

# Guardrail Committee Meeting Minutes

July 24, 2013

2:00 PM

Roadway Design Conference Room

## **I. Gaps Between Impact Attenuators and Cable Guiderail**

The Guardrail Committee discussed what measures could be taken to close the gaps between Impact Attenuators and Cable Guiderail to prevent vehicles from maneuvering through the gaps. A letter from Kevin Lacy, The State Traffic Engineer, to the Roger Thomas, the Guardrail Committee Chair, dated February 26, 2013 (Attachment 1), requested the Guardrail Committee investigate options and strategies to close the gaps. The Guardrail Committee Members made the decision to investigate different design alternatives that would address closing up the existing gaps in the field and a design that could possibly be used with new construction. To address closing up the gaps on new construction, it appears reducing the distance from the cable guiderail anchor block to the impact attenuator will likely be the preferred measure to address this area of concern.

## **II. Strong Post Guardrail Placement Height 29" vs. Midwest Guardrail System Placement Height 31"**

Revisit the Department's decision to meet MASH Strong Post Guardrail height requirements by adjusting the top of rail height to 29" in comparison using the Midwest Guardrail System which has a top of rail placement height of 31". The committee reviewed slides and information from both Florida and Ohio noting the reasons why they decided to implement raising the guardrail height to 31". It appears adjusting the guardrail height to 31" will be a future costs savings for Department. The additional height will allow for a greater construction height tolerance on future resurfacing projects. The Guardrail Committee requested that we investigate what changes will need to be made to our current 29" standard guardrail placement standards to meet the 31" guardrail placement requirement. Once we have made a determination as to what changes need to be made, this information will be shared and vetted at an Operations Staff Meeting prior to establishing an implementation date. (Attachment 2)

### **III. AASHTO, MASH and Load and Resistance Factor Bridge Design Specifications (LRFD)**

Load and Resistance Factor Design Specifications require 42" or 54" tall barriers to shield bridge piers that are not designed to withstand a 400-kip impact. The Structures Management Unit addressed this LRFD specification with a Design Exception (Structure Design Manual - Article 3.6.5.1 - Protection of Structures) to address the protection of piers. (Attachment 3)

### **IV. Placement Of Guardrail Approaching A Dual Lane Structure - Wide Paved Shoulder Area**

From a picture provided for a TIP project along NC 49 in Cabarrus County, a question was posed as to whether or not we need to revise Std. Drawing 862.01 (Sheet 3 of 12) to reduce the wide paved area to the end of the guardrail end terminal? Paving to the end of the guardrail end terminal, results in leaving an area that could be used for illegal U-turns. During the meeting, it was noted the Standard Drawing has a note specifying the limits to the Guardrail Anchor Unit are to be paved when the median shoulder is 10'. After some general conversation, the decision was made to not revise the standard drawing, but to bring this issue to our design staff's attention. In most cases with a median paved shoulder less than 10', it appears to work best on the approach end of a dual lane structure to pave the full limits to where the guardrail ends and the proprietary guardrail anchor unit (M-350) begins; then taper back at an 8:1 rate to the paved shoulder. (Attachment 4)


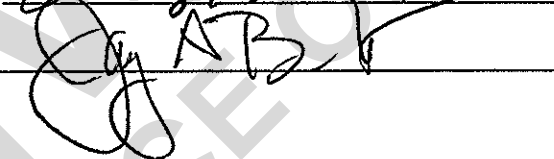
### **V. Miscellaneous**

#### **Severe Duty Crash Cushions**

Tony Wyatt, the Central Region Field Operations Engineer, advised the Guardrail Committee that Division 5 Maintenance initiated a Spot Safety Effort to fund the placement of 4 Severe Duty Impact attenuator Smart Cushions (2 TL-2 Units and 2 TL-3 units). Once installed, these Impact Attenuators will be monitored to note their performance. (Attachment 5)

**FHWA Eligibility Letters for Roadside Safety Hardware  
(Attachment 6)**

A copy of the FHWA Eligibility Letters for Roadside Safety Hardware (FAQs) was passed out to the Guardrail Committee Members as Attachment 6. It was noted this information was being shared with the group to help clarify the role the FHWA Division and Headquarters Offices have in determining whether or not hardware is eligible for reimbursement under the Federal Aid Highway Program. Furthermore this information notes "As a service to the States, the FHWA has issued letters to developers, manufactures, State highway agencies and other petitioners recognizing their certifications that the hardware they represent have been crash tested and meet the appropriate crash testing criteria."

