

SECTION 01 57 28
TEMPORARY FLOW CONTROL

PART 1 GENERAL

1.01 REFERENCES

- A. The following is a list of standards which may be referenced in this section:
 - 1. Institute of Inspection, Cleaning, and Restoration Certification (IICRC): S500, Standard and Reference Guide for Professional Water Damage Restoration.

1.02 DEFINITIONS

- A. Bypass Pumping: Temporary flow control accomplished by diverting flow between unit processes within the Work area using one or more pumps.
- B. Temporary Flow Control: Reducing, redirecting, limiting, or excluding flow in or to a sanitary sewer, storm sewer, pump station, force main, process piping or other facility as required for performing the Work under the Contract. Draining, handling, and disposal of sanitary sewage and stormwater from pipelines and other facilities as required for performing the Work under the Contract is also part of temporary flow control.
- C. Temporary Flow Control Plan: Plan prepared by Contractor containing complete information on how Contractor proposes to perform temporary flow control in accordance with specified requirements.

1.03 SYSTEM DESCRIPTION

- A. Provide facilities and controls required to intercept, convey, and discharge flow to be controlled; include standby and emergency equipment.
- B. Conform to regulatory requirements.
- C. Protect water resources, wetlands, and other natural resources.
- D. Temporary flow control shall be done in a manner that will not damage private or public property or create a nuisance or public menace. Flow shall be conveyed in enclosed pipes that are adequately protected from traffic or other hazards.

E. Discharge:

1. To sanitary sewer system or wastewater treatment plant processes as described herein.
2. Dumping or free flow on private or public property, gutters, streets, or sidewalks is prohibited.
3. Discharge of sanitary sewage to storm sewers, to surface waters or wetlands, or into the ground, is prohibited.

1.04 SITE CONDITIONS

- A. Obtain approval and secure permits for placement of temporary flow control facilities within public right-of-ways.
- B. Existing facilities within the Wastewater Treatment Plant property lines are shown on the Drawings.

1.05 SUBMITTALS

A. Informational Submittals:

1. Temporary Flow Control Plans.
2. Bypass Pumping Plans.
3. Emergency Cleanup Plan.
4. Special permits required for temporary flow control.
5. Names and qualifications of industrial hygienist and standby cleanup Subcontractor, including but not limited to, certification by IICRC.
6. Information describing equipment and materials to be used and showing conformance with specified requirements.
7. Personnel Plan.

1.06 QUALITY ASSURANCE

A. Qualifications:

1. Industrial Hygienist and Cleanup Subcontractor: Certified by IICRC.
2. Temporary Flow Control System Designer: Professional engineer who has at least 5 years' experience in design of such systems and who is registered in the State of Arizona.

B. Regulatory Requirements: None.

1.07 TEMPORARY FLOW CONTROL AND BYPASS PUMPING SYSTEMS IDENTIFIED TO COMPLETE THE WORK

- A. The following list includes temporary flow control and bypass pumping systems which are anticipated to be required to complete the construction and

commissioning of the wastewater treatment. Additional systems may be required, or systems listed may be unnecessary if the Contractor develops a commissioning plan which eliminates the need for these systems. Maximum capacities are listed; temporary flow control and bypass pumping systems shall provide variable flow control on the order of 10 to 1 turndown.

1. Raw Sewage: Temporary flow control, or bypass pumping, for tie in of new raw sewage manhole No. 11 located on the existing 24-inch Raw Sewage (RS) influent pipe. This tie-in will allow feeding RS to Facility 20, Headworks. Maximum capacity of 2 mgd is required.
2. Raw Sewage: Temporary flow control to allow concurrent feeding of Facility 20, Headworks and the existing headworks..
3. Raw Sewage: Temporary flow control, or bypass pumping, for tie in of the existing 4-inch RS force main to new raw sewage manhole No. 11. Maximum capacity of 300 gpm is expected, field verify.
4. Temporary flow control diverting RS from the RS piping near the influent to Facility 25 – Process Tanks to the RS/Bypass piping which discharges to the Tank Drain Pump Station wet well. Branch connections points on the RS and RS/Bypass piping are provided. Maximum capacity of 1.2 mgd is required.
5. Temporary bypass pumping from the Tank Drain Pump Station wet well to the existing SR WWTP Headworks. A pumping capacity of 500 gpm is required.
6. Temporary WAS or Mixed Liquor Suspended Solids (MLSS) bypass pumping from existing SR WWTP to seed the new Secondary/Tertiary Unit Process. MLSS can be pumped directly from the existing aeration basins. MLSS shall be passed through all stages of Headworks prior to introduction into the Bioreactors. Maximum capacity of 1.2 mgd is required.
7. Temporary flow control diverting Permeate (PERM) from downstream of the Membrane unit process to the Tank Drain Pump Station wet well or to the existing SR WWTP Reclamation Plant. Branch connections on the PERM piping are provided for this bypass function. Maximum capacity of 1.2 mgd is required.
8. Temporary flow control diverting UV Effluent (UVE) from downstream of the UV Unit Process to the existing SR WWTP Reclamation Plant. Branch connections on the UVE piping are provided for this bypass function. . Maximum capacity of 1.2 mgd is required.
9. Temporary Digested Sludge (DS) bypass pumping from the existing digester to Facility 18, Receiving Station. All DS shall be treated by the Septage Receiving unit and stored in the Septage EQ Tank and transferred with the Septage Equalization Pump to Facility 80, Digester Facility. A submersible pump may be deployed into the digester through the existing digester roof hatch. The pump should be suspended in the tank no less than 10feet off the bottom of the digester tank to avoid

