U.S. Department
Of Transportation
Federal Highway
Administration

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

August 13, 1993

Refer to: HNG-14/SS-37

Mr. Frank T. Ellis
Greenline
1616 Commerce Drive
Stow, Ohio 44224-1761

Dear Mr. Ellis:

Thank you for your letter of July 26 requesting Federal Highway Administration's (FHWA) acceptance of your company's delineator post as a breakaway device. The letter was a follow-up to one of June 9, which transmitted summaries of static laboratory tests done on the posts, as well as impact tests conducted with a bogie vehicle. In the recent letter you provided some additional information that we requested (via our letter of June 29).

Impact tests were conducted by ATEC Associates, Inc., of Jacksonville, Florida. A sled was used to simulate a vehicle driving over an installation of four delineator posts, a total of 12 times at various speeds. Drawings of the two types of posts tested are enclosed. Details of the tests were:

Posts impacted: Corner Guard and Highway Delineator

Post material: Blend of recycled thermoplastic

Post dimensions: 85.7 mm (3.375 in) wide by 1676 mm (66 in) long

Post embedment: 457 mm (18 in) deep

Height above ground: 1220 mm (48 in)

Velocity of vehicle: Posts were hit at speeds of 72, 89, and 105 kmh, (+/- 3 kmh) [45, 55, and 65 mph (+/- 2 mph)] with virtually no change in velocity. No potential for vehicle damage other than on the hood was observed.

The ATEC observed that there were no signs of splitting, cracking, or chipping on any of the posts after the twelve impacts.

Our recognized crash test and acceptance criteria for roadside features are contained in the National Cooperative Highway Research Program (NCHRP) Report 350 Recommended Procedures for the Safety Performance Evaluation of Highway Features. Unfortunately, the NCHRP Report 350 does not specifically address delineator posts. It does, however, contain guidance for testing free-standing, low-mass work zone traffic control devices, from which we can inter a testing philosophy for obviously insubstantial objects.

For free-standing, work-zone, traffic control devices having a mass less than 45 kg (a weight less than 99 lbs.) there is an exemption from the evaluation criteria involving occupant impact velocity and occupant ridedown accelerations, thus reducing instrumentation and reporting requirements. In addition, the low-speed (35 kmh) test may be omitted if it can be determined that the high-speed test (100 kmh) is clearly the more critical test.

In the absence of specific guidance for objects attached to the ground, engineering judgment must be used in determining which evaluation criteria in the NCHRP Report 350 must be applied. In our view such judgment can certainly be based on observations of test results. Thus for an insubstantial support such as a delineator support, where testing clearly shows the support causes minimal change in vehicle velocity, we believe we can apply the same rules as those for free-standing, low-mass, work-zone, traffic control devices. We also believe that the high-speed test is the more critical one for a low-mass delineator support, and that testing at the low speed is not require. (Note that there will always be the chance under this approach that less than full support testing procedures will indicate the need for following all procedures.)

Based upon the test data you supplied we can infer compliance with the intent of the NCHRP Report 350. It is apparent that your company's posts had very little effect on the velocity, stability, or integrity of the impacting vehicle. Therefore, GreenLine Corner Guard posts and GreenLine Highway Delineator posts may be used on National Highway System projects, if required by a State.

Our acceptance is limited to yielding characteristics of the Greenline delineator post and does not cover their structural features. Presumably, you will supply potential users with sufficient information on structural design and installation requirements to ensure proper performance. We anticipate that highway agencies will require certification from you that the hardware furnished will have essentially the same composition, mechanical properties, and geometry as those of the tested posts upon which our acceptance is based.

Greenline delineator posts are proprietary products. Therefore, to be used in a Federal-aid highway project on the National Highway System: (a) they must be supplied through competitive bidding with equally suitable unpatented items; (b) the State highway agency must certify that they are essential for synchronization with existing highway facilities or that no equally suitable alternate exists; or (c) they must be used for research or for a distinctive type of construction on relatively short sections of road for experimental

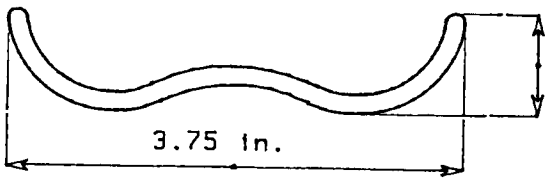
purposes. Our regulations concerning proprietary products are contained in Title 23, Code of Federal Regulations, Section 635.411, a copy of which is enclosed.

