Implementation of Adaptive Management Strategies for Bio-Engineered Shoreline Stabilization in Great Egg Harbor Bay

A Case Study for Transportation Projects

Presented By: Robert Bevilacqua
Outline

- Project Overview
- Problem/Goals/Design/Details
- Construction Overview
- Adaptive Management Strategies
  - What worked?
  - What Didn’t?
  - How We Adjusted
- Lessons Learned
MARSH PLANTING, COIR FASCINE, AND STONE TOE

NOT TO SCALE

NOTES:
1. MAX. SLOPE FOR RIPRAPP PLACEMENT 1:20H.
2. EXTENT OF LOW MARSH PLANTING TO BE DETERMINED IN FIELD BY ENGINEER.
3. CONTRACTOR SHALL REPLACE PREVEGETATED COIR MATTERIES WITH TOPSOIL STABILIZATION MATING WITH LOW MARSH PLANT PLUGS, SPACED 12" O.C., AS INDICATED ON SHORELINE STABILIZATION PLANS.
4. SEE DETAILS 4.5, AND 3/55-7 FOR STONE TOE END CONDITION.

LINE OF EXISTING GRADE - SEE CROSS-SECTIONS
RIPRAPP, SEE PLANS FOR 050
NONWOVEN GEOTEXTILE, WRAP END INTO RIPRAPP AS SHOWN
BACKFILL WITH SUBSTRATE EXCAVATED FOR STONE TOE, SEE SPECS AND SECTIONS, TYP.

TOPSOIL STABILIZATION MATING WITH LOW MARSH PLANT PLUGS, SEE DETAIL 3/55-7
PREVEGETATED COIR MATTERIES WITH LOW MARSH PLANT PLUGS, SEE DETAIL 1/55-7
BACKFILL WITH SUBSTRATE EXCAVATED FOR STONE TOE, SEE SPECS AND SECTIONS

18" COIR FASCINE
W/ EARTH ANCHOR,
SEE DETAIL 2/55-7

LINE OF EXISTING GRADE -
SEE CROSS-SECTIONS

RIPRAPP, SEE PLANS FOR 050
NONWOVEN GEOTEXTILE, WRAP END INTO RIPRAPP AS SHOWN
BACKFILL WITH SUBSTRATE EXCAVATED FOR STONE TOE, SEE SPECS AND SECTIONS, TYP.

6' WOOD STAKE THROUGH
FASCINE NETTING, 2' O.C., TYP.
TOP OF STAKE NOT TO EXTEND
BEYOND TOP OF FASCINE.

EXISTING MARCH
VEGETATION - MINIMIZE
DISTURBANCE

VARIES - SEE NOTE #2

6' WOOD STAKE THROUGH
FASCINE NETTING, 2' O.C., TYP.
TOP OF STAKE NOT TO EXTEND
BEYOND TOP OF FASCINE

EARTH ANCHOR
EXISTING SUBGRADE
MARSH PLANTING AND COIR FASCINE

NOT TO SCALE

NOTES:
1. EXTENT OF LOW MARSH PLANTING TO BE DETERMINED IN FIELD BY ENGINEER.
2. CONTRACTOR SHALL REPLACE PREVEGETATED COIR MATTRESSES WITH TOPSOIL STABILIZATION MATTING WITH LOW MARSH PLANT PLUGS, SPACED 12" O.C., AS INDICATED ON SHORELINE STABILIZATION PLANS.
3. REFER TO DETAILS 4.5/397 FOR END TREATMENT.
Adaptive Management

- 2 Stage Approach
- What worked? What Didn’t?
- Low Energy = No Problem
- High Energy = Problem
  - Environment?
  - Materials?
  - Installation Methods/Quality?
  - Design Assumptions?
- Fixing it – substitute materials, strengthen, elevate, herbivory control
- Continuing Challenges
Lower Energy Regimes
High Energy Regimes

- Materials & Strengthening
- Elevation Adjustments
- Herbivory Controls
- Quality Control & Oversight
Lessons Learned

- Change the 1-shot, get in/ get out paradigm

Contracting Processes
- Separate from Infrastructure Contract
- More direct control of Specialty Restoration Contractor
- Selection, oversight, communication, change orders
- Clarification & Enforcement of Specs
- Flexibility with payment items, budgeting for uncertainty
- Performance vs. Schedule Incentives

- Education and Setting Expectations