



**Turf & Soil Diagnostics**



**MATERIALS TEST REPORT FOR**  
Martha's Vineyard High School

**REPORT TO:** Huntress Sports  
Chris Huntress  
17 Tewksbury Street  
Andover, MA 01810

**DATE RECEIVED:** Oct-28-2019  
**REPORT DATE:** Nov-05-2019  
**CONDITION OF SAMPLE:** Normal

**PARTICLE SIZE (ASTM F1632)**

Lab ID#	Sample Name	Soil Separate* (%)			Sieve Size / Sand Fraction Sand Particle Diameter % Retained							
		Sand 2.0 - 0.05 mm	Silt 0.05 - 0.002 mm	Clay < 0.002 mm	No. 5 Gravel 4.0 mm	No. 10 Gravel 2.0 mm	No. 18 V. Coarse 1.0 mm	No. 35 Coarse 0.50 mm	No. 60 Medium 0.25 mm	No. 100 Fine 0.15 mm	No. 270 V. Fine 0.05 mm	
45434-1	Phase One - Grass Field	70.1	19.3	5.9	2.2	2.5	6.8	18.5	25.6	11.0	8.2	

**PARTICLE SHAPE / pH / PARTICLE SIZE PARAMETERS**

Lab ID#	Sample Name			USDA Textural Classification	pH <sup>1</sup> 1:1	Uniformity Coefficient Cu	D15 mm	D85 mm	% Organic Matter Dry Wt.**
45434-1	Phase One - Grass Field			Sandy Loam	5.1	96.3	0.01	0.88	3.63

\*ASTM F1632 and Determination of Size Factors SOP

<sup>1</sup> ASTM D4972, method A, CaCl<sub>2</sub>, 25 g sample used

\*\*ASTM F1647 Method A

Samples were tested as received and comments pertain only to the samples shown.

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Samples were received with a transmittal letter.

Reviewed by \_\_\_\_\_



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**PHYSICAL EVALUATION**

Lab ID#	Sample Name	Particle Density <sup>1</sup> g/cc	Bulk Density g/cc	Infiltration Rate* in/hr	Infiltration Rate* cm/hr	Total Porosity %	Aeration Porosity %	Capillary Porosity <sup>2</sup> %	Degree of Saturation %	Organic Matter % Dry Wt. <sup>3</sup>
45434-1	Phase One - Grass Field	2.61	1.46	1.2	3.1	43.8	2.7	41.1	94	3.63

\*ASTM F1815 40 cm Tension with compaction energy reduced to 5.75 ft lb/sq inch.

<sup>1</sup> ASTM D5550

<sup>2</sup> Determined at 40 cm tension

<sup>3</sup> ASTM F1647 Method A

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Reviewed by \_\_\_\_\_



November 5, 2019

Huntress Sports  
Martha's Vineyard High School  
TSD File #45434

Enclosed are the laboratory results of the Phase One – Grass Field soil sample. No specifications were provided for this project, but our understanding is that these soils will be used for sports fields.

The Phase One – Grass Field sample is classified as sandy loam per the USDA textural classification scheme. Sandy loam soils typically provide acceptable water and nutrient holding for most turf and landscapes. They provide limited internal drainage and can be prone to excess compaction under heavy use.

Organic matter is another component of topsoil quality. An organic matter content of 3 to 8% by weight is typically recommended for most turf and landscape soils of this type, with organic matter contents towards the lower part of the range for sports fields and towards the upper end for planting beds.

The 40 cm performance testing indicates that the Phase One - Grass Field sample has a saturated hydraulic conductivity (infiltration) rate that is low. Limited internal drainage should be expected such that fields should be crowned to ensure adequate surface drainage. The total porosity is acceptable.

Total porosity is comprised of air-filled (aeration) and water-filled (capillary) pore space. Aeration porosity is made up of relatively large pores that conduct water under saturated conditions. When drained, they are filled with air providing the oxygen necessary for root growth. Capillary porosity is made up of small pores that hold water against the force of gravity, retaining much of it for plant use. Ideally, a root zone mix would contain a nearly equal distribution of air and water filled pore space after free drainage.

The aeration porosity is low and the capillary porosity is high. The results suggest that these soils should have poor drainage and the potential for low aeration and excessive water retention. With the low infiltration rate, fields should be crowned to ensure adequate surface drainage.

As with any soil installation, it will be especially important to control compaction during the placement and grading of the soil. Never handle the soil when wet. Equipment with low ground pressure is recommended for the placement and gradation of the soil.

Please let us know if you have any questions or are in need of further assistance. Samples are generally kept on the premises for 45 days after report date. Thank you for using Turf & Soil Diagnostics, Inc.

Sincerely,

Duane K. Otto  
Vice President