



SECTION 31 23 19

DEWATERING

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. The WORK of this section consists of controlling groundwater, site drainage, and storm flows during construction. CONTRACTOR is cautioned that the WORK involves construction in and around drainage channels, local rivers, and areas of local drainage. These areas are subject to frequent periodic inundation.

1.02 RELATED SECTIONS

- A. The following is a list of SPECIFICATIONS which may be related to this section:
1. Section 01 57 19, Temporary Environmental Controls
 2. Section 31 23 00, Excavation and Fill.
 3. Section 31 23 33, Trenching and Backfilling.
 4. Section 31 35 00, Erosion and Sedimentation Control

1.03 REFERENCES

- A. The following is a list of standards which may be referenced in this section:
1. ASTM International (ASTM):
 - a. D698, Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Standard Effort (12 400 ft-lbf/ft³ (600 kN-m/m³)).

1.04 SUBMITTALS

- A. CONTRACTOR shall submit to the ENGINEER a Water Control Plan 2 weeks prior to execution of the PROJECT. At a minimum, the Water Control Plan shall include:
1. Descriptions of proposed groundwater and surface water control facilities including, but not limited to, equipment, methods, standby equipment and power supply, means of measuring inflow to excavations, pollution control facilities, discharge locations to be utilized, and provisions for immediate temporary water supply as required by this section.
 2. Drawings showing locations, dimensions, and relationships of elements of each system.
 3. Design calculations demonstrating adequacy of proposed dewatering systems and components.
 4. If system is modified during installation or operation, revise or amend and resubmit Water Control Plan.



PART 2 PRODUCTS

2.01 MATERIALS

- A. Onsite materials may be used within the limits of construction to construct temporary dams and berms. Materials such as plastic sheeting, sand bags, and storm sewer pipe may also be used if desired by CONTRACTOR.

PART 3 EXECUTION

3.01 GENERAL

- A. For all excavation, CONTRACTOR shall provide suitable equipment and labor to remove water, and keep the excavation dewatered so that construction can be carried on under dewatered conditions.
 - 1. Water control shall be accomplished such that no damage is done to adjacent channel banks or structures.
 - 2. Continuously control water during course of construction, including weekends and holidays and during periods of work stoppages, and provide adequate backup systems to maintain control of water.
- B. CONTRACTOR is responsible for investigating and becoming familiar with all site conditions that may affect the WORK including surface water, potential flooding conditions, level of groundwater and the time of year the work is to be done.
- C. CONTRACTOR shall conduct operations in such a manner that storm or other waters may proceed uninterrupted along their existing drainage courses.
 - 1. By submitting a BID, CONTRACTOR acknowledges that CONTRACTOR has investigated the risk arising from such waters and has prepared BID accordingly, and assumes all of said risk.
- D. At no time during construction shall CONTRACTOR affect existing surface or subsurface drainage patterns of adjacent property.
 - 1. Any damage to adjacent property resulting from CONTRACTOR's alteration of surface or subsurface drainage patterns shall be repaired by CONTRACTOR at no additional cost to OWNER.
- E. Pumps and generators used for dewatering and water control shall be quiet equipment enclosed in sound deadening devices.
- F. CONTRACTOR shall remove all temporary water control facilities when they are no longer needed or at the completion of the PROJECT.
- G. All excavations made as part of dewatering operations shall be backfilled with the same type material as was removed and compacted to ninety-five percent (95%) of Maximum Standard Proctor Density (ASTM D698) except where replacement by other materials and/or methods are required.



3.02 CONSTRUCTION

A. Surface Water Control:

1. Surface water control generally falls into the following categories:
 - a. Normal low flows along the channel.
 - b. Storm/flood flows along the channel.
 - c. Flows from existing storm drain pipelines.
 - d. Local surface inflows not conveyed by pipelines.
2. CONTRACTOR shall coordinate, evaluate, design, construct, and maintain temporary water conveyance systems.
 - a. These systems shall not worsen flooding, alter major flow paths, or worsen flow characteristics during construction. CONTRACTOR is responsible to ensure that any such worsening of flooding does not occur.
 - b. CONTRACTOR is solely responsible for determining the methods and adequacy of water control measures.
3. At a minimum, CONTRACTOR shall be responsible for diverting the quantity of surface flow around the construction area so that the excavations will remain free of surface water for the time it takes to install these materials, and the time required for curing of any concrete or grout. CONTRACTOR is cautioned that the minimum quantity of water to be diverted is for erosion control and construction purposes and not for general protection of the construction site.
 - a. It shall be CONTRACTOR's responsibility to determine the quantity of water which shall be diverted to protect the WORK from damage caused by stormwater.
4. CONTRACTOR shall, at all times, maintain a flow path for all channels.
 - a. Temporary structures such as berms, sandbags, pipeline diversions, etc., may be permitted for the control of channel flow, as long as such measures are not a major obstruction to flood flows, do not worsen flooding, or alter historic flow routes.

B. Groundwater Control:

1. CONTRACTOR shall install adequate measures to maintain the level of groundwater below the foundation subgrade elevation and maintain sufficient bearing capacity for all structures, pipelines, earthwork, and rockwork.
 - a. Such measures may include, but are not limited to, installation of perimeter subdrains, pumping from drilled holes or by pumping from sumps excavated below the subgrade elevation.
 - b. Dewatering from within the foundation excavations shall not be allowed.



2. The foundation bearing surfaces are to be kept dewatered and stable until the structures or other types of work are complete and backfilled.
 - a. Disturbance of foundation subgrade by CONTRACTOR operations shall not be considered as originally unsuitable foundation subgrade and shall be repaired at CONTRACTOR's expense.
3. Contractor shall dispose of groundwater as follows:
 - a. Obtain discharge permit for water disposal from authorities having jurisdiction.
 - b. Treat water collected by dewatering operations, as required by regulatory agencies, prior to discharge.
 - c. Discharge water as required by discharge permit and in manner that will not cause erosion or flooding, or otherwise damage existing facilities, completed Work, or adjacent property.
 - d. Remove solids from treatment facilities and perform other maintenance of treatment facilities as necessary to maintain their efficiency.
4. Any temporary dewatering trenches or well points shall be restored following dewatering operations to reduce permeability in those areas as approved by ENGINEER.

END OF SECTION