residential district, the pump enclosures must suppress sound to 85 decibels at all times. If the pump is located within 100 ft of a residential district, the pump enclosure must limit the sound to 85 decibels between 10:00 A.M. and 10:00 P.M. and to 75 decibels at all other times as stated in the City of New Braunfels Noise Ordinance.

330.6 Construction Methods

Preparation:

- A. Obtain the Engineer's approval of location of bypass pipelines, staging areas and pump locations prior to installation.
- B. Obtain approvals for placement within public or private property.

Construction, Installation, and Removal:

- A. During construction, it will be the Contractor's responsibility to maintain a safe and secure environment at all times. All provisions and/or requirements of the temporary bypass pumping plan must be followed throughout the course of any bypass flow operations. Contractor must notify the Owner 72 hours prior to commencing the bypass pumping operations.
- B. Contractor shall provide continuous supply on-site fuel storage sufficient for 24-hour operation of the bypass pumping installation.
- C. Contractor shall protect all components of the bypass operations from vandalism and vehicular damage by making the site secure.
- D. Contractor shall minimize sewer odors by using lids, shroud covers, or any method approved by the Inspector or Engineer.
- E. Contractor shall be solely responsible for any and all damages to private and/or public property caused by or during the installation, operation, and/or removal of the bypass pumping system.
- F. All piping, joints and accessories shall be designed to withstand at least twice the maximum system pressure, or a minimum of 50 psi, whichever is greater.

- G. During flow diversion and/or pumping, no sewage shall be leaked, dumped, or spilled in or onto, any area outside of the existing sanitary sewer system.
- H. When flow diversion and/or pumping operations are complete, all pumping shall be drained into the sanitary sewer prior to disassembly and all flow management components shall be removed.

Bypass Pumping Schedule:

- A. Flows shown below are based on modeled flows.
- B. It is the Contractors responsibility to verify the flows with the city prior to development of bypass pumping plan.

Sanitary Sewer Manhole / Location	Average Dry Weather (MGD or GPM)	Peak Wet Weather (MGD or GPM)
(SSMH No. X or STA __+__ or Line Name and Size)	X.XX	X.XX

330.7 Measurement and Payment

Measurement:

- A. Measurement for the Work specified herein will be by lump sum, as the Work progresses, and as required by the Contract Documents.
- B. Temporary bypass pumping not specifically required on the Drawings but directed by the Engineer and/or the inspector, will not be measured separately for payment and will be considered incidental. Repair or replacement of manhole sections disturbed as a part of the temporary bypass pumping operations is considered incidental to the line item and will not be measured separately for payment.

Payment:

- A. Partial payment of the lump sum bid item for temporary bypass pumping shall be in accordance with the following:
 - 1. When initial setup and operation of the temporary bypass pumping system begins, 40 percent of the line item will be paid.
 - 2. The remaining portion of the line item will be paid when the temporary bypass pumping system operations for the entire job are completed.

End