

AquaCell

Technical Bulletin TB101



AquaCell load capacity testing results by TRI Environmental

Objective

1. Determine the load carrying capacity of the AquaCell system in a controlled environment.

Test Method

2. AquaCell units (standard and extra strong configurations) were subjected to a compressive load in a controlled environment until failure.
 - a. Compression testing was based on a bench-scale compression test ASTM D2412.
 - b. Test was modified to apply compressive load at constant 2.0% rate at height of chamber per minute as directed by ASTM F2418 & ASTM F2922.
 - c. Load was applied until module failure, or the maximum capacity of 135,000 lbs. was reached.
 - d. No backfill or finished pavement was present during testing (test module only).

Test Results

3. Standard Configuration:
 - a. Average maximum compressive load: 77,779 lbs.
 - b. Exceeds HS-20 load rating (72,000 lbs)

Product	Test Specimen	Maximum Compressive Load (lb)	Maximum Compressive Stress (psi)	Extension at Max Load (in)
AquaCell Standard Configuration	1	76,824	69.2	0.926
	2	78,043	70.3	0.943
	3	78,470	70.7	0.949
	Avg.	77,779	70.0	0.939

4. Extra Strong Configuration:
 - a. Average maximum compressive load: 117,839 lbs.
 - b. Exceeds HS-25 load rating (90,000 lbs)

Product	Test Specimen	Maximum Compressive Load (lb)	Maximum Compressive Stress (psi)	Extension at Max Load (in)
AquaCell Extra Strong Configuration	1	117,681	106.0	1.143
	2	118,891	107.1	1.155
	3	116,944	105.3	1.152
	Avg.	117,839	106.1	1.150

Discussion

5. The AquaCell system demonstrated significant load carrying capacity in both standard and extra strong configurations. The standard configuration achieved an average maximum compressive load exceeding the HS-20 rating, with the expectation that backfill, and finished pavement will further improve load distribution and performance. The extra strong configuration exceeded the HS-25 load rating, suitable for the most demanding commercial applications.

Conclusion

6. Based on testing, the AquaCell system can be utilized in the following load classifications
 - a. ASHTO H-20, HS-20, H-25 (Standard Configuration)
 - b. AASHTO HS-25 (Extra Strong Configuration)

Note

1. AASHTO refers to the American Association of State Highway and Transportation Officials.
2. Testing completed at TRI Environmental, Austin, Texas.
 - a. Results referenced from TRI log number 24-001165 dated April 23, 2024.

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