New Jersey, ( County)

Dam Replacement Project

*Construction*

*Inspection Program*

New Jersey, ( County)

Dam Replacement Project

Prepared for: New Jersey Department of Environmental Protection –

Bureau of Dam Safety

Prepared by:

*Construction Inspection Program*

Contents

Section 1 Introduction 1-1

Section 2 Organization Chart 2-1

Section 3

3.1 Structure and Responsibilities 3-1

3.2 Laboratory Testing 3-1

3.3 Field Testing 3-2

3.4 Review of Submittals 3-2

3.5 As-Built Drawings 3-3

3.6 Design Changes 3-3

3.7 Schedule of Construction 3-3

**Section 4 Erosion Control Measures and Other Environmental Matters** 4-1

**Section 5 Reporting Procedures** 6-1

Appendix A

*Resumes*

*Job Minutes Format*

*Dewatering and Drainage Plan* (If applicable)

*Submittal List and Schedule*

*Preliminary Schedule*

Section 1

Introduction

 Dam is located across within , County, New Jersey. The dam forms an impoundment known as . The impoundment and associated dam are maintained by the .

The project will be supervised and managed by , of . The Contractor selected for the rehabilitation is of , NJ. The project’s organization chart is shown in Section 2.

#

# **Section 2**

1-1

Organization Chart

 The construction organization chart is as shown below:

**OWNER –**

**NJDEP**

**BUREAU OF DAM SAFETY**

## ADDITIONAL FIELD/OFFICE TECHNICAL STAFF, AS NEEDED

## STAFF ENGINEER(S)

**SR. STAFF ENGINEER(S)**

**ANY CONTRACTOR**

**COMPANY**

**PROJECT MANAGER**

**ANY ENGINEERING**

**COMPANY**

**RESPONSIBLE**

**ENGINEER**

2-1

# **Section 3**

Inspection Program Structure and Responsibilities

3.1 Structure and Responsibilities

The inspection program structure and responsibilities are described below. Also refer to the organizational chart on preceding page 2-1.

The owner is . The owner is represented by ANY ENGINEERING CO. who will manage and oversee the project. For the duration of the project, the responsible engineer, ENGINEER, will oversee the work. All major decisions or changes to the contract shall be made by the . All minor variations in the contract may be authorized by ENGINEER. All substantive changes to the approved plans and specifications will be submitted to NJDEP Bureau of Dam Safety for approval prior to construction.

ANY CONTRACTOR is the company that will perform the replacement work. , will act as the company’s manager. will provide periodic inspections of the work and quality assurance and control on behalf of ANY CONTRACTOR. The Project Manager for is , and will be the contact for ANY CONTRACTOR on contractual matters. will provide the overall construction management of the project.

ANY ENGINEERING CO. will provide full-time inspections and monitoring of the construction. will be in charge of reviewing ANY CONTRACTOR’s submittals. will be in charge of the construction inspection of the civil work and assist the ENGINEER in the submittal review. will be in charge of daily inspections and documentation of the work in reports, along with bi-weekly progress meetings with ANY CONTRACTOR. is a senior engineer and will visit the site to inspect the following at a minimum: subgrade soil conditions for the foundations, concrete form work and placement of the reinforcing steel. is also a senior engineer and will visit the site to inspect the following at a minimum: structural work and procedures. Additional field/office staff will be used, if needed, to verify compliance with the plans, specifications and conditions of the Dam Construction Permit.

* 1. Laboratory Testing

Laboratory testing on soils, riprap, concrete, and asphalt shown on Table 1 will be performed by independent laboratories employed by the CONTRACTOR. The riprap gradation will likely be supplied by a quarry. The asphalt and concrete mix design will be supplied by the Batch Plants.