Minutes prepared by Roger Thomas, PE   
Minutes approved by Jay Bennett, PE 

List of meeting attendees:

<u>Name</u>	<u>Representing</u>
Jay A. Bennett	Roadway Design
Vickie Davis	Construction Unit
Bucky Galloway	Traffic Safety Unit
Cabell Garbee	Materials & Test Unit
Brad Hibbs	Federal Highway Administration
Brandon Jones	Division 5
Virginia Mabry	Transportation Program Management
Emily McGraw	State Maintenance Operations
Cynthia Terrell	Contract Standards and Development
Roger Thomas	Roadway Design
Shawn A. Troy	Traffic Safety Unit
Tony Wyatt	Traffic Safety Unit



Attachment 1

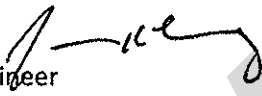
STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION

PAT MCCRORY  
GOVERNOR

ANTHONY J. TATA  
SECRETARY

February 26, 2013

**TO:** Roger Thomas, PE  
Roadway Design Engineer, Chair Guardrail Committee

**FROM:** J. Kevin Lacy, PE   
State Traffic Engineer

**SUBJECT:** Gaps Between W-Beam Guardrail and Cable Guiderail in the Medians of Freeway Facilities

There are numerous locations on freeways throughout the state with 20-foot horizontal gaps (Transitional Gaps) between the end treatment of a section of W-beam guardrail and the anchor unit of a section of cable guiderail in accordance with Roadway Standard Drawing 865.01, Sheet 1. To prevent vehicles from maneuvering through these gaps, which have an effective width of 24 feet measured diagonally, three double face guiderail intermediate posts without cable are installed on 6-foot maximum centers unless the gap is left completely open for maintenance purposes.

While the three guiderail intermediate posts are effective at limiting access to motorists intentionally attempting to traverse the median, they do not aid in preventing errant vehicles at speed from crossing the median.

There have been some interest from a least one Division to take another look at these transitional gaps, and to provide options to close some of them with an approved strategy to prevent current vehicles from passing through.

I am requesting the guardrail committee to research and review available strategies to close and secure the transitional gaps such as the one developed by the South Dakota Department of Transportation. In addition, if a suitable strategy is available, complete the necessary steps to allow implementation on our highways.

Attachments

JKL:PHD3

cc: Terry. R. Gibson, PE  
Jon Nance, PE  
Debbie Barbour, PE  
Jay Bennett, PE

MAILING ADDRESS:  
TRANSPORTATION MOBILITY AND SAFETY DIVISION  
P.O. Box 3165  
WILSON NC 27895

TELEPHONE: 252-237-6164  
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WEBSITE: [WWW.NCDOT.ORG](http://WWW.NCDOT.ORG)

LOCATION:  
490 SW WARD BOULEVARD  
WILSON NC 27893

**Thomas, Roger D**

**From:** Galloway, David D  
**Sent:** Monday, July 15, 2013 12:02 PM  
**To:** Bennett, Jay A; Thomas, Roger D; Lacy, Kevin; Wyatt, Anthony D; Garris, Randy A  
**Cc:** Daughtry, Haywood  
**Subject:** 31" guardrail height discussion at AFB20-TCRS joint meeting

**Follow Up Flag:** Follow up  
**Flag Status:** Flagged

Gentlemen,

A lot of discussion in last week's AFB 20-TCRS joint meeting centered on the topic of 31" guardrail and the recommendation from FHWA for states to consider adopting 31" guardrail standards. Based on the presentations that were given and my discussions with other state reps, it appears that the majority of states have adopted the 31" design standard and have started installing 31" systems on new projects. Where do we stand in NC as far as adopting the 31" standard?

