

March 27, 2002

HSA-10/B39A

Ms. Maggie Ellis  
General Manager  
Mondo Polymer Technologies  
P.O. Box 250  
Reno, Ohio 45773

Dear Ms. Ellis:

In your March 6 letter to Mr. Richard Powers of my staff, you requested acceptance of a modified version of your polymer guardrail offset block that was first accepted by the Federal Highway Administration in March 1997 as meeting the requirements of the National Cooperative Highway Research Program (NCHRP) Report 350. You indicated that the formulation of the Mondo Polymer Offset Block remained the same as the original version (approximately 70 per cent low density polyethylene and 30 per cent high density polyethylene), but that its dimensions had been changed to reduce its weight and cost. You also sent copies of the Texas Transportation Institute's February 2002 report entitled "NCHRP Report 350 Test 3-11 of the G-4 W-Beam Guardrail with Mondo Recycled Polymer Offset Block" and a videotape of the crash test.

The new block dimensions are 102-mm wide at the block/guardrail interface and remain constant for 162 mm before flaring out to 152-mm wide at the post/block interface. A 10-mm deep by 108-mm wide recess accommodates the post flange, making the effective block depth 193 mm. In addition, the new blocks have two rectangular openings that taper from 64 mm by 114 mm at the front to 76 mm by 127 mm at the post/block interface. These dimensions are shown in Enclosure 1.

Test 3-11 was conducted on a 68.6-m long standard w-beam test installation. The pickup truck impacted approximately 24 m from the upstream anchor at 101.4 km/h and 25.4 degrees. Maximum occupant impact velocity was 4.9 m/s and the subsequent ridedown acceleration was 10.9 g's. Vehicle roll and pitch was slight. Barrier dynamic deflection was reported to be 0.84 m. Enclosure 2 is a summary sheet of the test.

Based on staff review of the test results, the modified Mondo Polymer Offset Block may be considered crashworthy and used on the National Highway System with strong steel post w-beam and with strong steel post Thrie-beam (with an increased block height of 554 mm). It may also be used without the route as an offset block with wood post w-beam and Thrie-beam barriers. As with all acceptance letters for recycled blocks, this acceptance is based on the reported crash performance of the Mondo Polymer offset block and is not intended to address its long-term durability. I also assume that all manufactured blocks will conform to the material composition and physical dimensions of the blocks used in the above test. Since your product is

**proprietary, the conditions stated in Title 23, Code of federal Regulations, Section 635.411 governing its use on Federal-aid projects remain in effect.**

