

8/27/2015

RE: AASHTO H-20 Load Rating for GrassCell Porous Pavement System

The GrassCell porous paving block has been designed for use in heavy traffic applications.

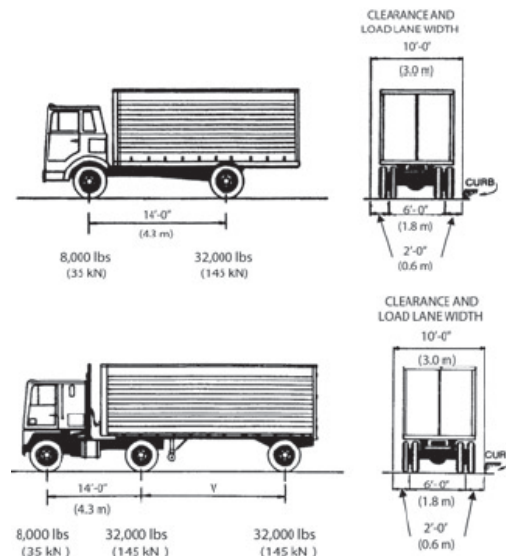
AASHTO H20 load criteria allows an axle load of up to 32,000 lbs, with dual wheel clusters. (refer to figure below) 16,000 lbs per dual wheel cluster and tire pressures of up to 110 psi can be expected.

GrassCell has been tested to 320 psi in an unfilled, unconfined compressive test (see attached: "Compression Testing for 50mm Nero Pave Cell" – 50mm Nero Pave Cell is identified as G-Cell, GrassCell or GravelCell in the US. Conversion: 225 (metric tons/square meter) X 2202.6 (lbs/metric ton) X (1/1548 square meters/square inches) = 320 psi).

For H20 vehicle loading, with the maximum wheel (dual wheel cluster) load of 16,000 lbs and an assumed surface contact area of 1 sq ft; the applied pressure would be 16,000 lbs. / sq ft. Converting to psi: 16,000 / 144 = 111 psi >>> which closely corresponds to the assumed maximum tire pressure.

Conservatively assuming H20 traffic loading over an unfilled GrassCell panel, a factor of safety for structural capacity can be calculated: 320 psi / 111 psi = 2.88

It is reasonable to conclude that the unfilled GrassCell will adequately carry H20 loads. The factor of safety will be significantly increased in an installed condition with soil infill.

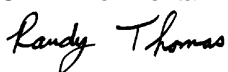


These sketches illustrate the AASHTO-approved live loading specifications for standard H20 and H520 trucks.

Source: AASHTO Standard Specifications for Highway Bridges.

Regards,

ACF Environmental



Randy Thomas, P.E.  
South Region Engineer



# Compression Testing for 50mm Nero Pave Cell

by Professor Bijan Samali  
on behalf of accessUTS Pty Ltd

for Rainsmart Solutions Pty Ltd, Sydney

25 August 2011

Project No: 2009001711

[accessUTS Pty Limited](#)

PO Box 123

Broadway NSW 2007 Australia

Tel +61 2 9514 1916 Fax +61 2 9514 1433

ABN 55 098 424 312

accessUTS is a controlled entity of the University of Technology, Sydney

## TABLE OF CONTENTS

1. AIM.....	3
2. INTRODUCTION .....	3
3. EQUIPMENT USED.....	3
4. TEST DETAILS .....	4
5. RESULTS.....	6
6. APPENDIX A - GRAPHICAL RESULTS.....	7

## 1. AIM

The aim of this study was to measure the maximum load bearing capacity of the 50mm Nero Pave Cell unfilled / unconfined.

## 2. INTRODUCTION

The testing of the 50mm Nero Pave Cell was requested by Mr. Minon Desai, Director from Rainsmart Solution Pty. Ltd. The tests were conducted in the Materials Testing Laboratory at UTS - Faculty of Engineering and IT at the Broadway Campus.

The logging of force and displacement data during the compression testing was carried out by officers of the Faculty of Engineering and IT, UTS.

## 3. EQUIPMENT USED

The following data acquisition system, force and displacement instrumentation were provided by the Faculty of Engineering and IT, UTS.

- Tinius Olsen 200 Tonne Sr N106750 - Digital Display - Model AC 8500 A,
- Displacement (The Stroke) - 1 LVDT (Linear Voltage Differential Transducer) RDP LDC S/N 63270,
- Data acquisition system - Data Taker Geologger (DT 615) unit 1 S/N 18717.

