



U.S. Department  
of Transportation  
**Federal Highway  
Administration**

Office of the Administrator

1200 New Jersey Ave., SE  
Washington, D.C. 20590

May 3, 2017

In Reply Refer To:  
HSA-1

Mr, Charles A. Kilpatrick  
Commissioner  
Virginia Department of Transportation  
1401 East Broad Street  
Richmond, VA 23219

Dear Commissioner Kilpatrick:

On April 11th, we asked our Federal-aid Division Offices to gather information on the States' usage of and experience with a particular guardrail terminal – the Lindsay X-LITE. This effort began after a congressional request was made, on behalf of a constituent, for us to analyze the performance of the X-LITE. In addition to sharing information with you about the Lindsay X-LITE terminal, the purpose of my letter is threefold, namely, to 1) encourage you to aggressively address the need for correct installation and maintenance of roadside hardware; 2) ask you to begin (or continue) to conduct in-service performance evaluations (ISPE); and 3) encourage you to gather and document information on in-service performance on roadside hardware and share the results with the Federal Highway Administration (FHWA).

With regard to the X-LITE, FHWA has re-examined the original crash test information and continues to collect and review state-based information provided by FHWA division offices and others, as we consider next steps and assess the continued federal aid reimbursement eligibility of the X-LITE.

As you are well aware, determining the initial crashworthiness of roadside hardware begins with rigorous laboratory testing, using very specific vehicles, installations, impact speeds and angles, to establish a minimum, basic standard of crashworthiness, as defined by the American Association of State Highway and Transportation Officials' (AASHTO) Manual on Assessing Safety Hardware (MASH). Correctly installing and maintaining roadside hardware is another critical responsibility. We stand ready to provide technical support to local, State, Federal, and tribal organizations that own and are ultimately responsible for the installation, maintenance, and inspection of hardware. We also know you take advantage of training and information from manufacturers.

Once these devices are identified as crashworthy and properly installed, we need to capture how a device performs in the vast array of real-world collisions. For these reasons, we strongly encourage the States to collect and assess ISPE data of roadside hardware and take appropriate action as needed. Owners and operators of roadways are the only entities in the position, as selectors of hardware, with complete access to crash data, maintenance information and other critical elements, to perform adequate in-service performance evaluations. We encourage you to

share your findings with FHWA, as Tennessee did recently, (see enclosure) and we will post in-service performance information so all States can benefit and make better decisions about maintaining roadside hardware safety devices on your Qualified Products List.

Finally, we ask your assistance with the following actions:

1. Work with your FHWA Division Office to develop a plan to collect and analyze ISPE information on roadside hardware, including analysis of installation and maintenance practices.
2. Take advantage of current and future training and technical assistance opportunities highlighted in the enclosure.
3. Consider participating in a pooled fund, central clearinghouse, and/or other arrangement that may serve as a resource on ISPEs or other roadside hardware safety issues.

We have provided more detailed information, including resources and a new Web site link, to our Division Offices who will be contacting your State engineers.

We understand that a discussion of roadside hardware is part of the agenda for the AASHTO Standing Committee on Highways meeting in May and we look forward to continued discussions on this issue. If you have any questions, please feel free to contact Elizabeth Alicandri, Associate Administrator, Office of Safety, at 202-366-6409 or me.

Sincerely yours,

A handwritten signature in blue ink, appearing to read "W. Waidelich, Jr.", written in a cursive style.

Walter C. Waidelich, Jr.  
Acting Deputy Administrator

Enclosure



**STATE OF TENNESSEE  
DEPARTMENT OF TRANSPORTATION**

COMMISSIONER'S OFFICE  
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JOHN C. SCHROER  
COMMISSIONER

BILL HASLAM  
GOVERNOR

April 4, 2017

Ms. Pamela K. Kordenbrock  
Division Administrator  
Federal Highway Administration-Tennessee  
404 BNA Drive, Suite 508  
Nashville, Tennessee 37217

Re: Lindsey Transportation Solutions  
X-Lite End Terminal

Dear Ms. Kordenbrock:

The purpose of this correspondence is to inform the Federal Highway Administration (FHWA) of recent issues that the Tennessee Department of Transportation (TDOT) has experienced with the above referenced energy absorbing tangential guardrail end terminal.

