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Date: 9/16/2022

Client Name: Tucson Country Club

File Number: 34998

Consultant: Soil and Water Consulting

Greensmix : Lab #2021 TEE CAPPING MATERIAL

Gravel: Lab #2020 WCS&G PHX GRAVEL

GREENSMIX/GRAVEL COMPATIBILITY

Rootzone Sieve Analysis	Particle Diameter (%)							
	2.0 mm	1.0 mm	0.5 mm	0.25 mm	0.15 mm	0.106 mm	0.053 mm	Silt/Clay
% Retained	2.8	15.0	27.9	31.0	11.8	5.1	3.0	3.4

Gravel Sieve Analysis	Particle Diameter (%)							
	12.5 mm	9.5 mm	6.35 mm	4.75 mm	2.36 mm	2.0 mm	1.0 mm	< 1.0 mm
% Retained	0.0	0.7	30.4	23.0	41.5	1.4	1.8	1.2

1. For Bridging to Occur. $D_{15}(\text{gravel}) \leq 8 \times D_{85}(\text{rootzone})$ $D_{15}(\text{gravel}) = 2.97$
 $D_{85}(\text{rootzone}) = 1.19$
 $2.97 \text{ mm} \leq 9.52 \text{ mm}$

These Results show that the $D_{15}(\text{gravel})$ at 2.97 mm **IS** less than or equal to ($\leq$) $8 \times D_{85}(\text{rootzone})$, which was $8 \times 1.19 \text{ mm} = 9.52 \text{ mm}$. Therefore, bridging of the coarsest 15% rootzone particles **SHOULD** occur with the finest 15% of gravel particles. This gravel **IS** compatible with sand.

2. For Adequate Permeability. $D_{15}(\text{gravel}) \geq 5 \times D_{15}(\text{rootzone})$ $D_{15}(\text{gravel}) = 2.97$
 $D_{15}(\text{rootzone}) = 0.18$
 $2.97 \text{ mm} \geq 0.90 \text{ mm}$

These Results show that the $D_{15}(\text{gravel})$ at 2.97 mm **IS** $\geq 5 \times D_{15}(\text{rootzone})$, which was $5 \times 0.18 \text{ mm} = 0.90 \text{ mm}$. Therefore, adequate permeability **SHOULD** occur with this gravel and rootzone sand.

3. Uniformity Coefficient of Gravel $D_{90}(\text{gravel})/D_{15}(\text{gravel}) \leq 3.0$ $D_{90}(\text{gravel}) = 8.53$
 $D_{15}(\text{gravel}) = 2.97$
 $2.87 \text{ mm} \leq 3.00 \text{ mm}$

These Results show that the $D_{90}(\text{gravel})/D_{15}(\text{gravel})$ is 2.87 mm which **IS** less than or equal to 3.0. Therefore, the Uniformity Coefficient of gravel **PASSES** this criterion.

Furthermore, the gravel should have 100% particles < 12mm, $\leq 10\%$ particles < 2mm, and $\leq 5\%$ particles < 1mm.

Reviewed by:

Jackie Brackman