



March 28, 2011

Matt Murphy  
ICON Materials  
PO Box 957  
Auburn, WA 98071

RE: Pit #A-464 - File #11030073

Dear Mr. Murphy:

Enclosed are the laboratory results of the Topdressing Greens and Topdressing Fairway samples. These samples were tested according to the USGA protocols. These results are being compared to the 2004 USGA recommendations for putting green construction.

The particle size results indicate the Topdressing Greens and Topdressing Fairway samples meets USGA particle size recommendations for greens.

We recommend using topdressing sands that are compatible with the existing rootzone materials. The Topdressing Greens sample should be compatible with finer USGA greens. The Topdressing Fairway sample should be compatible with most soil based fairways and many sand based fairways. Compatibility can be verified by comparing the particle size of the existing rootzone to the particle size of the topdressing sand. Compatible topdressing sands are similar or coarser than the existing rootzone. The use of finer sands will increase the risk of layering, which increases the risk of excessive water retention at the surface.

The infiltration rates of the two samples are essentially the same at 59.0 and 58.7 in/hr. These infiltration rates suggest rapid internal drainage, which is desirable for topdressing sands.

If you have any questions or are in need of further assistance, please do not hesitate to contact us. Samples are generally kept on the premises for 45 days after report date. Thank you for using Turf Diagnostics and Design, Inc.

Sincerely,

Duane K. Otto  
Vice President

File: ICON Materials  
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Matt Murphy  
PO Box 957  
Auburn, WA 98071  
PHONE: 253-261-4817

Date received Mar-23-2011  
Account Number 01112530  
Date Reported Mar-28-2011  
Facility Pit #A-464



Particle Size Evaluation\*

Lab ID#	Sample Name	% Sand 2.0 - 0.05 mm	% Silt 0.05-0.002mm	% Clay < 0.002mm	Gravel 2.0 (10)	% Retained mm (US sieve)				
						V. Coarse 1.0 (18)	Coarse 0.5 (35)	Medium 0.25 (60)	Fine 0.15 (100)	V. Fine 0.05 (270)
11030073-1	Topdressing Greens	98.9	< 1.0	< 1.0	0.0	3.0	23.8	52.5	16.2	3.4
11030073-2	Topdressing Fairway	98.8	< 1.0	< 1.0	0.2	6.4	25.0	46.2	17.6	3.7
USGA Recommendations for Greens		> 92%	< 5%	< 3%	< 3%	< 7%**	> 60% Combined		< 20%	< 5%

Lab ID#	Sample Name	Uniformity Coefficient Cu	D15 mm	D50 mm	D85 mm	Shape Angularity	Shape Sphericity	Acid Reaction	pH <sup>†</sup> 1:1	% Organic Matter Dry Wt.***
11030073-1	Topdressing Greens	2.4	0.21	0.37	0.71	Sub-Angular to Sub-Rounded	Medium	Slight		
11030073-2	Topdressing Fairway	2.5	0.20	0.38	0.79	Sub-Angular to Sub-Rounded	Medium	Slight		

A2LA Testing Certificate Number 797-01

\*ASTM F1632 Method B & Determination of Size Factors SOP

†ASTM D4972 w/ CaCl<sub>2</sub>

\*\*\*ASTM F1647 Method A

\*\*Maximum of 10% combined on Gravel (2.0 mm) and Very Coarse (1.0 mm) fractions.

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

This report may not be reproduced in part, but only in full.

Sample condition upon receipt was normal.

Samples were received with a transmittal letter.

Reviewed by Duane K. Otto



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**30 cm USGA Physical Evaluation\***

Lab ID#	Sample Name	Infiltration Rate* in/hr	Infiltration Rate* cm/hr	Bulk Density g/cc	Organic Matter % Dry Wt.‡
11030073-1	Topdressing Greens	59.0	149.8	1.46	
11030073-2	Topdressing Fairway	58.7	149.1	1.49	
USGA Recommendations		> 6	> 15	-	-

A2LA Testing Certificate Number 797-01      \*ASTM F1815 Saturated Hydraulic Conductivity (K-SAT).      ‡ ASTM F1647 Method A

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