



Memorandum

Subject: **ACTION:** Information on Guardrail
Terminals

Date: MAY - 3 2017

From: Elizabeth Alicandri
Associate Administrator, Office of Safety
Washington DC

Michael S. Fairfield
for

In Reply Refer To:
HSA-1

To: Division Administrators
Directors of Field Services

Summary

You may be aware that we have received a request to re-examine the FHWA Federal Aid eligibility letter on Lindsay's X-LITE guardrail terminal. We are coordinating with your offices and States to collect more data and information to further assess the in service performance of roadside hardware, including the X-LITE.

Purpose

The purpose of this memorandum is to share with you a summary of information recently collected from the States, inform you of the current status of the X-LITE in terms of the FHWA eligibility letter, and request your assistance with follow-up actions. We ask that you share this information with your state partners as we in Headquarters plan to send similar information to the State DOT CEOs and to discuss it at the next American Association of State Highway and Transportation Officials' (AASHTO's) Standing Committee on Highways meeting in May 2017.

Summary of Information Collection and Review

As you know, FHWA issues Federal aid reimbursement eligibility letters on roadside safety devices based on accredited laboratory crash test results. As a first step in response to the requests to review information on the X-LITE, an FHWA expert who had not previously been involved in reviewing the X-LITE testing results examined the original applications and related materials for the Lindsay X-LITE guardrail terminal. That analysis confirmed that the original laboratory crash testing for the device was performed in accordance with the National Cooperative Highway Research Program 350 Report guidance, the criteria for crashworthiness testing at the time the device was found eligible for reimbursement. The expert found no notable concerns with the original crash test report.

We have also examined the most rigorous in-service data that we have to date -- the preliminary results of a pilot In-Service Performance Evaluation. Under the pilot, FHWA and the four states (MO, CA, MA and PA) are evaluating 9 energy absorbing guardrail terminals, including the Lindsay X-LITE. In considering the 200-plus crashes, the ratio of Fatality + Serious Injury per total crashes does not lead to any conclusions that any of the devices, including the Lindsay X-LITE, are unsafe. This finding does not replace the in-service experiences that SDOTs can contribute.

As a third step, and because SDOT information on in-service performance is so important, on April 11th, I sent an email to all FHWA Division Administrators asking for input on the States' usage of and experience with a particular guardrail terminal -- the Lindsay X-LITE. We appreciate your responses, and understand that in some cases the numbers you provided were estimates.

Results from SDOT Information:

We received baseline information on the X-LITE from all 52 States (including DC and PR) and have determined that, nationwide, although 33 States have the XLITE on their qualified products list, only 29 States have the device installed on state-owned roadways. With a total of about 14,000 devices nationwide, over 80 percent of the X-LITE Devices are found in 7 States (WV, MA, TN, MD, TX, NC and VA).

Additionally, six States reported that they have removed the X-LITE from their Qualified Product List (QPL): (GA, MO, OR, TN, VA, and AZ). States that shared a reason for removing the device from the QPL indicated they were moving to devices that are compliant with AASHTO's Manual for Assessing Safety Hardware (MASH). Five States indicated they are in the process of gathering information on the X-LITE and three States expressed some concerns with the device, including constructability challenges and overall quality concerns.

To conclude our review and to ensure that engage all State DOTs on this issue, we request your assistance with the following actions:

1. Share this memorandum with your State partners immediately and reinforce the importance of this safety-related issue. In your communication with the State DOT, please inform them that our Acting FHWA Deputy Administrator is sending a similar letter to their Chief Executive Officer.
2. Engage the SDOT to ascertain if they have and/or plan to collect and analyze ISPE information on roadside hardware. Report information back to my office by May 19, 2017.
3. Ask the State DOT to formally share with us any in-service concerns they have with particular roadside hardware. We have already posted a letter we received from Tennessee on the website in the attachment, and we will post others as they are received. Lacking formal ISPEs, this will serve as an initial clearinghouse for In-Service Performance Information that States can use when making their decision on roadside safety hardware.
4. Work with the SDOT to conduct an analysis of their installation and maintenance practices, and report back your findings by May 19, 2017.