As you know, FHWA issued a letter of eligibility for the X-Lite Flared Terminal and X-Lite Tangent Terminal on September 7, 2011, thus these products had been properly evaluated by NCHRP-350 TL-3 evaluation criteria. As stated in the letter from Michael S. Griffith, FHWA Safety Office, *"Both systems described above and detailed in the enclosed drawings are acceptable for use on the NHS under the range of conditions tested."* Subsequent modifications of the end terminals led to additional approvals by FHWA dated March 29, 2013 and January 28, 2014. As a result of the acceptance letters, the X-Lite terminals were added to TDOT's Qualified Product List (QPL) in June, 2013.

In June, 2016, TDOT's field staff expressed concerns to our Headquarters Construction Division regarding installations of X-Lite terminals involving two (2) crashes resulting in three (3) fatalities where the guardrail penetrated the vehicle cabin. Between July and October, 2016, TDOT staff conducted field inspections and had discussions with Lindsey Transportation Solutions executives and staff several times attempting to clarify guardrail end terminal installation details. Lindsey Transportation Solutions was unable to resolve our concerns regarding a lack of bolt torque specifications in their installation instructions. We note that in FHWA's September 9, 2011 acceptance letter regarding the X-Lite Terminal, under the standard provisions of acceptance, that "the manufacturer is expected to supply potential users with sufficient information on design and installation requirements to ensure proper performance."

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TDOT concluded that unclear instructions *may* cause installation deficiencies, which could result in the terminal performing differently from the original tested conditions.

As a result of unclear installation instructions, and TDOT's migration to the 2016 edition of AASHTO's Manual for Assessing Safety Hardware (MASH), the X-Lite (TX) Terminal was removed from TDOT's QPL on October 25, 2016.

Additionally, our experience with the X-Lite Terminals has revealed in-service performance that we believe does not provide adequate protection of motorists on our network of roads. Our concern is based on crashes where we have observed the impact head of the unit separating horizontally from the adjacent w-beam guardrail, sliding past this adjacent section of w-beam which then could and has penetrated a vehicle cabin. Since the end terminal was removed from our QPL, two (2) additional crashes resulting in fatalities and other non-fatality crashes have prompted TDOT to take further action.

We have made the decision to remove installed X-Lite (TX) terminals from the state highway systems through contracts in our March 31, 2017 bid letting.

In FHWA's September 9, 2011 acceptance letter regarding the X-Lite Terminal, under the standard provisions of acceptance, it is noted that "if in-service performance reveals unacceptable safety problems that FHWA reserves its rights to modify or revoke acceptance."

It is also our understanding that the Virginia Department of Transportation (VDOT) removed the Lindsey Transportation Solutions X-Lite End Terminals from their Approved Products List on September 1, 2016.

While Tennessee will soon see these products removed from the state highway system, in light of these circumstances, I believe it appropriate to notify FHWA of our inability to receive satisfactory installation information from the manufacturer and that in-service performance of this device is resulting in unacceptable safety levels for the Department. We are available to provide additional information with regard to these concerns should you request them.

Sincerely,



John C. Schroer  
Commissioner

JCS/CER/jc

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cc: Mr. Paul D. Degges, P.E., Deputy Commissioner/Chief Engineer  
Mr. John Reinbold, Legal Counsel  
Mr. Jeff C. Jones, P.E, Assistant Chief Engineer-Design  
Mr. Chuck Rychen, Assistant Chief Engineer-Operations  
Mr. Will Reid, P.E., Director of Construction  
Assistant Chief Engineers/ Regional Directors  
Mr. Bud Wright AASHTO