U.S. Department
of Transportation
**Federal Highway
Administration**

January 17, 2007

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

In Reply Refer To:
HSSD/B-153

Mr. David Hubbell
P.O. Box 600
Saranac Lake, NY 12983

Dear Mr. Hubbell:

Thank you for your letter of June 26, 2007, requesting the Federal Highway Administration (FHWA) acceptance of your company's NatureRail™ aesthetic weak-post barrier for use on the National Highway System (NHS). Accompanying your letter were reports of crash testing conducted by the French testing laboratory LEIR and video of the tests. You requested that we find this device acceptable for use on the NHS use at test level 2 (TL-2) under the provisions of the National Cooperative Highway Research Program (NCHRP) Report 350 "Recommended Procedures for the Safety Performance Evaluation of Highway Features" when compared to the successfully tested TL-3 aesthetic "Ironwood" barrier covered under the FHWA acceptance letters B-56 (dated June 18, 1999), and B-56A (May 11, 2000) and B-56B (September 5, 2003). You supplied additional information comparing the NatureRail™ to another tested system on December 19, 2006.

Introduction
The FHWA guidance on crash testing of roadside safety hardware is contained in a memorandum dated July 25, 1997, titled "INFORMATION: Identifying Acceptable Highway Safety Features."

Testing was conducted on three NatureRail™ configurations:

Test SOL/GBS-01/519 **(519)** Standard configuration on 1.5 m posts on 2 m spacing
Test SOL/GBS-06/593 **(593)** with additional steel on 2 m posts on 4m spacing
Test SOL/GBS-02/744 **(744)** with additional steel on 2 m posts on 1m spacing.

Brief descriptions of the devices, taken from the LEIR test reports, follow:

NatureRail™ **519**
The system tested was a protective system made of wood and metal comprising cylindrical posts averaging 180 mm in diameter and 1,980 mm high as a crash barrier. Flat 100 x 5 metal rails 4,650 mm in length were used as interior reinforcement. The crash barriers were screwed

tightly to C100 x 50 x 25 x 5 posts (1,500 mm high). The posts were paneled with round timber (averaging 160 mm in diameter and 670 mm high) and rammed into the ground 2 metres apart. The connection between the crash barrier and the posts was secured using metal spacers (100 x 50 x 650). The connection between the spacers, paneling and posts was ensured by a class 4.6 screw, a H, M12 nut and an M12 washer.

NatureRail™ **593**
The system tested was a protective system made of wood and metal comprising cylindrical posts averaging 180 mm in diameter and 1,980 mm high as a crash barrier. Flat 100 x 5 metal rails 4,650 mm in length were used as interior reinforcement. The crash barriers were screwed tightly to C100 x 50 x 25 x 5 posts (2,000 mm high). The posts were paneled with round timber (averaging 160 mm in diameter and 670 mm high) and rammed into the ground 4 metres apart. In order to form an even more rigid connection between the round wood posts and reinforcement panels, an additional U100 metal reinforcement element 800 mm in length was screwed behind the crash barrier in the spaces between posts. The connection between the crash barrier and the posts was secured using metal spacers (100 x 50 x 650). The connection between the crash barrier, spacers and metal reinforcing elements was screwed using 4 class 4.6 TRCC M16 x 200 screws, 4 H, M16 nuts and 4 M16 washers. The connection between the spacers, paneling and posts was ensured by a H, M12 x 60 class 4.6 screw, a H, M12 nut and an M12 washer.

NatureRail™ **744**
The device tested is a wood and steel safety barrier with obstacle protection. It consists of C100 posts, 2.00 m in length, beaten into the ground every 1.00 m. The posts are trimmed with logs. A set of pre-assembled rails consisting of two logs – RH and LH (Ø 180 mm, length 1,980 mm) secured to a flat metal reinforcement (100x, length : 4,650 mm). The wood/metal rails are assembled together by overlapping. The pre-assembled assemblies are reinforced by a metal rail C100 x 50 x 25 x 5, length : 5,998 mm, placed at the rear of the logs. The metal rail is secured to the posts by means of a connection/spacers part. The rails are mounted by means of 4 special round-head bolts, quality 8.8, M16 x 170, and 4 Ø 18 washers (ext. Ø:40, thk.: 5 mm) and threaded plates M16 200 x 80, thk.:12 mm. This assembly is secured to a connection piece/spacer by means of 4 M16 x 30 hex screws, four 18 x 5 washers and 4 M16 hex nuts, and two threaded plates M16 200 x 80 x 12. The connection piece/spacer is secured to the post by means of hex head 12 x 60 screws, a Ø 14 washer and a M12 hex bolt. The post's wood trim is placed between the metal support and the connection piece/spacer. The connection between the rear metal reinforcements is made by means of sleeves C85 x 35 x 16, thk.: 4 mm, length 240 mm and 4 hex head bolts, M12 x 60, 4 washers and 4 nuts.