5. Share feedback either directly with my office and/or through the Division Administrators Advisory Group on Safety. If FHWA can do more to assist, we want to hear about it.
6. Encourage States to leverage current and future training and technical assistance opportunities highlighted in the enclosure. Discuss their possible interest in a pooled fund, central clearinghouse, and/or other arrangement that may serve as a resource on ISPEs or other roadside hardware safety issues.

Please send your responses and/or feedback to Menna Yassin, 202-366-2833, menna.yassin@dot.gov.

In the attachment, I have provided additional information including:

- the importance receiving of In-Service Performance Information from the States;
- the importance of rigor in hardware installation and maintenance; and
- the link to a new resource for relevant resources and information

Thank you for your attention to this important matter. I look forward to continuing our dialogue to make our roads safer.

Enclosure

Need for In-Service Performance Information

Determining the initial crashworthiness of roadside hardware begins with rigorous laboratory testing, using very specific vehicles, installations, impact speeds and angles. This controlled testing provides industry, accredited laboratories and public agencies with a minimum level of assurance that the devices meet a basic standard of crashworthiness, as defined by AASHTO's MASH. However, all parties know the standard, idealized laboratory crash test conditions cannot capture how a device performs in the vast array of real-world collisions. For these reasons, FHWA and AASHTO encourage the owners and operators of the highways to collect and assess ISPE data of roadside hardware and take appropriate action thereafter, if needed.

We cannot overemphasize the importance of the ISPE. In 1993, the National Cooperative Highway Research Program (NCHRP) Report 350, *Recommended Procedures for the Safety Performance Evaluation of Highway Features*, was published and included a chapter dedicated to ISPE. A subsequent NCHRP Report 490, *In-Service Performance of Traffic Barriers*, was published in 2002 and provides detailed instructions and tools for conducting ISPEs. Similarly, AASHTO's MASH initially distributed in 2007, and updated in 2016, communicates the importance of ensuring roadside hardware devices are functioning properly in real world conditions. Finally, an AASHTO-FHWA task force published a report in 2015 on *Guardrail Terminal Crash Analysis*. This document recommended ISPEs be performed at the national and state level and suggested that public agencies carefully document guardrail crashes.

In addition to the 4 State Pilot ISPE targeted for completion in 2019, FHWA can and will provide new information to States on ISPEs in the next quarter. We plan to develop and deliver webinars and tools that support a range of State efforts in collecting and assessing ISPE data.

Importance of Rigor in Hardware Installation and Maintenance

The technical documents cited above, and fact that ISPEs are an important piece of our information stream, highlight the importance of proper installation and maintenance of devices. FHWA has, and will continue to, provide technical support to local, State, Federal and tribal organizations that own and are ultimately responsible for the installation, maintenance, and inspection of roadside hardware.

Since 2010, FHWA had made available State-specific training on roadside hardware design, inspection, and maintenance. My office issued a memorandum in November 2016 on guardrail terminal installations and repairs and requested that you share this information with your State partners.

To date, we have conducted training in 15 states. In the Fixing America's Surface Transportation (FAST) Act (Sec 1417), we received additional funds to expand guardrail safety training. New, state tailored training will be made available beginning with two initial offerings in the 4th quarter followed by an aggressive delivery schedule in FY18. We anticipate a total of 23 States will receive the individualized, classroom training by the end of 2019. In addition, these FAST Act funds will support the development and distribution of other technical assistance materials supporting guardrail inspection, maintenance, and installation.

Resources

In an effort to promote States' collection and analysis of ISPE information and use of guardrail system installation and maintenance training opportunities and resources, please direct our stakeholders to

https://safety.fhwa.dot.gov/roadway_dept/countermeasures/reduce_crash_severity/guardrail_ispe.cfm.

Information on that site includes, but is not limited to:

- NCHRP Reports on conducting ISPEs;
- Current data/information from the four state Pilot ISPE;
- Guardrail installation and maintenance training opportunities
 - webinars, technical briefs, inspection checklists; technical assistance products and services from FHWA's Office of Technical Services)
- Information from State DOTs on in-service performance information