

July 1, 2002

HSA-10/B101

**Mr. Michael Adams
Vice President Sales
Rhino Safety Barrier LLC
2500 Gaspar Avenue
Whiting, Indiana 46394-2175**

Dear Mr. Adams:

Mr. Edward Cooper's April 23 letter to Mr. A. George Ostensen, transmitted copies of NCHRP Report 350 compliance tests of a water-filled polyethylene barrier conducted by MIRA Ltd. in the United Kingdom. Staff review of these reports revealed that they did not contain a detailed description of the test article or a narrative description of the tests themselves. Revised reports were later received, as was a detailed material specification sheet. Although the additional information was minimal, you provided detailed descriptions for the connecting bolt sizes and the material composition of the deflector strips on June 27. My staff was then able to complete its review of the design and testing of your Rhino traffic barrier.

This barrier is 890-mm high and 690-mm wide at the base. It is made in 2-meter long sections of 9-mm thick polyethylene water-filled shells, reinforced with front and backside deflector strips and connected with steel-reinforced polyethylene pins and 11 gauge galvanized steel "bridging strips." The deflector strips are made from low-density polyethylene with a wall thickness of 9 mm and filled with medium density polyurethane foam. The bridging strips span the joint between barrier segments and are connected to each other through the barrier with galvanized Grade 2 hex head bolts, 19-mm diameter bolts, 290-mm long, with a 100-mm minimum thread length. Each section is then filled with 350 liters of water. The test installation was 68-m long. Enclosure 1 shows the overall dimensions and major components of the Rhino barrier.

NCHRP Report 350 test 2-11 was conducted on February 20, 2002. The 2000-kg pickup truck impacted the test installation approximately 18 meters from the upstream end at 69.2 km/h and 25 degrees. The truck was contained and redirected with relatively little damage to either the vehicle or the barrier segments. Barrier deflection was reported as 4.0 meters. Occupant impact velocity and ridedown accelerations were 3.67 m/s and 3.36 g's, respectively. NCHRP Report 350 test 2-10, an 820-kg car impacting at 20 degrees, was successfully run much earlier, on May 23, 2001. However, the barrier installation was different from the pickup truck test - no steel bridging strips were used. Due to the low occupant impact velocity and

ridedown accelerations reported in this test, my staff concluded that the results would have remained acceptable if the strips had been installed.

Based on our review of the information you provided, the Rhino barrier, with steel reinforced connecting pins, side deflector panels, and steel connector strips may be considered to be a test level 2 (TL-2) barrier under NCHRP Report 350 evaluation criteria and used on the National Highway System (NHS) when such use is deemed acceptable to the contracting agency. Since it is a proprietary product, its use on Federal-aid projects, except exempt, non-NHS projects, is subject to the conditions listed in Title 23, Code of Federal Regulations, Section 635.411, a copy of which is enclosed for your ready reference (Enclosure 2).

