

September 10, 2020

Re: Gleneagle Filing 2 Grading Revisions

Proposed Alternate Grading Plan Summary

The proposed Alternate Grading Plan meets the requirements of the ECM Section 3.3.3, more specifically:

- Section 3.3.3 D – Armoring of the low point of the channel has been provided utilizing a 2 ft wide 'V' shaped concrete pan capable of containing 10% of the 100-year flow See cross-sections J & L)
- Section 3.3.3 E.2 – The minimum radius required is equal to two times the top flow width of the proposed trapezoidal channel. Based on the calculated flow depth in the channel of 0.8 ft and top width of 8.4 ft, the minimum radius required is 16.8 ft with a 20 ft radius provided.
- Section 3.3.3 K – The proposed channels are located within a dedicated Tract owned and maintained by the Gleneagle HOA. All channels are accessible via the open space tract conveyed to and maintained by the GCA.

GLENEAGLE DEVELOPMENT DITCH CAPACITY CALCULATION SHEET											
5 Year Flow Calculation		Q5 cfs	Q100 cfs	S %	B ft	Z	D ft	d100 ft	V fps	Froude #	Riprap Size
Swale Location		Q5 cfs	Q100 cfs	S %	B ft	Z	D ft	d100 ft	V fps	Froude #	Riprap Size
J (Rev)		1.7	9.7	0.8	2.0	4:1	1.3	0.4	1.5	0.51	0.51
K		4.4	18.8	0.5	2.0	4:1	2.0	0.6	1.6	0.45	ECM
L1 (Rev)		2.8	13.5	1.3	2.0	4:1	1.4	0.4	2.1	0.68	
L2 (Rev)		2.8	13.5	1.5	2.0	4:1	1.3	0.4	2.2	0.73	
100 Year Flow Calculation											
Swale Location		Q5 cfs	Q100 cfs	S %	B ft	Z	D ft	d100 ft	V fps	Froude #	Riprap Size
J (Rev)		1.7	0.97	0.8	0.0	2.9:1	0.35	0.35	2.7	1.13	Conc.
Q100 X 10%		1.7	9.7-0.97=8.72	0.8	2.0	4:1	1.30	0.80	2.4	0.59	
K		4.4	18.8	0.5	2.0	4:1	Total D=1.65'	Total d=1.15'	2.3	0.49	ECM
L1 (Rev)		2.8	1.35	1.3	0.0	2.6:1	0.38	0.38	3.6	1.45	Conc.
Q100 X 10%		2.8	13.5-1.35=12.15	1.3	2.0	4:1	1.30	0.79	3.0	0.70	
L2 (Rev)		2.8	1.35	1.5	0.0	3:1	Total D=1.68'	Total d=1.17'	5.9	1.47	0.40
Q100 X 10%		2.8	13.5-1.35=12.15	1.5	2.0	4:1	1.30	0.80	3.3	0.81	
Overflow Spillway M		6.8	28.9	6.5	6.0	3:1	3.00	0.60	5.9	1.47	0.40
Channel Radius Calculation		Q5=5yr stm	Q100=100yr stm	S=slope	B=bottom width of swale	Z=side slope	D=max depth of swale	d100=max depth of flow	V=velocity		
Requirement		Per ECM Section 3.3.3 E.2 - Minimum Radius = 2 X Top Width of Trapezoidal Channel					0.5' freeboard Required				
Swale Location		Q5 cfs	Q100 cfs	S %	B ft	Z	D ft	d100 ft	Top Width	Radius ft	Use
L2		2.8	13.5	1.5	2.0	4:1	1.30	0.80	8.4	16.8	20'