200 White Mountain Drive
New Bremen, OH 45869
Tel: (419) 977-2766
Fax: (419) 977-2767

Date: 3/22/2023
Client Name: Dragon Ridge C.C.
File Number: 47746
Consultant: Soil and Water Consulting

Greensmix : Lab #2364 WCS&G 90/10 GREENS-MIX
Gravel: Lab #543 LMSC 1.6 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	0.5	9.6	39.2	36.0	9.2	2.3	0.8	2.4

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	0.3	17.0	30.2	43.2	2.5	4.3	2.5

1. **For Bridging to Occur.** D15(gravel) <= 8 x D85(rootzone)

D15(gravel) = 2.68
D85(rootzone) = 0.94

2.68 mm <= 7.52 mm

These Results show that the D15(gravel) at 2.68mm **IS** less than or equal to (<=) 8 x D85(rootzone), which was 8 x 0.94mm = 7.52mm. Therefore, bridging of the coarsest 15% rootzone particles **SHOULD** occur with the finest 15% of gravel particles. This gravel **IS** compatable with sand.

2. **For Adequate Permeability.** D15(gravel) >= 5 x D15(rootzone)

D15(gravel) = 2.68
D15(rootzone) = 0.25

2.68 mm >= 1.25 mm

These Results show that the D15(gravel) at 2.68mm **IS** >= 5 x D15(rootzone), which was 5 x 0.25mm = 1.25mm. Therefore, adequate permeability **SHOULD** occur with this gravel and rootzone sand.

3. **Uniformity Coefficient of Gravel** D90(gravel)/D15(gravel) <= 3.0

D90(gravel) = 7.70
D15(gravel) = 2.68

2.87 mm <= 3.00mm

These Results show that the D90(gravel)/D15(gravel) is 2.87mm 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, <= 10% particles < 2mm, and <= 5% particles < 1mm.

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Greensmix : Lab #2364 WCS&G 90/10 GREENS-MIX
Gravel: Lab #544 LMSC 1.7 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	0.5	9.6	39.2	36.0	9.2	2.3	0.8	2.4

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	4.8	51.0	42.4	0.9	0.2	0.0	0.1	0.6

1. **For Bridging to Occur.** D15(gravel) <= 8 x D85(rootzone)

   D15(gravel) = 7.33

   D85(rootzone) = 0.94

   7.33 mm <= 7.52 mm

   These Results show that the D15(gravel) at 7.33mm **IS** less than or equal to (<=) 8 x D85(rootzone), which was 8 x 0.94mm = 7.52mm. Therefore, bridging of the coarsest 15% rootzone particles **SHOULD** occur with the finest 15% of gravel particles. This gravel **IS** compatable with sand.

2. **For Adequate Permeability.** D15(gravel) >= 5 x D15(rootzone)

   D15(gravel) = 7.33

   D15(rootzone) = 0.25

   7.33 mm >= 1.25 mm

   These Results show that the D15(gravel) at 7.33mm **IS** >= 5 x D15(rootzone), which was 5 x 0.25mm = 1.25mm. Therefore, adequate permeability **SHOULD** occur with this gravel and rootzone sand.

3. **Uniformity Coefficient of Gravel** D90(gravel)/D15(gravel) <= 3.0

   D90(gravel) = 12.19

   D15(gravel) = 7.33

   1.66 mm <= 3.00mm

   These Results show that the D90(gravel)/D15(gravel) is 1.66mm 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, <= 10% particles < 2mm, and <= 5% particles < 1mm.

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Client Name: Dragon Ridge C.C.
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Consultant: Soil and Water Consulting

Greensmix : Lab #2364 WCS&G 90/10 GREENS-MIX
Gravel: Lab #545 LMSC 1.8 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	0.5	9.6	39.2	36.0	9.2	2.3	0.8	2.4

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	0.2	29.1	27.9	39.0	1.2	1.1	1.5

1. **For Bridging to Occur.** D15(gravel) <= 8 x D85(rootzone)

   D15(gravel) = 3.05

   D85(rootzone) = 0.94

   3.05 mm <= 7.52 mm

   These Results show that the D15(gravel) at 3.05mm **IS** less than or equal to (<=) 8 x D85(rootzone), which was 8 x 0.94mm = 7.52mm. Therefore, bridging of the coarsest 15% rootzone particles **SHOULD** occur with the finest 15% of gravel particles. This gravel **IS** compatable with sand.

2. **For Adequate Permeability.** D15(gravel) >= 5 x D15(rootzone)

   D15(gravel) = 3.05

   D15(rootzone) = 0.25

   3.05 mm >= 1.25 mm

   These Results show that the D15(gravel) at 3.05mm **IS** >= 5 x D15(rootzone), which was 5 x 0.25mm = 1.25mm. Therefore, adequate permeability **SHOULD** occur with this gravel and rootzone sand.

3. **Uniformity Coefficient of Gravel** D90(gravel)/D15(gravel) <= 3.0

   D90(gravel) = 8.44

   D15(gravel) = 3.05

   2.77 mm <= 3.00mm

   These Results show that the D90(gravel)/D15(gravel) is 2.77mm 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, <= 10% particles < 2mm, and <= 5% particles < 1mm.

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Consultant: Soil and Water Consulting

Greensmix : Lab #2364 WCS&G 90/10 GREENS-MIX
Gravel: Lab #546 LMSC 1.9 GRAVEL ACC

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	0.5	9.6	39.2	36.0	9.2	2.3	0.8	2.4

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	0.4	17.2	74.7	6.8	0.1	0.0	0.0	0.8

1. **For Bridging to Occur.** D15(gravel) <= 8 x D85(rootzone)

   D15(gravel) = 6.66

   D85(rootzone) = 0.94

   6.66 mm <= 7.52 mm

   These Results show that the D15(gravel) at 6.66mm **IS** less than or equal to (<=) 8 x D85(rootzone), which was 8 x 0.94mm = 7.52mm. Therefore, bridging of the coarsest 15% rootzone particles **SHOULD** occur with the finest 15% of gravel particles. This gravel **IS** compatable with sand.

2. **For Adequate Permeability.** D15(gravel) >= 5 x D15(rootzone)

   D15(gravel) = 6.66

   D15(rootzone) = 0.25

   6.66 mm >= 1.25 mm

   These Results show that the D15(gravel) at 6.66mm **IS** >= 5 x D15(rootzone), which was 5 x 0.25mm = 1.25mm. Therefore, adequate permeability **SHOULD** occur with this gravel and rootzone sand.

3. **Uniformity Coefficient of Gravel** D90(gravel)/D15(gravel) <= 3.0

   D90(gravel) = 10.83

   D15(gravel) = 6.66

   1.63 mm <= 3.00mm

   These Results show that the D90(gravel)/D15(gravel) is 1.63mm 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, <= 10% particles < 2mm, and <= 5% particles < 1mm.

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