

June 1, 2001

Refer to: HSA-B85

Mr. Rodney A. Boyd  
President, Highway Safety Products Group  
Trinity Industries, Inc.  
2525 Stemmons Freeway  
Dallas, TX 75207

Dear Mr. Boyd:

In his May 21 letter to Mr. Richard Powers of my staff, Mr. Don Johnson requested the Federal Highway Administration's (FHWA) acceptance of the King Recycled Composite guardrail offset block (King Block) for use with strong post, metal beam guardrail installations on the National Highway System (NHS).

The King Block is an injection-molded product, consisting of approximately 67 percent high density polyethylene (HPDE), 30 percent ground rubber, 2 percent Black concentrate, and 1/2 percent blowing agent. The external dimensions of the King Block, which has a honeycombed interior, are 105 mm x 185 mm x 355 mm (4.0 inches x 7.3 inches x 14.0 inches). The post face of the block includes a protrusion at the top so the blocks can be hung from the steel posts during the installation of the w-beam rail element. The rail face of the block has a tab at the bottom so the rail can be supported during installation. These and other details are shown in Enclosure 1.

Since the King Block is both narrower and deeper than other offset blocks that have been accepted for use on the NHS based on pendulum and/or full-scale tests, my staff recommended a full scale crash test in addition to your original pendulum testing to confirm satisfactory impact performance when this block is used with the steel post w-beam guardrail. The results of your subsequent test were documented in the Texas Transportation Institute's May 2001 test report, prepared by Alberson, Menges, and Schoeneman, and entitled "NCHRP Report 350 Test 3-11 of the Strong Post W-Beam Guardrail with Trinity Composite Blockout." This test showed that the 2000-kg pickup truck impacting at 101.4 km/h (63 mph) and 23.8 degrees was contained and redirected with very moderate roll, pitch and yaw angles. Maximum occupant impact velocity and ridedown accelerations were 9.3 m/s (30.5 fps) and 4.5 g's, respectively. Maximum dynamic deflection of the barrier was reported to be only 0.9 m (2.9 feet).

Based on our review of the information you provided, the King Block is considered acceptable for use on the NHS with a strong steel post guardrail when molded to the same dimensions and composed of the same materials as the tested blocks. As with all other recycled blocks we have reviewed, this FHWA acceptance is based solely on the reported impact behavior of your product and does not address the long-term performance or durability of this product. Since the

King Block is proprietary, 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 this regulation is enclosed for your ready reference (Enclosure 2). If you have any questions, please call Mr. Richard Powers at (202) 366-1320.

Sincerely yours,

(original signed by Frederick G. Wright, Jr.)

Frederick G. Wright, Jr.  
Program Manager, Safety

2 Enclosures



Sec. 635.411 Material or product selection.

(a) Federal funds shall not participate, directly or indirectly, in payment for any premium or royalty on any patented or proprietary material, specification, or process specifically set forth in the plans and specifications for a project, unless:

(1) Such patented or proprietary item is purchased or obtained through competitive bidding with equally suitable unpatented items; or

(2) The State highway agency certifies either that such patented or proprietary item is essential for synchronization with existing highway facilities, or that no equally suitable alternate exists; or

(3) Such patented or proprietary item is used for research or for a distinctive type of construction on relatively short sections of road for experimental purposes.

(b) When there is available for purchase more than one nonpatented, nonproprietary material, semifinished or finished article or product that will fulfill the requirements for an item of work of a project and these available materials or products are judged to be of satisfactory quality and equally acceptable on the basis of engineering analysis and the anticipated prices for the related item(s) of work are estimated to be approximately the same, the PS&E for the project shall either contain or include by reference the specifications for each such material or product that is considered acceptable for incorporation in the work. If the State highway agency wishes to substitute some other acceptable material or product for the material or product designated by the successful bidder or bid as the lowest alternate, and such substitution results in an increase in costs, there will not be Federal-aid participation in any increase in costs.

(c) A State highway agency may require a specific material or product when there are other acceptable materials and products, when such specific choice is approved by the Division Administrator as being in the public interest. When the Division Administrator's approval is not obtained, the item will be nonparticipating unless bidding procedures are used that establish the unit price of each acceptable alternative. In this case Federal-aid participation will be based on the lowest price so established.

(d) Appendix A sets forth the FHWA requirements regarding (1) the specification of alternative types of culvert pipes, and (2) the number and types of such alternatives which must be set forth in the specifications for various types of drainage installations.

(e) Reference in specifications and on plans to single trade name materials will not be approved on Federal-aid contracts.

ENCLOSURE 2