PART 1 GENERAL

1.1 DESCRIPTION OF REQUIREMENTS

A. This section provides for furnishing all labor, materials, equipment, power and incidentals for performing all operations necessary to dewater, depressurize, drain and maintain excavations as described herein and as necessary for installation of pipeline and appurtenances. Included are installing, maintaining, operating and removing dewatering systems and other approved devices for the control of surface and groundwater during the construction of open cut excavations, directional drilling, pipelines and appurtenances, and protecting work against rising waters and repair of any resulting damage.

1.2 CONTRACTOR'S RESPONSIBILITY

A. It is the sole responsibility of the CONTRACTOR to identify groundwater conditions and to provide any and all labor, material, equipment, techniques and methods to lower, control and handle the groundwater as necessary for his construction methods and to monitor the effectiveness of this installed system and its effect on adjacent facilities.

B. Operate, maintain and modify the system(s) as required to conform to these Specifications. Upon completion of the Construction, CONTRACTOR shall remove the system(s). The development, drilling and abandonment of all wells used in the dewatering system shall comply with regulations of the Florida Department of Environmental Protection and the governing Water Management District.

C. Assume sole responsibility for dewatering systems and for all loss or damage resulting from partial or complete failure of protective measures and any settlement or resultant damage caused by the dewatering operation.

1.3 PLANS AND OTHER DATA TO BE SUBMITTED

A. Prior to commencement of work, submit complete drawings, details and layouts showing the proposed dewatering plans in accordance with Section 01300. The submittals shall be sufficiently detailed (i.e., general arrangements, procedures to be used, etc.) to allow the ENGINEER to evaluate the proposed dewatering systems. Include the following, as required by the CONTRACTOR's proposed operation:

1. Names of equipment suppliers.
2. Names of installation subcontractors.

3. Plan for dewatering at access shafts and control of surface drainage.

4. Plan for dewatering for cut-and-cover excavations, or otherwise controlling groundwater.

5. Eductor system layout and details.

6. Deep well locations and details.

7. Well point system layout and details.

8. Installation reports for eductors, deep wells and well points.

9. Water level readings from piezometers or observation wells, and method of maintenance.

10. As part of his request for approval of a dewatering system, demonstrate the adequacy of the proposed system and well point filler sand by means of a test installation.

PART 2 PRODUCTS

A. Select equipment including but not limited to pumps, eductors, well points and piping and other material desired.

PART 3 EXECUTION

3.1 DEWATERING EXCAVATIONS

A. Furnish, install, operate and maintain all necessary equipment for dewatering the various parts of the Work and for maintaining free of water the excavations and such other parts of the Work as required for Construction operations. Dewatering system should provide for continuous operation including nights, weekends, holidays, etc. Appropriate backup shall be provided if electrical power is primary energy source for dewatering system.

B. Continue dewatering in all required areas, until the involved work is completed, including the placing and compaction of backfill materials in the dry.

C. Provide a uniform diameter for each pipe drain run constructed for dewatering. Remove the pipe drain when it has served its purpose. If removal of the pipe is impractical, provide grout connections at 50-foot intervals, and fill the pipe with clay grout or cement and sand grout when the pipe has served its purpose.
3.2 DEWATERING TRENCH

A. No pipeline shall be laid in a trench in the presence of water. All water shall be removed from the trench sufficiently ahead of the pipeline placing operation. The ENGINEER shall have full and final authority to require dewatering of the trench to ensure a dry, firm bed on which to place the pipeline. As a minimum, water levels shall be maintained at least 6 inches below the bottom of the trench. Trench shall continue to be dewatered until trench backfilling operations have been completed.

B. Removal of water may be accomplished by pumping or pumping in connection with well point installation as the particular situation may warrant.

C. If the soils encountered at the trench grade are suitable for the passage of water, without destroying the sides or utility foundation of the trench, sumps may be provided at intervals at the side of the main trench excavation. Pumps shall be used to lower the water level by taking their suction from said sumps.

3.3 REQUIREMENTS FOR EDUCTOR, WELL POINTS OR DEEP WELLS

A. Eductor, well points or deep wells, where used, must be furnished, installed and operated by a reputable CONTRACTOR regularly engaged in this business, and approved.

B. Submit the design criteria of the dewatering system and a certification that the system was designed according to that criteria.

C. Install sufficient piezometers or observation wells to show that all trench excavation in sandy material is predrained prior to excavation. Install piezometers or observation wells not less than 1 week in advance of beginning of nearest excavation.

D. Dewatering may be omitted for portions of underdrains or other trenches, only where auger borings and piezometers or observation wells show that the soil is predrained by an exterior system.

3.4 MAINTENANCE AND OBSERVATION

A. Maintenance and observation of piezometers or observation wells is the responsibility of the CONTRACTOR and shall consist of keeping them in good condition and observing and recording the elevation of the water level daily, as long as the dewatering system is in operation, and weekly thereafter until the work is completed or the piezometers or wells are removed.

B. Submit a record of the water level to the ENGINEER each day.
C. Replace damaged and destroyed piezometers or observation wells, unless otherwise accepted by the ENGINEER, with new piezometers or wells within 48 hours, at no additional cost to the County.

D. Cut off piezometers or observation wells in excavation areas, where exposed, as excavation proceeds, and continue to maintain and make observations as specified.

E. Remove, backfill or grout piezometers or observation wells inside or outside the excavation area, as approved by the ENGINEER.

3.5 DURATION OF DRAINAGE

A. In areas where concrete is to be placed, carry out the foundation drainage so that the required lowering of the water table will be effected prior to placing reinforcing steel. Keep foundation beds free from water to the same levels for 3 days after placing concrete.

3.6 PROTECTION OF STRUCTURES

A. Provide adequate protection for all structures to avoid damage to concrete.

B. Operate construction equipment over completed concrete slabs or structures only with approval. Rubber tire equipment heavier than 5 tons and crawlers heavier than 7 tons will require adequate load spreading by sand fill or other means.

3.7 DISCHARGE OF WATER

A. Do not discharge pumped drainage water into the sanitary sewer system or inhibit pedestrian or vehicular traffic with the groundwater control system.

B. Discharge pumped drainage water into the storm sewer system or drainage ditch by direct means (i.e., discharge hose to inlet, burying header, etc.). Monitor the discharged water to determine that soil particles are not being removed.

C. All discharge shall be in conformance with regulatory permits and if discharged into receiving waters, shall not exceed 29 N.T.U.=s above background.

3.8 REPAIR OF DAMAGE

A. Assume full responsibility for all loss and damage due to flooding, rising water or seepage resulting from dewatering operations in any part of the work. Repair any damage to partially completed work from these or other causes, including the removal of slides, repair of foundation beds and performance of any other work necessitated by lack of adequate dewatering or drainage facilities.

END OF SECTION