Mr. Bailey Pucillo  
Plasticade Products  
7700 Austin Avenue  
Skokie, IL 60077

Dear Mr. Pucillo:

Thank you for your letter of December 7, 1998, requesting Federal Highway Administration (FHWA) acceptance of your company’s Fibercade and Plasticade barricades and Plasticade Sign Stand as crashworthy traffic control devices for use in work zones on the National Highway System (NHS). Accompanying your letter was a copy of the crash test report by the Texas Transportation Institute (TTI), black and white photographs, and video documentation of the crash tests. You requested that we find the tested devices, as well as lighter or smaller devices of similar design, acceptable for use on the NHS. You provided additional information and drawings on April 13, 1999, in response to our request.

The FHWA guidance on crash testing of work zone traffic control devices is contained in two memoranda. The first, dated July 25, 1997, titled “Information: Identifying Acceptable Highway Safety Features,” established four categories of work zone devices: Category I devices were those lightweight which could be self-certified by the vendor, Category II devices were other lightweight devices which needed individual crash testing, Category III devices were barriers and other fixed or massive devices also needing crash testing, and Category IV devices were trailer mounted lighted signs, arrow panels, etc. The second guidance memorandum was issued on August 28, 1998, and is titled “INFORMATION: Crash Tested Work Zone Traffic Control Devices.” This recent memorandum lists devices that are acceptable under Categories I, II, and III. The devices you tested fall under Category II.

Full-scale automobile testing was conducted on your company’s Fibercade and Plasticade barricades and Plasticade Sign Stand. The Plasticade is a Type II barricade of hollow molded plastic that can be internally ballasted with sand. With the addition of a “sign sleeve” to its face, the Plasticade can support a warning sign (only “rollup” type signs were tested with the Plasticade.) The Fibercade is a Type II barricade constructed of rigid high molecular weight polyethylene components.
Two examples of each device were tested in tandem, one head-on and the next at 90 degrees, suggested in our July 16, 1998, letter to you. Each barricade was ballasted either internally or with two 11.4 kg sand bags placed on the middle rails. During the tests the most extensive windshield damage (for the specific devices you are requesting acceptance for) was shattering in two localized areas. This damage occurred during the tests of the Plasticade Sign Stand. There was no occupant compartment intrusion nor significant deformation observed, nor did any test article debris show potential for penetrating the occupant compartment. The vehicle remained stable and would not have intruded into adjacent lanes. The test results are summarized in the chart below. Drawings of the tested devices are enclosed.

<table>
<thead>
<tr>
<th>Device</th>
<th>Plasticade Type II</th>
<th>Plasticade Sign Stand</th>
<th>Fibercades Model 101-T12-C8-B3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Test No.</td>
<td>400001-ALB1</td>
<td>400001-ALB2</td>
<td>400001-ALB3</td>
</tr>
<tr>
<td>Height, mm (in)</td>
<td>1005 (40)</td>
<td>1060 (42)</td>
<td>1095, 1075 (43, 42)</td>
</tr>
<tr>
<td>Height to top of light</td>
<td>1240 (48)</td>
<td>1761 (70)**</td>
<td>1350, 1313 (53, 52)</td>
</tr>
<tr>
<td>Mass (without light*)</td>
<td>9.1 kg</td>
<td>10.6 kg</td>
<td>6.9 kg</td>
</tr>
<tr>
<td>Mass, plus ballast</td>
<td>13.6 kg</td>
<td>16.1 kg</td>
<td>29.7 kg</td>
</tr>
<tr>
<td>Vehicle Speed, km/h</td>
<td>98.6, 97.1</td>
<td>101.2, 98.3</td>
<td>97.5, 92.7</td>
</tr>
<tr>
<td>Velocity Change, m/s</td>
<td>0.42, 0.81</td>
<td>0.81, 0.44</td>
<td>1.33, 2.06</td>
</tr>
<tr>
<td>Windshield Damage</td>
<td>None</td>
<td>Shattered in 2 places</td>
<td>None</td>
</tr>
</tbody>
</table>

* Warning lights used were 315-mm tall and attached to the devices with a 91 mm diameter, 105 mm long standard halfmoon tamper-resistant bolt and nut. Two 6-volt batteries were in each yielding a total mass of 2 kg (4.25 lbs.) ** Height to top of rollup sign.

