

SLOPE REMEDIATION
CONSTRUCTION RECOMMENDATIONS

Fredericksburg and Spotsylvania
National Military Cemetery

April 24, 1991
Our Reference No. V910391

Schnabel Engineering Associates

SCHNABEL

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April 24, 1991

National Park Service
Fredericksburg and Spotsylvania NMP
120 Chatham Lane
Fredericksburg, Virginia 22405

Attn: Mr. Mike Johnson

Project: Slope Remediation Design, Fredericksburg
National Military Cemetery, Fredericksburg,
Virginia (Our V910391) (P.O. # PX4370-1-0096)

Gentlemen:

Submitted herewith are three copies of our recommendations and specifications for remediation of the existing slope at the south site wall of the National Military Cemetery (NMC). We will also provide one site visit and meeting with National Park Service personnel prior to construction to assess the suitability of the proposed plan and to include any plan revisions as required. These services are provided in accordance with our proposal/agreement of April 1, 1991, and your subsequent purchase order.

The following services are not included in this proposal/agreement: surveying for line and grade, cost or quantity estimates, construction dewatering, pavement design, and professional services not specifically mentioned.

CONSULTING GEOTECHNICAL ENGINEERS AND GEOLOGISTS
BETHESDA, MD • BALTIMORE, MD • LANDOVER, MD • WEST CHESTER, PA • PARAMUS, NJ
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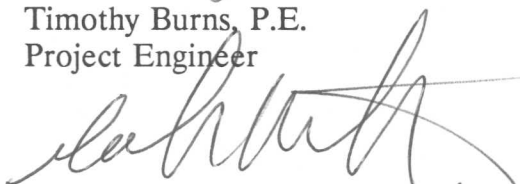
We appreciate the opportunity to be of service on this project. Please feel free to contact us if you have any questions.

Very truly yours,

SCHNABEL ENGINEERING ASSOCIATES, INC.



Timothy Burns, P.E.
Project Engineer



Gordon M. Matheson, Ph.D., P.E.
Commonwealth of Virginia

TJB/GMM/dge

cc: National Park Service
Attn: Mr. John Karish

Enclosure:

Map Pocket
Site Plan and Details
Drawing No. V910391-1

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Summary of Project

The Fredericksburg National Military is located northwest of Lafayette Boulevard in Fredericksburg, Virginia. The Atkins quarry, an abandoned sand and gravel quarry, borders the cemetery to the southwest. Atkins quarry ceased operations at least fifteen years ago and, since that time, has been overgrown with locally indigenous vegetation consisting of grasses, weeds, bushes and trees. The highwall of the quarry is approximately thirty feet from the brick wall surrounding the cemetery. Existing grades of the highwall in this vicinity are approximately 2.5H:1V near the toe of the slope, approximately 0.75H:1V in the middle portion of the slope, and nearly vertical in the upper ten feet of the slope.

The basic elements of this project include selected site grading and installation of soil erosion protection matting on the steepest areas of the existing slope. The intent of the project is to provide an erosion deterrent on the face of the soil slope.

The approximate extent of the work to be performed is indicated on Drawing No. V910391-1 (map pocket). The total construction surface area is estimated to be about 70 square yards.

Site Preparation

All loose surficial materials and debris should be removed from the face of the slope in areas where the soil erosion matting is to be placed. In areas where the existing grades

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of the slope face overhang areas below, site grading should be provided to allow for a positive slope grade at all locations. A detail indicating typical slope grading requirements is shown as Section 1/S-1 on Drawing No. V910391-1. Existing trees and other significant rooted vegetation should be left in place wherever possible along the slope.

The slope should not be compacted at the final grade, leaving the soil surface rough. A sample of the soil should be tested to determine fertilizer and lime needs. The soil pH should be in the range of 6.0 to 7.0. This testing can be performed by the Cooperative Extension Service Soil Testing Laboratory or by a commercial laboratory. Once fertilizer and lime requirements are determined by laboratory testing, fertilizer and lime should be applied to the slope face.

Soil Erosion Matting Installation

The soil erosion matting to be placed on the face of the slope should be ENKAMAT Type 7020 by BASF Corporation, or approved equivalent. The width of the mat should be about 38 inches. The mat should be entrenched at the top of the slope with a soil cover and should extend straight down the slope. Ground fasteners should be driven at about 3 ft. centers along the edge of the mat. Adjacent mats should overlap by a minimum of 4 inches. Typical details of the mat installation are shown on Drawing No. V910391-1 as Sections 2/S-1 and 3/S-1.

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The ground fasteners should be wood stakes with a nominal 1 inch thickness and a minimum of 10 inches in length.

Vegetation Recommendations

hydroseeder?

The slope should be hydroseeded with a mixture of grasses and legumes. The seeding should be applied at a rate of one pound per 20 square yards. The mixture used should be 50% Tall Fescue, 35% Sericea lespedeza, and 15% Weeping Love grass, or an *native?* equivalent mixture. The Sericea lespedeza seeds should be inoculated and scarified to promote uniform germination. The slope should be re-fertilized during the growing season, after planting.

Construction Considerations

Prepared soil slope areas may be susceptible to erosion by stormwater runoff. We recommend that the soil erosion protection matting be placed on prepared slope areas as soon after preparation as possible.

The existing slopes in the area of proposed mat placement exceed 1V:1H. We recommend safety measures be taken to protect laborers placing the mats on these slopes. We anticipate safety harnesses and cables, fixed at the top of the slope, will be required.



General Considerations

It is our opinion that the recommendations contained herein, if implemented correctly, will reduce future soil erosion of the slope. We cannot guarantee, however, that soil erosion on the slope will be eliminated or alleviated if these recommendations are followed. Modifications may be necessary depending on conditions encountered at the time of construction.

We have prepared this report and provided these recommendations in accordance with generally accepted geotechnical engineering practices, and make no other warranties, either expressed or implied, as to the professional services provided under the terms of this agreement and included in this report.

We appreciate the opportunity to be of service for this project. Please do not hesitate to contact either of the undersigned engineers for clarification of this report or the scope of construction work recommended.

buy extra (life?)
amount of matting — cost
seed — cost
labor — cost
cut trees for light? → Mark Abrams.

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