

Refer to: HSA-10/SS-112

Mr. Larry Mims  
K & K Systems  
699 Palmetto Road  
Tupelo, Mississippi 38801-7662

Dear Mr. Mims:

Thank you for your facsimile messages dated June 26, July 11 and August 7, 2002, requesting Federal Highway Administration (FHWA) acceptance of variations to your company's flashing light warning apparatus as breakaway systems for use on the National Highway System (NHS). Accompanying your letter were drawings and descriptions of the proposed modifications. You requested that we find the devices described below, and illustrated in the enclosures for reference, 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**

Testing of the supports was originally conducted at the Southwest Research Institute and found acceptable in FHWA Letter SS-90 dated August 18, 2000. Testing was in compliance with the guidelines contained in the National Cooperative Highway Research Program (NCHRP) Report 350, Recommended Procedures for the Safety Performance Evaluation of Highway Features. 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.

The original crash testing was conducted on single, four pound-per-foot u-channel posts mounted on two-bolt slip bases. The weight of the system was 192 pounds. Your current requests are for two variations:

### **June 26 Request**

This request is to allow K&K Systems warning apparatus to be attached to spun aluminum poles, 4 inch diameter, mounted on cast aluminum breakaway transformer bases supplied by Akron Foundry, Model # TS-1000 (FHWA Acceptance Letter LS-47 dated November 19, 1997.) All equipment mounted to the pole will be placed at a height of 7 feet or higher.

**July 11 Request**

This request is to permit retrofit of existing warning signs in work zones with K&K Systems warning apparatus. The u-channel posts would use Marion Steel u-channel posts with the Lap Splice breakaway system. All equipment would be mounted higher than the seven foot bottom of the sign. The “B Light” system would be mounted using three threaded 5/16 inch x 2 ½ inch grade 8 plated hex bolts with flat washer and hex nuts, per post.

**Findings**

The crash testing conducted earlier showed very good performance for the u-channel mounted warning light system. We would expect very similar behavior for the system mounted on the aluminum pole and breakaway transformer base as long as the fastener hardware is equal or superior to that used in the crash test.

The performance of the u-channel system should also be acceptable manner, however, its performance may show more contact with the hood, windshield, and/or roof of an impacting vehicle due to the nature of u-channel posts with the lap splice than is seen with the two-bolt slip base. Because we are confident that the occupant impact speed will be within acceptable limits we find this system acceptable for retrofitting existing warning sign installations.

Because the results of testing met the FHWA requirements and the proposed modifications are not expected to cause significantly different behavior, the devices described above and shown in the enclosed drawings for reference are acceptable for use as Test Level 3 devices on the NHS under the range of conditions tested, when proposed by a State.

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 SS-112 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.
- K&K Systems warning systems are or will be patented products and are considered "proprietary." The use of proprietary devices specified on Federal-aid projects, except exempt, non-NHS projects: (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,

Carol H. Jacoby, P.E.  
Director, Office of Safety Design

Enclosure

# K and K Systems, Inc.

699 Palmetto Road  
TUPELO, MS 38801

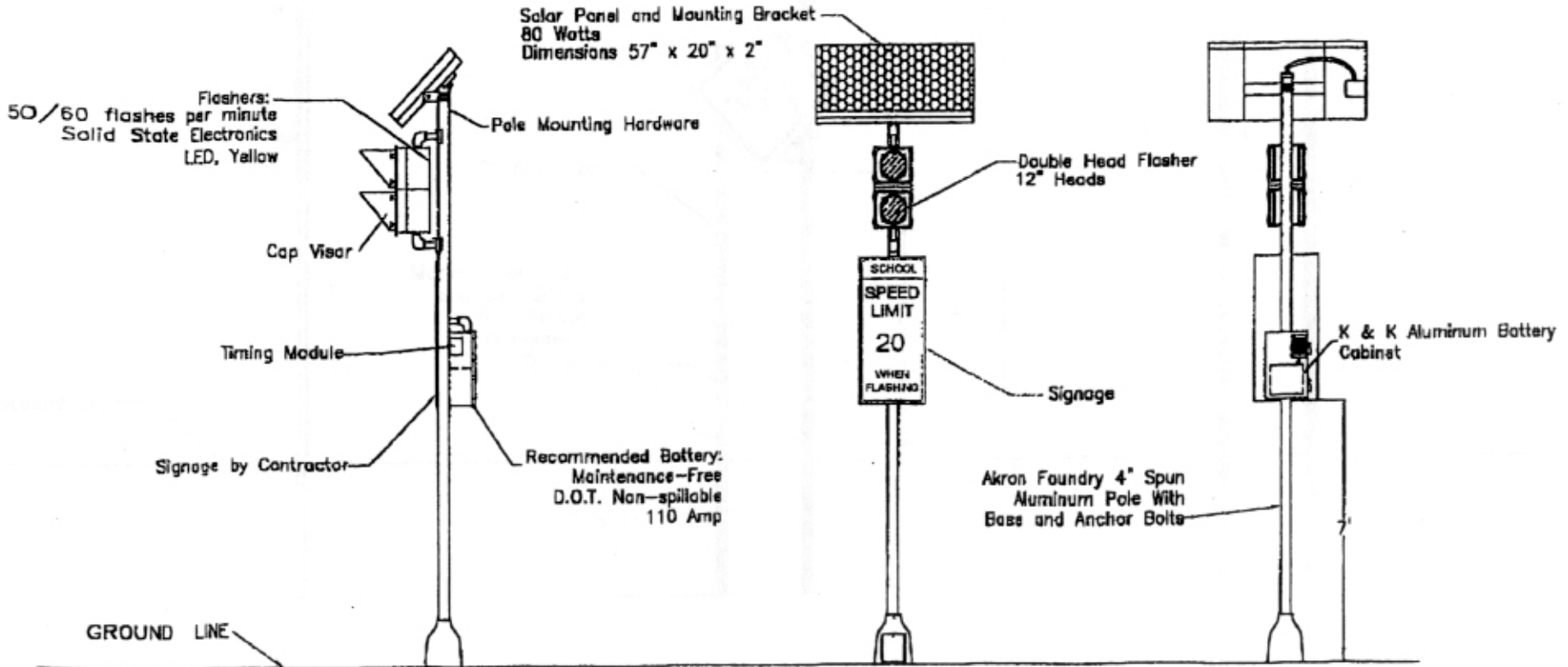
(862)566-2025  
FAX (862)566-7123  
T/F 1-888-414-3003  
www.k-k-systems.com

## FEATURES

SOLAR POWER  
SELF CONTAINED  
SYSTEM FLEXIBILITY  
MEETS MUTCD AND ITE STANDARDS  
EASY FIELD INSTALLATION  
NO GRID POWER NEEDED  
NO TRENCHING  
TEMPORARY/PERMANENT

## BENEFITS

NO ELECTRIC COST  
REDUCES WORKLOAD  
BUILT TO STATES STANDARDS  
ACCIDENT REDUCTION  
REDUCES LABOR COST  
LOCATION FLEXIBILITY  
REDUCES LABOR COST  
FUTURE COST REDUCTION.



Model CTR 112