3-1

**Table 1 – Lab Tests and Methods**

|  |  |
| --- | --- |
| **Item** | **Type of Test and Method** |
| Controlled Fill (Embankment) | Grain Size ASTM D422Compaction ASTM D698 |
| Controlled Fill (Backfill of excavations and trenches) | Grain Size ASTM D422Compaction ASTM D1557 |
| Screened Gravel | Grain Size ASTM D422 |
| Bankrun Gravel | Grain Size ASTM D422 |
| Crushed Stone | Grain Size ASTM D422 |
| Fine Aggregate | Grain Size ASTM C33 |
| Coarse Aggregate | Grain Size ASTM C33 |
| Concrete Compressive Strength | Slump Test ASTM C231 or ASTM C173.Core Compressive Strength ASTM C42 and C39 |
| Topsoil | Grain Size ASTM D422pH ASTM D4972Organic Content ASTM D5268 or D2974 |

* 1. Field Testing

During controlled fill placement and asphalt paving, a testing firm employed by the CONTRACTOR and acceptable to the ENGINEER will perform in-place density tests by nuclear method (ASTM D2922) and/or the modified proctor test (ASTM D1557). A minimum of one (1) field test for every lift shall be performed, and successive lifts of fill shall not be placed until the previous lift is tested. All tests that are performed by the CONTRACTOR must be reviewed by the ENGINEER.

One set (4) of field control cylinder specimens will be taken by the CONTRACTOR for each concrete truck load and tested by an independent laboratory employed by the CONTRACTOR. Slump tests will also be taken by the CONTRACTOR prior to placing the concrete. Cores from the newly placed asphalt pavement may be taken by the CONTRACTOR and tested. Copies of all field test results are to be kept onsite by the CONTRACTOR.

3-2

* 1. Review of Submittals

CONTRACTOR material submittals/shop drawings will be reviewed by the ENGINEER and the OWNER. Materials work plans, and other work items requiring submittals are listed in Appendix A.

* 1. As-Built Drawings

“Red-line” marked-up drawings, reflecting “as-built” conditions will be prepared by the CONTRACTOR in the field and reviewed by the ENGINEER. The red-line drawings are to be kept current by the CONTRACTOR on the site. The ENGINEER will prepare as-builts for submittal to NJDEP Bureau of Dam Safety.

3.6 Design Changes

One change order is anticipated that was reviewed and agreed upon by NJDEP Bureau of Dam Safety that involved the addition of a valve box in the concrete platform above the lake lowering gate valve behind the weir wall. No other change orders are anticipated. Any significant design changes will be submitted to NJDEP Bureau of Dam Safety for approval prior to incorporation into the construction.

3.7 Schedule of Construction

The CONTRACTOR is required to submit a detailed schedule shortly after the start of work. A tentative schedule currently under review is given in Appendix A. The ENGINEER will provide to NJDEP Bureau of Dam Safety the final approved schedule. The contract time is 90 days for substantial completion of the work and 120 consecutive calendar days to fully complete the work. The Notice to Proceed date is , and the completion date is .

# **Section 4**

3-3

Erosion Control Measures and Other Environmental Matters

The CONTRACTOR will provide necessary soil erosion control measures as per New Jersey State Standards for Soil Erosion and Sediment Control and the contract specifications. The ENGINEER will inspect and monitor the Erosion Control measures taken by the CONTRACTOR. A Soil Erosion and Sediment Control Plan Certification has been obtained from the County Soil Conservation District.

A Coastal Wetland Permit, Water Quality Certificate, and Waterfront Development Permit were approved by NJDEP Land Use Regulation Program (LURP). LURP is currently reviewing a Freshwater Wetlands General Permit #18, Stream Encroachment Permit, and Outfalls and Intake Structures General Permit #11. No construction will begin until the permits are approved.

A Tideland’s License has been approved and the OWNER has submitted the fee to the NJDEP Bureau of Tideland’s for this year. The OWNER is awaiting receipt of the License and will have it in hand prior to construction.

A Lake Lowering Permit was approved and extended to the end of March. Periodic progress reports will be sent to NJDEP Fish and Wildlife Division.

An Army Corp of Engineers Nationwide Permit 3 – Maintenance has been approved. Conditions of this permit and the permits listed above regarding protection of the waters will be adhered to.

# Section 5

4-1

Reporting Procedures

The ENGINEER will submit a copy of the (bi-weekly) progress meetings of the construction to NJDEP Bureau of Dam Safety. The minutes will include the items listed below:

1. Review previous meeting minutes.
2. Job progress review for past two weeks.
3. Change orders, both approved and pending.
4. Review submittal logs and update.
5. Review of construction schedule and progress rating.
6. Delivery date for long-lead items.
7. Issues requiring management attention.
8. Review invoice payments for Contractor (once per month).
9. Collect progress photos as required in General Conditions.
10. Review status of As-Built drawings which should be kept current.
11. Review test reports to assure that testing requirements noted in specifications are being met.
12. Job forecast for the next two weeks.