The results of this testing met the FHWA requirements and, therefore, the tested devices listed in the table above are acceptable for use on the NHS under the range of conditions tested, when proposed by a State. In addition, your company’s Minicade, Narrowcade, Signcade, and Type I Fibercades (with or without center or bottom panels) are acceptable by virtue of their being smaller or lighter versions of the successfully tested devices.

Our acceptance is limited to the crashworthiness characteristics of the devices and does not cover its structural features, nor conformity with the Manual on Uniform Traffic Control Devices. Presumably, you will supply potential users with sufficient information on design and installation requirements to ensure proper performance. We anticipate that the States will
require certification from Plasticade Products that the hardware furnished has essentially the same chemistry, mechanical properties, and geometry as that submitted for acceptance. To prevent misunderstanding by others, this letter of acceptance, designated as number WZ-14, shall not be reproduced except in full.

Many of your devices are patented products and considered "proprietary." The use of proprietary work zone traffic control devices in Federal-aid projects is generally of a temporary nature. They are selected by the contractor for use as needed and removed upon completion of the project. Under such conditions they can be presumed to meet requirement "a" given below for the use of proprietary products on Federal-aid projects. On the other hand, if proprietary devices are specified 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. Our regulations concerning proprietary products are contained in Title 23, Code of Federal Regulations, Section 635.411, a copy of which is enclosed.

Sincerely yours,

Dwight A. Horne
Director, Office of Highway Safety
Infrastructure

2 Enclosures

cc: Reader - HMHS, Chron - Rm 3407
    N. Artimovich - HMHS
    FHWA Field Offices
**ASSEMBLED OPENING WIDTH** 43" +1" -1"
**DIMENSION "W":**

**FILLER HOLE DRILL LOCATION** 12.5" -0.1" -0.1"
**DIMENSION "G":** (CENTER HOLE BETWEEN FRONT & BACK SURFACE)

**ASSEMBLED OPENING HEIGHT** 40" +1" -1"
**DIMENSION "H":**

**HINGE DRILL LOCATION** 1.6" +0.1" -0.1"
**DIMENSION "S":**

**HINGE DRILL LOCATION** 1.0" +0.1" -0.1"
**DIMENSION "R":**

**HINGE DRILL LOCATION** 11/32"
**DIMENSION "T":**

**FLASHER DRILL LOCATION** 1.3" +0.1" -0.1"
**DIMENSION "M":**

**FLASHER DRILL LOCATION** 1.3" +0.1" -0.1"
**DIMENSION "N":**

**FLASHER DRILL LOCATION** 9/16"
**DIMENSION "L":**

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**PLASTICADE PRODUCTS**
5005 NEWPORT DRIVE
ROLLING MEADOWS, IL 60008

All dimensions in inches.

**ASSEMBLY SPECIFICATION**

<table>
<thead>
<tr>
<th>APPROVED BY:</th>
<th>PART NAME:</th>
<th>PLASTICADE</th>
</tr>
</thead>
<tbody>
<tr>
<td>J. GLASS</td>
<td>SPECIFICATION No.: AS-10</td>
<td></td>
</tr>
<tr>
<td>DATE:</td>
<td>REVISION: A-11/14/97</td>
<td></td>
</tr>
<tr>
<td></td>
<td>SEE RELATED SPEC'S: MS-10, HS-10.1</td>
<td></td>
</tr>
<tr>
<td>MOLD No:</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>PLASTICADE-1</td>
<td></td>
</tr>
</tbody>
</table>

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Figure 36. Details of the Plasticade Products Plasticade Type II A-Frame barricade.
COMPONENT "A"
CARRIAGE BOLT
3/8"-16 UNC BY 2" LONG.

COMPONENT "B"
NYLON INSERT LOCKNUT
3/8"-16 UNC

COMPONENT "C"
CARRIAGE BOLT
1/4"-20 UNC BY 3" LONG.

