

WSDOT roadside safety update (December 2016)

Aesthetic Treatment for W-Beam Guardrail

By John Donahue, WSDOT Design Policy and Analysis Manager

Changes were made to the 2016 WSDOT Design Manual and further changes will be made to the January 2017 General Special Provisions (GSP's) that will affect projects involving aesthetic treatment of w-beam guardrail. Changes relate to how the aesthetic appearance of guardrail will be achieved where this approach is desired or required by agreement.

In Washington State, aesthetic treatment of w-beam guardrail is usually stipulated as a brown color. In the past this appearance was achieved through installation of rail manufactured using weathering steel (formerly CorTen) in place of galvanized steel. Instead of the protection afforded by galvanization, weathering steel has the characteristic of oxidizing to a protective patina that stops further oxidation that could result in reduction of structural integrity. At the request of the Federal Highway Administration, WSDOT looked at weathering steel and has determined that its life cycle performance does not match that of galvanized guardrail, and concluded that a substitute that provides a similar appearance will be more cost effective in the long run.

The new approach WSDOT has selected involves a surface treatment to standard galvanized rail, with either a powder coating or weathering stain material being specified. Powder coating may be applied using the industry standard approach described in WSDOT standard specification Division 6. A weathering stain approach is also offered which is sprayed on and cured, creating a chemical reaction in the presence of certain metals to achieve the color.

References to weathering steel were removed from the Design Manual in July 2016. A Division 8 [General Special Provision](#) for the new aesthetic treatment options will be available January 2017. Note that the new treatment applies to all components in a new W-beam installation, including rail, steel posts, hardware, and terminals.

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Implementation of the AASTHO Manual for Assessment of Safety Hardware (MASH)

A [joint agreement](#) signed in November 2015 between the Federal Highway Administration and the American Association of State Highway and Transportation Officials provides information about how the federal roadside safety hardware eligibility process will transition from the previous NCHRP 350 testing standard to the new MASH standard over the next four years. It also provides the basis for transportation agencies to consider their own policies on implementing this new testing criteria. The agreement sets forth the following items:

- AASHTO will continue to be responsible for determining testing criteria.

- FHWA will continue to provide eligibility letters for hardware for federal-aid reimbursement.
- Agencies are urged to establish a process for replacing pre-NCHRP 350 hardware.
- Agencies are encouraged to upgrade existing NCHRP 350 hardware to MASH tested hardware when damaged beyond repair or when policy requires an upgrade.
- A schedule is provided for sunseting NCHRP 350 by hardware category for contracts on the NHS.

The following webpage provides updated information from the national perspective on MASH implementation.

http://safety.fhwa.dot.gov/roadway_dept/policy_guide/road_hardware/

In December 2016, WSDOT will be issuing its own policy guidance regarding implementing MASH. The WSDOT policy directive will adopt the FHWA/AASHTO agreement's implementation timeline, and provide for further direction on implementation. This direction will include the need for coordination between WSDOT divisions. It will also include flexibility with respect to MASH hardware implementation dates, specifically calling for early implementation of MASH for W-beam terminals, while at the same time rescinding the department's current moratorium on the Trinity ET-Plus W-beam terminal. Other hardware categories will be considered for early implementation (compared to the FHWA/AASHTO agreement schedule) in the future on a case by case basis.

MASH implementation at WSDOT will involve actively monitoring national trends and emerging research. As part of this effort, our agency staff participates with many other states in a national Roadside Safety Pooled Fund group. The Roadside Safety Pooled Fund oversees research and testing of roadside hardware, with a current major focus on the transition to MASH tested hardware. Our staff also participates with other state and federal staff on the Transportation Research Board AFB 20 committee on roadside safety design, identifying research trends and assisting in the prioritization of research.

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