unknown grit and rag accumulation. The DS bypass pumping capacity shall be no greater than the Septage Equalization Pump capacity.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION

3.01 GENERAL REQUIREMENTS

- A. Install temporary flow control facilities only within public right-of-way, Government's property, temporary construction easement, permanent easement, or easement obtained by Contractor.
- B. Operate and maintain temporary flow control 24 hours per day, 7 days per week, including without limitation, holidays, as required to control flows.
- C. Promptly remove temporary flow control facilities as soon as they are no longer needed.

3.02 REQUIRED TEMPORARY FLOW CONTROL

- A. Eliminate flow from sewer manhole to manhole segments during the process of cutting existing piping inside new manholes which have been built around the existing pipe.
- B. Temporary piping systems to divert process system flow during commissioning phase of the project.

3.03 EQUIPMENT AND MATERIALS

- A. General:
 - 1. Provide materials and equipment that will ensure continuous and successful operation of temporary flow control systems.
 - 2. Repair or modify systems as necessary.
 - 3. Unless otherwise shown or specified, materials and equipment may be new or used at Contractor's option.
- B. Plugs:
 - 1. Provide with taps for connection of pressure gauges and air hoses, and flow-through capability.
 - 2. Pipe Diameters 24 Inches and Smaller: Use mechanical plugs with rubber gaskets or pneumatic plugs with rubber boots.

3. Pipe Diameters Larger than 24 Inches:
 - a. Use inflatable bag stoppers made in two or more pieces.
 - b. Manufacturers:
 - 1) Lansas.
 - 2) Cherne Industries.

C. Pumps:

1. Fully automatic, self-priming units that do not require use of foot valves or vacuum pumps in priming system.
2. Or, fully automatic, submersible units designed for the intended service.
3. Solids handling design with ability to pump minimum 3-inch diameter sphere.
4. Able to run dry for long periods of time, or provide adjustable flow control, to accommodate cyclical nature of flows.
5. Engine: Equipped to minimize noise. Noise levels shall not exceed 86 dBA at a distance of 50 feet from source.

D. Electric Power Generators:

1. Be able to simultaneously start and run electric powered pumps required for flow to be controlled.
2. Equipped to minimize noise. Noise levels shall not exceed 86 dBA at a distance of 50 feet from source.
3. Include automatic transfer switch if flow control system is to operate unattended.

E. Standby Equipment:

1. Standby Pump: One of each size to be available onsite.
2. Electric Power Generators: Minimum of one if temporary flow control system contains electric powered pump. Able to simultaneously start and run electric powered pumps required for flow to be controlled.

3.04 TEMPORARY FLOW CONTROL PLAN

A. Prepare and submit Temporary Flow Control Plan at least 20 days before starting the Work requiring temporary flow control; include following information:

1. Drawings indicating location of temporary sewer plugs and bypass discharge lines.
2. Drawings of temporary flow control bypass piping and bypass pumping discharge lines showing the source location and discharge location. Include details of piping and flexible hose to be utilized.

3. Traffic Control Plan specifically applicable to temporary flow control adhering to requirements of applicable agencies and as may be specified in Contract Documents.
4. Personnel plan for providing oversight of the temporary flow control systems 24/7 operation. The plan shall include details such as the names of personnel responsible, and method of alerting personnel to alarms or failures if they are not on site.
5. If trucks are to be employed include the following:
 - a. Numbers and sizes of trucks.
 - b. Configuration of facilities to be used to load trucks at each interception location.
 - c. Locations where trucks will unload.
 - d. Time for loading, unloading, and travel.
6. Complete descriptions and performance characteristics of pumps, electric power generators, and standby equipment.
7. Acoustical information for equipment to be used showing compliance with noise control requirements of Section 01 50 00, Temporary Facilities and Control.
8. Details of temporary force mains, including horizontal and vertical alignments, pipe materials, protection of existing buried and aboveground facilities and improvements, maintenance of traffic and access to properties.
9. Design calculations proving adequacy of temporary system and selected equipment to convey all flows.
10. Drawings showing layouts and configurations of temporary flow control facilities and also showing locations relative to right-of-way easement, and property boundaries.
11. Drawings and design calculations of temporary bulkheads and plugs.
12. Drawings and design calculations for thrust restraint of temporary piping.
13. Details of system controls and control logic; include diagrams and narrative.
14. Anticipated schedule for the Work.
15. Other information to completely describe temporary flow control facilities and conformance to specified requirements.