**Sincerely yours,**

**(original signed by David M. Smith)**

***for* A. George Ostensen  
Program Manager, Safety**

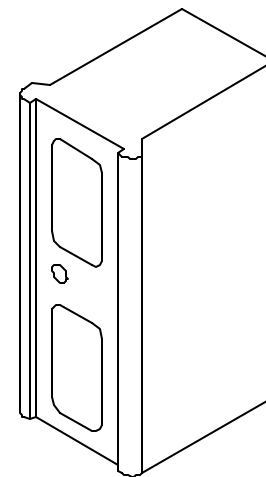
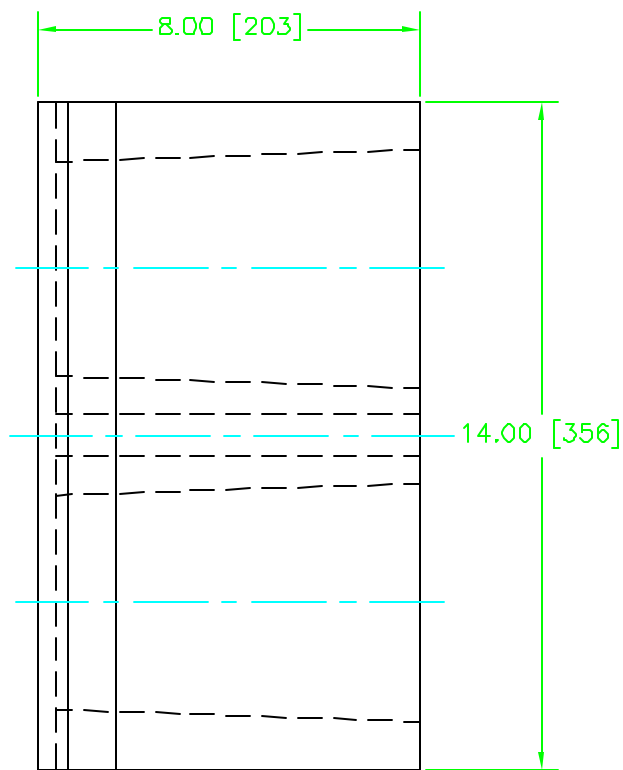
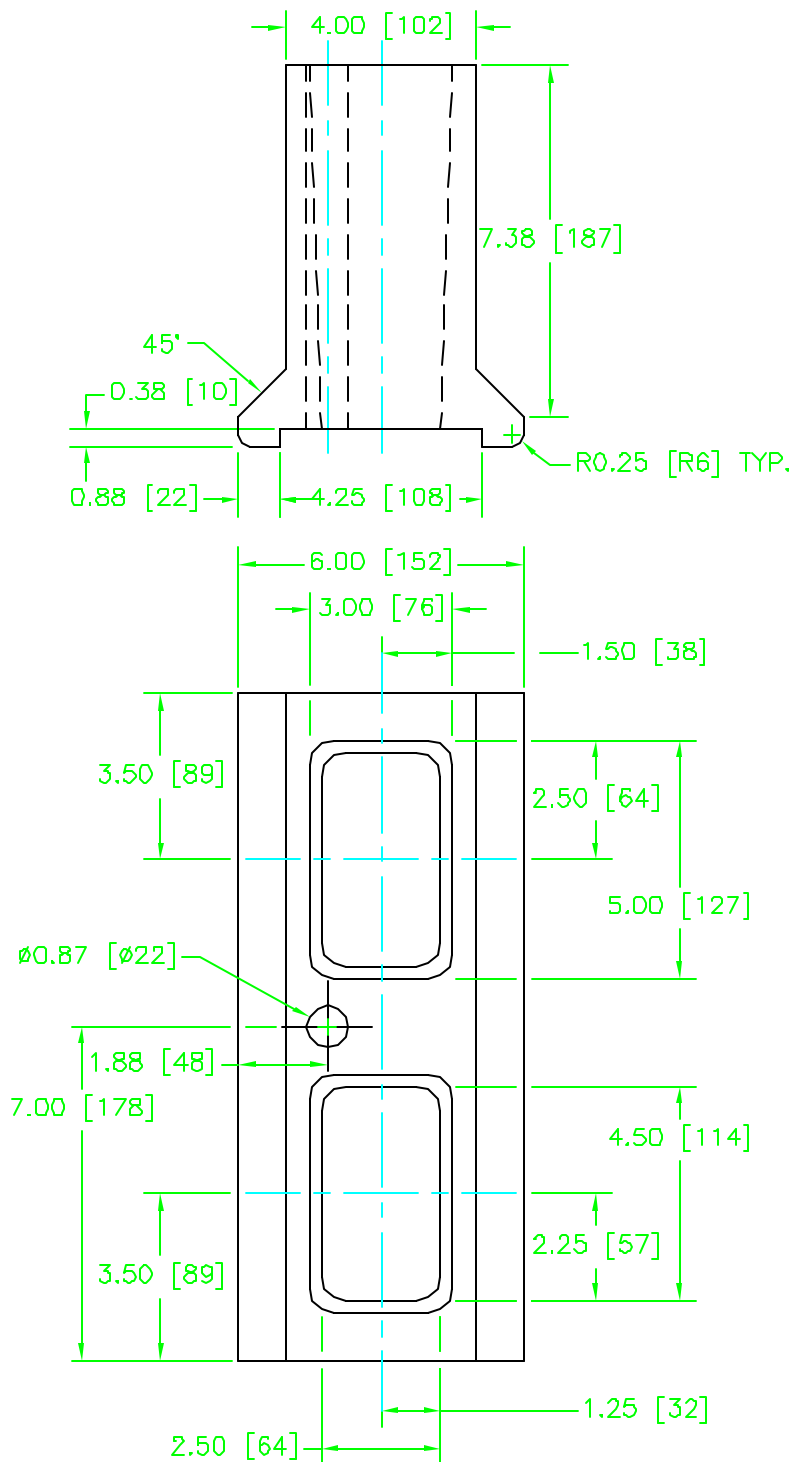
**2 Enclosures**

