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Prepared By: KIC
Checked By: WWP
Date: 2/11/2026
Revised:
Project: The Residences at Ashland
SMMA Job #: 24142

BUOYANCY CALCULATIONS FOR: SDS-1

ADS STORMTECH SC-800 PARAMETERS			
Ave. Finish grade elevation	223.00		
Ave. Ground water elevation	217.50		
Top of stone elevation	220.00		
Bottom of stone elevation	215.75		
Length	60.7	feet	
Width	30.0	feet	
Volume of Chambers	2,469	cu. ft.	
Volume of Stone (raw, no voids)	2,108	cu. ft.	
BUOYANT FORCE			
Buoyancy Force (float out)	**198,853**	lbs	*conservatively assumes 100% voids in system
GRAVITY FORCES			
Chambers	3,926	lbs	*48 chambers @ 81.8 lbs ea.
Stone	189,720	lbs	
Total structure weight	**193,646**	lbs	
Soil weight above structure (dry)	**316,854**	lbs	
Soil weight above structure (saturated)	**0**	lbs	
Total structure weight and soil weight	**510,500**	lbs	
Factor of safety against floatation	**2.6**		

NOTE: Conservative analysis does not factor in the effects of side wall friction and soil shear stress in cone of influence zone. This would ultimately increase the factor of safety.

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BUOYANCY CALCULATIONS FOR: SDB-1

SURFACE DETENTION BASIN PARAMETERS			
Ave. Finish grade elevation	225.50		
Ave. Ground water elevation	225.50		
60 mm HDPE Impermeable Liner elevation	224.83		
Surface Area of Impermeable Liner Below the Ave. Groundwater Elevation	5,638	sq. ft.	
BUOYANT FORCE			
Buoyancy Force (float out)	**234,541**	lbs	
GRAVITY FORCES			
60 mm HDPE Impermeable Liner	1,579	lbs	*60 mm HDPE liner: 0.28 lbs/ sq. ft.
Soil Weight above liner (dry)	0	lbs	
Soil Weight above liner (saturated)	451,040	lbs	
Total liner weight and soil weight	**452,619**	lbs	
Factor of safety against floatation	**1.9**		

NOTE: Conservative analysis does not factor in the effects of side wall friction and soil shear stress in cone of influence zone. This would ultimately increase the factor of safety.