3.05 EMERGENCY CLEANUP PLAN

- A. Prepare and submit not less than 60 days before scheduled date of temporary flow control activities. As a minimum plan shall include the following:
 1. Procedures for removal of water.
 2. Procedures for determining nature and extent of damage and required restoration where restoration is possible.
 3. Provide for industrial hygienist and standby Subcontractor for cleanup of exterior and building interior spaces that might be affected by a spill,

backup, or overflow. Industrial hygienist and cleanup Subcontractor shall be certified by IICRC and follow IICRC S500 for cleanup of Category 3 water.

B. Implement for Full Scale Test and during temporary flow control.

3.06 BLOCKING FLOW

- A. Flow control may consist of blocking flow with mechanical or pneumatic plugs if only small amount of flow needs to be controlled and adequate storage is available.
- B. Use primary and secondary plugs for each flow control location.
- C. When blocking flow is no longer needed for performance and acceptance of the Work, remove plugs in a manner that permits sewage flow to slowly return to normal without surcharging or causing other major disturbances downstream.
- D. Remove temporary plugs at end of each working day and restore normal flow. If downstream work is not or cannot be completed during workday provide, operate, and maintain bypass pumping system or other method of flow control to accommodate flows.

3.07 PIPING

- A. Minimize disturbance of existing utilities.
- B. Where temporary flow control pipelines cross streets and private driveways, install pipeline in trench and cover with temporary pavement.
- C. Installation of bypass pipelines is prohibited in salt marsh/wetland areas.

3.08 TEMPORARY SANITARY SEWAGE FLOW REDUCTION

- A. Contractor may request sewer service customers upstream of the Work area to reduce or curtail sewer flow.
 - 1. First Notice: Not less than 1 week nor more than 2 weeks prior to when sewer flow deduction or curtailment is requested.
 - 2. Second Notice: Not more than 24 hours nor less than 12 hours prior to when sewer flow deduction or curtailment is requested.
- B. When service lateral must be disconnected from main for more than 1 day, lateral shall be positively drained or pumped a minimum of once every 24 hours. Monitor status of flow and storage. Pump lateral more frequently where flows exceed storage capacity of lateral or temporary storage as may be provided by Contractor.

- C. Temporarily restore full flow services in uncompleted sections during nonwork hours.
- D. Promptly notify sewer service customers that were requested to reduce or curtail sewer flow when the Work is complete and full uninterrupted service restored.
- E. Contractor shall be responsible for control of sewage flows and under no circumstances be entitled to rely on flow reduction or curtailment by upstream sewer service customers.

3.09 DRAINING EXISTING RECLAIMED WATER PIPELINE

- A. Before initiating shutdown, ensure required materials, equipment, and labor are available onsite. Excavate and expose portions of existing pipeline to be removed.
- B. Provide tap and piping in place to drain from existing pipeline before it is cut and to capture contents that may drain out when pipe is cut.
- C. Water drained from reclaimed water pipeline shall be conveyed and discharged to the raw sewage system entering the plant.

3.10 FIELD QUALITY CONTROL

- A. Hydrostatic Pressure Test for Pumped and Gravity Bypass Systems:
 - 1. Prior to operation, test each section of piping with maximum pressure equal to 1.5 times maximum operating pressure of system. Pump suction piping testing is not required.
 - 2. Notify Contracting Officer 24 hours prior to testing.
- B. Full Scale Test:
 - 1. At least 14 days prior to test, notify the Contracting Officer of date and time of test.
 - 2. Do not begin temporary flow control activities until successful test has been completed.
 - 3. Conduct on proposed temporary flow control at least 14 days before scheduled date of actual proposed temporary flow control.
 - 4. Purpose of test is to demonstrate capability, function, and reliability of Contractor's proposed method of temporary flow control.
 - 5. Duration: Minimum of 4 hours.
 - 6. Conduct between 8:00 a.m. and 4:00 p.m. Do not conduct test on Saturday, Sunday, or holiday.
 - 7. If electric pumps are being used, provide standby generators to ensure continuity of pumping operation in event of power failure.

8. Demonstrate system controls and operation, reliability, and transfer to standby equipment during test.
9. Conduct until flow is accommodated for minimum specified test duration.
10. Failure:
 - a. Test shall be deemed to have failed if during test flows are not accommodated for whatever reason and for whatever length of time.
 - b. If test fails, determine and correct deficiencies that caused test to fail and conduct another Full Scale Test.
11. Determination by the Contracting Officer of a successful test, permission by the Contracting Officer to proceed with the Work requiring temporary flow control, or anything else shall not relieve Contractor from responsibility to provide temporary flow control.

END OF SECTION

