

**SECTION 02401**

**DEWATERING**

**PART 1 GENERAL**

1.01 SUMMARY

A. Work Included

1. Removal of groundwater to allow below grade construction
2. Site grading to prevent surface water from entering the excavation

1.02 SYSTEM REQUIREMENTS

- A. CONTRACTOR shall at its own expense, keep the excavation clear of water while structures, mains, and appurtenances are being built, utilities are being installed, and fill and backfill are being compacted. Under no conditions shall the work be laid in or underwater. No water shall flow over the work until the joints are complete or the concrete has set.
- B. Dewatering shall be sufficient to lower the piezometric level to at least two feet below the bottom of the excavation. Additional lowering shall be provided as necessary to create a stable subgrade.
- C. In areas where rock is encountered, the water level shall be kept at or below top of rock, but at least 6 inches below bottom of concrete. Additional rock shall be removed as needed to provide clearances.
- D. The control of groundwater shall be such that softening or heaving of the bottom of excavations or formation of "quick" conditions or "boils" shall be prevented.
- E. Dewatering systems shall be designed and operated so as to prevent the migration or removal of soils.
- F. The Contractor shall select, employ and pay for the services of a Licensed Pennsylvania well driller to keep all excavations and structures free from water while the construction work is in progress and to such an extent as may be necessary while excavation work is being carried on. He shall provide for the proper disposal of the water in such a manner as to not disturb or impede other construction activities. A licensed well driller is required only where wells are used for dewatering.

1.03 QUALITY ASSURANCE

- A. All dewatering shall be done in accordance with applicable federal, state, and local code requirements

**PART 2 PRODUCTS**

(Not used)

**PART 3 EXECUTION**

**3.01 GENERAL**

- A. Dewatering shall be accomplished by use of well points or pumping directly from excavation or trenches as approved by the Engineer. In order to assure continuous dewatering, duplicate pumping units of the selected system incorporated with emergency power should be employed so that a reliable operation may be obtained. It is absolutely essential that all excavations be kept dry during the construction.

**3.02 PROTECTION**

- A. CONTRACTOR shall take all necessary precautions during the dewatering operation to protect adjacent structures against subsidence, flooding or other damage. The dewatering system shall be installed and operated so that the groundwater level outside the excavation is not reduced to the extent that would damage or endanger structures or property on-site or off-site within the area of influence of the dewatering operation. Any such facilities and structures damaged shall be repaired or replaced to the satisfaction of their owner at CONTRACTOR's expense.
- B. Prior to dewatering, CONTRACTOR shall take into account the effect of its proposed dewatering operation on existing private water supply systems and their potability and shall make arrangements with property owners for protecting their supplies or providing alternative means of temporary or permanent supply at CONTRACTOR's expense. Alternative means of supply shall be in accordance with all applicable regulations, codes, and ordinances. Private wells exist adjacent to the wastewater treatment plant

**3.03 DEWATERING**

- A. All permanent improvements shall be constructed in areas free from water. The Contractor shall construct and maintain all permanent or temporary slopes, dikes, levees, drainage ditches, sumps, and observation wells necessary for the removal of water work areas. The Contractor shall design, furnish, install, maintain, and operate all necessary pumping and other dewatering equipment required for dewatering and various work areas and for keeping the foundation and other work areas free from water from any and all sources.
- B. All dewatering shall be performed in advance of excavation. The dewatering shall be accomplished in a manner that will prevent loss of fines from the foundation, will maintain stability of all excavated slopes and bottoms of

excavations, and will permit all construction operations to be performed in the dry. Dewatering of excavation shall be performed to the extent required to permit placement of compacted fill materials in the dry and to prevent sloughing of the excavation side slopes.

3.04 DISPOSAL OF DRAINAGE WATER

- A. The disposal of all water from the dewatering and control of water operation and surface drainage shall be accomplished in a manner to have no detrimental effect on any of the new or existing facilities. The method and location of disposal of all water shall be subject to the approval of the Engineer and Bucks County Conservation District. In addition, no water shall be drained into work built or under construction without prior consent of the Engineer.

**END OF SECTION**