



**FUGRO-McCLELLAND (SOUTHWEST), INC.**

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May 6, 1994

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Attention: Mr. Stan Motz

**Load Testing Program  
Motzblock and Concrete Block Backfill Retainers  
San Antonio, Texas**

**Introduction**

Fugro-McClelland (Southwest) performed full scale flexural load versus deflection tests on backfill retainer void protection panels. Two High Density Polyethylene (HDPE) plastic panels (trade named Motzblock) and two concrete panels were tested. The Motzblock panels were provided by M & M Construction Specialties. The concrete panels were typical fill retainer blocks purchased from Macon Concrete Products in San Antonio, Texas. The load test results along load versus deflection curves of the test data are presented in this letter. Our services were verbally authorized by Mr. Motz on April 21, 1994.

**Test Procedure**

The panels were tested in our San Antonio laboratory. To simulate actual field conditions, flexural loading was applied and resisting supports arranged assuming the panels would be placed with a batter, and the panels were protecting a 6 inch high void. The concrete panels were supported assuming the top and bottom edges of the battered panel would support the load and limited deflection of the panel would be experienced prior to failure. The HDPE panels were supported assuming some bending of the battered panel would occur prior to failure.

A loading frame was fabricated to perform full scale tests. The panels were turned sideways and placed flat beneath the load frame, and supported at the top and bottom along their full length. A relatively rigid 4 inch by 4 inch wood timber running the full length of the panel, and a hydraulic jack were used to apply the load. On Test Nos. 1, 2, and 4, a bed of sand, approximately 4 inches thick, was used to cover the panels prior to placement of the loading timber to distribute the load imposed by the timber. On Test No. 3, the 4 inch by 4 inch loading timber was placed directly on the panel.

Load was applied using a hand activated hydraulic jack pushing down on the loading timber and gaining reaction from the load frame. Applied load was measured using a "S" type load cell placed between the load frame and the jack, and deflection was measured using a Linear Displacement Transducer (LDT).

The load cell and LDT were monitored by a data processing system and uploaded to a computer for data storage.

**Data Presentation**

Load versus deflection plots for the four tests are presented on Plates 1 and 2, attached. The load test results are summarized on the following table. Presented is a brief description of each panel, the ultimate load of each panel at failure (in pounds), and the ultimate equivalent lateral earth pressure that could have been supported by the panel at failure (in psf). For this study, failure was assumed to occur after peak loading was achieved.

Test No.	Panel Description, (height, length, thickness)	Ultimate Load, (lbs)	Failure Capacity, (psf)
1	Motzblock HDPE Panel, 14" x 36" x 3/32"	2,700	1,800
2	Motzblock HDPE Panel, , 14" x 36" x 3/32"	2,940	1,960
3	Concrete Panel, 15" x 36" x 1-7/8"	1,980	660
4	Concrete Panel, 15" x 36" x 1-7/8"	2,950	983

**Conclusion**

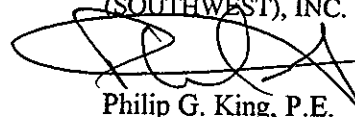
The test results indicate the Motzblock panels had equivalent or greater ultimate failure loads when compared to the concrete panels; and substantially greater ultimate equivalent lateral earth pressure capacities. Based on these test results, the Motzblock HDPE panels have greater flexural strength properties than the tested concrete panels.

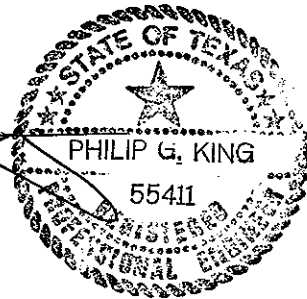
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We appreciate the opportunity to perform this study for M & M Construction Specialities. Please call if we can provide any additional information.

Sincerely,

FUGRO-McCLELLAND  
(SOUTHWEST), INC.

  
Philip G. King, P.E.  
Manager



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