

codification of general and permanent rules by the executive departments and agencies of the federal government. It will be incorporated in the Guides and Reference section of 23 CFR part 625, Design Standards for Highways, for guidance on the acceptability of roadside barriers and other safety appurtenances for use on federal-aid projects.

The guides and references include information and general controls that are valuable in attaining good design and in promoting uniformity. They are intended to provide general program direction. Though it is called a guide, in practice NCHRP 350 will serve as a regulation.

It is likely that both the AASHTO guide specification for bridge railings and the *Standard Specifications for Structural Supports for Highway Signs, Luminaires, and Traffic Signals* will still be available for use and the results will be accepted by FHWA.

Besides performance criteria established by crash testing, will the United States develop other formalized criteria to be used for third-party testing? Answer: FHWA does not have generic criteria for a third-party certification program under which a supplier is authorized by a third party to use the programs's mark (certification mark) or a certificate of conformity to indicate that a product is in compliance with applicable standards or specifications. We are proposing to develop such a system.

Will we incorporate more surveillance; that is, the initial and continuing observation of the product supplier to ensure that the products comply with the criteria contained in the standards and/or specifications for the product? Answer: Any increased surveillance probably will be the responsibility of state highway agencies.

Will there be requirements for a third-party certification body? Answer: FHWA does not have any specific requirements for an internal quality system and audit procedure.

Will FHWA institute requirements for crash lab certification? Answer: We also do not have any formal requirements for competence of calibration and testing laboratories. In the United States, the National Highway Traffic Safety Administration (NHTSA) has taken the lead in the qualification of crash test laboratories as part of its car crash test program. FHWA will probably follow NHTSA's lead and use some of the procedures. FHWA is considering having a contract in which it will prequalify labs for an FHWA contract. We would expect that any labs that prequalify for our research testing would be qualified for acceptance testing.

## Conclusion

Our procedures continue to evolve, especially toward the desire to harmonize acceptance of roadside safety hardware with the rest of the world.

## IMPLEMENTATION OF CEN AND U.S. PROCEDURES ON A GLOBAL BASIS

*Andrew Naylor*

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As a manufacturer of a barrier system, it is a fairly daunting prospect to look around the world and consider the amount of privately funded money that goes into testing products to gain individual country approval. It is quite vast. My company has been fortunate because countries where the Bridon wire rope safety fence is installed did accept the U.K. Department of Transport's approval system, which approved the product. Nevertheless, there are many countries throughout the world that require my company to test under their different conditions.

This situation even occurs within Europe. My company recently completed some testing in France to gain French approval. The reason behind that was that not knowing when CEN was going to come forward, we wanted to increase our market share in certain parts of the world. To do that, we needed an order of approval. So, again, within Europe there are different approval systems set up.

From that my company sees that the pending CEN performance standard for our rope barriers actually would be very much welcomed by all European manufacturers of whatever type of barrier system they are marketing.

This is the first time I have actually been involved with TRB, but it is a tremendous international step forward to establishing links between Europe and the United States. Despite the expansive body of water between us, it has been recognized that working together can only benefit the road user worldwide.

By comparing some of the test parameters for the United Kingdom, France, and in particular, the proposed CEN standards and the U.S. NCHRP Report 230 and the updated Report 350, what became fairly apparent was that on the larger car testing, the European values, that is, CEN, the United Kingdom, and France, about 80 km, are all of a similar order. This surprise came when

looking at what the United States is doing, probably around 130 to 140 km. So there is a significant magnitude of difference there. So perhaps, just on that one aspect, there is a need to close that gap, perhaps bridge the gap between water, and bridge it between the other testing parameters.

On the lighter vehicle testing, both Europe and the United States seem to achieve a great degree of compatibility. From my company's point of view, this means that we could gain acceptance throughout Europe but would still have to carry out significant test work for U.S. approval. If successful, this would in essence close the circle worldwide as far as we are concerned for the approval of not only the wire rope safety fence system, but also other barrier systems.

Harmonization can only lead to freer and greater competitive nonconditions for all manufacturers. There is going to be a significant reduction in my company's testing costs, and we will not have to direct our testing toward a specific market, if there is going to be common work throughout and if previous work will be accepted.

The other thing is that it does enable my company to develop safer systems perhaps and things like containment systems, again trying to benefit both road user and people involved in highways.

So manufacturers, designers, and approval authorities probably all have one goal in common — and that is to save the world for the road user. And as far as my company is concerned as a manufacturer, we welcome all forms of harmonization.

#### **IMPLEMENTATION OF CEN AND U.S. PROCEDURES ON A GLOBAL BASIS: THE UNITED STATES**

*Michael Drezenes  
Energy Absorption, Inc.*

Before you can understand the potential implications of the CEN TC226 WG1 harmonization efforts on U.S. highway safety product manufacturers, it is necessary to have an idea of the current status of these manufacturers overseas. I will use Energy Absorption Systems as an example, because knowing how the experiences of the past put U.S. highway safety product manufacturers in the position they are in today will allow us to better predict what will happen in the future after the CEN standards are officially approved.

Driving through any country in the world, one quickly realizes that many of the roadside hazards that are prevalent in one's own country are also routinely found in other countries. These black spots become more evident when kilometers of highways are built near

large cities, thereby losing the luxury of geometries. This is a fact of life in every country in the world.

Many different approaches are taken to correct these black spots, and typically these corrections are handled on a country-by-country or even a state-by-state or county-by-county basis. Before the implementation of CEN TC226, little discussion between countries was ever held regarding the proper way to correct roadside hazards. Some practices were acceptable in one country, but ridiculed in another — a lot of "not invented here" was evident.

Energy Absorption Systems tried to introduce crash cushions overseas and had some limited success. In some countries, crash cushions, although recognized as safety features, were and still are illegal because of a lack of specifications and a misunderstanding of the concept. My company stopped trying to sell a product and started selling a concept: the concept of using properly tested and designed crash cushions to make roads safer. We explained the need for specifications, the evolution of NCHRP Report 230, and why the testing was so stringent. The same basic objections were always present whenever we presented NCHRP Report 230 or the American example:

- The speed overseas is different from the United States.
- The size of cars overseas is smaller compared with the United States.
- People overseas wear seat belts; in the United States we just talk about wearing them.
- The product liability issue is much greater in the United States compared with other countries.
- The "not invented here" syndrome is ever present.

Everyone made it very clear that their country was not the United States. Their conditions were different, and Energy needed to understand their needs and to design the right product. Product modifications were often required. We explained that although the conditions were different, the physics of a crash were very similar regardless of where you are in the world. A properly designed and tested crash cushion would make this crash less severe.

We explained that the size of the test vehicles or the speeds used for testing did not matter; a crash cushion needs to do certain things to be effective. These items were discussed in detail, and we came up with the following key functional requirements: (a) contain the vehicle with no penetration or vaulting; (b) redirect the vehicle; and (c) allow for tolerable impact forces.

This would normally get the attention of most of the highway officials, and we would look at each of these a