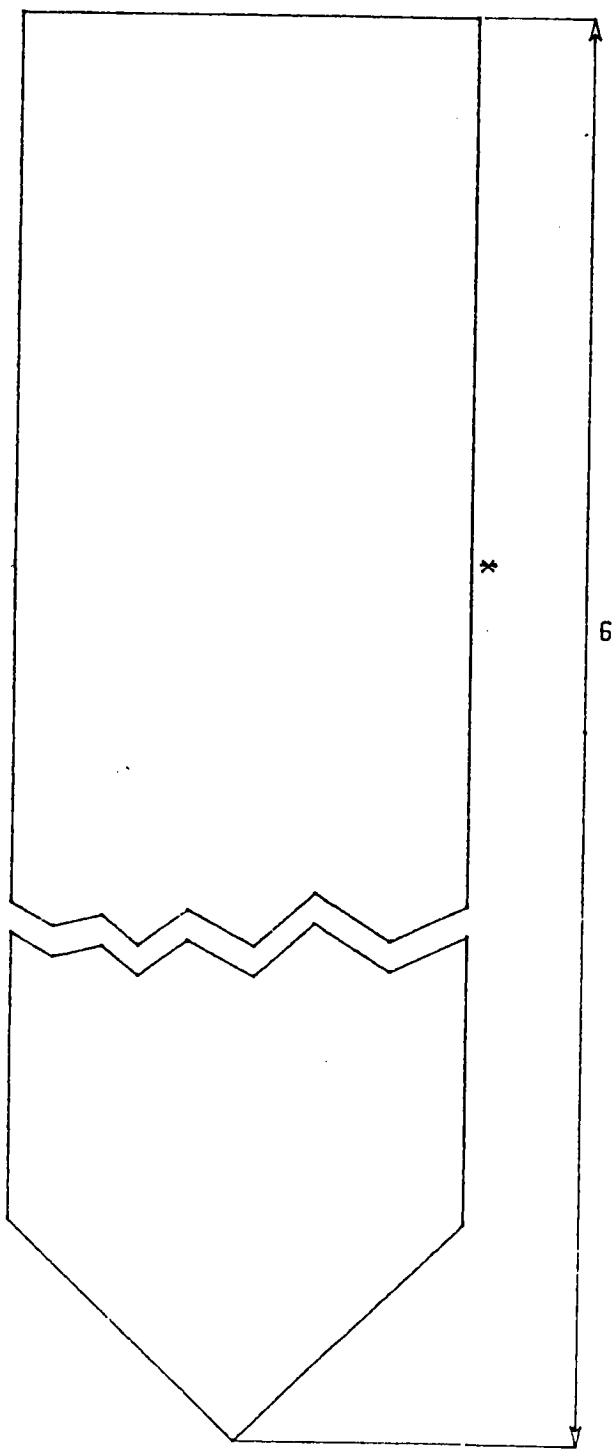
Sincerely yours,

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

3 Enclosures

TYP. WALL THICKNESS: 0.160 in.





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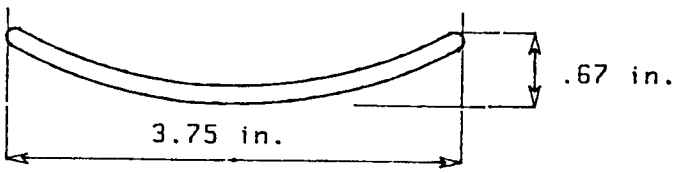

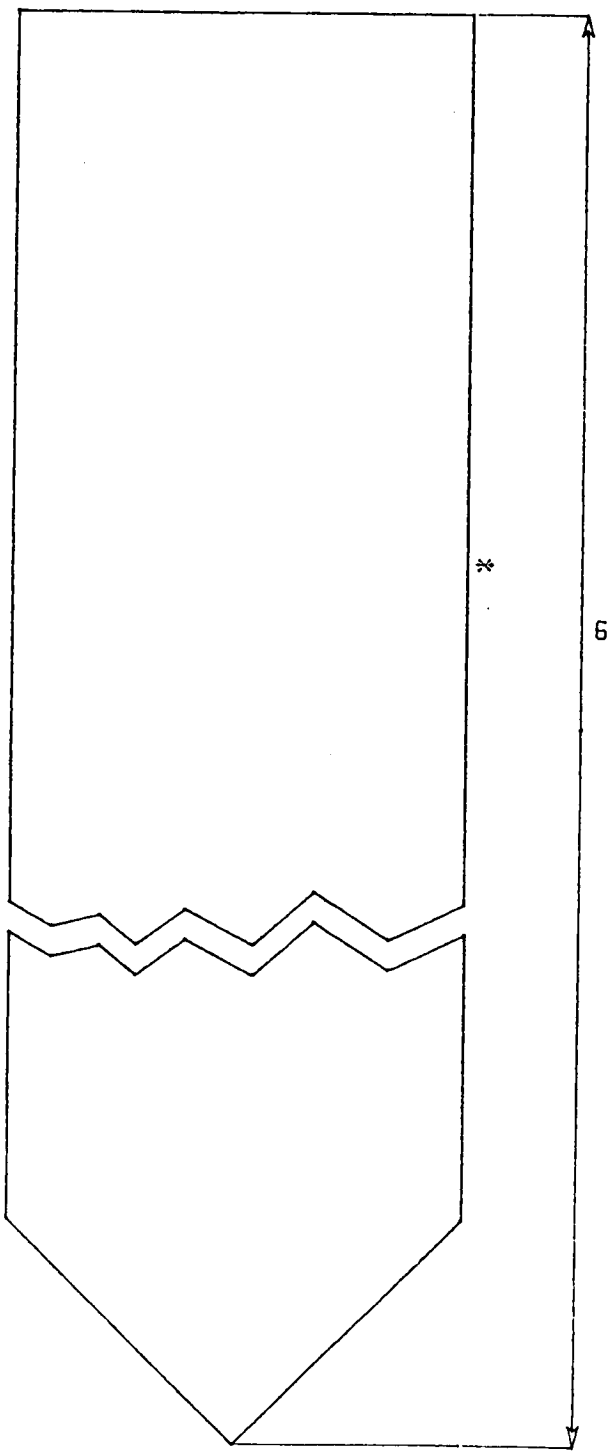

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