My primary interest with moving forward with the 31" guardrail standard is not solely based on crash testing or what other states are doing. My primary interest is due to the fact that we can significantly increase the effective service life of our guardrail systems if we adopt a 31" standard. I have developed several high dollar safety projects over the last few years where the guardrail was installed at 29" (sometimes lower) and within a couple of years, the roads were resurfaced with a 2" lift and now the guardrail is officially substandard. On some of these projects, we have had some shoulder stabilization issues and the guardrail has settled to a height below 27" after resurfacing. Knowing that most of the guardrail on our rural two lane roadways and even some multi-lane roadways will be in place for up to and possibly over 30 years, it just doesn't make sense in my opinion to install anything other than 31" approved systems from this point forward.

As you know, we do less than a respectable job in upgrading roadside safety features under standard resurfacing projects and in some cases larger rehab projects and it is due primarily to the lack of funding. Thus, anything we can do to ensure that our roadside safety systems remain standard and meet their accepted service lives needs to be seriously considered.

If the Department is not ready to move forward with the 31" standard then I would like to have special approval to install 31" guardrail on some of the safety projects within the Western Region. We could consider these experimental projects.

I realize that from a design standpoint that it is not as simple as just specifying a 2" increase in the height of guardrail but I think those issues (transitions, etc.) can be easily overcome. I would be more the willing to assist the department in this implementation process. Just let me know how I can help. If you have any questions or need additional info, please let me know.

D. D. "Bucky" Galloway, P.E., CPM  
NCDOT-M & S Division-Traffic Safety Unit  
Western Region Field Operations Engineer  
Phone #: 828-650-2700

## Thomas, Roger D

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**From:** Thomas, Roger D  
**Sent:** Monday, March 28, 2011 7:48 AM  
**To:** Division Engineers  
**Cc:** Division Maintenance Engineers; Division Operations Engineers; Roadway PE; Howerton, Joel S; McMillan, Art; Barbour, Deborah M; bradley.hibbs@fhwa.dot.gov; Brandenburg, Jennifer P; Rochelle, Rodger D; Keel, William D; Pace, Randy K; Frederick, Samuel; Terrell, Cynthia B; Walker, Warren F; Davis, Vickie G; Watkins, Lonnie R; Mabry, Virginia G; Troy, Shawn A; Hancock, Ronald A  
**Subject:** Manual for Assessing Safety Hardware

Division Engineers,

This email is to advise you of the newly implemented Manual for Assessing Safety Hardware (MASH) Guidelines. Due to the implementation of these guidelines, height adjustment changes will affect the placement of Steel Strong Post W-beam guardrail. Please note that this email requires a response by April 18, 2011, if you have any comments.

### **MASH Guidelines**

The new Manual for Assessing Safety Hardware (MASH) guidelines will supersede NCHRP Report 350, *Recommended Procedures for the Safety Performance Evaluation of Highway Features*, for the purpose of evaluating new safety hardware. Attached is a letter from David A. Nicol, Director, Office of Field Safety with the FHWA dated November 20, 2009. This letter provides information in regards to the background and Implementation Plan for MASH. Also attached is a file which provides an overview of MASH. The Federal Highway Administration has requested that the Department coordinate to update our Special Provisions to reflect the MASH guidelines. Furthermore, as noted in the memo, agencies are encouraged to upgrade existing highway safety hardware that has not been accepted under NCHRP Report 350 or MASH:

During reconstruction projects  
During 3R projects, or  
When the system is damaged beyond repair

Based upon the above guidance, the following terminals/transitions should be upgraded on the NHS:

1. Blunt End Terminals for W-beam guardrail or median barrier.
2. Turned-down terminals
3. Bridge approach guardrail that is not connected to the bridge railing.

The following devices should be upgraded whenever encountered within the limits of a project on the NHS:

4. Breakaway Cable Terminal (BCT's)
5. Modified Eccentric Loading Terminals (MELT's) – If it requires adjustment or is damaged.

