



Testing Engineers & Consultants, Inc.

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TEC Report Number: 37448-2

Date Issued: June 14, 1999

Mr. Loren Venegas
Ideal Shield ® L.L.C.
2555 Clark Street
Detroit, MI 48209

**Re: On-site Structural Testing of the
Ideal Shield ® Protective Guard Rail System**

Dear Mr. Venegas,

On June 2, 1999, Testing Engineers & Consultants, Inc. (TEC) witnessed the successful on-site testing of the standard strength Ideal Shield ® One Line Guard Rail System, (SGR-1-120-14 ¾ P) which is more fully described in the attached catalog pages.

The test was designed to exceed conditions that might normally be expected in an industrial, manufacturing, warehouse and/or plant environment. The two Guardrail legs (2 1/2 inch diameter schedule 80 pipe posts) were placed into a pair of 3 5/8 inch diameter holes which had been cored 6 inches into the concrete floor. A Kalmar fork lift (model no ACC 80 LP 2PS) with an empty weight of 12,100 pounds was then driven into the Guard Rail at a right angle towards the center of the Guard Rail. Using previously determined calibration data, the forklift speed at impact exceeded 4 miles per hour. At that speed and with that mass, the forklift exerted a force of 2,405 pounds on the guardrail. The Ideal Shield ® Guardrail was successful in stopping the forklift.

Due to the high impact, the guardrail was slightly bowed, however, it was still functional. The Ideal Shield ® Guardrail was then lifted out of the cored holes, rotated 180 degrees, re-inserted into the holes, and tested again. After two such impacts at 4 mph, the test procedure was terminated due to the concrete breaking around the cored holes.

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CONSULTING ENGINEERS & FULL-SERVICE PROFESSIONAL TESTING AND INSPECTION
OFFICES IN ANN ARBOR, DETROIT, LANSING AND TROY

FOUNDED IN 1966

Testing Engineers & Consultants, Inc.

Mr. Loren Venegas
Ideal Shield ® L.L.C.
June 14, 1999

TEC Report Number: 37448-1

We at TEC were pleased with the test results and would like to thank you for this opportunity to be of service. Feel free to call should you have any questions.

Respectfully submitted,

TESTING ENGINEERS & CONSULTANTS, INC.



Donald L. Malinowski

Donald L. Malinowski, P.E.
Project Manager

Ruben E. Ramos

Ruben E. Ramos, P.E.
Vice President
Engineering and Construction Services

DLM/RER/zs