

November 7, 2003

Refer to: HSA-10/WZ-119

Mr. Richard M. Heinz  
Endless Visions, Incorporated  
124 McAllister  
Rushville, Illinois 62681

Dear Mr. Heinz:

Thank you for your letter of October 20, 2003, requesting Federal Highway Administration (FHWA) acceptance of your company's J-4 Flagger's Workstation as a crashworthy traffic control device for use in work zones on the National Highway System (NHS). Accompanying your letter was a report of crash testing conducted by the Texas Transportation Institute and a video of the tests. You requested that we find these devices acceptable for use on the NHS under the provisions of National Cooperative Highway Research Program (NCHRP) Report 350 "Recommended Procedures for the Safety Performance Evaluation of Highway Features."

#### **Introduction**

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 are those lightweight devices which are to be self-certified by the vendor, Category II devices are other lightweight devices which need individual crash testing but with reduced instrumentation, Category III devices are barriers and other fixed or heavy devices also needing crash testing with normal instrumentation, and Category IV devices are trailer mounted lighted signs, arrow panels, etc. for which crash testing requirements have not yet been established. The second guidance memorandum was issued on August 28, 1998, and is titled "INFORMATION: Crash Tested Work Zone Traffic Control Devices." This later memorandum lists devices that are acceptable under Categories I, II, and III.

A brief description of the devices follows:

The J-4 Flagger's Workstation is a Category III portable work zone traffic control device. It is remotely operated by the flagger who is standing in a safer location off of the traveled way. The device consists of a 12-volt battery pack, motor system, push bar handle, 180 degree rotating fiberglass telescopic pole supporting a dual face sign supported by a small steel frame. The portable device is supported by four retractable outriggers when in use and caster wheels when moving from site to site. The outriggers are approximately 1030 mm by 1090 mm in the plan. The device is operated using a control box mounted on a 7.62-m extension cord. The overall height of the device was approximately 3.5 meters, and it weights approximately 93 kg. Details of the workstation are shown in the enclosed drawings for reference.

### Testing

Full-scale automobile testing was conducted on the workstation. Two stand-alone examples of the device were tested in separate tests, one head-on and another turned at 90 degrees. The crash tests are summarized in the table below:

Test Number	400001-FFR1	400001-FFR2
Test Article	J4 Head On	J4 90 Degrees
Height to Bottom of Sign	2140 mm minimum	
Height to Top of Sign	3075 mm	
Flags or lights	Strobe light assembly above STOP/SLOW sign	
Test Article Mass (each)	93 kg	
Vehicle Inertial Mass	820 kg	820 kg
Impact Speed	99.2 km/hr	99.8 km/hr
Velocity Change	3.4 m/s	3.5 m/s
Occupant Impact Speed	2.8 m/s	2.9 m/s
Vehicle crush	50 mm crush	100 mm crush
Occupant Compart. Intrusion	8 mm floor pan deformation	None
Windshield Damage	No Contact	No Contact

### Findings

Damage was limited to the front right corner of the test vehicle in the head-on impact with a very minor amount of floor pan deformation toward the occupants. The vehicle sustained moderate damage to the right front corner with a maximum exterior crush of 100 mm in the 90 degree impact. No deformation or intrusion into the passenger compartment resulted from the test. The results of the testing met the FHWA requirements and, therefore, the devices described above and shown in the enclosed drawings for reference are acceptable for use on the NHS under the range of conditions tested, when proposed by a State. The 12 inch diameter reel for storing the communication cable, as described and illustrated in your email messages of October 29, will be acceptable without additional crash testing.

Please note the following standard provisions that 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 device being marketed is significantly different from the version that was crash tested, 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 hardware furnished has essentially the same chemistry, mechanical properties, and geometry as that submitted for acceptance, and that they will meet the crashworthiness requirements of FHWA and NCHRP Report 350.
- To prevent misunderstanding by others, this letter of acceptance, designated as number WZ-119 shall not be reproduced except in full. This letter, and the test documentation upon which this letter is based, is public information. All such letters and documentation may be reviewed at our office upon request.
- The J4 Flagger Workstation is a patented device 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 by a highway agency* for use on Federal-aid 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. These provisions do not apply to exempt Non-NHS projects. Our regulations concerning proprietary products are contained in Title 23, Code of Federal Regulations, Section 635.411, a copy of which is enclosed.
- This acceptance letter shall not be construed as authorization or consent by the FHWA to use, manufacture, or sell any patented device. Patent issues are to be resolved by the applicant and the patent owner.

