

December 9, 2003

HSA-10/B124

Mr. Shane E. Weyant  
Corporate Sales and Marketing Director  
Creative Pultrusions, Inc.  
214 Industrial Lane  
Alum Bank, PA 15521

Dear Mr. Weyant:

In your November 10 letter to Mr. Richard Powers of my staff you requested formal Federal Highway Administration acceptance of a guardrail design that used a composite beam material developed under the DOT Small Business Innovation Research (SBIR) Program in lieu of a galvanized steel beam element. Your design, called the SuperRail Composite Guardrail, was tested to NCHRP Report 350 test level 3 (TL-3) by the Southwest Research Institute (SwRI) in San Antonio, Texas. Copies of the test reports and a videotape of the two tests that were conducted were included with your letter.

The SuperRail Composite Guardrail beam element is made via a continuous pultrusion process. Its shape is similar to a standard Thrie-beam rail element as shown in Enclosure 1, but it is composed of fiberglass roving and biaxial fabric layers in a specially formulated resin system. For the test installation, six 25-foot long composite rail sections were butt-spliced using a separate fiberglass vinyl ester composite splice plate and supported on standard W6 x 8.5 steel posts on 6 foot-3 inch centers with routed timber blockouts. Mounting height to the top of the rail element was 32 inches.

NCHRP Report 350 test 3-10 and 3-11 were conducted and documented in the October 2003 SwRI test reports, "Full-Scale Crash Evaluation of a Composite Thrie-Beam Guardrail System – Final Report Test CB-101" and "Full-Scale Crash Evaluation of a Composite Thrie-Beam Guardrail System – Final Report Test CB-102." In both the small car and the pickup truck tests, the occupant impact velocities (OIVs) and the ridedown accelerations (G's) were below the Report 350 preferred values of 9 m/sec and 15 G's, respectively. Maximum dynamic deflection was 787 mm in the pickup truck test and both vehicles were successfully contained and redirected. Based on these test results, the SuperRail Composite Guardrail may be used on the National Highway System as an NCHRP Report 350 TL-3 longitudinal barrier when such use is acceptable to the contracting agency. Although tested with steel posts, this rail would also be acceptable for use with standard timber posts and offset blocks. Since the SuperRail can be produced in a variety of colors, it may prove to be popular in locations where an aesthetic barrier is preferred.

I understand you plan to develop a crashworthy terminal for use with the SuperRail Composite Guardrail. Until such time as a crashworthy end terminal is tested and accepted, the SuperRail must be buried in a backslope with a post and cable terminal as was tested, shielded with a crashworthy impact attenuator, or introduced outside the minimum clear zone selected for the project where the barrier will be used.

Please note the following special provisions that apply to all FHWA product acceptance letters:

- FHWA acceptance is limited to the crashworthiness characteristics of the SuperRail and does not address long-term durability or life-cycle costs.
- Any design 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 evaluations reveal unacceptable safety problems, or that the device being marketed is significantly different from the version that was crash tested, this acceptance letter may be modified or revoked.
- 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 it will meet the crashworthiness requirements of NCHRP Report 350.
- To prevent misunderstanding by others, this letter of acceptance, designated as number B-124 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 SuperRail is a proprietary product. When proprietary devices are *specified by a highway agency* for use on Federal-aid projects, except exempt, non-NHS projects, they: (a) must be supplied through competitive bidding with equally suitable unpatented items; (b) the highway agency must certify that they are essential for synchronization with existing highway facilities or that no equally suitable alternative exists or; (c) they must be used for research or for a distinctive type of construction on relatively short sections of road for experimental purposes. FHWA regulations concerning proprietary products are contained in Title 23, Code of Federal Regulations, Section 635.411, a copy of which is Enclosure 2.

Since the SuperRail Composite Guardrail is a new product, I strongly encourage you to conduct in-service performance evaluations of field installations for several years to obtain cost and installation data and information on barrier performance under varied weather and temperature conditions.

