



November 19, 2013

Mr. Ernest Steinauer, Chairman
Nantucket Conservation Commission
2 Bathing Beach Road
Nantucket, MA 02554

**RE: Flanking Mitigation and Project Removal Costs
Baxter Road Temporary Stabilization Application
Town of Nantucket
Nantucket, Massachusetts
MMI #2967-11-4**

Dear Chairman Steinauer and Members of the Conservation Commission:

This letter is intended to address the final few issues raised at the hearing of November 13, 2013 regarding the above-referenced application. Specifically, the commission requested the following:

- Additional detail on how flanking of the geotube ends will be mitigated
- Costs for removing the geotubes

Aside from these two issues, you may recall that we had lengthy discussions about the sand mitigation volumes and protocols during that hearing. Based on that discussion, the project team is proposing to increase the mitigation volumes and associated nourishment protocols. This change is outlined below as well.

Flanking Details

Please find in Attachment A revised Sheet 5 of 11 of the project plan set entitled "Typical Flanking Detail – Temporary Slope Stabilization" dated October 25, 2013 and revised through November 18, 2013. This detail has been modified to reflect discussions with the anticipated geotube contractor and to represent the suggested sand mitigation volumes for the tube ends as calculated by the design team. Flanking will be addressed through a combination of providing geotextile end tubes and placement of 430 cubic yards of sand.

The end tubes will be constructed of a geotextile fabric and filled with sand in the same manner as the larger geotubes but are smaller in size. Their purpose is to fill the void space between the larger geotubes and the bank. No excavation is proposed for installation of the end tubes.

Sand nourishment will be added to the ends in the same manner as on the face of the geotube and will mimic the nourishment volumes. The slope of 2.5:1 that is proposed on the front of the tubes will be carried around the ends and matched into the existing bluff.

Project Removal

Application materials have clearly articulated that the project will be removed when certain failure criteria are met (as defined in Milone & MacBroom, Inc. letters dated October 25, 2013 and November 5, 2013) or at the end of the permit life, whichever occurs first. Removal will be completed by first removing any

nourishment sand that is on top of the bags and stockpiling that material on the beach. An excavator will be used to tear the bags open and remove the sand materials with a grading bucket, rolling the sand out of the interior of the bag. Once enough sand is removed from the bag to lift the geotextile, the excavator bucket will be used to grab the bag and pull it up, removing the sand from inside the bag. Removal will begin with the top tube and proceed to the next lowest tube and so on. The geotube and scour apron will then be loaded into all-terrain dump trucks, hauled off the beach, and properly disposed of at the landfill or recycled. No synthetic materials will be left on or under the beach. The sand from the interior will remain on the beach and will be graded to match the general beach profile.

If the beach has eroded to the extent that at high tide there is not adequate room available to work on the beach, then the removal will be completed during low tide only. In the event that the beach in front of the bags has completely eroded to the extent that removal cannot be accomplished "in the dry," the work will be completed from the seaward side of the lowest tubes, including the anchor tube and scour mat, by working in between the tides.

The cost for removal of the bags, disposal of the waste material, and regrading the sand has been estimated at approximately \$218,000. A cost estimate from a contractor is included in Attachment B.

Sand Mitigation Volume and Nourishment Rates

At the meeting of November 13, 2013, the commission engaged in some discussion regarding the sand mitigation volume. We have considered the feedback provided by commission members as well as the written comments from Applied Coastal and Research and, based on this, the project team will accept a nourishment rate of 22 cubic yards per linear foot as a condition of approval for this project. Following is a summary of the proposed nourishment protocol:

