

PART 1 – GENERAL

1.1 RELATED SECTIONS

- A. Section 01 33 00 – Submittal Procedures
- B. Section 01 45 00 – Quality Control
- C. Section 31 10 00 – Site Clearing
- D. Section 31 20 00 – Earth Moving
- E. Section 33 46 00 – Subdrainage
- F. Section 33 11 00 – Water Utilities
- G. Section 33 11 16 – Pumping and Pump Stations
- H. Section 32 90 00 – Planting
- I. Section 01 78 00 – Closeout Submittals

1.2 REFERENCES, CODES, AND STANDARDS

- A. American Society for Testing and Materials (ASTM)
 - 1. ASTM D2321 – Standard Practice for Underground Installation of Thermoplastic Pipe for Sewers and Other Gravity-Flow Applications
 - 2. ASTM D5092 – Standard Specification for Rubber Gasket Joints for Drain and Sewer Plastic Pipes
- B. American National Standards Institute (ANSI)
 - 1. ANSI/ASME A112.6.3 – Gravity Sanitary Drainage Systems
- C. Occupational Safety and Health Administration (OSHA)
 - 1. OSHA 29 CFR 1926 – Safety and Health Regulations for Construction
- D. International Code Council (ICC)
 - 1. International Building Code (IBC)
 - 2. International Plumbing Code (IPC)
- E. National Fire Protection Association (NFPA)
 - 1. NFPA 70 – National Electrical Code (NEC)
- F. American Water Works Association (AWWA)
 - 1. AWWA C600 – Installation of Ductile-Iron Water Mains and Their Appurtenances
- G. U.S. Environmental Protection Agency (EPA)
 - 1. EPA Stormwater Management Best Practices
- H. Manufacturer standards and installation instructions

1.3 DEFINITIONS

- A. Dewatering: The process of removing and controlling groundwater and surface water from construction excavations and sites to provide a dry and stable work area.

- B. Pumping System: Equipment used for removing water, including pumps, piping, and discharge systems.
- C. Wellpoints: Small-diameter suction wells connected to a header pipe and vacuum pumps used for lowering groundwater levels.
- D. Sump: A low point excavation or pit where water collects for pumping out.

1.4 SUBMITTALS

A. Action Submittals

- 1. Dewatering Plan: Detailed description of dewatering methods, equipment, sequence, and expected impacts on site and adjacent properties.
- 2. Equipment Data: Manufacturer's specifications, performance curves, and capacities for pumps, wellpoints, and related equipment.
- 3. Pumping System Layout Drawings: Locations of sumps, pumps, discharge lines, and monitoring points.
- 4. Monitoring Plan: Methods and frequency for measuring groundwater levels and water quality.
- 5. Schedule: Dewatering system installation, operation, and removal schedule aligned with construction sequencing.
- 6. Safety Plan: Procedures and measures for worker safety related to dewatering operations, including confined space entry if applicable.

B. Informational Submittals

- 1. Records of field tests and monitoring data.
- 2. Maintenance and operation manuals.
- 3. Copies of permits and approvals related to dewatering activities.
- 4. Photographic documentation of pre-construction site conditions and dewatering setup.

1.5 QUALITY ASSURANCE

A. Qualifications

- 1. Dewatering Contractor shall have a minimum of five years' experience successfully performing dewatering operations similar in scope and complexity.
- 2. All equipment shall be certified by manufacturers and comply with applicable ANSI and ASTM standards.

B. Testing and Monitoring

- 1. Dewatering system shall be monitored continuously during operation to ensure groundwater lowering meets design criteria without adverse effects on adjacent structures or environment.
- 2. Provide instrumentation for groundwater level monitoring, including piezometers or observation wells as directed.

C. Compliance

- 1. Comply with all applicable federal, state, and local environmental regulations, including discharge permits and stormwater management requirements.

2. Implement dust control and erosion prevention measures during dewatering.
- D. Safety
1. Follow OSHA requirements for excavation safety, electrical safety, and confined space entry.
 2. Provide appropriate personal protective equipment (PPE) and training for personnel.

1.6 DELIVERY, STORAGE, AND HANDLING

- A. Deliver equipment and materials in manufacturer's original packaging with labels and instructions intact.
- B. Store pumps, pipes, hoses, and accessories in dry, protected areas to prevent damage and contamination.
- C. Handle equipment carefully to avoid impact or deformation; use appropriate lifting devices and techniques.
- D. Protect electrical components and controls from moisture and physical damage during storage and installation.
- E. Maintain storage records and inspection logs to ensure material integrity prior to installation.