6. For Steel Strong Post W-beam guardrail, no metal offset blocks are to be replaced in-kind or installed new.

## W-Beam Guardrail Height Adjustment

For the placement of Steel Strong Post W-beam guardrail, the Department will be required to make a height adjustment to our current standards to meet the new minimum height requirement for NCHRP Report 350 and MASH guidelines. Our current height placement is 27" to the top of rail which is 1' – 9" to the center. Based upon crash testing, the new minimum height requirement to the top of rail should be 27 ¾". To meet this new minimum height requirement we are proposing to adjust the height to 29" to the top of rail; 1' – 11" to the center (see attached letter from David A. Nicol dated May 17<sup>th</sup> 2010 and the revised standard drawing). By adjusting the height to 29", it will allow more flexibility (1" +/- tolerance) on future resurfacing projects to meet the 27 ¾" minimum height requirement without having to reset the guardrail posts.

## Damaged Guardrail

If the length of damaged Steel Strong Post W-beam guardrail is significant, then repair the barrier to meet the new height requirement of 29". When repairing 300 feet of damaged guardrail in a 1200 foot section of continuous guardrail, it is currently acceptable to replace the damaged 300 feet to the proper height and save the remaining guardrail in place. If 80% or more of a guardrail run is damaged, the entire section of guardrail should be replaced to the new height requirement. For short sections (one or two panels) of repair, it is generally not practical to adjust the current height. The height transition between proposed 29" tall guardrail and existing 27" tail barrier should take place in 25 feet (over the span of two 12-foot, 6-inch pieces of w-beam rail). For end terminals use the same 25-foot transition to go from the 29" W-beam to the 27" high terminal.

For your information, we are trying to fund a North Carolina research project to test the 27" high guardrail at Test Level 2 conditions (44 mph) to see if it will help our case for in-service conditions on local state maintained roads. Please provide me any comments or concerns you may have in regards to the 29" guardrail height adjustment by April 18<sup>th</sup>, 2011. If you have any questions please do not hesitate to contact me.

Roger Thomas, PE  
North Carolina Department of Transportation  
Roadway Design Unit  
Assistant State Roadway Design Engineer – Central Region  
1582 Mail Service Center  
Raleigh, NC 27699-1582  
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<http://www.ncdot.org/doh/preconstruct/highway/roadway/>



MASH Memo to  
Field.pdf



mash  
overview.pdf



guardrail height  
memo051710.p...



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For example, in continuous superstructures with relatively short-end spans, live load in the end span causes the bearing to be more compressed, while live load in the second span causes the bearing to be less compressed and can lead to uplift. To check the maximum compression force in the bearing, live load should be placed in the end span and the maximum *DC* dead load factor of 1.25 should be applied to the force effect(s). To check possible uplift of the bearing, live load should be placed in the second span and the minimum *DC* dead load factor of 0.90 should be applied to the force effect(s).

### 2.3.2 Article 3.5.1 Dead Loads

Include an additional 30 lbs/ft<sup>2</sup> (1.4 kN/m<sup>2</sup>) for future bituminous wearing surface on all bridge floors, except those on movable spans. For movable spans and other unusual types of spans, use 8 lbs/ft<sup>2</sup> (0.4 kN/m<sup>2</sup>) for future wearing surface. Do not include load due to future wearing surface in the camber calculations.

### 2.3.3 Article 3.6.4 Braking force

Compute the braking force, *BR*, as the greater of:

- 5% of the design truck plus lane load,
- 5% of the design tandem plus lane load.

### → 2.3.4 Article 3.6.5.1 Protection of Structures

Wherever possible, provide adequate clearance to avert design for vehicular collision and rail car collision with structures.

Abutments and piers located less than 30 ft. (9.14 m) from the edge of roadway shall be protected with a 2'-8" (813 mm) tall concrete barrier and approach guardrail in lieu of being designed for the equivalent static force of 400 kips. Abutments and Piers located less than 25'-0" (7.62 m) from the centerline of a railroad track must be protected by a crashwall. See Chapter 7 for guidance on pier protection.

### 2.3.5 Article 4.6.2.2 Beam Slab Bridges

Regardless of the method of analysis used, design the exterior beams and stringers to have at least as much factored resistance as interior beams.

The typical cross-section for cored slab and box beam bridges are to be considered type (g) as shown in Table 4.6.2.2.1-1 of the LRFD specifications. Compute moment and shear distribution factors as if the units are connected only enough to prevent relative vertical displacement at the interface, but not sufficiently to act as a unit.

