MICHIGAN

DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION

FOR

**BYPASS PUMPING**

DET:MS 1 of 4 APPR:DMG:CJD:08-19-21

**a. Description.** This work consists of furnishing and operating a temporary storm water bypass pumping system at each location designated in the contract as approved by the Engineer. Temporary bypass pumping will be required to operate 24 hours per day, 7 days per week for the duration required.

During construction, maintain pump station capacity in accordance with the Special Provision for Pump Station Equipment, Mechanical and Vertical Mixed Flow Pumps. When shown on the plans, the Contractor may sequence the work to maintain existing pumping equipment to provide the required capacity of the pump station.

**b. Materials.** Furnish mechanical materials in accordance with the standard specifications, current applicable *ASTM standards* and as specified herein.

Ensure electrical materials and controls required for automated operation of each pump and automated pump watch in accordance with the current standards and practices of the *NEC, ANSI, ASTM, UL, NEMA*, the standard specifications, *MIOSHA* and this special provision.

Where applicable, utilize existing pump station pumps and discharge piping for bypass pumping operations. Coordinate the use of existing pump station equipment with the Engineer. Ensure bypass pumps are capable of passing a minimum of a 3-inch solid.

Ensure pump is electrically driven. Allowable pump types include:

1. End suction, centrifugal trash pumps, capable of priming and re-priming automatically, without assistance. Trash pumps utilizing foot-valves are not permitted.

2. Submersible sewage pumps with double shrouded non-clog, semi-open vortex, semi-open multi-vane, or cutter type impellers.

3. Submersible mixed flow/propeller pumps.

Construct discharge piping of rigid pipe and fittings with positive, restrained joints. Piping must have a pressure rating equal to 1.5 times the working pressure at peak flow.

**c. Construction.** Design, furnish, install, test, operate, monitor, and maintain temporary bypass pumping system(s). The Contractor is responsible for all damages caused by temporary bypass pumping.

1. Install and test the bypass pumping system(s) and all components prior to commencing construction.

2. Maintain bypass pumping in a manner that will not cause surcharging of sewers or damage to sewers. Maintain bypass pumping in a manner that will protect public and private property from damage and flooding.

3. Accomplish bypass pumping without damaging existing buildings or structures.

4. Remove the temporary bypass pumping system(s) upon completion of the work.

5. Furnish, maintain, and operate all temporary facilities such as dams, plugs, pumping equipment (both primary and back-up units), conduits, all power, and all labor required for bypass pumping.

6. Furnish adequate standby equipment installed and ready for immediate operation and use if the primary system(s) should fail. Furnish one pump on standby at each work location, equal to the largest pump in the bypass pumping system(s), to maintain pump system redundancy.

7. For bypass pumping operation(s) discharging to an existing sewer, the maximum water level in the influent sewer cannot exceed the crown of the existing influent sewer. Discharges to existing sewers require prior approval of local agencies with jurisdiction for the sewers.

8. Bypass pumping operation(s) discharging directly to waters of the state must comply with all local, state, and federal guidelines for such an operation. Water discharged to streams, drains or sewers may require permits from federal, state, or local agencies having jurisdiction. Comply with all water quality requirements prior to discharging bypass water. The Contractor is responsible for all testing and treatment required to meet water quality requirements prior to discharge.

Ensure bypass pumping operations design and construction is in accordance with the 1994 PA 451, Natural Resources and Environmental Protection Act, Part 91 Soil Erosion and Sedimentation Control. Where applicable, obtain and pay for all permits and inspections for bypass pumping operations in accordance with 1994 PA 451, Part 91 and all local agencies having jurisdiction. No additional claim for compensation will be allowed due to the Contractor's failure to obtain or pay for required permits and inspections.

Furnish, install, maintain, and remove temporary and permanent soil erosion and sedimentation control measures as specified in the contract or as directed by the Engineer.

9. Furnish designated personnel and equipment for on-call maintenance and operation of the bypass pumping facilities 24 hours a day, 7 days a week during bypass pumping operations. This must include a service truck outfitted with a welder, generator, compressor, and crane. Outfit the truck with the appropriate equipment to ensure that the bypass pumping can be maintained despite mechanical failures.