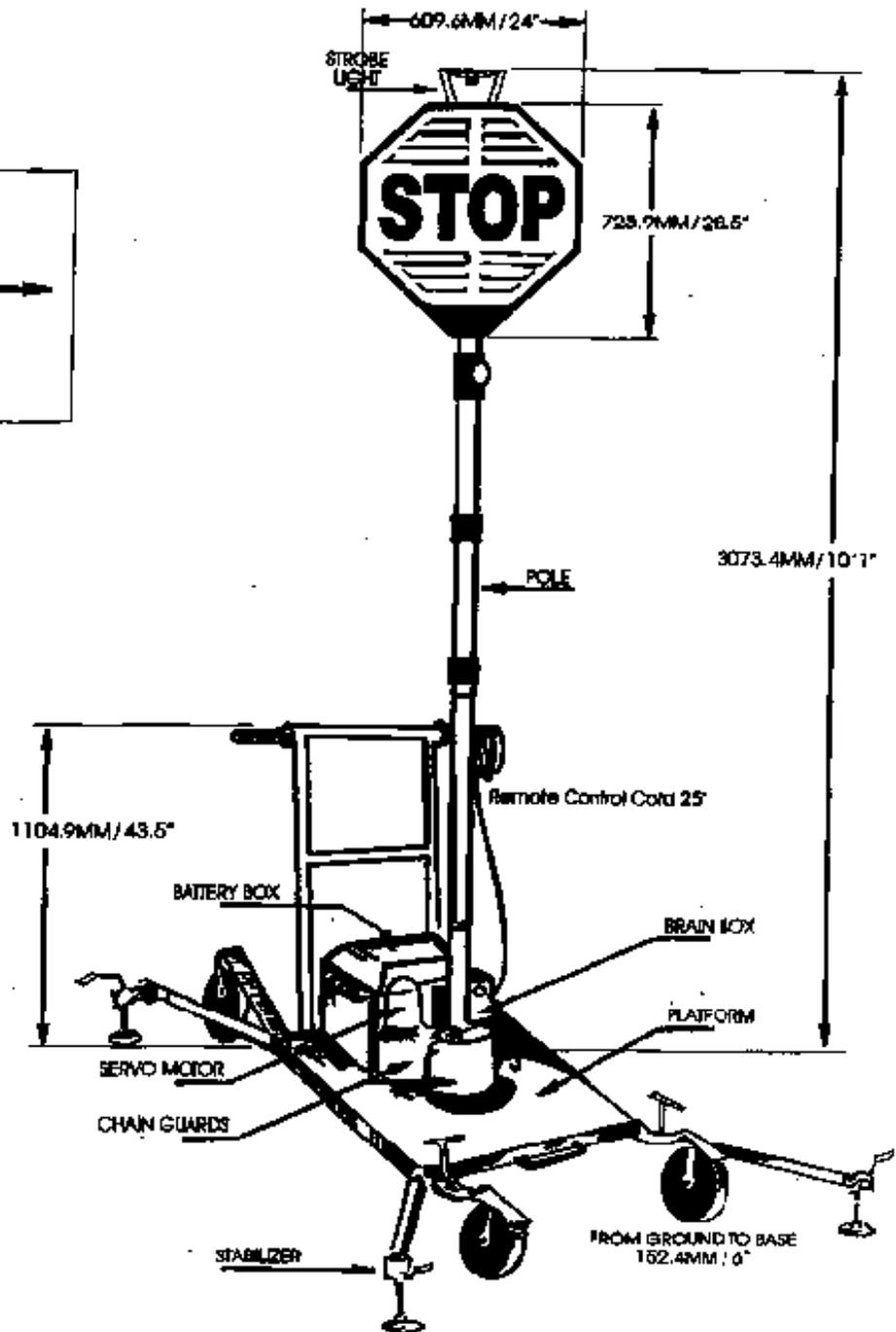
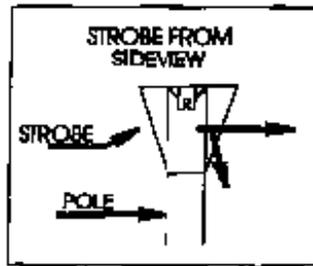
Sincerely yours,

*/Original Signed By/*

John R. Baxter, P.E.  
Director, Office of Safety Design  
Office of Safety

Enclosure

# J4 FLAGGER'S WORKSTATION



**Sec. 635.411 Material or product selection.**

(a) Federal funds shall not participate, directly or indirectly, in payment for any premium or royalty on any patented or proprietary material, specification, or process specifically set forth in the plans and specifications for a project, unless:

(1) Such patented or proprietary item is purchased or obtained through competitive bidding with equally suitable unpatented items; or

(2) The State highway agency certifies either that such patented or proprietary item is essential for synchronization with existing highway facilities, or that no equally suitable alternate exists; or

(3) Such patented or proprietary item is used for research or for a distinctive type of construction on relatively short sections of road for experimental purposes.

(b) When there is available for purchase more than one nonpatented, nonproprietary material, semifinished or finished article or product that will fulfill the requirements for an item of work of a project and these available materials or products are judged to be of satisfactory quality and equally acceptable on the basis of engineering analysis and the anticipated prices for the related item(s) of work are estimated to be approximately the same, the PS&E for the project shall either contain or include by reference the specifications for each such material or product that is considered acceptable for incorporation in the work. If the State highway agency wishes to substitute some other acceptable material or product for the material or product designated by the successful bidder or bid as the lowest alternate, and such substitution results in an increase in costs, there will not be Federal-aid participation in any increase in costs.

(c) A State highway agency may require a specific material or product when there are other acceptable materials and products, when such specific choice is approved by the Division Administrator as being in the public interest. When the Division Administrator's approval is not obtained, the item will be nonparticipating unless bidding procedures are used that establish the unit price of each acceptable alternative. In this case Federal-aid participation will be based on the lowest price so established.

(d) Appendix A sets forth the FHWA requirements regarding (1) the specification of alternative types of culvert pipes, and (2) the number and types of such alternatives which must be set forth in the specifications for various types of drainage installations.

(e) Reference in specifications and on plans to single trade name materials will not be approved on Federal-aid contracts.