### 2.3.6 Article 4.6.3 Methods of Analysis

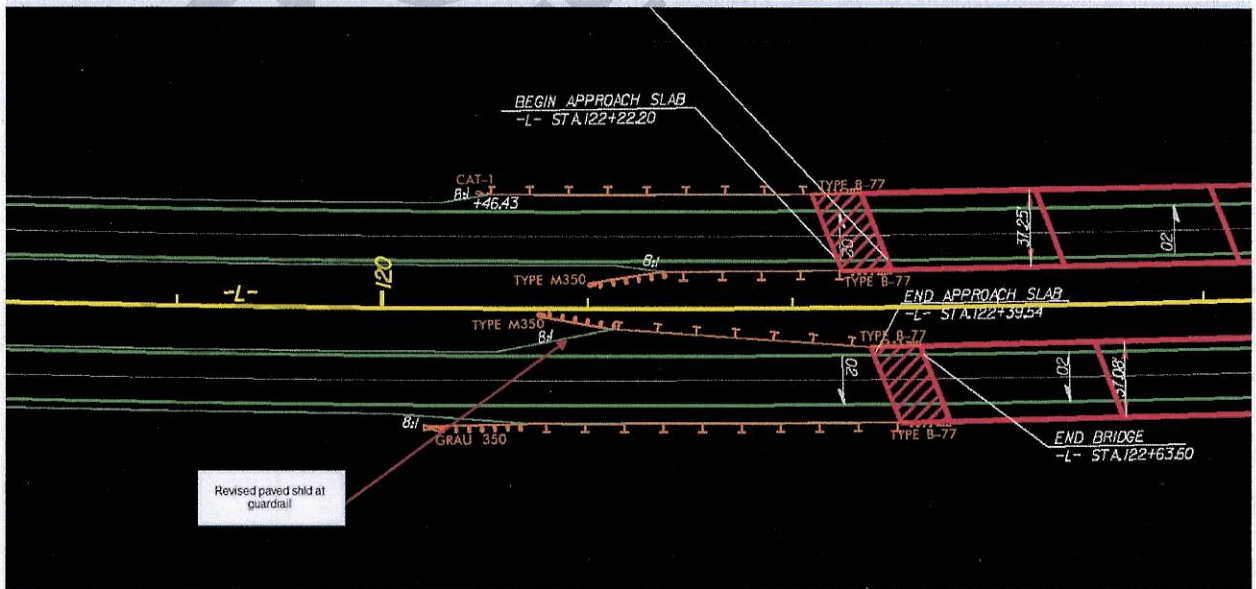
The traditional AASHTO approach to bridge structural analysis employs distribution factors to account for distribution of wheel loads to the bridge girders. When a refined method of analysis is used, provide sufficient information on the bridge analysis to aid in



Constructed project in Cabarrus County - excessively wide paved shoulder area

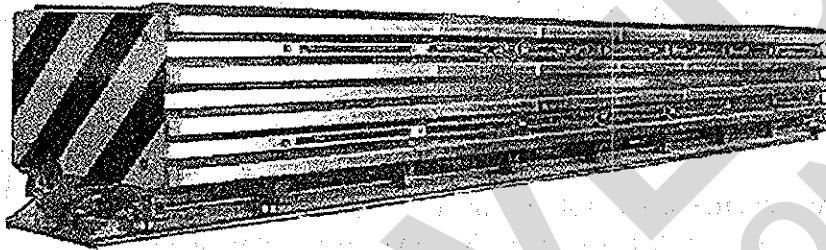


The photo below shows the recommended method to address paving the median paved shoulders on projects with a paved shoulder width less than 10 feet.



# **THE SMART CUSHION** **INNOVATIONS CRASH** **CUSHION**

MODEL SC1100GM  
NCHRP 350 TL-3 APPROVED



The SC1100GM is a revolutionary speed dependent crash cushion that can vary stopping force to let lighter and slower moving vehicles have a longer ridedown distance. Unlike fixed force attenuators, the SC1100GM does not reach maximum stopping force unless the vehicle is traveling at the maximum design speed. Also, after all required NCHRP tests were performed with the same unit, there was only minor damage on one panel during the reverse side impact test. The new panel design is greater than 50% stronger than current designs and showed no damage after test# 3-37 which is the forward side impact test. The SC1100GM was successfully designed for safety, reusability and durability before, during and after impact.

