SECTION 312319 - DEWATERING

1. GENERAL
	* + 1. RELATED DOCUMENTS
				1. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.
			2. SUMMARY
				1. Section includes construction dewatering.
				2. Related Requirements:

Section 310000 "Earthwork" for excavating, backfilling, site grading, and controlling surface-water runoff and ponding.

* + - 1. PREINSTALLATION MEETINGS

Retain "Preinstallation Conference" Paragraph below if Work of this Section is extensive or complex enough to justify a conference. Review discussion topics below and revise or delete to suit Project.

* + - * 1. Preinstallation Conference: Conduct conference at [**Project site**] <**Insert location**>.

Verify availability of Contractor's personnel, equipment, and facilities needed to make progress and avoid delays.

Review condition of site to be dewatered including coordination with temporary erosion-control measures and temporary controls and protections.

Review geotechnical report.

Review proposed site clearing and excavations.

Review existing utilities and subsurface conditions.

Review observation and monitoring of dewatering system.

* + - 1. SUBMITTALS
				1. Submittals for this Section are subject to the re-evaluation fee identified in Article 4 of the General Conditions.
				2. Manufacturer’s installation instructions shall be provided along with product data.
				3. Submittals shall be provided in the order in which they are specified and tabbed (for combined submittals).
				4. Shop Drawings: For dewatering system, prepared by or under the supervision of a qualified Professional Engineer, licensed in the State of New York.

Include plans, elevations, sections, and details.

Show arrangement, locations, and details of wells and well points; locations of risers, headers, filters, pumps, power units, and discharge lines; and means of discharge, control of sediment, and disposal of water.

Include layouts of piezometers and flow-measuring devices for monitoring performance of dewatering system.

Include written plan for dewatering operations including sequence of well and well-point placement coordinated with excavation support system and control procedures to be adopted if dewatering problems arise.

* + - * 1. Qualification Data: For [**Contractor**] [**land surveyor**] [**and**] [**professional engineer**].
				2. Field quality-control reports.

Usually retain "Existing Conditions" Paragraph below for determining effect of dewatering system on permanent construction.

* + - * 1. Existing Conditions: Using [**photographs**] [**or**] [**video recordings**], show existing conditions of adjacent construction and site improvements that might be misconstrued as damage caused by dewatering operations. Submit before Work begins.

Revise "Record Drawings" Paragraph below to suit Project.

* + - * 1. Record Drawings: Identify locations and depths of capped wells and well points and other abandoned-in-place dewatering equipment.
			1. QUALITY ASSURANCE

Generally, retain "Contractor Qualifications" Paragraph below.

* + - * 1. Contractor Qualifications: The Work of this Section shall be performed by a firm experienced in wellpoint dewatering work. The firm shall have satisfactorily completed such Work for at least 5 projects of comparable size.
			1. FIELD CONDITIONS

Revise or delete "Project-Site Information" Paragraph below to suit Project.

* + - * 1. Project-Site Information: A geotechnical report has been prepared for this Project and is available for information only. The opinions expressed in this report are those of a Geotechnical Engineer and represent interpretations of subsurface conditions, tests, and results of analyses conducted by a Geotechnical Engineer. The Contractor is solely responsible for interpretations or conclusions drawn from this data.

Make additional test borings and conduct other exploratory operations necessary for dewatering according to the performance requirements.

The geotechnical report is [**included**] [**referenced**] elsewhere in Project Manual.

* + - * 1. Survey Work: Engage a qualified Land Surveyor or Professional Engineer, licensed in the State of New York, to survey adjacent existing buildings, structures, and site improvements; establish exact elevations at fixed points to act as benchmarks. Clearly identify benchmarks and record existing elevations.
1. PRODUCTS
	* + 1. PERFORMANCE REQUIREMENTS

Revise this Article according to customary practice in Project's location or if Contractor is not permitted by authorities having jurisdiction to assume responsibility for design.

* + - * 1. Dewatering Performance: Design, furnish, install, test, operate, monitor, and maintain dewatering system of sufficient scope, size, and capacity to control hydrostatic pressures and to lower, control, remove, and dispose of ground water and permit excavation and construction to proceed on dry, stable subgrades.

In some cases groundwater will only have to be lowered 1-foot below excavation as determined by engineering analysis.

Design dewatering system(s) that will lower and maintain the groundwater level at least 2-feet below required excavation elevations. Continuously maintain the groundwater level at or slightly below the required elevations until all Work in the areas requiring dewatering is installed and approved by the Director’s Representative, including Work in separate related contracts.

Coordinate the Work of this Section with related contractors having Work in these areas. Related contractors will be required to progress their Work in these areas without undue delay.

Continuously monitor and maintain dewatering operations to ensure erosion control, stability of excavations and constructed slopes, prevention of flooding in excavation, and prevention of damage to subgrades and permanent structures.