COMPONENT "D"
NYLON INSERT LOCKNUT
1/4"-20 UNC

ARCHITECTURAL SPECIFICATION

PLASTICADE PRODUCTS
7700 AUSTIN AVENUE
SKOKIE, IL 60077

HARDWARE SPECIFICATION

APPROVED BY: B. Pucillo
DATE: 03/29/99
REVISION: A-03/28/99
MOLD No: FIBERCADE-1

PART NAME: FIBERCADE 101-T12-C8-B3
SPECIFICATION No.: HS-70.1
SEE RELATED SPEC'S: AS-70
ASSEMBLED OPENING WIDTH
DIMENSION "W": 43.3" +1" -1"

ASSEMBLED OPENING HEIGHT
DIMENSION "H": 41" +1" -1"

HINGE LOCATION
DIMENSION "A": 3.25" +0.1" -0.1"

TOP BOARD
DETAIL "T12": 12" HIGH X 24" WIDE

MIDDLE BOARD
DETAIL "C8": 8" HIGH X 24" WIDE

BOTTOM BOARD
DETAIL "B3": 3" HIGH X 24" WIDE

ASSEMBLY SPECIFICATION

PLASTICADE PRODUCTS
7700 AUSTIN AVENUE
SKOKIE, IL 60077

APPROVED BY: B. Pucillo
DATE: 03/29/99
REVISION: A-03/28/99
MOLD No: FIBERCADE-1

PART NAME: FIBERCADE 101-T12-C8-B3
SPECIFICATION No.: AS-70
SEE RELATED SPEC'S: HS-70.1
Figure 34. Details of the Empco-Lite Model 100/400 warning light used during testing.

Figure 35. Details of bolts used to attach warning lights to barricades during testing.
Federal Highway Administration, DOT

pipes, and (2) the number and types of such alternatives which must be set forth in the specifications for various types of drainage installations.

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

§ 655.413 Warranty clauses.

The SHA may include warranty provisions in National Highway System (NHS) construction contracts in accordance with the following:

a) Warranty provisions shall be for a specific product or feature. Items of maintenance not eligible for Federal participation shall not be covered.

b) All warranty requirements and subsequent revisions shall be submitted to the Division Administrator for advance approval.

c) No warranty requirement shall be approved which, in the judgment of the Division Administrator, may place an undue obligation on the contractor for items over which the contractor has no control.

d) A SHA may establish its own procedures regarding the inclusion of warranty provisions in non-NHS Federal-aid contracts.

§ 655.417 Convict produced materials.

(a) Materials produced after Jul. 1991, by convict labor may only be incorporated in a Federal-aid highway construction project if such materials have been:

1) Produced by convicts who are parole, supervised release, or pretrial from a prison or

2) Produced in a qualified prison facility and the cumulative annual production of such materials in Federal-aid highway construction projects does not exceed the amount such materials produced in such facility for use in Federal-aid highway construction projects during the 12-month period ending July 1, 1987.

(b) Qualified prison facility means a prison facility in which convicts, during the 12-month period ending July 1987, produced materials for use in Federal-aid highway construction projects.

APPENDIX A TO SUBPART D—SUMMARY OF ACCEPTABLE CRITERIA FOR SPECIFYING TYPES OF CULVERT PIPES

<table>
<thead>
<tr>
<th>Type of drainage installation</th>
<th>Alternatives required</th>
<th>AASHTO designation to be included with alternatives</th>
<th>Application</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cross-drains under high-type pavement</td>
<td>Yes</td>
<td>No number</td>
<td>No</td>
<td>Staywire</td>
</tr>
<tr>
<td>Other cross-drain installations</td>
<td>Yes</td>
<td>X</td>
<td>M-170 and M-198</td>
<td>Do not</td>
</tr>
<tr>
<td>Sidewall installations</td>
<td>Yes</td>
<td>X</td>
<td>3 minimum</td>
<td>Do not</td>
</tr>
<tr>
<td>Special installation conditions</td>
<td>Yes</td>
<td>X</td>
<td>M-26</td>
<td>Do not</td>
</tr>
<tr>
<td>Special drainage systems (storm sewers, culvert pipes, etc.)</td>
<td>Yes</td>
<td>X</td>
<td>M-26</td>
<td>Do not</td>
</tr>
</tbody>
</table>

1 High-type pavement is generally described as FHWA construction type codes I, J, K, L, and plant mix and penetration inadam vegetation, respectively shown in the right-hand columns of type codes G and H having a combined thickness of turf and base of 3 - 4 or more (or equivalent) of equal or less than the required grade of surf and a bevel of equal or less than 3 - 4.

2 Specified in mee special conditions. Specified in mee special site requirements.

Subpart E—Interstate Maintenance Guidelines

SOURCE: 49 FR 20793, Mar. 31, 1984, unless otherwise noted.