## 4. TEST DETAILS

The 50mm Nero Pave Cell was placed into the hydraulic compression rig and loaded monotonically as shown in Figure 1. The force and corresponding displacement data (the stroke) was monitored on digital displays and also sampled the data logging equipment. The logged data was stored on a computer for post-test processing. The product was loaded until. Maximum load had occurred.

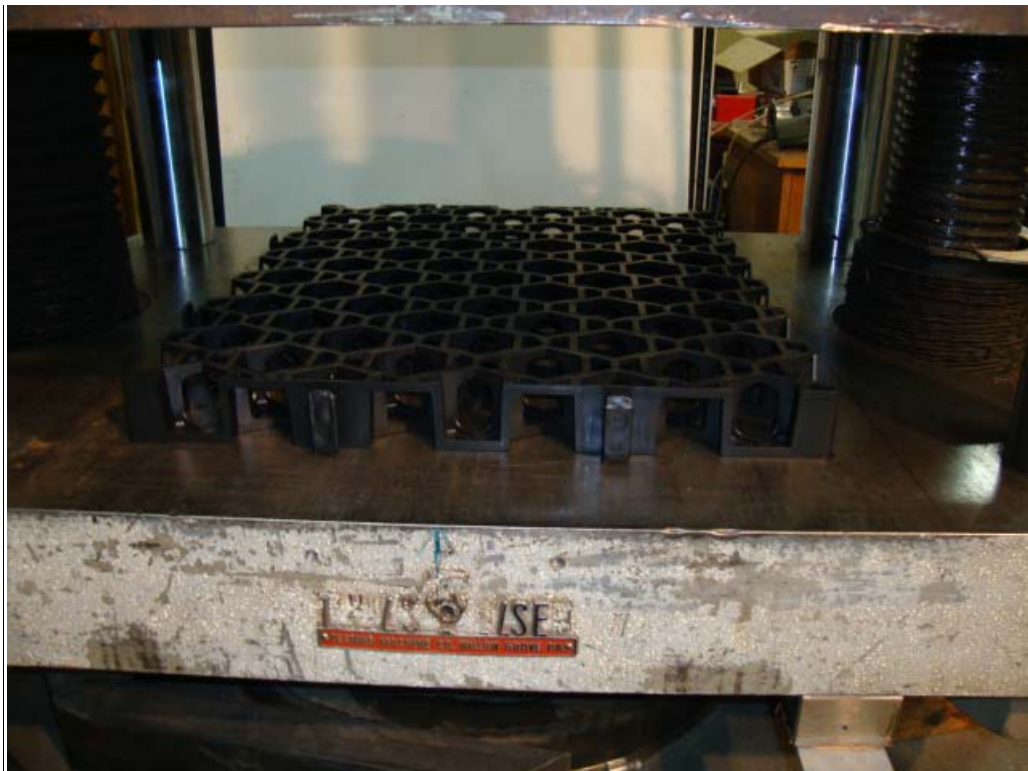


Figure 1 - Typical setup of test




Figure 2 - Tested sample.

## 5. RESULTS

Summary of the test results is included in Table below.

Test No.	Test Date	Product	Loaded Face (mm)	Max Load (KN)	Capacity (T/m <sup>2</sup> )
1	3/08/2011	50mm Nero_Pave_Cell, (500x600x50)	500x600	696.58	236.69
2	3/08/2011	50mm Nero_Pave_Cell, (500x600x50)	500x600	675.65	229.57
3	3/08/2011	50mm Nero_Pave_Cell, (500x600x50)	500x600	697.44	236.98
Average					234.41



