



MEMORANDUM

To: District Engineers
Attn: Directors of Transportation Planning and Development
and District Bridge Engineers

December 13, 2001

From: Mary Lou Ralls, P.E.

Subject: New and Revised Bridge Railing Standards (English)

New and revised English bridge railing standards with an issue date of December 2001 are posted on the TxDOT web site. Effective immediately, these new and revised standards replace the old English sheets that were issued January 1996.

The revisions bring TxDOT bridge railing into compliance with the FHWA-mandated performance requirements of NCHRP Report 350 and work with the Design Division's new metal beam guard fence transition details issued on December 3, 2001. The revised bridge standards and guard fence standards are applicable to all new construction projects beginning with the May 2002 letting. Use prior to that date is at the option of the district.

Bridge Railing Design Speed Acceptability/Test Level Status

TxDOT bridge rails are now divided into two NCHRP Report 350 design speed categories:

Test Level 3 (TL-3), or "high speed," acceptable for design speeds greater than 45 mph
Test Level 2 (TL-2), or "low speed," acceptable for design speeds of 45 mph or less

Check the standard sheets or the online Bridge Railing Manual for the acceptable test level status of each bridge railing.

Available Bridge Railing

The following bridge railing standards are presently on the TxDOT website: T101, C101, T201, C201, B201, T203, C203, T4 (S), C4 (S), T4 (A), T411, T501, and SSTR.

The following bridge rails are also acceptable under NCHRP Report 350 for various test levels, but are not yet available as standards: C411, C501, T503, T504, T6, and HT. Standards for these bridge rails will be issued by the end of January 2002. Until that time, working drawings of these rails are available from the Bridge Division.

Metric versions of NCHRP 350 compliant bridge rails are not available as standards. The Bridge Division will work with districts on a case-by-case basis as needed for remaining metric projects.

Other Bridge Railing

The following bridge rails are no longer available or are presently under redesign:

Railing	Status
T202/C202	Replaced by the T203 and C203.
T421	Post and runner geometry is being analyzed.
C4(A)	Structural capacity of the aluminum pedestrian railing is being analyzed and may be redesigned.
C6	Retired due to lack of use.
T501SW	This is the T501 with a sound wall on top of it; the anchorage of this railing is presently under design.
T502, C502	No longer needed because drain slots have been added to the T501 and C501.

Notes

There are a number of features to note on the new bridge railing standards:

- Last week BRG published the first edition of the online Bridge Railing Manual. The manual provides information about suitability of each bridge railing, including the NCHRP 350 test level and associated design speed acceptability.
- Most combination rails are only acceptable for use in TL-2 (low-speed) applications. This is because the handrail, which is added to bridge rails to make them suitable for pedestrian use, is a potential occupant compartment intrusion hazard. The only combination bridge railing suitable for TL-3 (high-speed) applications is the C4 (S).
- Optional drainage slots are added or revised for the concrete parapet rails T201, C201, T4 (S), T4 (A), C4 (S), T501, and SSTR.

- TxDOT has recently received approval to use the T6 for TL-2 (low-speed) applications. The existing standard is being revised with a modified post and base plate to improve its breakaway capabilities. In cases where a metal railing is needed for high-speed applications, the T101 should be used. A new drawing for a rail anchorage curb, the RAC, now accommodates the use of any bridge railing on culverts. This detail is available from BRG as a working drawing and will be available as a standard when BRG issues the next culverts standards package. The Bridge Railing Manual, which currently says that the T6 is not approved at any level, will be updated to show approval for TL-2 applications.
- The minimum embedment depth for rail-to-deck anchorage reinforcement is increased from 5 inches to 6 ½ inches.
- Details for anchoring concrete railing over prestressed panels were removed due to strength concerns.

The new standards are available from the Bridge Standards (English) web pages in MicroStation® “dgn” and Adobe® Acrobat® “pdf” formats; therefore, copies of the sheets were not included with this memorandum. Please distribute this information to the appropriate district staff and area offices as well as those consulting engineers working on TxDOT projects.

If you have questions or comments concerning these new standards, please contact David W. McDonnold, P.E., at (512) 416-2229, Mark J. Bloschock, P.E. at (512) 416-2178, or Jon T. Ries at (512) 416-2191.

Note: Original signed by Mary Lou Ralls

cc: Administration
Division and Office Directors
Federal Highway Administration
All Bridge Division Employees
Bridge Consultants