U.S. Department
Of Transportation
Federal Highway
Administration

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

March 16, 1989

Refer to: HNG-14/SS-09

Mr. James W. Young
Franklin Steel
P.O. Box 671
Franklin, Pennsylvania 16323

Dear Mr. Young:

This is in response to your February 21 letter to Mr. James Hatton requesting Federal Highway Administration (FHWA) acceptance of your company's Eze-Erect Sign Posts. Your letter accompanied reports by the Southwest Research Institute, "Full-Scale Crash Tests of the Eze-Erect Sign Support, Volume 1: Strong Soil Tests" and "Volume 2: Weak Soil Tests."

Four tests were conducted using 1,800-pound automobiles. Two tests were in NCHRP 230 S-1 "strong" soil and two in S-2 "weak" soil. Tests were conducted on 4-pound-per-foot posts manufactured of ASTM A-1-76 steel at 20 m.p.h. and 60 m.p.h. in each soil type. A summary of the tests and results is shown below:

Test Number:	F.S.1	F.S.2	F.S.3	F.S.4
Soil Type	Strong	Strong	Weak	Weak
Impact Speed (mph)	20	60	18.9	59.3
Occupant impact velocity (fps)	5.1 (film)	2.9	7.3	10.1
	4.8 (accel.)	1.3	2.4	6.7
Occupant ridedown acceleration (g's)	1.0 (film)	NC	NC	2.7
	NC (accel.)	1.3	NC	1.5
Velocity Change (fps)	5.5 (film)	4.7	6.5	2.6
	6.0 (accel.)	1.4	3.0	4.0
Stub Height (in.)	*	*	*	*

NC: No Contact: Occupant did not displace sufficient distance to contact vehicle interior and experience ridedown accelerations.

*Stub heights were not reported. The post bases were driven to leave a 4-inch height remaining above ground to permit attachment of support posts. In test F.S.1, the post base was pulled out of the ground by the connecting strap to a height in excess of 4

inches. This warrants some concern. However, the interpretation of "substantial remains" is not settled. Inasmuch as the post base was not pulled up during test F.S.2, the post bases were completely pulled out during the weak soil tests, thus leaving no stubs, and the stub remaining in test F.S.1 had no apparent adverse effect, the results of test F.S.1 are not considered sufficient to deny acceptance of the system.

This information shows that the actual test and calculated changes in vehicle velocity for the 4-pound-per-foot Eze-Erect sign supports meet provisions of Section 7 of the 1985 American Association of State Highway and Transportation Officials "Standard Specifications for Structural Supports for Highway Signs, Luminaire and Traffic Signals." Therefore, the tested Eze-Erect signposts, as well as your 2.0, 2.25, 2.5, 2.75, and 3.0-pound-per-foot posts, will be acceptable for use on Federal-aid projects, within the range of conditions tested if proposed by a State. The acceptance is limited to breakaway characteristics of the system and does not cover its 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 Franklin Steel that the furnished supports, including breakaway fasteners, have essentially the same chemistry, mechanical properties, and geometry as those used in the tests and that they will meet the FHWA change in velocity requirements.

Sincerely yours,

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

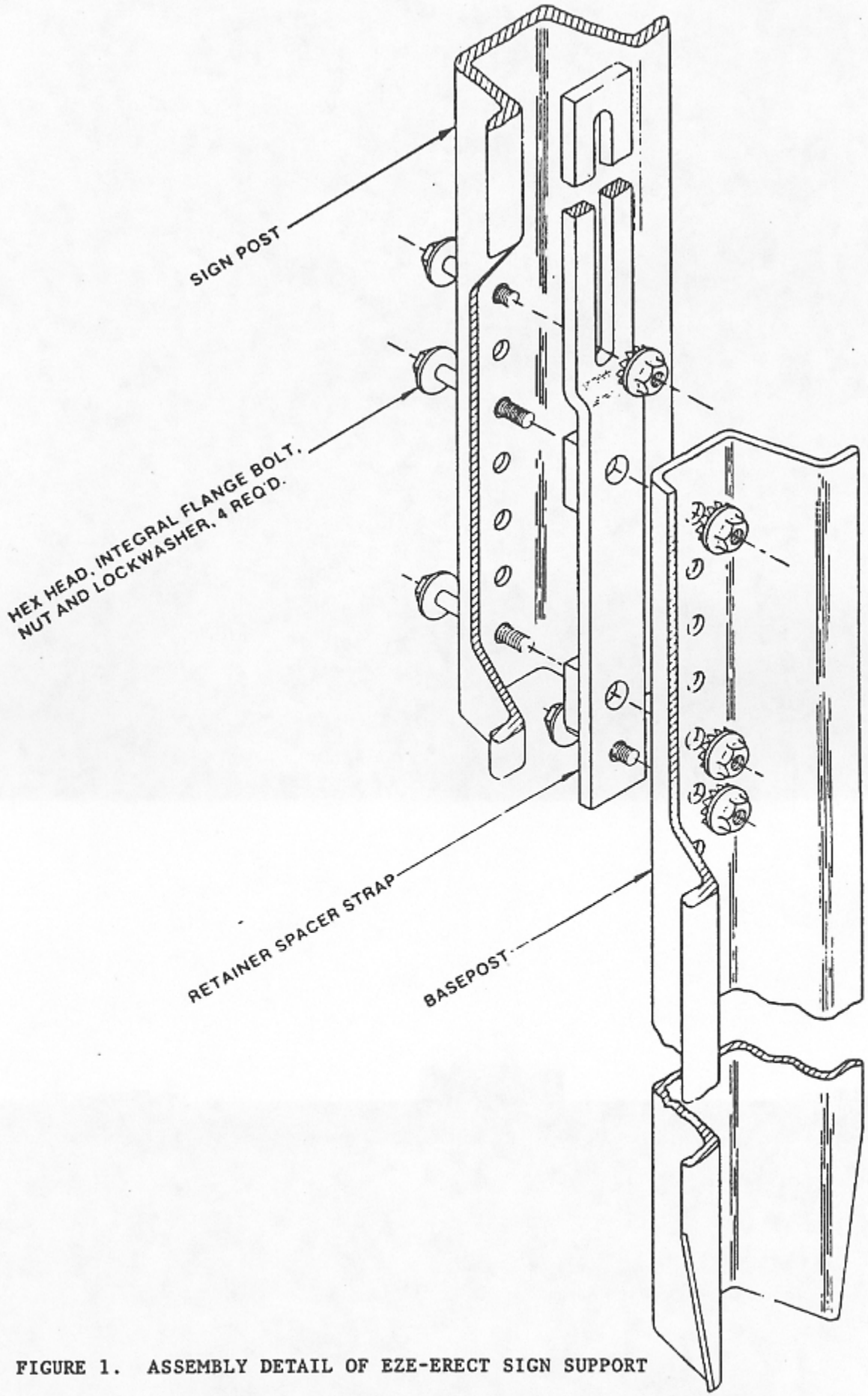

FIGURE 1. ASSEMBLY DETAIL OF EZE-ERECT SIGN SUPPORT