SECTION 02140

Groundwater dewatering

# GENERAL

## SECTION INCLUDES

### Materials, installation, maintenance, operation, and removal of temporary dewatering systems.

## RELATED REQUIREMENTS

### Section 01000 – General Requirements

### Section 01300 – Shop Drawings and Submittals

### Section 02223 – Trenching, Backfilling and Compaction

### Section 02150 – Sheeting, Shoring and Bracing

### Section 15000 – General Piping Requirements

## REFERENCES

### The publications listed below form part of this specification to the extent referenced and are referred to in the text by the basic designation only. Reference shall be made to the latest edition of said standards unless otherwise called for.

### State of California, Department of Transportation, Storm Water Quality Handbooks.

#### Construction Site Best Management Practices Manual.

#### Dewatering Manual.

#### Field Guide to Construction Site Dewatering.

## SUBMITTALS

### All submittals shall be submitted in accordance with Section 01300, “Shop Drawings and Submittals”.

### Submit a working drawing and related supporting information detailing the proposed plan and methodology for dewatering, treatment, and disposal of accumulated water.

#### Identify the location, type and size of dewatering devices and related equipment.

#### The size and type of materials composing the collection system.

#### The size and type of equipment to be used to retain and treat accumulated water.

#### The proposed disposal locations.

### Submit completed permits governing the disposal of groundwater from Agencies of Jurisdiction.

## QUALITY ASSURANCE

### The Contractor shall conduct a demonstration of its proposed system.

#### The Contractor shall provide verification that adequate personnel, materials, and equipment are available.

### The Contractor shall maintain adequate control of the dewatering operation.

#### To ensure the stability of excavated and constructed slopes are not adversely affected by water.

#### To ensure that erosion is controlled.

#### To ensure that flooding of excavations or damage to structures does not occur.

### Conducting the dewatering operation in a manner which will protect adjacent structures and facilities rests solely with the Contractor.

#### The cost of repairing any damage to adjacent structures and restoration of facilities shall be the responsibility of the Contractor.

## DESIGN CRITERIA

### Dewatering, treatment, and disposal of water shall be performed in conformance with all applicable local, state, and Federal laws and permits issued by Jurisdictional Regulatory Agencies.

#### A permit is required from the Regional Water Quality Control Board for discharge of groundwater to storm drains or surface waters.

#### Sewer systems shall not be used as drains for dewatering trenches or excavations, nor for disposal of collected or accumulated groundwater, without the approval of the Agency of Jurisdiction.

#### Groundwater shall not be applied to land without the approval of the landowner or the Agency of Jurisdiction.

# PRODUCTS

## MATERIALS

### The Contractor shall provide piezometers for monitoring groundwater levels. The Contractor shall provide other instruments and measuring devices as required.

### Piping, pumping equipment and all other materials required to provide control of surface water and groundwater in excavations shall be suitable for the intended purpose.

### Standby pumping systems and a source of standby power shall be maintained on the site at all times.

#### The standby equipment shall be of reasonable size and quantity to prevent damage, should pumping equipment fail.

### Dewatering equipment shall not cause a noise nuisance.

# EXECUTION

## DESIGN REQUIREMENTS

### The Contractor shall provide and maintain at all times during construction ample means and devices to promptly remove and dispose of all water from any source entering excavations or other parts of the work.

#### Dewatering shall be performed by methods that will ensure a dry excavation and preservation of the final lines and grades of the bottoms of excavations.

#### Dewatering methods may include well points, sump points, suitable rock or gravel placed as pipe bedding for drainage and pumping, temporary pipelines, or other means, all subject to the approval of the Agency.

#### The cost of dewatering activities shall be borne by the Contractor.

## DEWATERING OF EXCAVATIONS

### The Contractor shall maintain an adequate system to lower and control the groundwater:

#### To permit excavation and construction of buried improvements.

#### To provide for placement of bedding and backfill materials.

#### To permit concrete work under dry conditions.

### Sufficient dewatering equipment shall be installed to pre-drain the water-bearing strata below the bottom of excavations.

### The hydrostatic head in water-bearing strata shall be reduced to ensure that the water level is below the bottom of the excavation at all times.

### The system shall be placed into operation before excavation is started.

#### The system shall be operated continuously 24 hours a day, 7 days a week until the work is complete.

##### The excavated areas shall be kept free from water during construction.

##### Free from water while concrete is setting and achieving full strength.

##### Free from water until backfill has been placed to a sufficient height to anchor the work against possible flotation.

#### Flotation of facilities shall be prevented by maintaining a positive and continuous removal of water.

### If foundation soils are disturbed or loosened by the upward seepage of water or an uncontrolled flow of water, the affected areas shall be excavated and replaced with drain rock at no additional cost to the Agency.

### If well points or wells are used, they shall be adequately spaced to provide the necessary dewatering.

#### They shall be sand packed and/or other means shall be used to prevent pumping of fine sands or silts from the subsurface.

#### A continuous check shall be maintained to ensure that the subsurface soil is not being removed by the dewatering operation.

### Water and debris shall be disposed of in a suitable manner in compliance with permit requirements without damage to adjacent property.

#### No water shall be drained into work being built or other construction.

#### Before disposal, water shall be treated in accordance with permit requirements.

### The release of groundwater to its original level shall be performed in a manner that avoids disturbance of natural foundation soils, prevents disturbance of compacted backfill, and prevents flotation or movement of structures and pipelines.

### Upon completion of the dewatering and control of water operation, all temporary works and dewatering facilities shall be removed in a manner satisfactory to the Agency.

END OF SECTION