

**FINAL CONSTRUCTION REPORT – Country Road Site  
FERC PROJECT # 1889/2485  
TURNERS FALLS/NORTHFIELD MOUNTAIN PROJECTS  
BIOENGINEERING BANK AND SLOPE STABILIZATION  
CONNECTICUT RIVER, MASSACHUSETTS**

**November 6, 2006**

**Table of Contents**

- 1) Progress of Work
  - i) Background
  - ii) Bioengineering Techniques
    - (a) Lower bank treatment details
    - (b) Upper bank treatment details
- 2) Status of Construction
- 3) Construction Difficulties
- 4) Contract Status
- 5) Reservoir Filling
- 6) Foundation
- 7) Sources of Major Construction Material
- 8) Materials Testing Results
- 9) Instrumentation
- 10) Erosion Control and Other Environmental Measures
- 11) Schedule

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**Site Report**

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**1) Progress of Work:**

Background

The Connecticut River erosion control work associated with the Phase II, Turners Falls/Northfield Mountain bioengineering bank stabilization projects includes eight sites totaling approximately 6,100 linear feet of riverbank. The Phase I bioengineering projects which were completed during the period of September 1996 to August 2000, included a total of five sites with 5,470 linear feet of bank restoration which includes projects beginning 2001 through this year. The Phase II projects are scheduled to be completed at the end of this project. The Country Road site is approximately 1005 linear feet of bank. This site was selected in accordance with the FERC accepted “Erosion Control Plan” and based on a consensus decision process with the ad hoc Connecticut River Streambank Erosion Control Committee (CRSEC). The committee is made up of land owners, project abutters, and environmental resource agencies.

Bioengineering Techniques

The bioengineering treatments which have been employed on the Connecticut River are considered to be a “soft-engineering” approach to bank stabilization by using living plant materials, and erosion control fabrics to stabilize the eroded slopes. Past experience using soft engineered techniques on the Connecticut River has demonstrated these stabilization techniques are appropriate in protecting the banks, even under high flow spring freshet conditions. Other benefits which have been demonstrated by the bioengineering treatments include sediment reduction, improved water quality, improved fisheries habitat, improved wildlife habitat, protection of prime agricultural land and protection of substantial archaeological resources. While Phase I projects on the Connecticut River were viewed as demonstrative in nature, the methods used in the projects have progressed to the point where they are considered a viable form of erosion control on the Connecticut River.

## Bank Treatment Details

### Lower Bank Treatment

A triangular stacked 3 coir log break water arrangement secured with duckbill earth anchors and stainless steel aircraft cable creates an emergent shelf where aquatic native plants are planted. The shelf abuts the stone toe of slope composed of 2"-4" diameter stone is placed at the water's edge at an elevation within the normal elevation range of the pool. Based on experiences with the Phase I projects, the stone specified was downsized from 4"-6" inches in prior projects as there has been no movement or shifting of the stone due to near bank shear stress. The stone toe was Dutch wrapped in filter fabric. This minimizes sediment leaching through the stone as well as reduces the tendency of the stone settle far into the river bottom silt. The toe of the bank slope above the rock rip-rap is stabilized with a Pyramat. The Pyramat, which are secured to the bank with 6 inch staples and willow stakes, creates a two horizontal to one vertical (2H to 1V) slope with the fill backing.

The lower bench/terrace area created between the toe of the bank slope and the Pyramat will be planted with native herbaceous species and is set at an elevation that allows it to be frequently inundated.

### Upper Bank Treatment

The upper bank region of the project in areas above the breakwater and hard toe treatment has been re-graded to a slope of at least (2 H to 1 V) and in some areas (2.5 H to 1 V). A concerted effort was made to develop a grade more suitable than the angle of repose for the native un-consolidated material. A minimum of 6 inches of quality loam was graded onto the banks and the entire area was seeded with a native seed mix. Erosion control material (biodegradable erosion control blanket of 700GSM Coir matting) was placed over the entire graded bank.

All plant materials and seed mixes used on this site were selected as species representing native plant materials found along the Connecticut River Valley. These plant selections have been reviewed and approved by local, state and federal resource agencies.

## **2) Status of Construction**

Bioengineering mobilization and construction on the Country Road Site began on September 11, 2006. Work for the first week included contractor mobilization and brush clearing. A pre-construction meeting with the site contractors was held at the start of the work to review the project plans, brush-clearing areas, and environmental protection considerations. Hard construction is complete, hard toe installed, coir log installation, and partial plant installation is done with the final plantings scheduled to take place in the Spring of 2007.

## **3) Construction Difficulties**

There were no significant construction difficulties experienced.

#### **4) Contract Status**

The construction contractor who is performing the riverbank erosion control work at the Country Road site is Davenport Construction of Greenfield, Massachusetts. No other subcontractors other than material suppliers are being used as of this date. Project supervision is being conducted by the NE Energy Services Project Engineer, Kurt Harris.

#### **5) Reservoir Filling**

Not applicable to this project.

#### **6) Foundation**

Not applicable to this project.

#### **7) Sources of Major Construction Materials**

Rock Rip-Rap: Lane Construction, Northfield, Massachusetts

Filter Fabric: Redhead Supplies, Hatfield, Massachusetts

Coir fiber rolls and erosion control fabric: E.J. Prescott, Gardiner, Maine

Duckbill Earth Anchors & Fasteners– Orchard Equipment Supply Co., Conway, Massachusetts

#### **8) Materials Testing and Results**

No material testing was required during this reporting period.

#### **9) Instrumentation**

Not Applicable to this project

#### **10) Erosion Control and Other Environmental Measures**

Sediment floating boom and good work practices.

#### **11) Schedule**

Site work was substantially completed on October 31, 2006



Creating the stone toe



Stone toe with emergent aquatic shelf to the left of the stone toe



Final grading



Final grade with coir matting installed