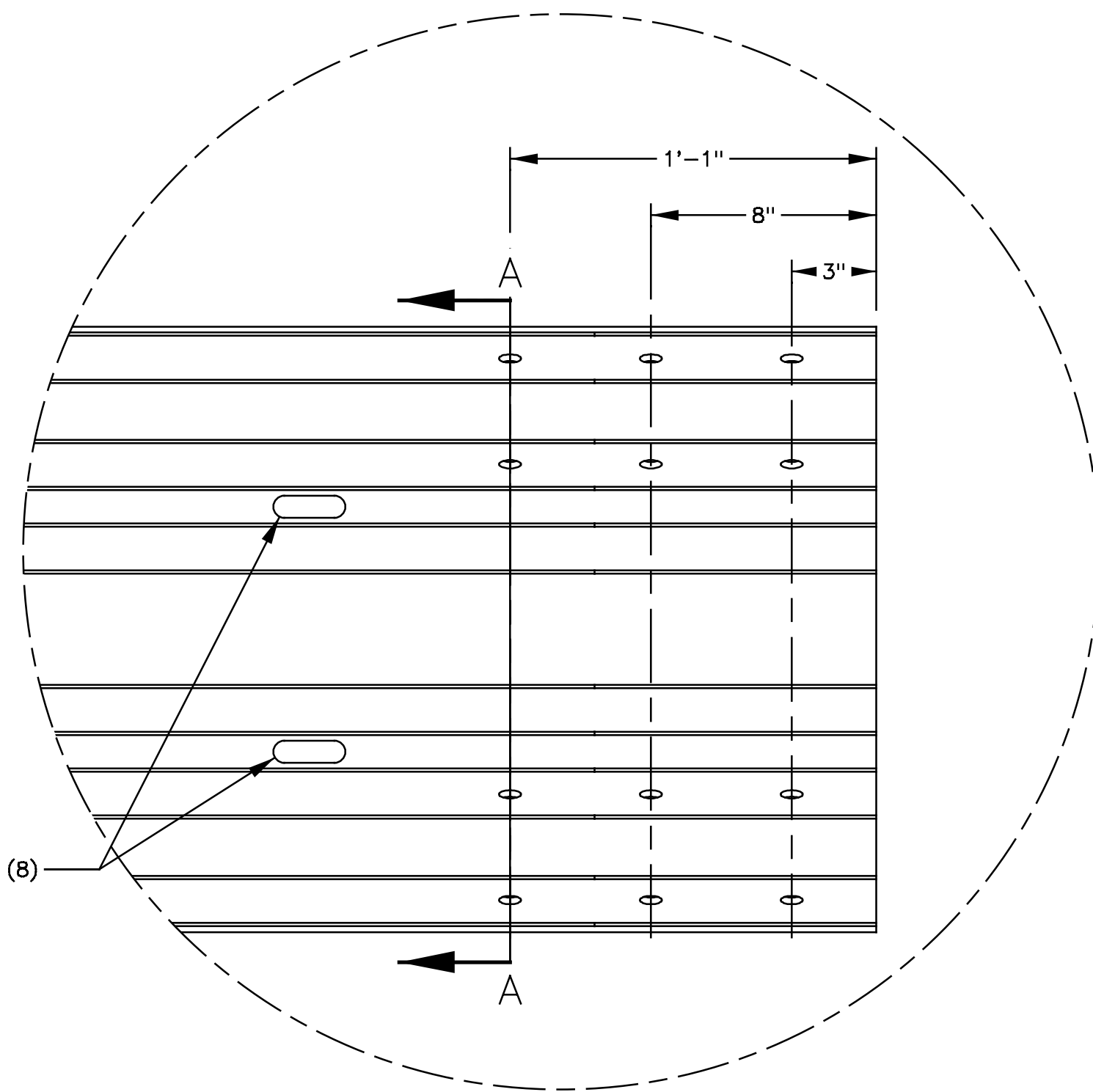
Sincerely yours,

**/ original signed by /**

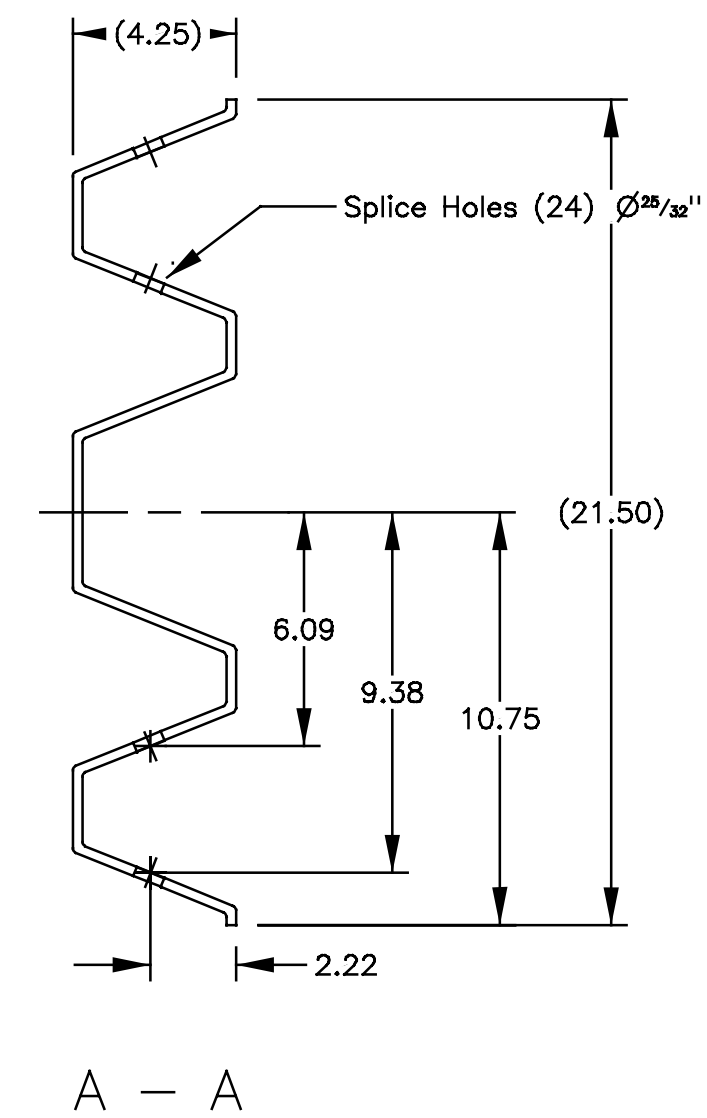
John R. Baxter  
Director, Office of Roadside Design  
Office of Safety

2 Enclosures

REV	DESCRIPTION	DATE	APPROVED

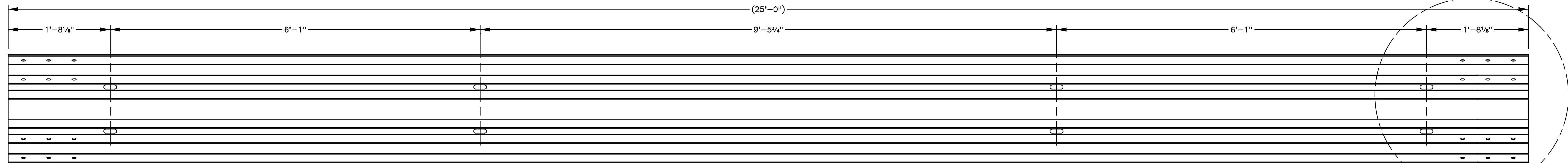


3/4" x 2 1/2" Post Slots (8)



NOTES:

- Quantity = 6 Rails, 2 of each construction
- Holes are to be drilled as close to perpendicular as possible
- Parts will be labeled according to their construction:



MATERIALS			
QTY	MATERIAL	PART NO.	MANU. DATE
2	3205 TRIAXIAL STITCHED FABRIC	CP155-TR4-TRX	11-27-2002
2	2808 0/90 BIAxIAL FABRIC	CP155-TR2-BIX	11-27-2002
2	CONTINUOUS STRAND MAT AND ROVING (CSM)	CP155-TR3-CSM	11-27-2002

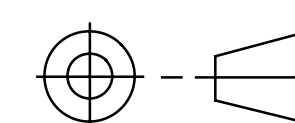
NO NOT SCALE DRAWING  
UNLESS OTHERWISE SPECIFIED  
DIMENSIONS ARE INCHES  
TOLERANCES  
.XX = ± .03  
.XXX = ± .010  
ANGULAR = ± 5°  
FRACTIONS = ± 1/16

CONTRACT NO.  
DTRS57-01-C-10054  
DRAWN BY  
N. MOLENGRAFT 02/05/2003  
CHECKED BY  
R. FOEDINGER 02/05/2003  
APPROVED BY  
R. FOEDINGER 02/05/2003

DE TECHNOLOGIES, INC.  
3620 HORIZON DRIVE  
KING OF PRUSSIA, PA 19406

FRP-Rail Pend Test  
FRP-Rail 25' Section

MATERIAL:   
FINISH: -



SIZE D	DRAWING NUMBER DET-NM-0043	REV -
SCALE 1:10	WEIGHT -	SHEET 1 OF 1