



Montana Department of Transportation
PO Box 201001
Helena, MT 59620-1001

Construction Memorandum

To: District Construction Engineers

From: Paul Jagoda, P.E.
Construction Engineering Services Engineer

Date: July 08, 2010

Subject: Construction Tolerances for Structures

The new special provision STRUCTURE TOLERANCES (see link) was initiated June 6, 2010 and is being included in most projects involving bridge repair or construction. This Construction Memorandum is intended to provide field inspectors with guidance for using the given tolerances and determining conformance of the work.

<http://www.mdt.mt.gov/other/bridge/external/special-provisions/Br201.77.doc>

It is unrealistic to expect that every structure can be built to exact dimensions and elevations. The tolerances listed in Table 550-1 of the Special Provision provide for some allowable deviation from the ideal. The values given in the table were determined based on published National Standards and/or industry common practice.

Work that does not exactly match the plan dimensions but is within the limits listed in the table may be assumed to not adversely affect the structure and therefore would be acceptable.

In the event a portion of the work is outside the limits listed in Table 550-1 of the Special Provision, the work may still be acceptable under the Special Provision. In this case, the Project Manager should contact the Bridge Reviewer and/or the Bridge Bureau for a recommendation of how to proceed. In some cases, it may be determined that no corrective action is required. When it has been determined that there would be a detrimental effect to the structure, the Special Provision requires the Contractor to submit a plan for corrective action.

DECK FORMS

The following guidance, relating to cast-in-place concrete bridge decks, is intended to increase uniformity and reduce the potential for disputes:

Deck form elevations should be calculated by MDT and used to check the Contractor's formwork. The calculated elevations must take into account the anticipated dead load deflections given in the plans. In addition, the inspector will need to find out if the Contractor has assumed a form "crush" value when setting the form elevations. This value is a small adjustment that is sometimes added to compensate for the formwork compressing under the weight of the concrete. Values of 1/4 or 3/8 inch are typical. It is important for MDT to be consistent with the Contractor's use of the form "crush" adjustment in order to accurately check form elevations and determine whether or not they fall within the specified tolerances. When calculating form elevations MDT should use the same value for form "crush" that the Contractor has assumed.

DECK SMOOTHNESS

The Special Provision allows for a deviation from deck surface smoothness of up to 3/16" in 10 feet (measuring parallel with centerline). The intent of the tolerance is to maintain a smooth vertical profile by preventing dips and bumps in the surface that would be felt by a driver. Small localized imperfections such as wrinkle marks caused by burlap or finishing ridges would not be detrimental to the ride and would not be considered as unacceptable in terms of the smoothness tolerance. Many times these imperfections are present as a result of the requirement to place wet burlap within 15 minutes of screeding the concrete. Of course damage to the surface such as gouges, footprints, or marks left by soaker hoses or the finishing screed may be determined to be unacceptable under requirements listed in the Special Provision and/or elsewhere in the Contract.

For assistance or questions relating to this Memorandum, please contact the District's Construction Engineering Services Bridge Reviewer.

FB/fb

CC: Dwane Kailey, PE	District Operations Engineers	CES Bureau	Lisa Durbin, PE
Kevin Christensen, PE	FHWA Operations Engineers	Patrick Metzger-MCS	Kent Barnes, PE
Joe Nye, PE	Matt Strizich, PE	EPMs	