

Construction Plan For Fort Florida Site

Cooling Pond and Vicinity

The provisions of this construction plan are required for all excavations greater than five (5) feet in depth below existing ground level due to the proximity of the construction of the CFCRT Ft. Florida Station to the Florida Power and Light (FPL) cooling reservoir and are in addition to other safety plan requirements of the contract documents. A Dam Safety Plan was also prepared with this Construction Plan and it is provided as Exhibit A. All Contractor's construction personnel assigned to this work site shall be familiar with and abide by the details of both plans. The main topics of these plans shall be reviewed at each weekly tailgate safety meeting and when a new activity is started.

Potholing / Electronic Locating

Prior to construction in any area known to have sub-surface installations, these installations will be located through actual physical investigation or by using electronic devices to locate the metal tape attached to subsurface pipe. Locations of these installations will be clearly marked to prevent their damage during construction activities.

Excavation

- The Contractor shall provide a minimum of 3 days notice to FDOT's Construction Manager prior to the start of any excavation greater than five (5) feet in depth below existing ground level.
- Before any excavation begins, all personnel will be familiar with the Dam Safety Plan. A copy of the plan shall be available at the Contractor's site office.
- Where a dewatering system is required, it will operate at least 24 hours prior to excavation or until the optimum drawdown has been achieved.
- Trench boxes and sheeting will be used where required to support the excavation.
- Excavation will be limited to the width, length and depth necessary to perform the required work.
- Voids behind trench boxes and sheeting will be filled with soil and compacted using the excavator/backhoe bucket.
- All excavations greater than five (5) feet in depth below existing ground level will be dewatered and monitored 24 hours a day, seven days a week.
- No unauthorized person shall be allowed in or around the excavation.
- Excavations will be signed and barricaded if open after working hours or if they pose a threat to persons or property.
- Berms or ditches shall be constructed to prevent runoff from entering the excavation.
- Excavation bottoms shall be kept firm and dry.

Sheeting and Bracing

- In all excavations greater than five (5) feet in depth below existing ground level, trench boxes will be used to stabilize the surrounding soil and provide safe working conditions.
- The top of the trench box shall always be at least 18 inches above ground level as required by OSHA.
- The contractor will submit the maximum lateral earth pressure rating for any trench box to be used on site at least seven days in advance of any excavation. The rating shall bear the seal of an engineer registered in the State of Florida.
- All trench boxes at the site will have tabulated data available for inspection to assure they are adequate to resist the lateral forces exerted by the dam.

Bedding

- Sand bedding will be placed under any new pipe to protect it from deformation due to uneven support in accordance with FDOT specifications.
- After the pipe is installed, sand bedding will be placed around the entire pipe envelope to a depth of 6 inches over the top of the pipe.

Backfilling and Compaction

- Backfill material will be compacted to FDOT specifications.
- The Contractor's designated testing representative will verify that field density and moisture content specifications are satisfied.

Drilling or pile driving

- All pile driving must be done according to the approved plans. Seismic monitoring shall be continuous during all driving operations.
- Prior to any drilling work, all members of the work force will be briefed on the 'Red Flag Criteria for drilling near a dam.'

Emergency Backfill Material

- In order to respond proactively to any situation that arises that could compromise the dam, a 50 cubic yard stockpile of stone shall be available at the site in case there is any indication of adverse conditions.

Site Security

- All equipment shall be secured and the site cleaned and inspected at the end of each day. Items that may be damaged or disturbed by unexpected weather shall be secured. All engine driven equipment shall have the keys removed and doors locked. The person(s) listed on the emergency contact list will have access to the secured location that contains all keys.
- All vehicles entering the site will be clearly marked with the contractors name or have a site access poster or sheet clearly posted on the authorized vehicle.

Exhibit A

DAM SAFETY PLAN

Fort Florida Road Station – Parking Lot Construction

A Construction Plan was also prepared for this project along with this Dam Safety Plan. All construction personnel will be familiar and abide by the details of each plan. The main topics of these plans will be reviewed at each weekly tailgate safety meeting and at the start of a new activity. The contractor is also required to submit a construction safety plan in accordance with the contract documents.

Jobsite Responsibilities

The construction company will man the project 24 hours per day, seven days a week while dewatering equipment is functioning and excavations greater than 5 ft below existing ground level are open. At least one person capable of operating and maintaining the dewatering system and also capable of operating heavy equipment shall be on site during such times.

Contractor personnel will participate in the Florida Power and Light (FPL) Dam Safety Training and will maintain familiarity with the FPL “Red Flag Criteria” given at that training.

Tailgate safety meetings with all field crews will be held weekly or when commencing a new activity in order to keep crews informed of safety measures. Evacuation routes and safe areas will be communicated to all workers at these safety meetings. A log of personnel on site including any visitors will also be kept at all times to ensure all personnel are evacuated correctly. Plastic coated weather resistant signs shall be posted at each excavation with the emergency phone numbers and procedures.

During excavations greater than five (5) ft below existing ground level, inspections will be conducted by the Contractor’s geotech engineer four times per day, on a maximum interval of six hours. A report shall be produced tabulating the time, location, and the observations of the inspector to create a constant assessment of excavation status and any changes that might occur. In addition to these formal inspections, the onsite inspector, superintendent and the crews will remain alert and aware of Red Flag Criteria throughout the work day.