How does it work? The front sled is connected to the rear of the unit by a 1.125" wire rope cable. Upon frontal impact, the unit collapses a shock absorbing cylinder in the rear of the unit which controls the ridedown force. When it is time to reset the unit, you detach the cable, pull the unit out, reattach the cable, replace two shear bolts, inspect the unit and you are done. The SC1100GM was engineered specifically for the ease of resetting.

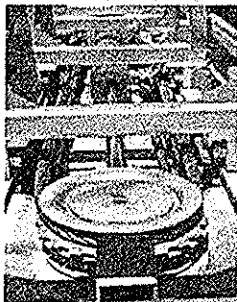
## **Safety**

- A speed dependent system not a fixed force system
- Longer ridedown distances and therefore, lower sustained G forces
- Side impacts result in <1 degree exit angles which keep the vehicles from deflecting back into traffic lanes
- Quick resetting of unit
- Less out of service time
- Less worker exposure

## **Cost Benefits**

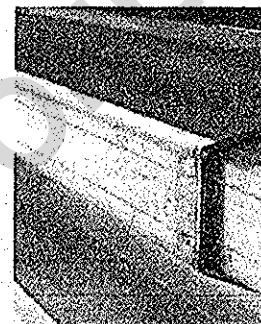
- Under design impacts, there should be very few parts that need to be replaced which will provide dramatic savings
- Labor savings from quick resetting time
- Many side impacts will require only an inspection
- New tapered design eliminates side panel binding on frontal impacts which reduces damage

## Features



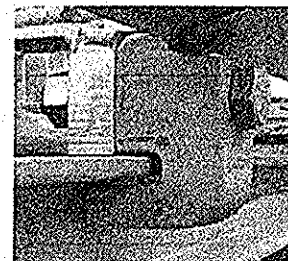
The new Cable and Cylinder arrangement allows longer ridedown distances of any vehicle that has less mass or speed than our maximum design criteria. It is reusable and usually, only needs two shear bolts and the front panel replaced upon frontal impacts.

The stronger side panel profile is over 50% stronger than curved profiles. This profile allows the edges to be beveled to reduce snagging potential and damage on reverse direction impacts. The panel is fabricated from 10 gauge, 60 ksi minimum yield steel with a G90 galvanized coating.

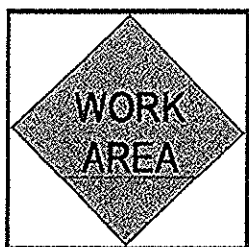


The support gussets behind the panels prevent snagging caused by the creation of a gap from panel deformation on reverse side impacts.

The side guides will not be damaged from side impacts at design speeds and vehicle weights. Also, they allow the support frames to be individually replaced if they become damaged.



The new roller guide design on front sled provides smooth, aligned collapse of the system through reduction of snagging, friction and binding



**WORK AREA PROTECTION CORP**  
a division of STABLER COMPANIES INC.

Website: [www.workareaprotection.com](http://www.workareaprotection.com)  
Email: [workarea@workareaprotection.com](mailto:workarea@workareaprotection.com)

# SMART CUSHION PHOTOS



Post Head-On Impact



Barrier Protection  
Freeway Off-Ramp



**Thomas, Roger D**

**From:** Bennett, Jay A  
**Sent:** Thursday, January 31, 2013 10:02 AM  
**To:** Thomas, Roger D  
**Cc:** Taylor, Bryan D; Mumford, Glenn W; Bruton, Teresa M; Howerton, Joel S  
**Subject:** FW: Roadside Safety Hardware: Federal-aid Reimbursement Eligibility Process  
**Attachments:** Eligibility\_FAQs 01-28-2013.docx

Roger,

This Q and A paper needs to be discussed with the Guardrail Committee and the project engineers.

Jay.