# A field inspection report will be submitted to the NJDEP Bureau of Dam Safety at the first of every month. A few representative photographs showing construction progress/activities will typically be included with the field report.

5-1

**APPENDIX A**

* Resumes
* Job Minutes Format
* Dewatering and Drainage Plan (If applicable)
* Submittal List and Schedule
* Preliminary Schedule

**Job Minutes**

 **Dam Replacement Project**

**, New Jersey**

ENGINEER:

Job meeting No. \_\_\_\_\_ Project #

Date:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Time:\_\_\_\_\_\_\_\_\_\_\_\_\_

**Attendees:**

**Job Progress**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Award Amount | Adjusted Amount | Total Payment Requests to date | Percent Complete | Retained Amount | Contract Balance |
|  |  |  |  |  |  |
|  |  |  |  |  |  |

Notes:

**Schedule**

Progress:

Anticipated changes or delays:

**Work performed last two weeks**

**Work to be performed the next two weeks**

cc:

# **Dewatering and Drainage Plan**

The CONTRACTOR will drain the lake and keep it lowered throughout the duration of construction by installing a 30-inch HDPE pipe through the dam. Coffer dams will be installed on both sides of the dam to prevent water from the lake and the wetland from seeping into the trench and work area. During a possible, large storm event, the 30-inch HDPE pipe may not have capacity for the peak runoff flows into the lake. At that time, the CONTRACTOR will install pumps to keep the lake lowered to protect the trench. The trench will be dewatered by the following methods described on the next sheet titled “Dewatering Plan”.

DEWATERING PLAN

 employs the most environmentally friendly techniques for dewatering work areas.

Water depths in a river, stream or lake vary frequently due to tides, rain and snow.

In our dewatering plan for our construction sites we have taken into account all expected water depths. We closely monitor extended weather forecasts for rain and water accumulation variables.

**Dewatering in Depths of up to 2.5 feet:**

When the water depth is 2.5 feet or less, we employ a combination of plywood sheets installed vertically and secured with sandbags. A waterproof liner is placed between the plywood and the sandbags. The liner adheres to the contour of the plywood and the uneven bottom to create a seal while water is pumped out of the dewatered area.

If the plywood needs additional strength, strong backs are attached to the plywood to resist the water pressure.

The dewatered area is a loop if the stream crossing work is performed in sections. If the entire crossing has to be dewatered, we employ pumps to bypass the crossing.

**Dewatering in depths of up to 6** **feet:**

When water depths are 4 feet or less (but more than 2.5 feet) we utilize portable cofferdams. These cofferdams have steel frames and plywood faces. Each cofferdam element is secured by fasteners. A watertight liner is placed along the face of the cofferdam and sandbags placed at the foot of the cofferdam to seal the uneven bottom contour. Once the liner and sandbags are secured, water is pumped out of the work area.

If the dewatering is done in sections, the cofferdam is looped to form a semi- circle. The water is then pumped from the work area to keep it dry.

Dewatering Plan

Page 2

Occasionally ground water is encountered in work areas. After the area is dewatered, smaller pumps are used to pump out minor groundwater drains and leaks.

The above steel cofferdam can be employed to a water depth of up to 6 feet. If water depth is over 6 feet, Z sheeting either made of vinyl or steel will be utilized.

**Materials Used:**

1. uses commonly used plywood for the wood dam

2. Sand bags used for the dewatering are made of clean approved sand, placed in nylon bags

3. Liners are made of reinforced nylon. Ply thickness is based on water velocity and depth.

4. The steel frames are made of 1/8-inch angle bars welded together with additional strength members welded as braces.

**Pumps:**

 owns a variety of pumps. Pump sizes range from 2 inches to 8 inches. Occasionally we use hydraulic submersible pumps with tandem hoses for hard to reach areas. Pumps are downsized after dewatering. Smaller pumps are used to maintain the dewatered areas dry.

All pumping and dewatering will be performed as per the permit requirements. All local, state and federal environmental regulations will be strictly adhered to.

*The attached sketch shows the different cofferdams and is a part of this dewatering plan.*





