

Construction Products Directive, the council will consider if they comply with the mandate.

Member state authorities responsible for national regulations should be able to participate through the national delegations to CEN/CENELEC and present their points of view adequately in all stages of the drafting process.

A European standard based on a mandate and adopted by the council is characterized as harmonized. These harmonized standards are obligatory for all member state authorities. Corresponding to that fact, member states have to choose levels and classes among those fixed at the European level within such standards.

Types of Standards

Finally, they should be given some information about the required three types of harmonized European standards. The types are defined as follows.

Category A

These are fundamental standards related to the design and execution of works and to the basic data of products and are closely linked to the relevant essential requirements; for instance, definition and determination of the acoustic insulation of a wall.

Category Bh

These are intermediate standards related to whole families of products and applied to common characteristics of these product families; for instance, definition and measurement of the impact severity of safety barriers.

Category B

These standards apply to more or less homogenous product families or products and, where applicable, differentiate for intended uses. The standards define the products and spell out their principal characteristics, specific requirements and/or performances related to the essential requirements, the interpretive documents, and, where applicable, the intended uses and related requirement performance levels. Where necessary the standards may include indications of their production process as well as their application.

Signification of Standard Types in Relation to Road Equipment

Relating to the directive mandates respectively, harmonized standards will be established for road equipment as far as this equipment may be characterized as construction products. This term refers to products that are produced for incorporation in a permanent manner in the construction works. This means (a) that its removal reduces the performance capabilities of the works or of parts of the works; and (b) that the dismantling and the replacement of the product are operations that refer to building and civil engineering activities.

Furthermore, it is sure that there will not be a Category A standard for road equipment. Therefore, it is expected that mandates for Category Bh and Category B will be given for the following:

- Permanent road vehicle restraint systems;
- Road marking materials for permanent and temporary horizontal road signs as far as they are fixed on a road surface;
- Permanent road vertical signs but none for equivalent temporary products;
- Permanently installed traffic control devices;
- Noise protection walls; and
- Other permanent road equipment such as antiglare screens and emergency telephone posts.

IMPLEMENTATION OF U.S. PROCEDURES

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U.S. Procedures

U.S. acceptance procedures encompass regulatory requirements along with actual practices. Existing U.S. barrier acceptance procedures have slowly evolved in a step-by-step fashion. Like a European castle or palace built over a period of time that has evolved wing by wing, with major overhauls when necessary, the U.S. procedures have developed requirement by requirement in response to a need or problems, becoming more and more formalized as the conditions and the public interest has required it. Since they were not developed at one time, they are based on regulations along with practice. Specific details of this evolution are addressed in TRB Circular 396, May 1992.

U.S. acceptance procedures reflect the intergovernmental relationships between the highway agencies; that is, the states and local jurisdictions own most of the roads, while the Federal Highway Administration (FHWA) is basically a funding and oversight agency. The following will focus on federal and state highway acceptance procedures for the federal-aid system, with the understanding that most other highway agencies, including toll road authorities, accept the results of this acceptance process. The U.S. procedures also reflect the fact that most of the crash testing is done by third-party testing laboratories, not by the responsible highway agencies.

Test and Evaluation Procedures

1. Standards and guidelines developed by the American Association of State Highway and Transportation Officials (AASHTO)

a. 1985 AASHTO standard specifications for structural supports for highway signs, luminaires, and traffic signals

b. AASHTO guide specifications for bridge railings

2. NCHRP 230, *Recommended Procedures for the Safety Performance Evaluation of Highway Safety Appurtenances*

3. Regulations and guidance contained in the *Code of Federal Regulations*, 23 CFR part 625, Design Standards for Highways

The U.S. roadside safety appurtenance acceptance system is based in part on consensus-based test and evaluation procedures. It is based on performance criteria. It does not include product standards.

In the United States, only the threshold of crashworthiness of a barrier is quantified for acceptance, not the amount of safety. Other critical items in the selection of a roadside device, such as costs, ease of repair, durability, deflection distance, and required site conditions, may be measured and reported but do not serve as a basis for rejection. But as such the U.S. results are subject to interpretation by the user, in this case the highway agency, of the safety device. It is the user agency that is the guarantor of the safety of the installations.

According to federal policy, in the federal-aid road system, each state highway agency is responsible for accepting a roadside safety device. Officially FHWA has said that roadside safety appurtenances other than those covered by letters of acceptance could be acceptable for use on federal-aid highway projects. It is not a

requirement of FHWA that such a letter be issued for each appurtenance to be used in a federal-aid project. If for a particular appurtenance it can be demonstrated to the satisfaction of the highway agency and the FHWA division office that a system has been tested in accordance with recognized procedures and the results are satisfactory, then that support system could be accepted for use in a federal-aid project in the division.

However, in actual practice the highway agencies generally rely on FHWA to certify the safety of devices. The manufacturer or the highway agency that developed the device submits the crash test report to FHWA. FHWA then issues a letter of acceptance stating that the device has met crashworthiness criteria included in NCHRP 230. This acts as a certificate and is accepted as such. In the case of proprietary devices, it is a letter to the developer of the device with copies to the FHWA regions. With devices developed by FHWA, it is by memorandum to the regional administrator.

Items Covered in the Letter

This acceptance letter:

1. Provides a brief description of the device tested;
2. Summarizes the test conditions and results;
3. Limits the approval to the crashworthy characteristics of the devices, with the manufacturer expected to provide information to the highway agency on structural design and installation requirements;
4. States that the state highway agency will expect a manufacturer to certify that the hardware furnished has the same physical and crashworthy properties as demonstrated in the test; and
5. Encourages in-service evaluation or field testing of new roadside safety hardware, even though it is not required by FHWA.

Let's Turn to the Future

What will be the future direction of our acceptance procedures? With the advent of NCHRP 350, with the increased emphasis on quality assurance, and with the desire to interface with CEN standards and procedures, it is likely that U.S. procedures will become more formalized and detailed.

What will happen in the near future, since the new procedures are expected to become available in February as a published research report and FHWA proposes to formally adopt the report? We propose to incorporate it into the *Code of Federal Regulations*, a

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

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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