

Refer to: HSA-10/SS-109

Mr. Laurence Green
Prairie Proto Products
P.O. Box 155
100 Main Street
Gildford, Montana 59525

Dear Mr. Green:

Thank you for your submittal of May 8, 2002 and your letter of July 9, 2002, requesting Federal Highway Administration (FHWA) acceptance of your company's swing-away mailbox support and delineators as breakaway systems for use on the National Highway System (NHS). Accompanying your letter was a report from Texas Transportation Institute and videos of the mailbox crash tests. You requested that we find the Swing-A-Way Mailbox and the swinging delineator designs 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 mailbox supports was in compliance with the guidelines for small sign supports contained in the 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 devices are described below:

Swing-A-Way Mailbox

The support is a 72-inch long 4x4 inch wood post embedded 30 inches into the soil. A steel hinge mechanism is bolted to the post, and a diagonal arm extends towards the roadway to support two mailboxes at a height of 39.5 inches above the pavement. The mailboxes were "1-A Standard" boxes. A vertical deflector bar extends down from the end of the arm at a distance of 56 inches from the wood post support. The intent of the deflector bar is to catch the bumper of an impacting vehicle and prevent the mailboxes from damaging the windshield.

Swing-A-Way Delineator

You submitted information on two variations of a delineator system that featured a 4x4 inch galvanized steel panel with retroreflective material affixed to it. The steel panel had a 2.5 inch wide extension that was bent around a horizontal carriage bolt. The bolt was affixed to a breakaway u-channel sign support in one system, and an angled round steel rod in the second system.

Testing

Full-scale automobile testing was conducted on your company's mailbox support. The mass of the test vehicle was 820 kg in all tests. The complete devices as tested are shown in the Enclosures.

Test #	#1	#2
Test Article Mass	Not recorded	Not recorded
Soil	strong (Standard)	strong (Standard)
Impact point of test vehicle centerline	Post	Mailboxes
Vehicle Mass	369 kg (1850 pounds)	369 kg (1850 pounds)
Impact Speed	34.8 km / hr (21.6 mph)	99.8 km/hr (62.0 mph)
Vehicle velocity change	1.0 m/s	2.7 m/s
Occupant Impact Speed	0.4 m/s (1.5 fps)	None
Windshield Damage	No contact	No contact
Stub Height	None	None
Occupant Compartment Intrusion.	None	None
Vehicle Damage	Dents to bumper and body	Dents to bumper, hood, body

Findings

Damage to the test vehicle resulting from the mailbox tests was limited to dents in the bumper and hood, with scraped paint on the side. There was no windshield contact during either test. Velocity changes were all within acceptable limits, and the only stub remaining consisted of wood splinters. The results of testing met the FHWA requirements and, therefore, 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.

The swinging delineator systems were not crash tested. The delineator attached to the u-channel post does not adversely affect the performance of the breakaway post. Therefore, it is also considered acceptable for use on the NHS. The swinging delineator attached to the angled round steel rod would also be acceptable if it is attached to a support that, in itself, is breakaway such as a 4x4 wood post. However, in the July 31 letter that the Director of the FHWA Office of Transportation Operations wrote to you, Shelly Row noted that certain aspects of your Swing-A-Way delineators do not conform to the Manual on Uniform Traffic Control Devices (MUTCD).

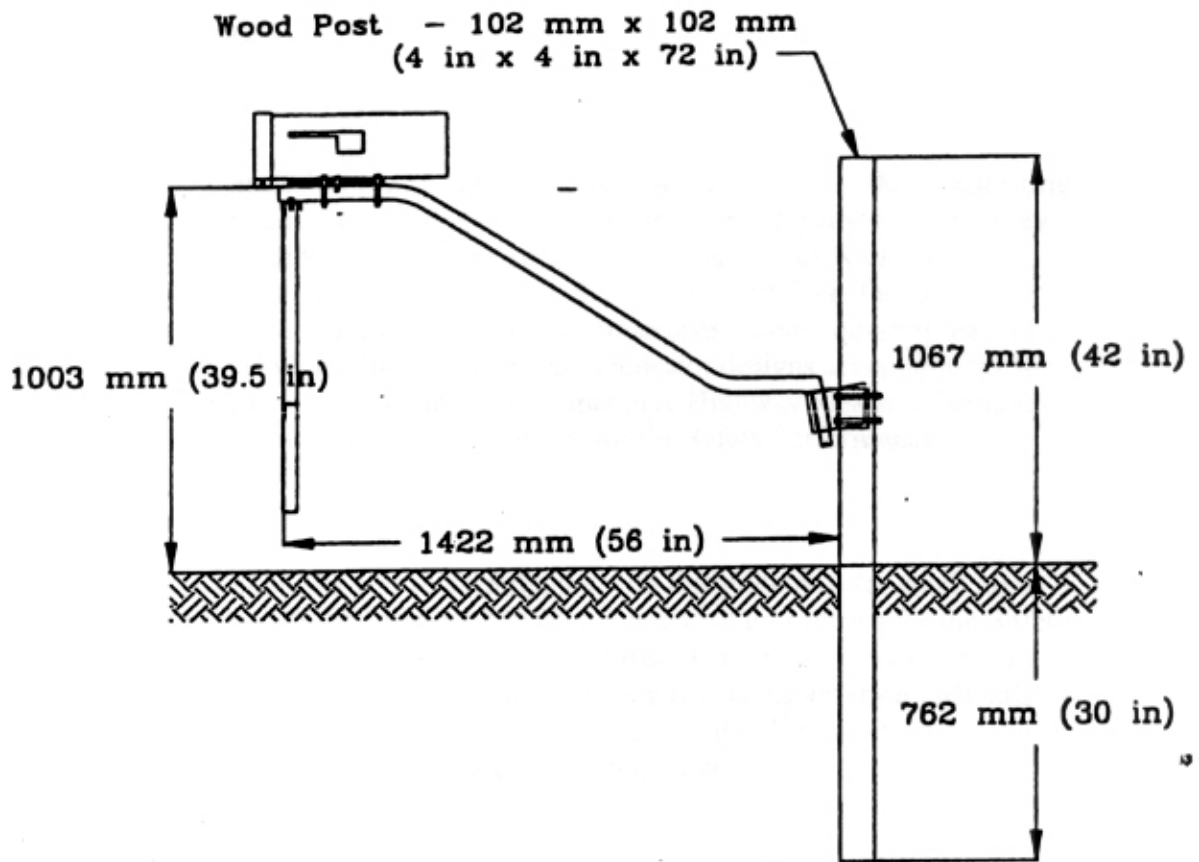
Jurisdictions that wish to use your delineator system on an experimental basis should request approval from the FHWA as noted in Ms Row's letter.

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 MUTCD.
- 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-109 shall not be reproduced except in full. As this letter and the documentation which support it become public information, it will be available for inspection at our office by interested parties.
- The "Proto Prairie Products Swing-A-Way Mailbox" is a patented product and is 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



1 ft = 0.305 m
1 in = 25.4 mm

Figure 1. Schematic of Roadside Safety Devices Swing-Away Mailbox Support Design.