U.S. Department
Of Transportation
Federal Highway
Administration

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

May 11, 1989

Refer to: HNG-14/SS-10

Mr. Ellis Britton
HwyCom Corporation
P.O. Box 2119
Big Springs, Texas, 79720

Dear Mr. Britton:

This is in response to Mr. Red Lindsay's February 15 letter to Mr. Thomas O. Willett requesting acceptance of your company's 3-inch diameter fiberglass signpost system. You provided additional information on March 20 in response to our request. Together, these submissions include reports of two tests conducted by the Texas Transportation Institute, a specification for fiber-reinforced plastic (FRP) small sign supports, and supplementary information on component specifications.

The two tests were conducted using the same 1,800-pound automobile (Honda Civic). The 19.7 m.p.h. test resulted in a change in velocity of 14.1 feet per second. The 63.0 m.p.h. test resulted in a change in velocity of 2.9 fps. The tests were conducted in strong (S-1) soil in conformance with the requirements of NCHRP 230. The results are in compliance with the breakaway requirements of the AASHTO Standard Specifications for Structural Supports for Highway Signs, Luminaires and Traffic Signals, 1985.

The sign post system consists of a 3-inch outside diameter FRP post composed of polyester resin (Owens-Corning Fiberglass) OCF E-440 Type Orthophthalic) and glass fiber reinforcement (OCF Roving 113, Yield T-30 or equivalent). The fiber-reinforced tube is manufactured by a process called "pultrusion", whereby longitudinal and diagonal glass fibers are combined with a resin. A surface veil of woven glass fiber completes the 1/8-inch thick wall of the tube. This FRP post is inserted into a 28-inch long, 3.10-inch to 3.125-inch inside diameter ceramic coated steel tube (wall thickness of 0.062 to 0.095 inches) which has been flattened for 12 inches to prevent rotation. Self-tapping screws secure the post in place.

Based on the above information this signpost system is acceptable for use on Federal-aid highway projects, should its use be proposed by a State. This acceptance is limited to breakaway characteristics of the system described above and does not cover its structural features. Further, we have determined that only one post should be allowed within an 8-

foot path. We note this system was only tested in the strong (S-1) soil described in NCHRP 230. Usually we would suggest that breakaway supports be tested in weak (S-2) soil. However, with the short foundation embedment specified for your support, we consider this additional testing unnecessary. On the other hand, users should be cautioned not to use the support in weak soil if to do so requires an increase in foundation embedment or other revision in the foundation, unless the revised design is tested. Presumably, Hwycom Corporation will supply potential users with sufficient information on structural design and installation requirements to ensure proper support performance.

We anticipate that the States will require certification from Hwycom Corporation that materials furnished have chemistries, mechanical properties, and geometries approximately the same as those used in the tests and that the supports made from the materials will meet the breakaway requirements of the AASHTO specifications.

Since the HwyCom FRP post and base system is a proprietary item, to be used in a Federal-aid project they: (a) it must be supplied through competitive bidding with equally suitable unpatented items; (b) the State highway agency certifies that it is essential for synchronization with existing highway facilities or that no equally suitable alternate exists; or (c) it is 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 (copy enclosed).

Sincerely yours,

L. A. Staron, Chief
Federal-Aid and Design Division

Enclosures

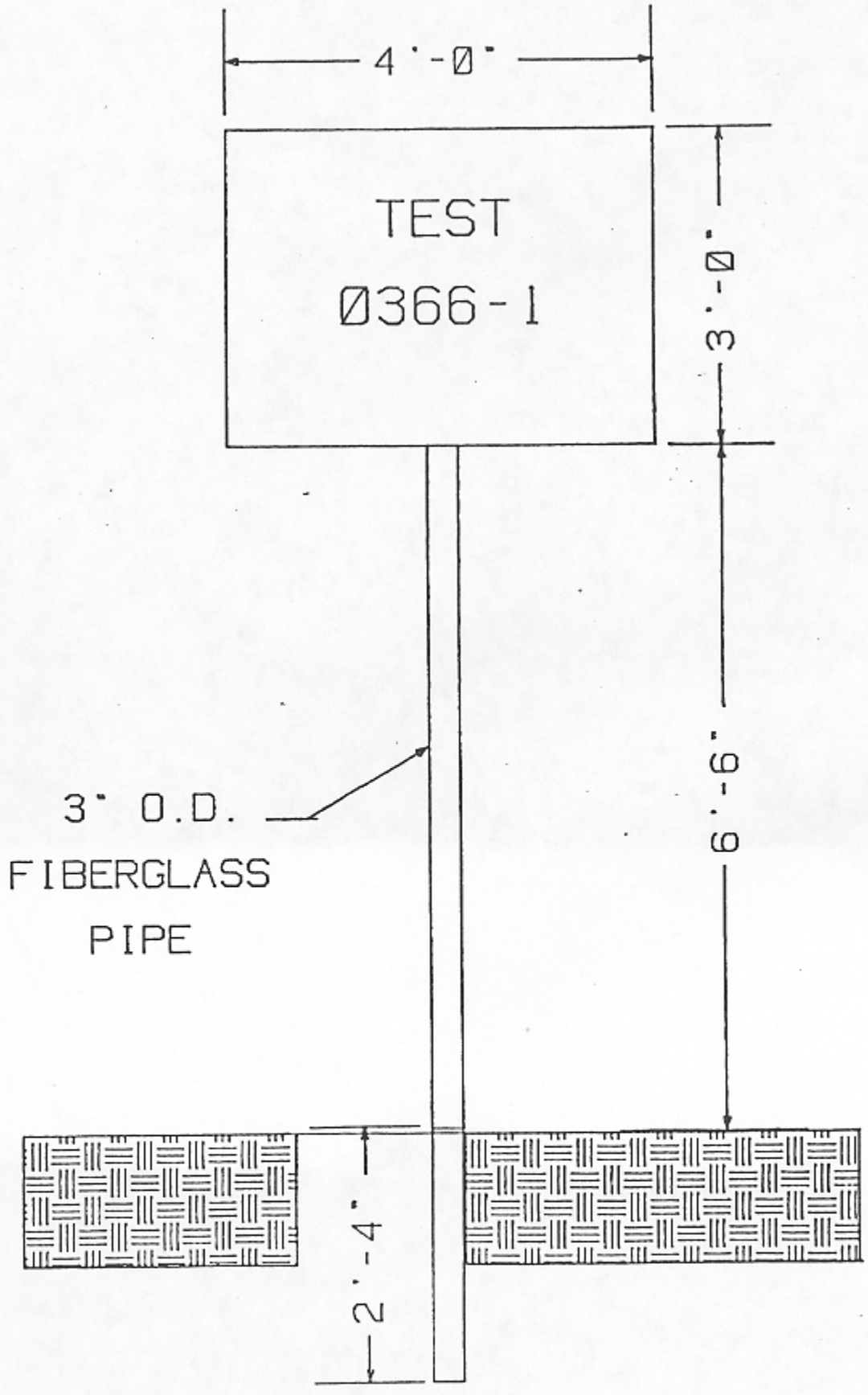

Figure 1. Details of sign installation for test 0366-1.