Professor Bijan Samali

## 6. APPENDIX A - GRAPHICAL RESULTS



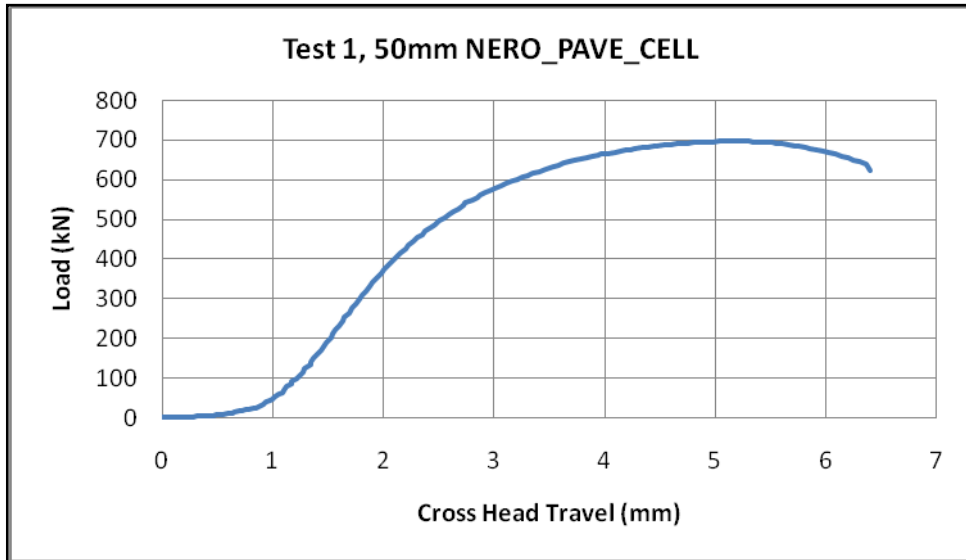


Fig A1: Test 1

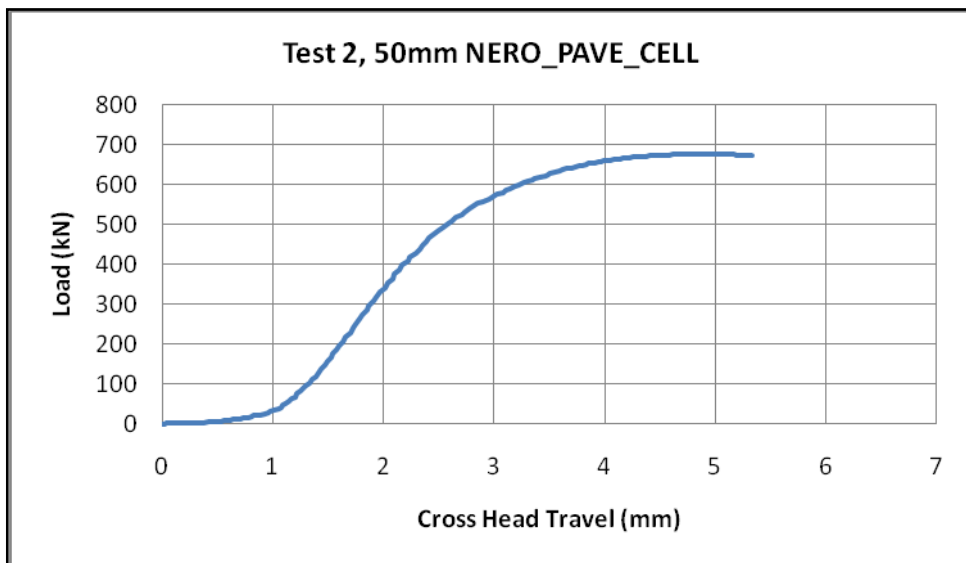


Fig A2: Test 2

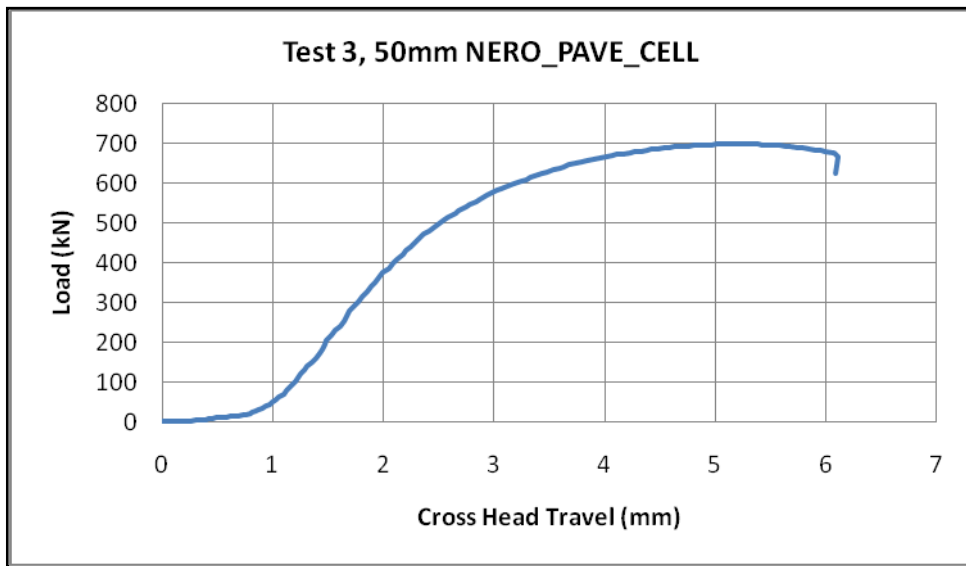


Fig A3: Test 3