



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

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

July 20, 1999

Refer to HMHS

Mr. Grant Dicke
Dicke Tool Company
1201 Warren Avenue
Downers Grove, IL 60515

Dear Mr. Dicke

Thank you for your letter of February 15 requesting Federal Highway Administration (FHWA) acceptance of a number of your company's safety devices as crashworthy traffic control devices for use in work zones on the National Highway System. Accompanying your letter were copies of the crash test report by Midwest Roadside Safety Facility (MwRSF) and video documentation of the crash tests. You requested that we find the tested devices acceptable for use on the National Highway System.

FHWA guidance on crash testing of work zone traffic control devices is contained in two memoranda. The first, dated July 25, 1997, titled "Information: Identifying Acceptable Highway Safety Features," established four categories of work zone devices: Category I devices were those lightweight devices which could be self-certified by the vendor, Category II devices were other lightweight devices which needed individual crash testing, Category III devices were barriers and other fixed or massive devices also needing crash testing, and Category IV devices were trailer mounted lighted signs, arrow panels, etc. The second guidance memorandum was issued on August 28, and is titled "INFORMATION: Crash Tested Work Zone Traffic Control Devices." This recent memorandum lists devices that are acceptable under Categories I, II, and III. Your company's devices are classified as Category II.

Enclosure 1 is a list enumerating the various devices for which you are requesting acceptance. Enclosure 2 consists of drawings of each of these devices, and Enclosure 3 summarizes the crash tests conducted. Systems you had tested included 626-mm wide Type I plastic barricades with warning lights on top, 318-mm wide Type I plastic barricades (similar to "vertical panels), a low density polyethylene "1500 series" drum with a warning light on top, and a number of different portable sign stands of aluminum and fiberglass construction. Details of the sign stands are in the attachments.

Full-scale automobile testing was conducted on your company's barricades, lighted drum, and portable sign supports. Early on, two examples of each device were tested in tandem, one head-on and the next at 90 degrees, as called for in our guidance memoranda. Repeated testing of

portable sign stands showed that the second device struck did not show any more potential to penetrate the occupant compartment or to cause the vehicle to go out of control. Later tests were, therefore, conducted with two different devices being struck in tandem. Because the devices are free-standing and have a mass such that significant vehicle velocity change was not expected, measurement of occupant impact velocities and ridedown accelerations were not conducted. The primary purpose of the tests was to assess the potential for occupant compartment intrusion and the test vehicle's post-impact trajectory.

The following devices were tested with successful results:

(Systems 5 and 6) Model numbers DL1003W. A rigid mounted portable sign support with a 1219-mm square vinyl sign mounted at a height of 356 mm and three wood-staffed flags mounted at 2076 mm.

(System 12) Model numbers DF3330. A double-torsion spring mounted sign support with a 1219-mm square vinyl sign mounted at 337 mm with three wood-staffed flags at 2057 mm.

(System 13) Model number DF3000S. A double torsion spring mounted sign support with a 1218-mm square vinyl sign mounted at 352 mm and with two woos-staffed flags mounted at 2073-mm.

(System 15) Model number DF3003W. A double-torsion spring mounted sign support with a 1218-mm square vinyl sign at 356-mm and three wood-staffed flags at 2070 mm.

(System 19) Model number DF3003S. A double-torsion spring mounted sign support with a 1210-mm x 1219-mm vinyl sign at 340-mm and two wood-staffed flags at 2045 mm.

(System 24) Model number DF3000WQ. A double-torsion spring mounted sign support with a 1216-mm x 1219-mm vinyl sign mounted at 368 mm and with two fiberglass-staffed flags at 2083 mm.

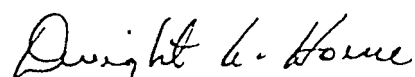
(System 26) Model number DL1003WQ. A rigid mounted portable sign support with a 1210-mm x 1219-mm vinyl sign at 394-mm and with two fiberglass-staffed flags mounted at 2108-mm.

During the tests the most extensive windshield damage (for the specific devices you are requesting acceptance for) was minor cracking. There was no occupant compartment intrusion or deformation observed, nor did any test article debris show potential for penetrating the occupant compartment. The results of this testing met the FHWA requirements and, therefore, the devices listed in Enclosure 1 are acceptable for use on the National Highway System under the range of conditions tested, when proposed by a state. The barricades and drum are acceptable with the warning lights as tested, and the portable sign stands are acceptable with the flag/poles systems they were tested with.

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. Presumably, you will supply potential users with sufficient information on design and installation requirements to ensure proper performance. We anticipate that the States will require certification from Dicke Tool Company that the hardware furnished has essentially the same chemistry, mechanical properties, and geometry as those which were tested and submitted for acceptance. To prevent misunderstanding by others, this letter of acceptance, designated as number WZ-17, shall not be reproduced except in full including Enclosure 1.

Your traffic control devices may be patented products or contain patented features. If so, they would be considered "proprietary." The use of proprietary work zone traffic control devices in Federal-aid projects is generally of a temporary nature. They are selected by the contractor for use as needed and removed upon completion of the project. Under such conditions they can be presumed to meet requirement "a" given below for the use of proprietary products on Federal-aid projects. On the other hand, if proprietary devices are specified for use on Federal-aid projects, except exempt, non-NHS projects, they: (a) must be supplied through competitive bidding with equally suitable unpatented items; (b) the highway agency must certify that they are essential for synchronization with existing highway facilities or that no equally suitable alternative 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 may be found as Enclosure 4.

Sincerely yours,

A handwritten signature in cursive script that reads "Dwight A. Horne".

Dwight A. Horne
Director, Office of Highway Safety Infrastructure

Enclosure