U.S. Department
of Transportation
Federal Highway
Administration

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

Refer to: HSA-10/SS-101

Mr. Vince Leone
BMK Corporation
4387 North Rider Trail
Earth City, MO 63045-1103

Dear Mr. Leone:

This is in response to your letter of October 10 requesting Federal Highway Administration (FHWA) acceptance of your company's Polecrete-Postloc as foundation material for use with breakaway sign post systems on the National Highway System (NHS). Accompanying your letter were material specifications and technical product information.

Introduction

Requirements for breakaway supports are those in the American Association of State Highway and Transportation Officials' (AASHTO) Standard Specifications for Structural Supports for Highway Signs, Luminaires and Traffic Signals. Crash testing of breakaway supports is covered in the National Cooperative Highway Research Program (NCHRP) Report 350, Recommended Procedures for the Safety Performance Evaluation of Highway Features.

Polecrete PostLoc is a high density, polyurethane backfill product that can be used as an alternative to concrete for setting and straightening small roadside sign structures. PostLoc expands up to 10 times its original volume by transforming the two-part liquid components into a solid foundation material in minutes. Information on compressive strength, density, and tensile properties of the tested material were provided for our files.

Full-scale automobile testing has been conducted at Texas Transportation Institute on a single support omni-directional slip base installation with a 72.2 mm (3 inch) diameter schedule 40 steel pipe support in a foam backfill foundation material. The size of the foundation was 30.5 mm diameter by 1060 mm deep (12 inches x 42 inches). Since slip base sign supports depend upon rigid foundations to perform as intended, expanding foam backfill materials need to be strong enough to resist crushing in order to provide this acceptable foundation.

The low-and high-speed crash tests both resulted in occupant impact speeds of 1.1 m/s, well under the 5.0 m/s maximum as specified in NCHRP Report 350. The test articles did not show any potential for penetrating the passenger compartment, and there was no observable distress or

movement of the foam foundation material. Based on these tests, the State of Texas is establishing design specifications for foam backfill material. The FHWA concurs that the design specifications determined as a result of these tests are acceptable for using polyurethane foam backfill for breakaway small sign support systems such as omni-directional three-bolt slip bases.

As your material exceeds those specifications Polecrete Postloc is acceptable for use when backfilling breakaway small sign supports mounted in standard soil conditions on the NHS under the range of conditions tested, when proposed by a State. The acceptable sign support systems are the tested omni-directional slip base and the following wood post systems:

Wood post size (nominal)	Number of Posts acceptable	Size of holes required **
4x4	1	None
4x4	2	None
4x6	1	1 ½ inches
4x6	2	1 ½ inches
6x8	1	3 inches

*Number of such posts permitted within a 2.1 m (7 foot span.)
** Holes are to be drilled into the long side of the post (the side that is parallel to traffic) and at heights of 4 inches and 18 inches above the ground.

Please note the following standard provisions which apply to FHWA letters of acceptance:

- Our acceptance is limited to the crashworthiness characteristics of the devices and does not cover their structural features, nor conformity with the Manual on Uniform Traffic Control Devices.
- Any changes that may adversely influence the crashworthiness of the device will require a new acceptance letter.
- Should the FHWA discover that the qualification testing was flawed, that in-service performance reveals unacceptable safety problems, or that the product being marketed is significantly different from the version that was used in the crash tests, it reserves the right to modify or revoke its acceptance.
- You will be expected to supply potential users with sufficient information on design and installation requirements to ensure proper performance.
- You will be expected to certify to potential users that the material furnished has essentially the same chemistry and mechanical properties as that submitted for acceptance, and that they will meet the crashworthiness requirements of FHWA and NCHRP Report 350. Potential users may contact the FHWA Office of Safety Design to confirm that the material properties are comparable to those of the tested product.

! To prevent misunderstanding by others, this letter of acceptance , designated as number SS-101 shall not be reproduced except in full. As this letter and the supporting documentation which support it become public information, it will be available for inspection at our office by interested parties.

Sincerely yours,

Michael L. Halladay
Acting Program Manager, Safety

Enclosure