

# Bathurst, Clarabut Geotechnical Testing, Inc.

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21 July, 2000

Mr. John Turgeon-Schramm  
Anchor Wall Systems  
Suite 390, 5959 Baker Road  
Minnetonka, MN 55345  
UNITED STATES

Via email attachment

Dear Mr. Turgeon-Schramm:

**Ref: Interpretation of Landmark Overturning Testing Results**  
**BCGT Report *Results of Landmark Block Unit Overturning Testing***  
***with and without Mirafi Geogrid Layer Inclusions (dated 8 June 2000)***  
**Project BCGT2049**

In response to your request of today's date please find herein an interpretation of the test results in the above report in the context of segmental retaining wall design.

The test configuration used simulates a worst case scenario for the topmost Landmark block in a dry-stacked column of units. The worst case is because the point of application of the load in the experimental test setup is very close to the top of the unit rather than at some location between the middle and bottom third point of the block height as would be expected due to lateral earth pressure. The lowest average overturning force recorded for all test configurations was for the Tapered Landmark-Mirafi 3XT configuration (Table 5). For this series the mean toppling force was 260 lb/block with a standard deviation of 44.1 lb/block based on a sample size of 13 tests. The slight geometrical differences for tests oriented with a flush face and those with a small setback do not warrant differentiating between samples. For design purposes it is prudent to use a topple force that is two standard deviations below the mean value (i.e.  $260 - 2 \times 44.1$  lb/block = 172 lb/block). This value can be expected to be exceeded in 98% of test replicates. For design purposes the overturning moment must be converted to reflect a 1 foot running length of wall and the 14 inch moment arm used in the test setup. Hence, with 98% confidence the overturning moment of the topmost unit in a Landmark block system per running foot of wall is:

$$172 \text{ lb / block} \times 1 \text{ block} / 8 \text{ in} \times 12 \text{ in} / \text{ft} \times 14 \text{ in} \times 1 \text{ ft} / 12 \text{ in} = 301 \text{ lb-ft / ft}$$

Here, the 8 inch value in the above calculation is the running length of a single block unit. To calculate the moment resistance of an unreinforced column of Landmark blocks containing more than one unit it would be necessary to include the self-weight of the column of units above the lowermost unit.

I trust that the above explanation is satisfactory.

Sincerely,



Richard J. Bathurst, Ph.D., P.Eng.