1.7 WARRANTY

- A. Provide a minimum one-year warranty from date of substantial completion covering defects in materials and workmanship of dewatering system components.
- B. Warranty shall include prompt repair or replacement of defective equipment and correction of installation deficiencies.
- C. Submit written warranty documents prior to final acceptance.

PART 2 – PRODUCTS

2.1 MANUFACTURERS

- A. Submersible Pumps:
 1. Flygt (Xylem Inc.)
 2. Grundfos
 3. Tsurumi Manufacturing Co., Ltd.
- B. Wellpoint Systems:
 1. Layne Christensen Company
 2. Maccaferri Environmental Solutions
- C. Pump Controls and Accessories:
 1. Siemens Industry, Inc.
 2. Allen-Bradley (Rockwell Automation)
- D. Piping and Hose:

1. JM Eagle (Thermoplastic piping)
 2. Continental Girbau (Flexible hose)
- E. Monitoring Equipment:
1. Solinst Canada Ltd. (Piezometers and Level Loggers)
 2. In-Situ, Inc.

2.2 PUMPS

- A. Submersible pumps shall be suitable for continuous operation, with stainless steel or corrosion-resistant housing and impellers.
- B. Pumps shall have automatic level controls or float switches to prevent dry running.
- C. Capacity and head shall meet or exceed the design requirements specified in the Dewatering Plan.
- D. Electrical motors shall comply with NFPA 70 and be suitable for wet or submerged applications.

2.3 WELLPOINT SYSTEMS

- A. Wellpoints shall be constructed of corrosion-resistant materials with screened intake sections to prevent clogging.
- B. Header piping shall be sized to provide uniform vacuum and flow distribution.
- C. Vacuum pumps shall be sized to maintain required groundwater lowering with redundancy for continuous operation.

2.4 PIPING AND HOSES

- A. Discharge piping shall be durable, flexible or rigid as required, resistant to abrasion, and capable of handling expected flow rates and pressures.
- B. Connections shall be watertight, with fittings and joints complying with ASTM standards.
- C. Provide backflow prevention where required by local codes.

2.5 CONTROLS AND MONITORING EQUIPMENT

- A. Automatic control panels shall allow for start/stop operation, alarm indications, and remote monitoring capability.
- B. Groundwater monitoring instruments shall be accurate to within 0.01 feet and capable of continuous data logging.
- C. Provide weatherproof enclosures for all electrical components.

PART 3 – EXECUTION

3.1 EXAMINATION

- A. Verify site conditions, including groundwater levels, soil type, and existing utilities prior to installation.
- B. Notify Architect/Engineer of any conditions detrimental to proper dewatering system performance.
- C. Confirm that all required permits and approvals have been obtained.

3.2 PREPARATION

Install erosion and sediment control measures to prevent off-site discharge of pumped water. Establish access routes and staging areas for equipment installation and maintenance. Mark locations of all wellpoints, sumps, and discharge lines as per approved submittals.

3.3 INSTALLATION

- A. Install wellpoints, pumps, piping, and controls in accordance with manufacturer instructions and approved Dewatering Plan.
- B. Ensure all electrical connections comply with NEC requirements and are performed by qualified personnel.
- C. Provide adequate anchoring and support for piping and equipment to prevent movement during operation.
- D. Conduct initial testing of pumps and control systems to verify operation prior to dewatering commencement.

3.4 OPERATION

- A. Operate dewatering system continuously as required to maintain excavation and site dry and stable.
- B. Monitor groundwater levels and system performance daily, adjusting operation as necessary.
- C. Maintain logs of operating parameters, maintenance activities, and monitoring data.
- D. Implement immediate corrective actions in case of system failure or deviation from design criteria.

3.5 MAINTENANCE

- A. Perform routine inspection and maintenance of pumps, hoses, and controls to ensure reliable operation.
- B. Clean strainers, check valves, and screens regularly to prevent clogging.
- C. Replace damaged or worn components promptly.
- D. Maintain clear access to all equipment for inspection and repair.

3.6 SYSTEM REMOVAL AND SITE RESTORATION

- A. Remove all dewatering equipment, piping, and temporary structures upon completion of excavation or as directed.
- B. Restore disturbed areas to original or specified conditions, including grading and erosion control measures.
- C. Dispose of water and sediment in compliance with environmental regulations and permit conditions.
- D. Submit final dewatering system removal report documenting system performance and site conditions.

3.7 PROTECTION

- A. Protect adjacent structures, utilities, and natural features from adverse effects of dewatering operations.
- B. Monitor for potential settlement or destabilization and report immediately any observed damages.
- C. Maintain barriers and signage to prevent unauthorized access to dewatering equipment and excavations.

END OF SECTION