1. Provide initial cover of 18 cubic yards per linear foot immediately following construction of the tubes. The reason for this is to provide the initial cover and to provide a large up-front volume of sand while observing how the entire geotube system performs in the first months of installation.
2. January through March of Year 1: Provide the remaining four cubic yards per linear foot on an as-needed basis in accordance with the replenishment trigger presented in our November 12, 2013 letter.
3. April - Years 2 through 5: Provide additional sand to obtain a minimum of 12 cubic yards per linear foot of sand cover. Twelve cubic yards per linear foot is the minimum sand volume required to provide the desired two minimum feet of cover. If some portion of the previous year's sand is in place at the time of the April nourishment, then the volume needed to get to 12 cubic yards per linear foot will be provided with the remaining sand added in November. For example, if 10 cubic yards per linear foot of sand is needed in April to meet the 12-cubic-yard minimum, then the remaining two cubic yards will be added in November instead of April.
4. November - Years 2 through 5: Add an additional six cubic yards per linear foot *plus* any excess volume left over from the April requirement. The reason for this is to ensure that the bulk of the mitigation volume is available in November for potential mobilization during winter storms.
5. November through March of Years 2 through 5: Add the remaining four cubic yards per linear foot on an as-needed basis in accordance with the replenishment trigger presented in our

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November 12, 2013 letter. If the 22 cubic yards per linear foot volume is not placed in its entirety before March 1, the balance of the sand will be placed on March 1.

End volumes will be replaced and nourished on the same schedule as outlined above.

We hope this information addresses any concerns of the commission members. As we have mentioned during past hearings, timely implementation of stabilization measures at this location is critically important to public health and safety.

Very truly yours,

MILONE & MACBROOM, INC.



