Subject: INFORMATION: Roadside Safety Hardware—Federal-Aid Reimbursement Eligibility Process

From: Tony Furst  
Associate Administrator for Safety

To: Division Administrators  
Federal Lands Highway Division Engineers

The purpose of this memorandum is to describe the Federal-aid reimbursement eligibility process for roadside safety hardware. This process is relevant to all roadside safety hardware, including longitudinal barriers, crash cushions, attenuators, end terminals, breakaway supports, and work zone hardware used on Federal-aid projects. Key features of the process include:

- FHWA letters will state whether roadside hardware is eligible for reimbursement under the Federal-aid highway program. The letters will not state that hardware is “acceptable for use” as experience shows the intent of such language can be misinterpreted. All eligibility letters shall originate from the Office of Safety in Headquarters.

- Finite element analysis (FEA) will be required in support of requests for non-significant structural modifications to previously crash tested hardware where the effect of the modifications is uncertain and additional crash testing is not performed. This is discussed in detail in section II.B. of the attached process.

- Submissions can now be done electronically and we are streamlining the submission process by using a PDF form.

The process for eligibility determinations is described in detail in Attachment A.

Federal-aid reimbursement eligibility determination

As of November 1, 2011, FHWA letters state whether roadside hardware is eligible for reimbursement under the Federal-aid highway program. The purpose of these letters is to establish eligibility for Federal-aid reimbursement. The decision on whether to use particular hardware, and how to use it, is the State’s discretion. All eligibility letters shall originate from FHWA’s Office of Safety. Previous letters issued by the Office of Safety prior to the date of this memorandum continue in effect for the purpose of eligibility for Federal-aid reimbursement.
New and modified hardware

FHWA’s eligibility review of new hardware will primarily consider full-scale physical crash testing under the AASHTO Manual for Assessing Safety Hardware (MASH). A hardware developer may wish to include FEA as supplemental information in its original submission. FEA may be used to determine the effect of proposed modifications on the performance of existing successfully crash tested hardware.

Any structural change to the hardware where the effect on the crash test performance of the hardware is uncertain will require a FEA and verification and validation (V&V) analysis to demonstrate the expected performance of the structural change. FHWA may consider the FEA and V&V analysis as a basis for eligibility if results of this analysis are within MASH-prescribed parameters. When FEA and V&V analysis determine the proposed modification is not within MASH prescribed parameters, physical crash testing according to the MASH test criteria will be required.

FEA specifies dynamic 3-D finite element analysis (e.g., LS-DYNA software) and V&V procedures as detailed in the report of NCHRP project 22-24 (Recommended Procedures for Verification and Validation of Computer Simulations used for Roadside Safety Applications (V&V)) at http://onlinepubs.trb.org/onlinepubs/nchrp/nchrp_w179.pdf. The AASHTO Technical Committee on Roadside Safety has endorsed the use of NCHRP 22-24 V&V procedures when designers and developers use numerical simulation in evaluating roadside safety hardware. The use of V&V as part of the documentation supporting an eligibility request is covered in the attached guidance.

Please note that although the Federal-aid reimbursement eligibility process includes procedures to incorporate FEA and V&V, these do not replace physical crash test requirements for new hardware or for significant changes (as defined in section II.B. of the process, Attachment A) made to hardware that was previously determined to be eligible for Federal-aid reimbursement.

Electronic submissions

The Office of Safety developed an electronic method for submitting requests to FHWA for determining Federal-aid reimbursement eligibility using Adobe® Form format. This new electronic format is available for immediate use and serves to streamline the existing submission process by reducing the time currently required for review. It should be used for submitting requests related to new hardware or modifications to hardware previously determined to be eligible for Federal-aid funding. A full description of this process and a link to the form can be found at: Roadside Hardware Policy and Guidance - FHWA Safety Program.

Informing States

Division Offices should inform State transportation agencies about the Federal-aid reimbursement eligibility process, including use of electronic submissions. Beginning June 1, 2012, the PDF form should be used for submitting all requests for Federal-aid reimbursement eligibility determinations for both new and modified safety hardware.
While some States do test and submit hardware for review, most submissions come from private industry. The Office of Safety will conduct outreach to hardware manufacturers, crash test laboratories, and others in the roadside safety and work zone traffic control device industries.

Attachment A of this memorandum describes the Federal-aid reimbursement eligibility process, which includes a flow chart. It is posted with this memorandum on the FHWA Policy and Guidance Center. If you have any questions or comments on this policy, please contact Mr. Nicholas Artimovich at nick.artimovich@dot.gov or Mr. William Longstreet at will.longstreet@dot.gov, in the FHWA Office of Safety Technologies.

Attachment

cc: Directors of Field Services
    Safety Field
    John R. Baxter, Associate Administrator for Infrastructure, (HIF-1)
    Jeff A. Lindley, Associate Administrator for Operations, (HOP-1)
    Fred R. Wagner, Chief Counsel, (HCC-1)
Frequently Asked Questions: FHWA Eligibility Letters for Roadside Safety Hardware

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 4th 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 21, 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. 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

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.