



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

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

August 3, 1989

Refer to: HNG-14/SS-12

Mr. John Freeman
President, HwyCom
P.O. Box 2119
Big Spring, Texas 79721-2119

Dear Mr. Freeman:

This is in response to your July 21, 1989 letter to the Federal Highway Administration (FHWA) requesting acceptance of your company's double fiberglass small sign supports for use on Federal-aid highway projects. Tests were conducted to assess the compliance of these supports with FHWA requirements, which cite Section 7 of the 1985 American Association of State Highway and Transportation Officials (AASHTO) Standard Specifications for Structural Supports for Highway Signs, Luminaires and Traffic Signals. In support of this request your included two crash test reports from Texas Transportation Institute, and referred to your earlier submission which included manufacturing and installation details for a like single post support which received FHWA acceptance on May 11, 1989.

Both full-scale crash tests used the same 1,800 pound Honda Civic. The test installation, shown in Enclosure 1 consisted of a 4-foot by 6-foot sign panel mounted on two 3-inch diameter fiberglass support posts spaced 38 inches center-to-center. The posts were inserted into 27-inch long steel support tubes for a distance of 12 inches and secured with self-tapping screws. The support tubes, flattened for approximately half their length, had been driven into NCHRP "strong" soil. Other test details and results are shown below:

Test #	Impact Speed (mph)	Vehicle Delta V (fps)	Vehicle Longitudinal Accelerations (g's)	Occupant Impact Velocity Longitudinal (fps)	Occupant Ridedown Accelerations longitudinal (g's)
0366-3	20.2	23.8	-3.8	15.0	-4.8
0366-4	59.7	4.1	-1.7	*	*

*No theoretical occupant contact with vehicle interior during evaluation period of event.

In the low speed test the posts did not disengage from the support tubes as the vehicle rode over the installation. The posts were pulled entirely out of the flush-mounted support tubes during the high-speed test. In the low speed test, the occupant impact velocity did not exceed 16.0 fps, while the high-speed test did not result in an occupant impact with the interior of the vehicle.

These results meet the change in velocity and stub height requirements adopted by the FHWA. Therefore, your company's dual post sign support described above and in the enclosures is acceptable for use on Federal-aid highway projects, within the range of conditions tested, if proposed by a State. We note this system was only tested in the strong (S-1) soil described in NCHRP Report 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.

This acceptance is limited to breakaway characteristics of the system and does not cover structural features. Presumably, you will supply potential users with sufficient information on structural design and installation requirements to ensure proper performance. We anticipate that the States will require certification from HwyCom that the hardware furnished has essentially the same chemistry, mechanical properties, and geometry as that used in the tests, and that it will meet the FHWA change in velocity requirements.

Since the HwyCom 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, have previously been given to representatives of HwyCom. However, for your convenience, another copy is enclosed.

Sincerely yours,

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

Enclosures

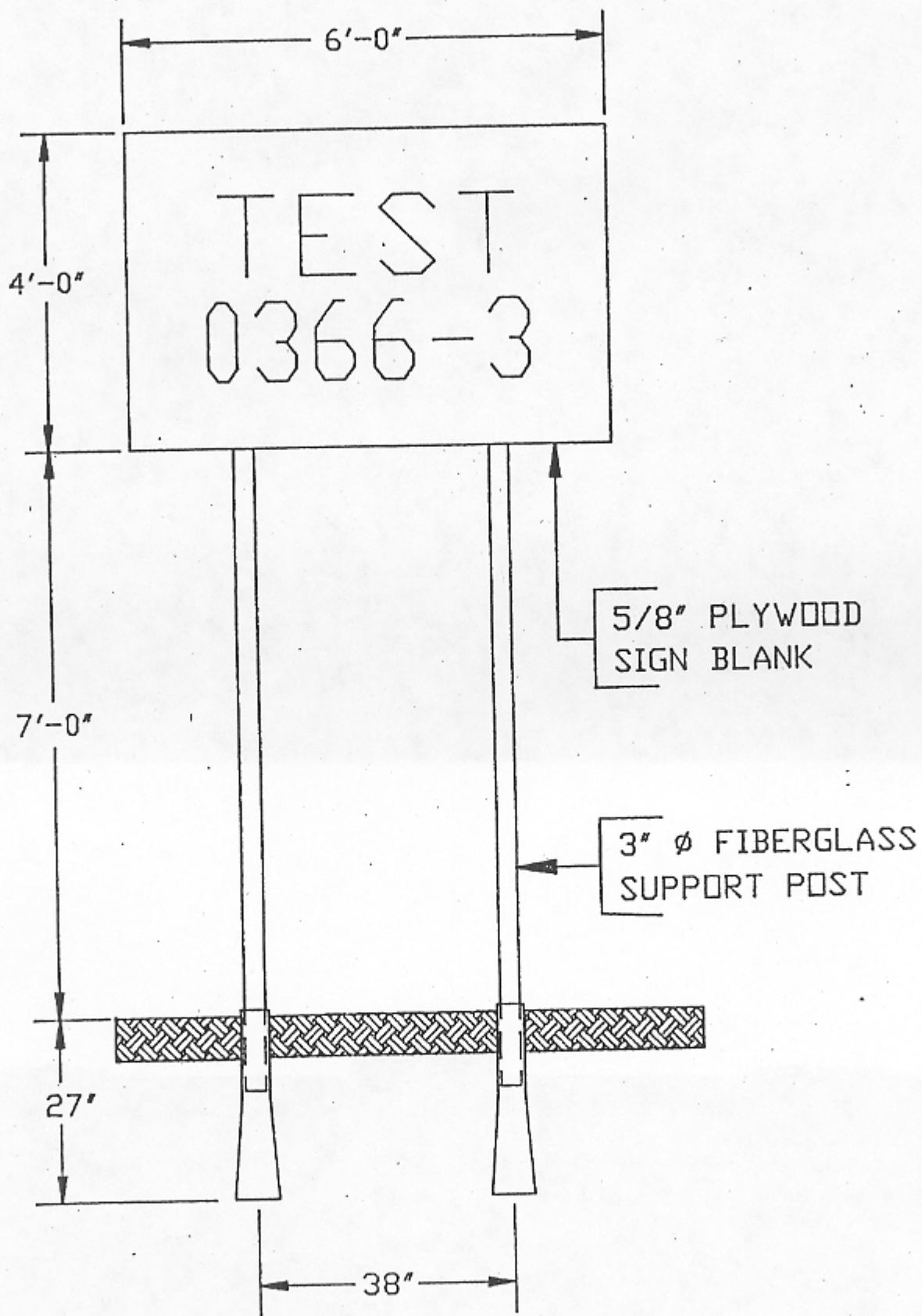


Figure 1. Details of sign installation for test 0366-3.