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**From:** [Bradley.Hibbs@dot.gov](mailto:Bradley.Hibbs@dot.gov) [mailto:[Bradley.Hibbs@dot.gov](mailto:Bradley.Hibbs@dot.gov)]  
**Sent:** Wednesday, January 30, 2013 9:53 AM  
**To:** Bennett, Jay A; Lacy, Kevin; Perfetti, Gregory R  
**Cc:** [Earl.Dubin@dot.gov](mailto:Earl.Dubin@dot.gov); [James.Martin@dot.gov](mailto:James.Martin@dot.gov); [Jim.Phillips@dot.gov](mailto:Jim.Phillips@dot.gov); [Jake.Riggsbee@dot.gov](mailto:Jake.Riggsbee@dot.gov)  
**Subject:** FW: Roadside Safety Hardware: Federal-aid Reimbursement Eligibility Process

Attached is a Q&A that supplements the May 21, 2012, FHWA Memorandum on Roadside Safety Hardware – Federal-aid Eligibility. Please contact me if you have any questions.

Bradley Hibbs, PE  
Operations Engineer  
FHWA-NC  
919.747.7006

Please consider the environment before printing this email.

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**From:** Griffith, Mike (FHWA)  
**Sent:** Monday, January 28, 2013 9:20 AM  
**To:** SAFETYFIELD (FHWA)  
**Subject:** Roadside Safety Hardware: Federal-aid Reimbursement Eligibility Process

The attached frequently asked questions were developed to help clarify the roles of the Division and Headquarters Offices in determining whether roadside safety hardware is eligible for reimbursement under the Federal- Aid Highway Program as discussed in the May 21, 2012 memorandum "INFORMATION: Roadside Safety Hardware- Federal-aid Reimbursement Eligibility Process."

We will hold a webinar in the next few weeks to cover the overall process and address your questions.

Regards,

Mike

Michael S. Griffith  
Director, Office of Safety Technologies  
Federal Highway Administration  
Office of Safety  
1200 New Jersey Avenue, SE  
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## FHWA Eligibility Letters for Roadside Safety Hardware (FAQs)

The selection, design, and installation of roadside safety hardware should follow the guidance in the American Association of State Highway and Transportation Officials (AASHTO) Roadside Design Guide (RDG) 4th edition. The RDG 4<sup>th</sup> edition states that roadside safety hardware used on the National Highway System (NHS) should meet the testing criteria contained in either the National Cooperative Highway Research Program (NCHRP) Report 350 or the AASHTO's Manual for Assessing Safety Hardware (MASH). The principal basis for determining if hardware meets these criteria, and therefore is eligible for reimbursement under the Federal-aid Highway Program, is the full-scale crash tests conducted by an accredited laboratory. As a service to the States, the FHWA has issued letters to developers, manufacturers, State highway agencies, and other petitioners recognizing *their* certifications that the hardware they represent have been crash tested and meet the appropriate crash testing criteria.

The following Frequently Asked Questions were developed to help clarify the roles of the Division and Headquarters Offices in determining whether hardware is eligible for reimbursement under the Federal-Aid Highway Program as discussed in the May 21, 2012 memorandum "INFORMATION: Roadside Safety Hardware-Federal-aid Reimbursement Eligibility Process."

**Q1 Does all roadside safety hardware need a FHWA Eligibility Letter in order to be eligible for reimbursement on Federal-aid highway projects?**

A1 No. Eligibility Letters are provided as a service to the States and are not a requirement for roadside safety hardware to be eligible for reimbursement on Federal-aid highway projects. Please see Q2 for other means of determining roadside safety hardware eligibility.