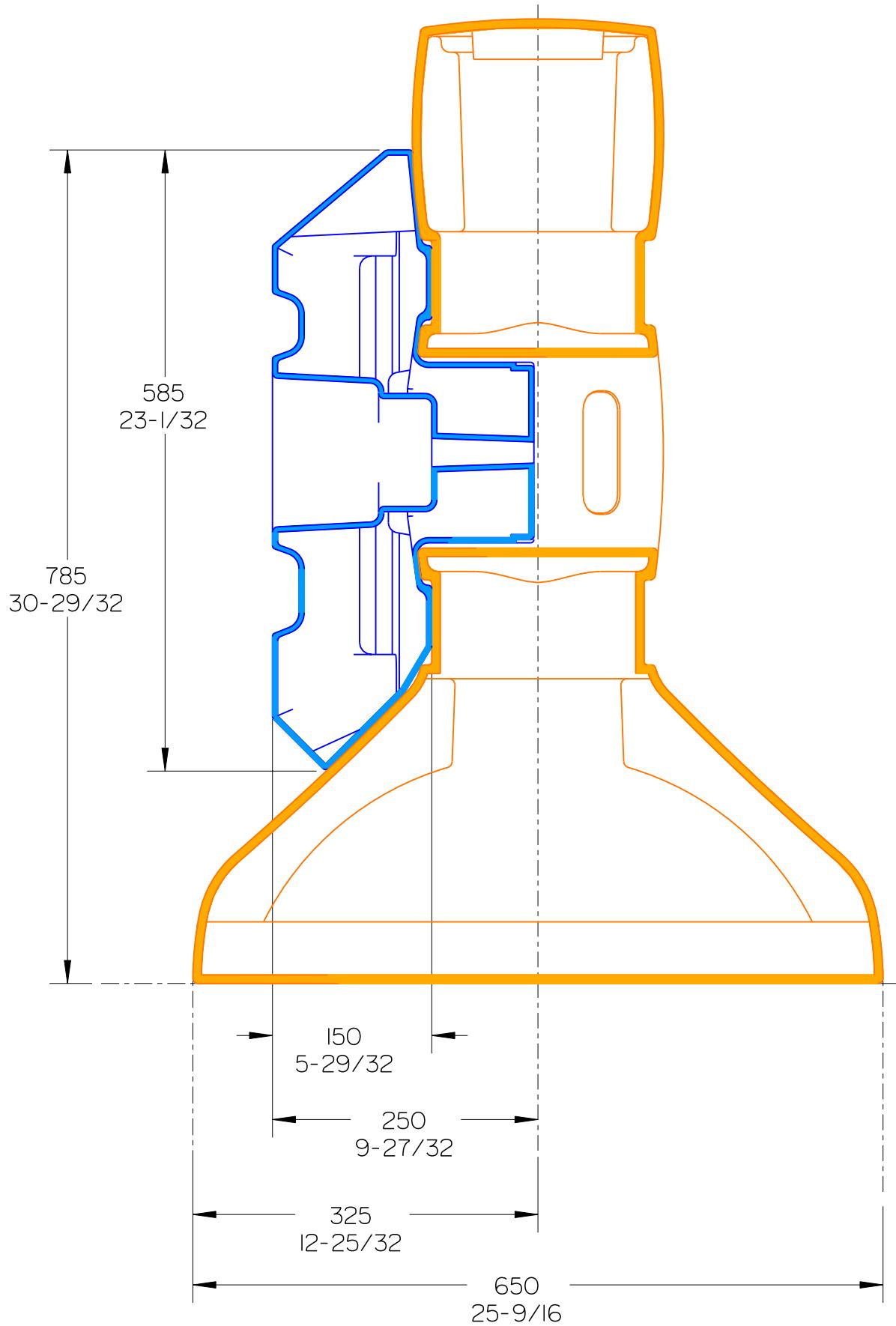
Sincerely yours,

(original signed by Harry W. Taylor)

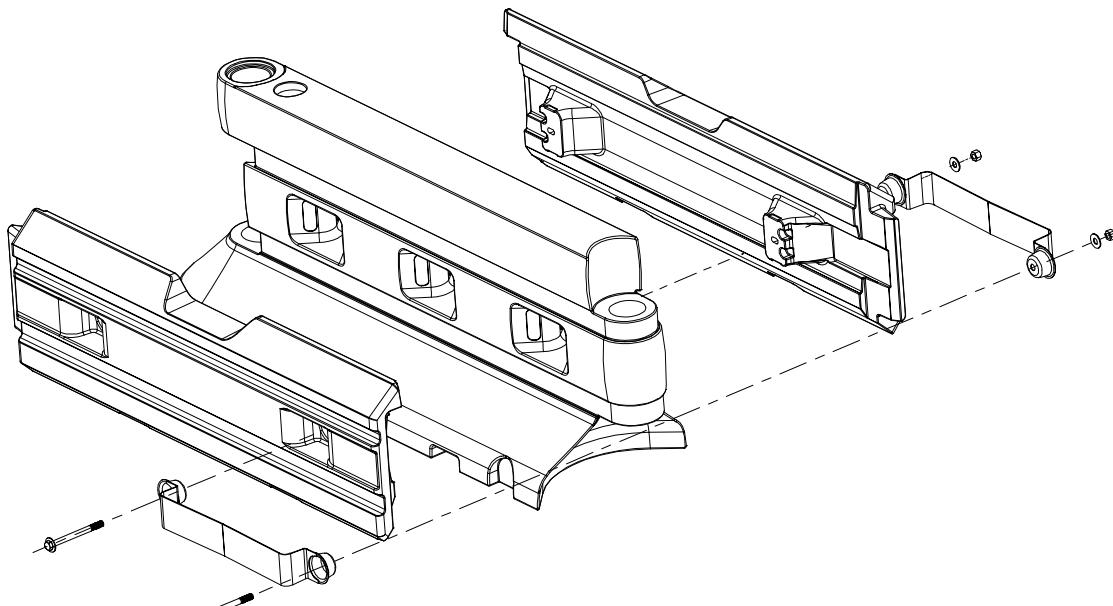
for

Carol H. Jacoby, P.E.
Director, Office of Safety Design

2 Enclosures



REVISION HISTORY			
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SCALE: 0.040 = 1.00	DRAWN BY: <i>YDS</i>	ASSEM NUMBER
DATE: 31-May-02	APRVD BY:	RBI-1000--20-07-01

ASSEM DESCRIPTION

MIRA BARRIERS

MATERIAL	MODEL TYPE	SHEET NUMBER	DRAWING NUMBER
	ASSEM	1 OF 1	MIRA-BARRIERS