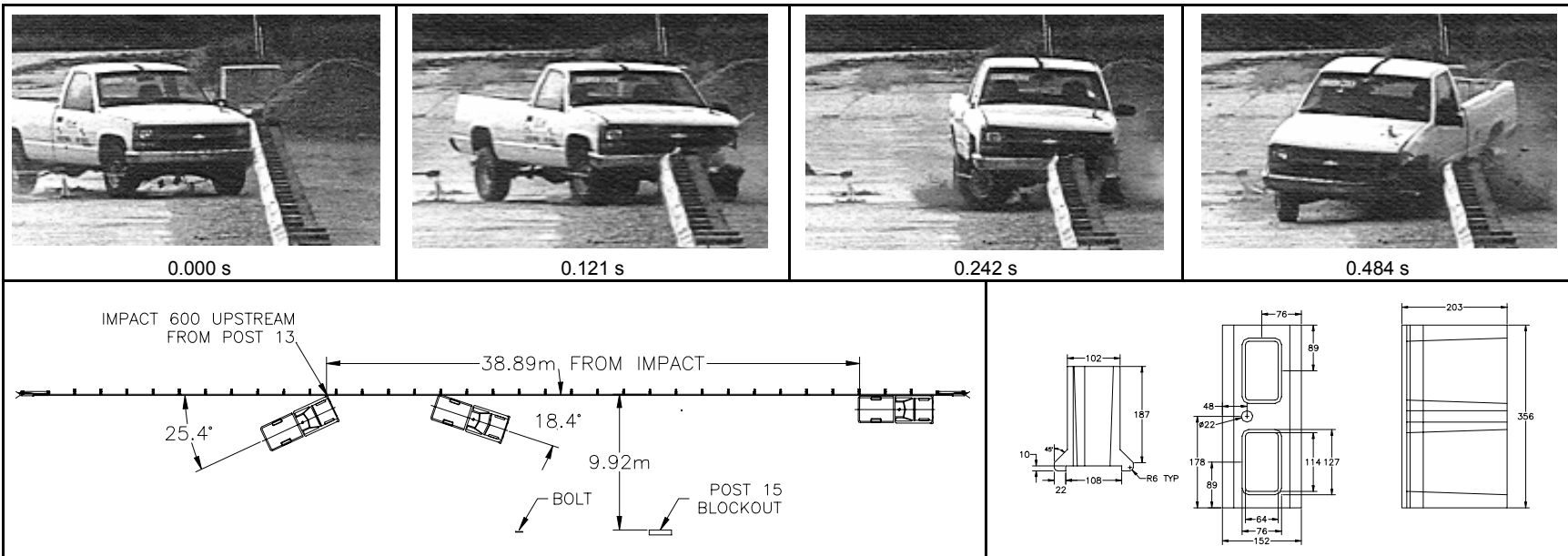
# MONDO POLYMER TECHNOLOGIES

RECYCLED POLYMER OFFSET BLOCK

STEEL POST MODEL #NREC

P.O. BOX 250 RENO, OH 45773





**General Information**

Test Agency ..... Texas Transportation Institute  
 Test No. .... 400001-MON1  
 Date ..... 01/10/02

**Test Article**

Type ..... Guardrail  
 Name ..... W-Beam Guardrail With Mondo Blockout  
 Installation Length (m) ..... 68.6  
 Material or Key Elements ... G4(1S) W-Beam Guardrail With Mondo  
 Polymer Blockouts  
**Soil Type and Condition** .... Standard Soil, Dry

**Test Vehicle**

Type ..... Production  
 Designation ..... 2000P  
 Model ..... 1996 Chevrolet 2500 Pickup Truck  
 Mass (kg)  
 Curb ..... 2115  
 Test Inertial ..... 2043  
 Dummy ..... N/A  
 Gross Static ..... 2043

**Impact Conditions**

Speed (km/h) ..... 101.4  
 Angle (deg) ..... 25.4

**Exit Conditions**

Speed (km/h) ..... 49.4  
 Angle (deg) ..... 18.4

**Occupant Risk Values**

Impact Velocity (m/s)  
 x-direction ..... 4.9  
 y-direction ..... 4.7  
 THIV (km/h) ..... 23.2  
 Ridedown Accelerations (g's)  
 x-direction ..... -10.9  
 y-direction ..... 8.9  
 PHD (g's) ..... 12.0  
 ASI ..... 0.78  
 Max. 0.050-s Average (g's)  
 x-direction ..... -4.9  
 y-direction ..... 6.1  
 z-direction ..... 3.2

**Test Article Deflections (m)**

Dynamic ..... 0.840  
 Permanent ..... 0.265  
 Working Width ..... 1.20

**Vehicle Damage**

Exterior  
 VDS ..... 11FL2  
 CDC ..... 11FLEW2  
 Maximum Exterior  
 Vehicle Crush (mm) .... 340  
 Interior  
 O CDI ..... LF0001000  
 Max. Occ. Compart.  
 Deformation (mm) ..... 12

**Post-Impact Behavior**

(during 1.0 s after impact)  
 Max. Yaw Angle (deg) ..... 40.1  
 Max. Pitch Angle (deg) .... 5.3  
 Max. Roll Angle (deg) ..... -7.0

Summary of results for test 400001-MON1, *NCHRP Report 350* test 3-11.