



COMMONWEALTH of VIRGINIA

DEPARTMENT OF TRANSPORTATION
1401 EAST BROAD STREET
RICHMOND, VIRGINIA 23219 2000

Charles A. Kilpatrick, P.E.
Commissioner

December 15, 2015

MEMORANDUM

TO: District Engineers, Division Administrators, Resident Engineers, Administrators'

FROM: Garrett Moore, P.E.
Chief Engineer

SUBJECT: Guidance on Guardrail Terminal and Manual for Assessing Safety Hardware (MASH) Implementation

PURPOSE AND DIRECTION

BACKGROUND:

In 2014, the Virginia Department of Transportation (VDOT) ended placement of Trinity Industries' modified ET-Plus terminals for guardrails on VDOT maintained roads in Virginia. This decision was based on the delivered product differing from the original ET-Plus which VDOT had approved in 2000. VDOT also received external reports alleging the modified ET-Plus was impaling vehicles and their occupants during crashes. I requested Virginia law enforcement agencies to inform us of any impacts to guardrail terminals and directed VDOT to collect information from every terminal strike that could be identified throughout the Commonwealth.

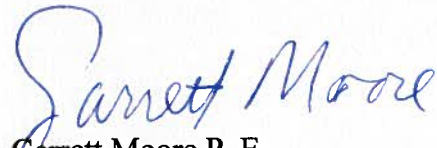
By July of 2015, we had received reports of four intrusions into passenger compartments of vehicles from terminal strikes since beginning the collection of reports of impacts, all modified ET-Plus terminals at that time. As a result of this information, I decided to test the modified ET-Plus using Virginia components for both the standard NCHRP 350 tests and non-standard shallow angle tests.

The test results show the modified ET-Plus passed the four standard NCHRP 350 tests. However, one of the two nonstandard shallow angle tests (truck) performed in a way that could have serious consequences for vehicle occupants. The test vehicle failed to remain upright 'overturning' after impacting the terminal.

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This confirmed for VDOT the modified ET-Plus has an apparent vulnerability at shallow angles. This is consistent with general conclusions (page 117) in the Joint AASHTO-FHWA Task Force on Guardrail Terminal Crash Analysis report in September concerning NCHRP 350 approved terminals.

VDOT will move directly to a risk based replacement plan for ET-Plus with MASH approved terminals and transition to MASH for all hardware. VDOT Districts and Divisions are tasked with the actions specified in the attachment.


Garrett Moore P. E.
Chief Engineer

Attachment (1)



Attachment to Dist
Engr_Div Adm_Res En