WZ-23

U.S.Department
of Transportation
Federal Highway
Administration

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

October 26, 1999

Refer to: HMHS

Mr. Henry A. Ross
Vice President
WLI Industries, Inc.
880 North Addison Road
Villa Park, IL 60181-7050

Dear Mr. Ross:

Thank you for your July 27, 1999, letter requesting Federal Highway Administration's (FHWA) acceptance of the "WLI Industries' High Level Work Zone Sign System with Plasticore Sign Substrate" as a crashworthy traffic control device for use in work zones on the National Highway System. Accompanying your letter was a copy of the crash test report by E-TECH Testing Services, Inc., and video documentation of the crash tests. You requested that we find the tested device acceptable for use on the National Highway System under the provisions of the National Cooperative Highway Research Program Report 350 "Recommended Procedures for the Safety Performance Evaluation of Highway Features."

The 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, 1999, 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.

The sign support system is an all-plastic, lightweight, high-mounting portable sign support system. The support framework is made up of 44-mm square PVC extrusions joined together with special plastic "T" couplers and 1 O-mm nylon fasteners. The upright portion of the framework slips into couplers on the support legs and is held in position by diagonal braces. The sign substrate consists of 10 mm thick Plasticor, an unfilled polypropylene copolymer corrugated plastic sheeting material. The test article mass, including sign, was 21 kg. Each sign support was ballasted with eight 18-kg sand bags which were evenly distributed on the support legs of the frame. No lights or flags were used. Drawings of the sign supports and material specifications are enclosed for reference. The crash test is summarized in the table below.

Test Number	Test 05-4652-001 (NCHRP 350 Test 3-71)
Test Article Mass (each)	21 kg
Ballast Used (each)	144 kg
Auxiliary Devices (lights, flags)	None
Sign Mounting Height	2160 mm to bottom, 3885 mm to top
Vehicle Test Inertial Mass	823 kg
Vehicle Impact Speed, Head – on	99.7 km/h
Vehicle Impact Speed, 90 - degrees	95.7 km/h
Velocity Change after 1st impact	2 km/h or 0.6 m/s

Full-scale automobile testing was conducted on your company's portable sign supports. Two examples of the device were tested in tandem, one head-on and the next at 90 degrees, as called for in our guidance memoranda. During the tests the most extensive windshield damage 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 "WLI Industries' High Level Work Zone Sign System with Plasticore Sign Substrate" with a mounting height of 2100 mm (7 feet) is acceptable for use on the National Highway System under the range of conditions tested, when proposed by a State.

Our acceptance is limited to the crashworthiness characteristics of the device and does not cover its 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 WLI Industries, Inc., that the hardware furnished has essentially the same chemistry, mechanical properties, and geometry as that submitted for acceptance. To prevent misunderstanding by others, this letter of acceptance, designated as number WZ-23, shall not be reproduced except in full.

The "WLI Industries' High Level Work Zone Sign System with Plasticore Sign Substrate" is a patented product and is 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 is enclosed.

Sincerely yours,

Dwight A. Home

Dwight A. Home
Director, Office of Highway Safety
Infrastructure

2 Enclosures

FHWA:HMHS-10:NAtimovich:jb:61795:10/26/99
cc: Reader - HMHS-I, Chron - Rm 3407
N. Artimovich - HMHS-IO

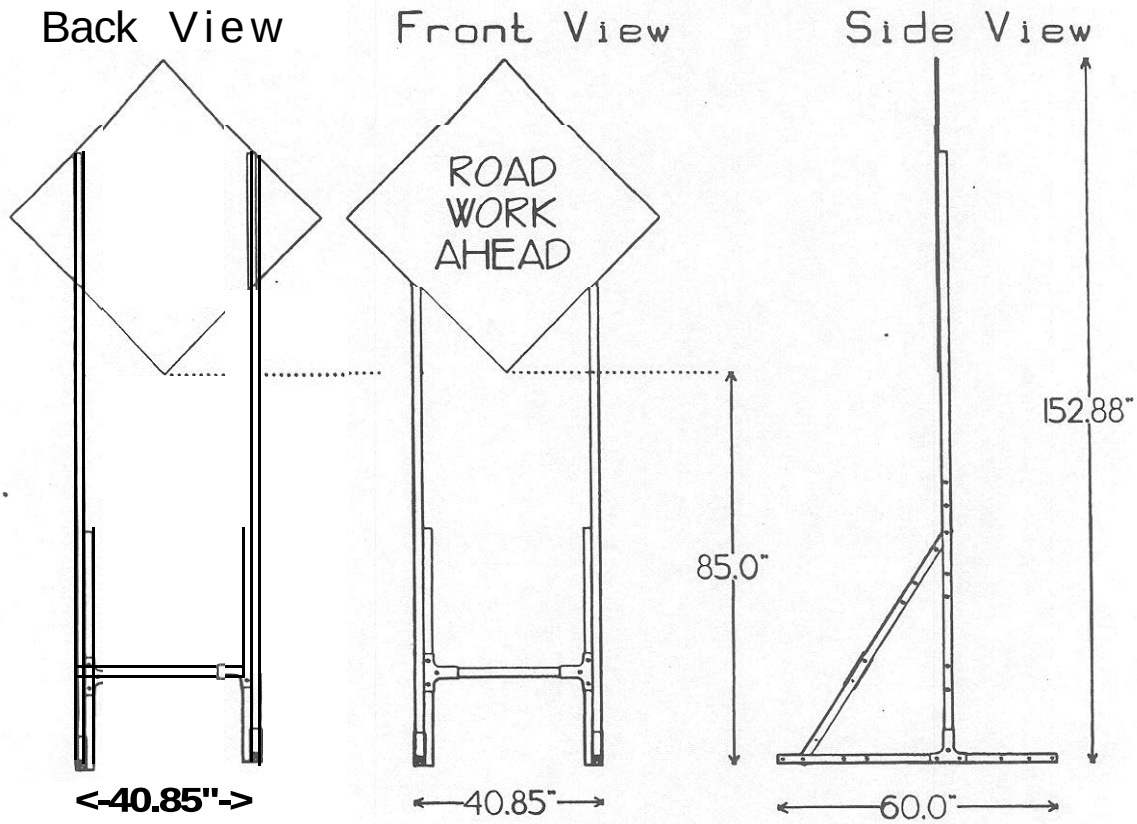

Illustration C-2. WLI High-Level Work Zone Sign System Dimensions (1 of 1)