**Q2 When approving a State's standard plans for generic (not a patented or proprietary design) roadside safety hardware on Federal-aid projects, can a Division Office rely on a certification from a State DOT and/or an accredited crash testing laboratory?**

A2 Yes. When approving the State's standard plans including generic roadside safety hardware for use on Federal-aid projects, the Division Office may rely on a certification from an ISO-accredited crash test laboratory indicating that the hardware has been tested under MASH and meets MASH criteria. The Division Office may also rely on a letter from the State DOT certifying that the hardware has been crash tested by an accredited laboratory. *These options apply to hardware that has been successfully crash tested by an accredited crash test laboratory that:*

- *is under contract to an individual state, or*
- *conducts the testing under a project administered through the FHWA Transportation Pooled Fund (TPF) Program*

**Q3 When approving a PS&E that includes patented/proprietary roadside safety hardware on Federal-aid projects, can a Division Office rely on a certification from a State DOT and/or an accredited crash testing laboratory?**

A3 Yes. When approving the State's PS&E that includes patented/proprietary roadside safety hardware, the Division Office may rely on certification from an ISO-accredited crash test laboratory indicating that the hardware has been tested under MASH and meets MASH criteria. Although eligibility letters are not mandatory, as stated above, we recommend that patented/proprietary products be reviewed by FHWA Headquarters Office of Safety before FHWA makes an eligibility determination.

**Q4 The May 12, 2012 memorandum from the Office of Safety, "Roadside Safety Hardware – Federal Aid Reimbursement Eligibility Process," states that the developer and tester must be separate. How does this apply to same-state agencies such as TTI and TxDOT?**

A4 The requirement is for an unbiased and independent assessment of all crash testing and evaluation procedures used on the hardware. The crash test report should be signed by the professional engineer (an engineer with the P.E. certification) supervising the testing. In the cited memorandum, "developer" refers to the designer or manufacturer of the hardware. The test facility may be a subsidiary or other related entity of the developer, but it must operate independently from the parent or related entity in conducting the testing and evaluation of the hardware. Academic institutions developing hardware for State DOTs should provide the same unbiased and independent assessment, and report signed by a professional engineer as described above.

**Q5 Can a Division Office require a FHWA Eligibility Letter as part of the process for approving State DOT standard plans for roadside safety hardware on Federal-aid projects?**

A5 No. The Division Office cannot require that State DOTs provide a FHWA Eligibility Letter as part of the Division's approval process of the State's standard plans. However, the Division Office should ensure that the safety hardware meets current AASHTO MASH or NCHRP Report 350 criteria. Please see Q11 for additional information.

**Q6 Can a Division Office issue a FHWA Eligibility Letter?**

A6 No. Only the Office of Safety at FHWA Headquarters will issue a FHWA Eligibility Letter.

**Q7 Can a Division Office accept roadside safety hardware that has been modified subsequent to the issuance of a FHWA Eligibility Letter?**

A7 No. Per the guidance on roadside safety hardware, only the Office of Safety at FHWA Headquarters will determine if modifications to roadside safety hardware meet the criteria to receive a FHWA Eligibility Letter.



**Q8** Should a Division Office consult with the Office of Safety regarding new roadside safety hardware that doesn't have a FHWA Eligibility Letter, or modifications to existing hardware that currently has an eligibility letter?

**A8** Yes, to both. The Office of Safety is prepared to discuss safety hardware at any time. However, any Headquarters determination of eligibility for new or revised hardware will follow the process as outlined at: [http://safety.fhwa.dot.gov/roadway\\_dept/policy\\_guide/road\\_hardware/acceptprocess](http://safety.fhwa.dot.gov/roadway_dept/policy_guide/road_hardware/acceptprocess). No determinations will be made outside of that process.

**Q9** Is an eligibility letter necessary on hardware previously developed by the States and being currently used on the NHS?

**A9** No. Eligibility Letters are provided as a service to the States and are not a requirement for safety hardware to be eligible for reimbursement on Federal-aid highway projects. Safety hardware that has already been determined eligible by the Division Office as part of a State's standard plans for Federal-aid projects remains eligible for reimbursement under the Federal-aid highway program.

**Q10** What crash test labs are accredited?

**A10** Accredited laboratories are identified on the FHWA web site at:  
[http://safety.fhwa.dot.gov/roadway\\_dept/policy\\_guide/road\\_hardware/laboratories](http://safety.fhwa.dot.gov/roadway_dept/policy_guide/road_hardware/laboratories)

**Q11** Why does the introduction refer to NCHRP Report 350 testing?

**A11** Roadside safety hardware that was verified through crash testing under Report 350 criteria continues to be eligible for funding under the Federal-aid Highway Program. All new crash testing should be conducted under the AASHTO MASH.