



## Testing Engineers & Consultants, Inc.

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

TEC Report Number: 37448-1

Date Issued: June 10, 1999

**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 Ideal Shield ® One Line Guard Rail System, (HGR-1-120-143/4-C-6) which is further described in the following catalog pages.

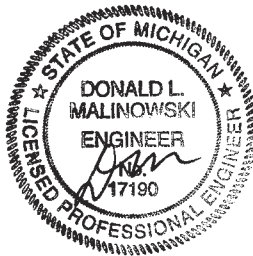
The test was designed to exceed conditions that might normally be expected in an industrial, manufacturing, warehouse, and/or plant environment. The two (2) Guardrail legs (4 inch diameter schedule 80 pipe posts) were placed into a pair of 5-1/8 inch diameter holes which had been cored 6 inches into 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 Guardrail. Using previously determined calibration data, the forklift speed at impact exceeded 8 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 a total of four such impacts at 8 mph, the procedure was terminated.

We at TEC were very pleased with the test results and would like to thank you for this opportunity to be of service. Please feel free to call should there be questions.

Respectfully submitted,

**TESTING ENGINEERS & CONSULTANTS, INC.**



*Donald L. Malinowski*  
Donald L. Malinowski, P.E.  
Project Manager

*Rm for*  
Ruben E. Ramos, P.E.  
Vice President  
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CONSULTING ENGINEERS & FULL-SERVICE PROFESSIONAL TESTING AND INSPECTION