

**SECTION 31 23 19
DEWATERING**

SPEC WRITER NOTES:

1. Use this section only for NCA projects.
2. Delete text between // _____ // not applicable to project. Edit remaining text to suit project. Also delete any other item or paragraph not applicable in the section and renumber the paragraphs.
3. Surface water included in this work shall include water that appears on the surface as rainfall or snowmelt runoff, or ground water conditions below grades that appear at the surface in the form of weeps or springs. Dewatering of surface water from flowing streams, brooks, lakes, ponds, or rivers identified on USGS topographic maps or shown on the plans as flowing shall not be included in this specification section.

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
1. Implementation of Erosion and Sedimentation Control Plan.
 2. Dewater excavations, including seepage and precipitation.
- B. Provide all labor, materials, tools, equipment, power, and services necessary for care of water and erosion control. Begin excavation work before the approved Erosion and Sedimentation Control Plan is in place.

1.2 RELATED REQUIREMENTS

SPEC WRITER NOTE: Update and retain references only when specified elsewhere in this section.

- A. Materials testing and inspection during construction: Section 01 45 29, TESTING LABORATORY SERVICES.
- B. Safety Requirements: Section 00 72 00, GENERAL CONDITIONS, Article, ACCIDENT PREVENTION.
- C. Submittal requirements as specified in Section 01 33 23 SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES.
- D. Protection of existing utilities, fire protection services, existing equipment, roads, and pavements: Section 01 00 00, GENERAL REQUIREMENTS.

- E. Subsurface Investigation: Section 01 00 00, GENERAL REQUIREMENTS, Article 1.11, PHYSICAL DATA.
- F. Erosion Control: Section 01 57 23, TEMPORARY STORM WATER POLLUTION CONTROLS.

1.3 SUBMITTALS

- A. Submittal Procedures: Section 01 33 23, SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES.
- B. Submittal Drawings:
 - 1. Show drawings and data with method employed in dewatering excavated areas, 30 days before commencement of excavation.
 - 2. Show location, depth and size of wellpoints, headers, sumps, ditches, size and location of discharge lines, capacities of pumps and standby units, and detailed description of dewatering methods to be employed to convey water from site to adequate disposal. Show details of the dewatering facilities, including equipment and erosion protection. Include facilities and procedures for insuring discharge water quality according to the applicable provisions of Erosion Control Plan or SWPPP or NPDES requirements, Section 01 57 23, TEMPORARY STORM WATER POLLUTION CONTROLS.
 - 3. Include written report outlining control procedures to be adopted when a dewatering problem arises.
 - 4. Submit materials in format acceptable to all regulatory agencies.
- C. Inspection Reports.
- D. All required permits.
- E. Delegated Design Drawings and Calculations: Signed and sealed by responsible design professional.
 - 1. Identify deviations from details shown on drawings.

1.4 QUALITY ASSURANCE

- A. Permitting Requirements: Comply and obtain required Federal, State, and County permits where Work is performed.
- B. Comply and provide information to Contracting Officer's Representative (COR), all conditions of regulating permits. Obtain written approval from COR before discontinuing operation of dewatering system.

PART 2 - PRODUCTS**2.1 SYSTEM DESCRIPTION**

SPEC WRITER NOTES:

1. Modify these specifications to insure that the Contractor coordinates the control of surface water described in this section, with the requirements in the National Pollution Discharge Elimination System (NPDES) requirements, where applicable.
2. Modify these specifications to require that the Contractor perform the dewatering work while maintaining water quality discharge requirements of the applicable State or Federal regulations.

- A. Dewatering: Lower and control ground water table levels and hydrostatic pressures and control surface water.

2.2 SYSTEM PERFORMANCE

- A. Delegated Design: Prepare submittal documents including design calculations and drawings signed and sealed by registered design professional, licensed in state where work is located.
 1. Minor deviations to details shown on drawings to accommodate manufacturer's standard products may be accepted by COR when deviations do not affect design concept and specified performance.
- B. Design dewatering system complying with specified performance:
 1. Size and Capacity: At least // 300 mm (1 foot) // below lowest foundation subgrade or bottom of pipe trench.
 2. Reduce hydrostatic head below excavation surface minimum 300 mm (1 foot) until backfill has been completed at least 300 mm (1-foot) above the initial observed groundwater level.
 3. Prevent loss of fines, seepage, boils, quick conditions or softening of foundation strata.
 4. Maintain stability of sides and bottom of excavation.
 5. Construction operations are performed in the dry subgrade.
 6. Control of surface and subsurface water as part of dewatering requirements. Maintain adequate control.
 - a. Stabilize excavated and constructed slopes not adversely affected by saturated soil.
 - b. Control erosion.
 - c. Flooding of excavations or damage to structures does not occur.

- d. Surface water drains away from excavations.
- e. Protect excavations of becoming wet from surface water before additional work is undertaken.

PART 3 - EXECUTION

3.1 INSTALLATION - GENERAL

- A. Install dewatering system to lower and control ground surface water to permit excavation, construction of structure, and placement of backfill materials in dry conditions. Make dewatering system adequate to pre-drain the water-bearing strata above and below bottom of structure foundations, utilities and other excavations.
- B. Reduce hydrostatic pressure head in water-bearing strata below structure foundations, utility lines, and other excavations, minimum // 300 mm (1 foot) // below prevailing excavation surface.
- C. Operation:
 - 1. Place dewatering system in operation before excavation below ground water table. Operate system continuously 24 hours a day, 7 days a week until construction work below existing ground water level is complete.
 - 2. Place adequate weight of backfill material to prevent buoyancy before discontinuing operation of the system.
- D. Water Disposal:
- E. Dispose water removed from excavations in such a manner as:
 - a. Avoid endanger portions of work under construction or completed.
 - b. Avoid inconvenience to Government or to others working near site.
 - c. Comply with permit regulations for disposal of water.
 - d. Control Runoff: Control runoff in work areas including but not limited to excavations, access roads, parking areas, laydown, and staging areas. Provide, operate, and maintain all ditches, basins, sumps, culverts, site grading, and pumping facilities to divert, collect, and remove all water from the work areas. Remove water from work areas and dispose according to applicable permits.
- 2. Excavation Dewatering:
 - a. Divert, collect, control, and remove water from construction work areas and excavations.

- b. Arrange drainage features and alter as required to avoid degradation of the final excavated surfaces.
- c. Utilize all necessary erosion and sediment control measures to avoid construction related degradation of natural water quality.
- 3. Remove and dispose surface and ground water entering excavations, trenches, and work areas during construction. Keep excavation dry during subgrade preparation and until construction is complete and pipe is installed to avoid damage from hydrostatic pressure, flotation, or other cause will result.

F. Standby Equipment:

- 1. Install complete standby equipment for immediate operation, as required to maintain de-watering on a continuous basis and in the event that all or any part of the system become inadequate or fail.

G. Corrective Action:

- 1. Perform work necessary to restore foundation soil and damaged structure resulting from failure of dewatering system.

H. Damages:

- 1. Immediately repair damages to adjacent facilities caused by dewatering operations.

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