Prevent surface water from entering excavations by grading, dikes, or other means.

Accomplish dewatering without damaging existing buildings, structures, and site improvements adjacent to excavation.

Remove dewatering system when no longer required for construction.

* + - * 1. Regulatory Requirements: Comply with governing EPA notification regulations before beginning dewatering. Comply with water- and debris-disposal regulations of authorities having jurisdiction.

Retain the following paragraph only when there are related contracts. Coordinate last sentence in documents across all contracts.

* + - * 1. Work in Separate Contracts: Coordinate the Work of this Section with related contractors having Work in these areas. Related contractors will be required to progress their Work in these areas without undue delay.
1. EXECUTION
	* + 1. PREPARATION
				1. Protect structures, utilities, sidewalks, pavements, and other facilities from damage caused by settlement, lateral movement, undermining, washout, and other hazards created by dewatering operations.

Prevent surface water and subsurface or ground water from entering excavations, from ponding on prepared subgrades, and from flooding site or surrounding area.

Protect subgrades and foundation soils from softening and damage by rain or water accumulation.

* + - * 1. Install dewatering system to ensure minimum interference with roads, streets, walks, and other adjacent occupied and used facilities.

Do not close or obstruct streets, walks, or other adjacent occupied or used facilities without permission from the Director’s Representative and authorities having jurisdiction. Provide alternate routes around closed or obstructed traffic ways if required by authorities having jurisdiction.

* + - * 1. Provide temporary grading to facilitate dewatering and control of surface water.
				2. Protect and maintain temporary erosion and sedimentation controls, which are specified in [**Section 015000 "Construction Facility and Temporary Controls,"**] [**Section 312500 "Erosion and Sediment Control,"**] during dewatering operations.
			1. INSTALLATION
				1. Install dewatering system utilizing wells, well points, or similar methods complete with pump equipment, standby power and pumps, filter material gradation, valves, appurtenances, water disposal, and surface-water controls.

Space well points or wells at intervals required to provide sufficient dewatering.

Use filters or other means to prevent pumping of fine sands or silts from the subsurface.

* + - * 1. Place dewatering system into operation to lower water to specified levels before excavating below ground-water level.
				2. Provide sumps, sedimentation tanks, and other flow-control devices as required by authorities having jurisdiction.
				3. Provide standby equipment on-site, installed and available for immediate operation, to maintain dewatering on continuous basis if any part of system becomes inadequate or fails.
			1. OPERATION
				1. Operate system continuously until drains, sewers, and structures have been constructed and fill materials have been placed or until dewatering is no longer required.
				2. Operate system to lower and control ground water to permit excavation, construction of structures, and placement of fill materials on dry subgrades. Drain water-bearing strata above and below bottom of foundations, drains, sewers, and other excavations.

Do not permit open-sump pumping that leads to loss of fines, soil piping, subgrade softening, and slope instability.

Reduce hydrostatic head in water-bearing strata below subgrade elevations of foundations, drains, sewers, and other excavations.

Maintain piezometric water level a minimum of [**24 inches**] <**Insert dimension**> below bottom of excavation.

* + - * 1. Dispose of water removed by dewatering in a manner that avoids endangering public health, property, and portions of work under construction or completed. Dispose of water and sediment in a manner that avoids inconvenience to others.
				2. Remove dewatering system from Project site on completion of dewatering. Plug or fill well holes with sand or cut off and cap wells a minimum of 36 inches below overlying construction.
			1. FIELD QUALITY CONTROL

Retain this Article if required; revise to suit Project. Indicate locations and depths of observation wells on Drawings.

* + - * 1. Observation Wells: Provide observation wells or piezometers, take measurements, and maintain at least the minimum number indicated; additional observation wells may be required by authorities having jurisdiction.

Observe and record daily elevation of ground water and piezometric water levels in observation wells.

Repair or replace, within 24 hours, observation wells that become inactive, damaged, or destroyed. In areas where observation wells are not functioning properly, suspend construction activities until reliable observations can be made. Add or remove water from observation-well risers to demonstrate that observation wells are functioning properly.

Fill observation wells, remove piezometers, and fill holes when dewatering is completed.

* + - * 1. Survey-Work Benchmarks: Resurvey benchmarks [**regularly**] [**monthly**] <**Insert time period**> during dewatering and maintain an accurate log of surveyed elevations for comparison with original elevations. Promptly notify Director’s Representative if changes in elevations occur or if cracks, sags, or other damage is evident in adjacent construction.
				2. Provide continual observation to ensure that subsurface soils are not being removed by the dewatering operation.
				3. Prepare reports of observations.
			1. PROTECTION
				1. Protect and maintain dewatering system during dewatering operations.
				2. Promptly repair damages to adjacent facilities caused by dewatering.

END OF SECTION 312319