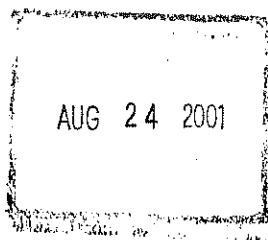




U.S. Department
of Transportation

**Federal Highway
Administration**



400 Seventh St., S.W.
Washington, D.C. 20590

Refer to: HSA-10/CC74

Mr. Matthew A. Gelfand
President
Universal Safety Response, Inc.
48 Arrandale Road
Rockville Centre, NY 11570

Dear Mr. Gelfand:

In your July 24 letter to Mr. Richard Powers of my staff, you requested the Federal Highway Administration's (FHWA) acceptance of your Ground Retractable Automobile Barrier (GRAB) for use on the National Highway System (NHS). To support your request, you included a copy of a Texas Transportation Institute June 2001 report entitled "Testing and Evaluation of the Ground Retractable Automobile Barrier (GRAB): Tests 3 and 4" and video tapes of the tests that were conducted.

The GRAB is an attenuating device designed to span a roadway or a traffic lane to prevent vehicle passage by bringing an encroaching vehicle to a controlled stop. Potential locations where the GRAB might be used include highway-railroad crossings, drawbridges, and closed HOV lanes. The system consists of a steel stanchion (anchor post) at each end, four hydraulic energy absorbers, and a cable/net assembly. The anchor posts were made from two sections of A36 steel pipe – a fixed inner pipe 25-mm thick with a 305-mm O.D. and a 19-mm thick, 381-mm O.D. outer pipe free to rotate around the anchor post. The reusable hydraulic cylinders, set between the anchor posts and the net (two at each end), are 2.9-m long with an effective stroke of 2.4 m. The net itself consists of upper and lower 19-mm diameter Extra High Strength (EHS) wire strands, with a 16-mm diameter wire rope in the center and 16-mm diameter wire rope woven up and down along the width of the net and attached to the top, middle and bottom cables with clamps. Enclosure 1 shows the general layout and dimensions of the GRAB.

The overall test installation width was 18.4 m between stanchions, with the net being 10.5-m wide. When tensioned to 27.5 kN, the top cable was 1 m above the ground. The bottom cable, tensioned to 17.5 kN, was 0.2 m above the ground.

The GRAB was tested to the National Cooperative Highway Research Program (NCHRP) Report 350 test level 2 (TL-2), with both the 820-kg car and the 2000-kg pickup truck impacting at the third point of the net at a nominal speed of 70 km/h. Both vehicles were stopped smoothly with no significant roll, pitch or yaw. Occupant impact velocities for the car and truck were 6.1 m/sec and 5.1 m/sec, respectively. The corresponding 10-millisecond ridedown accelerations were 5.4 and 7.2 g's. Maximum dynamic deflection of the GRAB was 6.3 m with the car and 6.6 m with the pickup truck. Summary results for the two tests are shown in Enclosures 2 and 3.

Based on staff review and recommendations, I concur that the GRAB, as tested, meets the evaluation criteria for a TL-2 traffic gate and may be used on the NHS when its use is acceptable to the contracting authorities. This acceptance pertains to the tested installation (which was fixed) and assumes that the retractable unit will have comparable anchorage strength and performance characteristics. To verify this assumption, I will need to see final drawings for the retractable design when they are available. My acceptance is based only on satisfactory crash performance and is not intended to address the electrical or mechanical functioning of the GRAB. The final design should also be appropriately delineated, as discussed between you and Mr. Powers in a recent telephone conversation. Since the GRAB is a proprietary product, the provisions of Title 23 Code of Federal Regulations, Section 635.411 are applicable. A copy of this regulation is enclosed (Enclosure 4) for your reference.

Sincerely yours,

A handwritten signature in black ink, appearing to read "F. G. Wright, Jr.", written in a cursive style.

Frederick G. Wright, Jr.
Program Manager, Safety

4 Enclosures