Basic potential failure modes in the excavation are:

- Slide in the slope face
- Heave in the excavation bottom (due to significant seepage and gradient)
- Internal erosion of soil due to a piping type mechanism
- Lateral movement of the structures protecting the sides of the excavation
- Erosion of the embankment by the discharged dewatering water.

The Contractor shall install piezometers as directed by FDOT's Construction Manager. Readings will be evaluated to ensure the water is not rising above target dewatering levels or the phreatic surface is dropping too rapidly. Visual observations that can be made to indicate excessive hydraulic gradient include: bottom heave (or softening of the subgrade as effective stress exceeds shear strength), internal erosion, and/or piping of soil fines (indicated by excessive seepage quantity in a clear water stream or the emergence of a muddy water stream within the excavation).

The excavations are to be corded off. The contractor will conduct hourly inspections to check for leaks in the hoses carrying the dewatering system discharge. Discharge into the FPL cooling pond is not permitted. The inspection will also check that the hose discharge is not causing erosion at the discharge location.

As part of routine inspections, FPL personnel will check for cracks in the crest of the dam and for tension cracks in the slope around the excavations. The Contractor is to check hourly for sediments in the decanting structure attached to the dewatering discharge piping.

The Contractor shall conduct periodic inspections to measure the amount of flow produced by the dewatering system. This can be performed using a weir in the decanting structure, by measuring the flow into a suitable large container or by using flow monitoring equipment.

The Contractor will prepare a table containing all of the inspection items, the inspection time, measured quantities, and a note signifying that the observations were satisfactory or that a remedial measure had to be initiated.

Reporting Chain of Command

The reporting Chain of Command for this Dam Safety plan is as follows:

- The FDOT Construction Manager will be responsible for the contract.
- The Contractor reports to the FDOT Construction Manager and is responsible for complying with the Dam Safety Plan.
- The Contractor is responsible for providing a qualified geotechnical engineer.
- The Contractor's superintendent will be responsible for construction activities and safety, including any subcontractors. All foremen shall report to the superintendent.
- The individual crews and subcontractors will report to their appropriate foremen.

The FPL Project Superintendent and the FDOT Construction Manager will review any key issues that affect dam safety. Where required, the FDOT Construction Manager will issue instructions for corrective actions to the Contractor.

In case of emergency, the FPL superintendent will notify the FDOT Construction Manager that corrective actions are required. The FDOT Construction Manager will coordinate these activities with the Contractor.

Emergency Phone Numbers

Contractor's Construction Site Office	TBD
Contractor's Corporate Office	TBD
FDOT Project Manager	TBD
Contractor's Project Superintendent	TBD
FP&L Construction Manager	
FP&L Dam Safety Engineer, Lewis Rounds	561-635-5773
Sanford Plant Control Room	
Principal Geotechnical Engineer,	TBD
Onsite Geotechnical Engineer,	TBD
Local Gravel Supplier	(Name)
Volusia County Sheriff	
Florida Highway Patrol	
Fire District	
Local Hospital – City	
Volusia County Public Works	
NOAA Hurricane Position	900-410-NOAA
American Red Cross	

Available Resources for Responding to an Emergency

The Contractor shall have the following equipment available on site during work hours in case of emergency:

- One (1) CAT 330 Excavator with operator
- Two (2) CAT 950 Loaders with operator
- One (1) CAT D6 Dozer with operator
- One (1) CAT 140 Motor Grader with operator
- One (1) CAT 563 Roller with operator
- Two (2) Foreman and Four (4) Laborers

If an emergency occurs during the night, the Contractor shall have:

- One (1) night watchman capable of operating equipment
- Job superintendent – shall be located within 20 minutes from job.
- Remainder of crew - shall not be any further than 60 minutes from the job.
- CAT 330 Excavator
- CAT 950 Loader

- One CAT D6 Dozer
- One CAT 140 Motor Grader
- One CAT 563 Roller
- One spare light plant.

Location of Crushed Stone/Filter Fabric

The Contractor will arrange for a 50 ton (two truckloads) stockpile of crushed stone on site for use in case of an emergency. At least 600 square feet of filter fabric shall be available at each stockpile location and in manageable sizes.

Procedures if Dam Integrity is Compromised

Excavation near the existing dam affects dam safety. Excavation failure could create an emergency condition associated with potential dam failure. The Contractor's geotech engineer will be on site during excavations greater than five (5) ft below existing ground level. FPL and the FDOT Construction Manager will review conditions with the Contractor's onsite geotechnical engineer. If dangerous conditions are observed, the FDOT Construction Manager will issue instructions to the Contractor to stop the excavation and to backfill.

Conditions that would deem the excavation unstable are:

- Signs of uncontrolled seepage
- Potential slope failure
- Sloughing
- Tension cracks
- Increasing seepage or seepage with fines
- Other indicators.

If there is seepage that appears as springs or boils, filter fabric must be placed and covered by rock materials with sufficient weight and permeability to prevent erosion or heave. Where seepage conditions prevent placement of filter fabric, the Contractor shall place fine filter and coarse filter material on the area of concern.