



MEMORANDUM

TO: District Engineers

DATE: December 22, 2011

FROM: Mark A. Marek, P.E. *mm*

SUBJECT: Revised Roadway Standards

The following changes have been made to the roadway standard sheets.

The sheets will be applicable to all new construction projects beginning with the September 2012 letting. The use of these sheets prior to that date is at the option of the district. The new standards are available from the Roadway Standards web page in Microstation® "dgn". See <http://www.dot.state.tx.us/business/standardplanfiles.htm>. Please distribute this information to the appropriate district staff and area offices, as well as consulting engineers working on TxDOT projects.

The metal beam guard fence standards are being revised to comply with an FHWA memorandum on rail height. The memorandum requires a minimum 27³/₄ inches to the top of the rail (including construction tolerance) on new installations. However, field experience in Texas and other states has shown that existing guardrail at 27 inches continues to function as intended.

Therefore, existing guardrail will continue to be maintained in accordance to the memorandum from Amadeo Saenz, Jr., P.E. dated November 22, 2005 which updated the TxDOT Maintenance Operations Manual, Chapter 2, section 7, and reads:

Guardrail (Existing)

When a guardrail installation is damaged, a review should be made to determine whether it is feasible to upgrade the installation to current design standards. "Guardrail Damage Ahead" signs should be installed only when substantial damage occurs to guardrail barriers or attenuators which causes them to not function properly. Repairs should be made as soon as practical. The following items should generally be considered in this analysis:

- *Is the section of guardrail still required under current design standards?*
- *Can the guardrail installation be avoided with the elimination of the hazard or the flattening of the slope?*

- *If it is determined that the guardrail is still necessary and more than approximately 50 percent or more of the cost of the installation requires replacement, the installation should be upgraded to current design standards.*

For new guardrail installations, updated crash testing criteria (AASHTO Manual for Assessing Safety Hardware (MASH)) revealed some limiting performance of the 27¾ inch guardrail system and FHWA is strongly encouraging 31 inch guardrail systems (with plus or minus one inch construction tolerance). The 31 inch system offers an overlay tolerance of 3 inches, to a 28 inch height, which meets the new minimum height requirement.

The following represents a summary of the individual sheet changes:

GF(31)-11. GF(31)-11 replaces MBGF-09. The metal beam guard fence height has been raised to a 31" top of rail with the railing spliced mid span of the posts in lieu of at the posts. The low filled culvert post plate has been updated and limits its use on bridge class culverts of up to 50'. An epoxy anchor system option has been added for this post installation. A new non-symmetrical transition and terminal connection have been added for use on downstream anchoring at concrete bridge rails.

GF(31)DAT-11. GF(31)DAT-11 is a new standard. This standard is for a new anchor system to be used on the downstream end of the system when it is located outside the clear zone of opposing traffic. This is a replacement of the Terminal Anchor System (TAS) (also know as the Texas Turndown).

GF(31)LS-11. GF(31)LS-11 is a new standard. This standard is an option for use on culverts less than 25 ft in length where posts can not be imbedded to the required depth. The metal beam guard fence can span a culvert (up to 25 ft) without a post and be located as close as 6" from the back of the headwall to the back of the post.

GF(31)TR-11. GF(31)TR-11 replaces MBGF(TR)-09. This thrie beam transition has been updated to include the non-symmetrical transition to maintain the 31" guardrail height.

GF(31)TL2-11. GF(31)TL2-11 replaces MBGF(TL2)-09. A new low speed (45 MPH or less)(TL2) transition has been developed for the 31" height.

GF(31)MS-11. GF(31)MS-11 replaces MBGF(MS)-10. The mowstrip layout remains the same. The height of the railing has been updated.

BED-11. BED-11 replaces BED-09. Detail A has been updated to show the new connection. The minimum length required of guardrail attached to a bridge rail is shown for the different scenarios.

SGT(7)31-11. SGT(7)31-11 replaces SGT(7)-10. This standard is the updated version of the Extruder Terminal (ET) (wood post) at the 31" height. The length of the system is now 43'-9" and conforms to the mid splice of the guardrail system.

SGT(7S)31-11. SGT(7S)31-11 replaces SGT(7)H-10. This standard is the updated version of the ET (steel post) at the 31" height. The length of the system is now 43'-9" and conforms to the mid splice of the guardrail system.

SGT(8)31-11. SGT(8)31-11 replaces SGT(8)-09. This standard is the updated version of the Sequential Kinking Terminal (SKT) (wood post) at the 31" height. The length of the system is now 43'-9" and conforms to the mid splice of the guardrail system.

SGT(8S)31-11. SGT(8S)31-11 replaces SGT(8)H-09. This standard is the updated version of the SKT (steel post) at the 31" height. The length of the system is now 43'-9" and conforms to the mid splice of the guardrail system.

In addition to the new standards above, the following existing metal beam guard fence standards have been updated to the minimum 28" height for projects the district has chosen not to go with the 31" rail height prior to the September 2011 letting. All other aspects (splice at posts, transitions, radius rail, end treatments, etc.) of the metal beam guard fence system have not changed from the existing system.

MBGF-11. MBGF-11 updates the rail height to 28" on MBGF-09.

MBGF(SR)-11. MBGF(SR)-11 updates the rail height to 28" on MBGF(SR)-10A. This system has not been tested or accepted at a 31" height. Research is underway to develop a compliant 31" system.

MBGF(TR)-11. MBGF(TR)-11 updates the rail height to 28" on MBGF(TR)-09.

MBGF(TL2)-11. MBGF(TL2)-11 updates the rail height to 28" on MBGF(TL2)-09.

MBGF(T101)-11. MBGF(T101)-11 updates the rail height to 28" on MBGF(T101)-09.

MBGF(MS)-11. MBGF(MS)-11 updates the rail height to 28" on MBGF(MS)-10.

BED(28)-11. BED(28)-11 updates the rail height to 28" on BED-09.

SGT(7)-11. SGT(7)-11 updates the rail height to 28" on SGT(7)-10.

SGT(7)H-10. SGT(7)H-10 has no changes. Rail height is currently at 27- 5/8".

SGT(8)-11. SGT(8)-11 updates the rail height to 28" on SGT(8)-10.

SGT(8)H-09. SGT(8)H-09 has no changes. Rail height is currently at 27- 5/8".

If you have any questions or need additional information concerning these standard details, please contact Rory Meza, P.E. at (512) 416-2678.

cc: Administration
Audit Office
Bridge Division
Construction Division
Environmental Affairs Division
General Services Division
Maintenance Division
Right of Way Division
Texas Turnpike Authority Division
Traffic Operations Division
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District TP&Ds
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