Nicolle E. Burnham, P.E., CFM
Principal

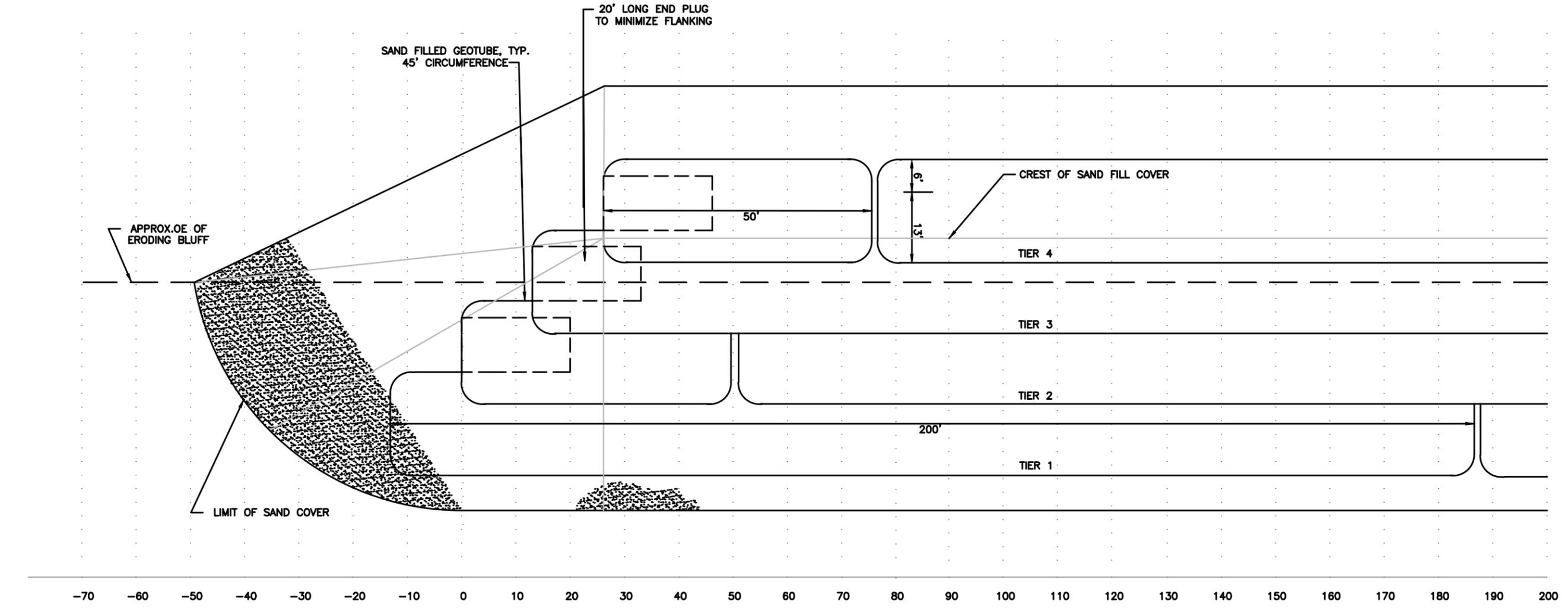
Enclosures

Attachment A – Sheet 5 of 11 "Typical Flanking Detail – Temporary Slope Stabilization" dated October 25, 2013 and revised through November 18, 2013

Attachment B – Project Removal Cost Opinion, prepared by Toscana

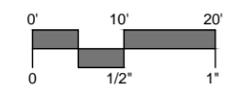
cc: Kara Buzanoski, Public Works Director

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PLAN OF TYPICAL GEOTUBE TERMINAL END – GEOSYNTHETIC TUBES

FOR PERMITTING PURPOSES ONLY



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REVISIONS	REVISED DETAIL
11/19/2013	

TYPICAL FLANKING DETAIL - TEMPORARY SLOPE STABILIZATION
BAXTER ROAD
SLOPE STABILIZATION
 NANTUCKET, MASSACHUSETTS

RSD	SMW	-
DESIGNED	DRAWN	CHECKED
SCALE HOR: 1"=20' VERT: 1"=20'		
DATE OCT. 25, 2013		
PROJECT NO. 2967-11		
SHEET NO. 5 OF 11		
SHEET NAME TYP		

Proposal

Submitted To: COTTAGE & CASTLE, INC.	Date: Tuesday, November 19, 2013
Address: 37 OLD SOUTH RD. UNIT 6	Job Name: SBPF - GEOTUBE REMOVAL
City, State, Zip: NANTUCKET, MA 02554	Location: BAXTER RD
Job Description:	JOBNO: 3435

THE COST TO:

1 - REMOVAL AND DISPOSAL OF 1500 LF OF GEOTUBE FROM SANKATY BEACH. REMOVAL WOULD TAKE PLACE FROM THE TOP DOWN, ANY SMALL SECTIONS OF THE TUBE REMAINING WOULD BE EXCAVATED AND RUN THRU A TROMMEL SCREEN TO ASSURE THAT ALL OF THE TUBE MATERIAL IS REMOVED FROM THE SITE. ACCESS WOULD BE NEEDED AT HOICKS HOLLOW.	\$218,000.00
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We Propose hereby to furnish material and labor in accordance with the above specifications for the sum of: **\$218,000.00**

Payment is to be made as follows:

BILLING IS WEEKLY. PAYMENT IS DUE WITHIN TEN DAYS.

All material is guaranteed to be as specified. All work is to be completed in a professional manner according to standard practices. Any alteration or deviation from the above specifications involving extra costs will be executed only upon written orders and will become an extra charge over and above the estimate. All agreements contingent upon strikes, accidents or delays beyond our control. Owner shall carry all risk property insurance, to include but not limited to, fire, windstorm and flood coverage. Our workers are fully covered by Workman's Compensation Insurance. We carry \$500,000 of care, custody and control legal liability insurance for of any building being moved. Coverage in excess of this amount is the sole responsibility of the Owner.

After ten (10) days, unpaid invoices accrue interest at a rate of 1 1/2% per month (18% per year). If Owner fails to make payment(s) as required under this Proposal or commits any other breach or default under this Proposal, Toscana shall have the right to immediately cease all work to be performed and to recover from Owner all moneys owed to Toscana for any work performed as well as any costs and expenses incurred by Toscana including reasonable attorney's fees, as a result of any default or non-payment.

Note: This proposal may be withdrawn by us if not accepted with 30 days.

Authorized Signature: _____

Acceptance of Proposal - The above prices, specifications and conditions are satisfactory and are hereby accepted. You are authorized to do the work as specified. Payment will be made as outlined above.

Signature: _____ **Date of Acceptance:** _____