10. Prior to installation of the bypass system(s) attend an onsite meeting with the Engineer to review the proposed installation. Upon completion of the installation demonstrate that the pumping system is in good working order and is sufficiently sized to successfully handle flows by performing a test run prior to beginning the bypass pumping operation.

11. Existing Utilities. Do not interrupt utilities unless approved by the Engineer and then only after arranging to provide temporary utility services in accordance with requirements indicated.

12. Install temporary bypass pumping system(s) to ensure minimum interference to operation of the existing facilities. Always keep driveways and entrances serving premises clear and available to Department personnel and emergency vehicles. Do not use these areas for parking or storage of equipment and materials. Do not close or obstruct streets, walks, or other adjacent occupied or used facilities without approval of the Engineer.

13. Explosion Hazard. Various areas at the facilities are classified as explosion hazards by *National Fire Protection Association (NFPA) 820*. Use appropriate safety measures within these areas when this hazard exists.

14. Confined Space Entry. Comply with *MIOSHA Part 90* and *Part 490 (R 325.63001)* and all state and federal requirements associated with confined spaces. Furnish one copy of the confined space entry program proposed for use on this project prior to commencing work. Ensure the confined space entry program is in accordance with all applicable codes and regulations and be acceptable to the Engineer. Certify, in writing to the Engineer, that the program will be utilized as written for this project.

15. When plugging or blocking is no longer needed for performance and acceptance of work, ensure it is removed in a manner that permits the flow to slowly return to normal without surge, to prevent surcharging or causing other major disturbances downstream.

16. Electrical Power Service. The Contractor may use the existing electrical pump station power system without charge for normal (as determined by the Engineer) electric power use for temporary bypass pumping at each project site.

Provide and install all necessary temporary equipment and materials to connect to the existing electrical service.

A. Ensure generators used to provide the electrical service are housed in sound attenuating enclosures with critical-area-type silencers.

B. Furnish a backup electrical power supply. Ensure the backup power supply is installed and ready for immediate use, including all cabling, disconnect panels and switch gear.

C. Complete all electrical work by an electrician licensed by the State of Michigan and in accordance with the *NEC*.

17. Submittals. Furnish detailed plans and descriptions, in PDF, outlining all provisions and precautions to be taken by the Contractor regarding the temporary bypass pumping of the existing sewer flows. Include schedules, locations, elevations, capacities of the equipment, materials, and all other miscellaneous items necessary and/or required to ensure proper protection of the facilities, including protection of the access and bypass pumping locations from damage due to the discharge flows, and compliance with the requirements specified in the contract. Include the following:

A. Measures for maintaining appropriate security for the bypass piping materials and equipment from vandalism.

B. Sewer plugging method.

C. Staging areas for temporary pumps.

D. Number, size, material, location, and method of installation of suction piping.

E. Number, size, material, location, and method of installation of discharge piping.

F. Bypass pump sizes, capacity, and quantity of each size pump to be on site as well as the power requirements.

G. Calculations of pump capacity and Total Dynamic Head (TDH), including the calculations that are used to derive the system TDH. Data must include calculations determining the Net Positive Suction Head available and Net Positive Suction Head required by each pump. Submit pump curves for all pumps.

H. Standby power generator size and location.

I. Thrust and restraint block sizes and locations.

J. Method of noise control for each pump and/or generator.

K. Any temporary pipe supports, and anchoring required.

L. Operating weights for equipment to be supported on existing structures.

M. Scheduling for installation of and maintenance of bypass pumping lines.

N. Emergency contact list.

O. Photographs or digital video recording, sufficiently detailed, of existing conditions of adjoining construction and site improvements that might be misconstrued as damage caused by temporary bypass pumping operations.

**d. Measurement and Payment.** The completed work, as described, will be measured as a lump sum and paid for at the contract price using the following pay item:

**Pay Item Pay Unit**

Bypass Pumping (Structure Identification) Lump Sum

**Bypass Pumping (Structure Identification)** includes installing and operating a temporary bypass pumping system and miscellaneous equipment for a complete and operating system. Removal and disposal of this temporary system is included in this pay item and will not be paid for separately.