Drawings of these barriers are enclosed for reference. Also enclosed are drawings that show the significant differences between the TL-3 Ironwood barrier and the TL-2 NatureRail™ designs.

Testing
Full-scale automobile testing was conducted by the Inrets Road Equipment Test Laboratory to EN 1317, N-2 standards.

The CEN tests are summarized in the table below:

Test/Product Number	Impact Speed	Impact Angle	Vehicle Mass	Deflection	
				Max. Dynamic	Permanent
519	113.3 km/hr	20.0 deg	1430 kg	1.5 m	0.56 m
593	112.3 km/hr	20.0 deg	1429 kg	2.1 m	0.92 m
744	116.4 km/hr	20.0 deg	1451 kg	0.9 m	0.8 m

Findings
The results of the CEN testing indicate that the three tested NatureRail™ configurations perform in a manner at least comparable to the NCHRP Report 350 TL-3 accepted Ironwood barrier. As you requested the FHWA acceptance to Report 350 TL-2 criteria we concur that the devices described in the various requests above and detailed in the enclosed drawings are acceptable for use on the NHS under TL-2 conditions, when proposed by a highway agency. Acceptance is limited to TL-2 conditions as testing with the 2000P pick up truck has not been conducted.

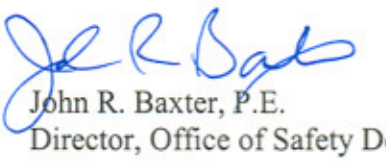
Please note the following standard provisions that apply to the FHWA letters of acceptance:

- Our acceptance is limited to the crashworthiness characteristics of the devices and does not cover their structural features, nor conformity with the Manual on Uniform Traffic Control Devices.
- Any changes that may adversely influence the crashworthiness of the device will require a new acceptance letter.
- Should the FHWA discover that the qualification testing was flawed, that in-service performance reveals unacceptable safety problems, or that the device being marketed is significantly different from the version that was crash tested, it reserves the right to modify or revoke its acceptance.
- You will be expected to supply potential users with sufficient information on design and installation requirements to ensure proper performance.
- You will be expected to certify to potential users that the hardware furnished has essentially the same chemistry, mechanical properties, and geometry as that submitted for acceptance, and that they will meet the crashworthiness requirements of the FHWA and the NCHRP Report 350.
- To prevent misunderstanding by others, this letter of acceptance, designated as number B-153 shall not be reproduced except in full. This letter, and the test documentation upon which this letter is based, is public information. All such letters and documentation may be reviewed at our office upon request.
- The NatureRail™ is a patented device and is considered "proprietary." The use of proprietary devices *specified by a highway agency* for use on Federal-aid projects must meet one of the following criteria: (a) it must be supplied through competitive bidding

with equally suitable unpatented items; (b) the highway agency must certify that it is essential for synchronization with existing highway facilities or that no equally suitable alternative exists or; (c) it must be used for research or for a distinctive type of construction on relatively short sections of road for experimental purposes. Our regulations concerning proprietary products are contained in Title 23, Code of Federal Regulations, Section 635.411, a copy of which is enclosed.

- This acceptance letter shall not be construed as authorization or consent by the FHWA to use, manufacture, or sell any patented device for which the applicant is not the patent holder. The acceptance letter is limited to the crashworthiness characteristics of the candidate device, and the FHWA is neither prepared nor required to become involved in issues concerning patent law. Patent issues, if any, are to be resolved by the applicant.

Sincerely yours,



John R. Baxter, P.E.
Director, Office of Safety Design
Office of Safety

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.