

**KANSAS DEPARTMENT OF TRANSPORTATION
SPECIAL PROVISION TO THE
STANDARD SPECIFICATIONS, EDITION 2007**

SECTION 712

STRUCTURAL STEEL CONSTRUCTION

Page 700-46, subsection 712.2. Delete Steel Fasteners.....DIVISION 1600, and add the following:

Provide Steel Fasteners that meet **DIVISION 1600** and special provision 07-16004, latest version.

Page 700-48, subsection 712.3b.(2). Delete the third paragraph and replace with the following:

The threads of machined bolts must be entirely outside the shear plane. Use approved nut locks or flat washers $\frac{1}{4}$ inch thick under nuts, with the threads burred. Ream the holes for machined bolts. The hole diameters may not be more than $\frac{1}{32}$ inch greater than the diameter of the finished bolt. In bolted connections, draw the bolts up tight and burr the threads at the face of the nut with a pointed tool.

Page 700-48, subsection 712.3b.(4). Delete the second paragraph and replace with the following:

Provide the Engineer applicable test results and certifications for bolt lots, KDOT approved DTI assembly lots, and DTI lots, as applicable, being used on the project: Rotational-Capacity Test (Bolt, Nut and Hardened Washer) & ASTM F 606 Compression Load Test (DTI).

Page 700-48, subsection 712b.(4) Calibration. Delete the Calibration section (excluding FIGURE 712-1) and associated bullets, and replace with the following:

Calibration. Calibration (**FIGURE 712-1**) is the process of determining the correct tightening procedures so that consistency and accuracy are obtained. This procedure is only applicable to calibrating the turn of fasteners using DTI's or KDOT approved DTI assemblies. This is only used on girder splices and diaphragm connections or as noted in the Contract Documents.

The calibration procedure is as follows:

- Using plies with equivalent thickness of the connection and correct bolt hole diameter, snug-tighten the fasteners such that all plates are in uniform contact;
- Place appropriate marks on the bolt, nut and plate so that the amount of nut rotation relative to the bolt can be verified;
- Hold the static element and rotate the turned element one half a turn. Record the number of gaps that refuse the 0.005 inch gage;
- If this rotation causes all of the gaps to refuse the feeler gage, move to another bolt and rotate the turned element $\frac{1}{3}$ of a turn and record the number of gaps that refuse the feeler gage;
- If this rotation causes all of the gaps to refuse the feeler gage, again, review snug-tight procedures;
- If this rotation does not cause all of the gaps to refuse the feeler gage, continue rotating the turned element until all the gaps refuse the 0.005 inch gage. Record the rotation. This is the target rotation for the bolting operation for this bolt length and diameter;
- Repeat this procedure for every bolt length and diameter on the project.

Page 700-50, subsection 712.3b.(4) Installation. Delete the third paragraph on the page and replace with the following:

Only use a Direct Tension Indicator (DTI) or a KDOT approved DTI assembly for girder splices and diaphragm connections, or as noted in the Contract Documents. Any DTI assembly which has separated due to shipping or handling shall be rejected.

Page 700-50, subsection 712.3b.(4) Installation. Add the following after the fourth paragraph and associated bullets on the page:

Install the KDOT approved DTI assembly by one of the following methods:

- Place the KDOT approved DTI assembly on the threads of the bolt and turn the DTI assembly to tighten. This method is preferred whenever possible.
- Place a hardened flat washer under the bolt head, place the DTI assembly on the threads and turn the bolt to tighten.

Page 700-50, subsection 712.3b.(4) Installation. Delete the fifth paragraph on the page and replace with the following:

On connections specifying the use of DTI's the Contractor may substitute a KDOT approved DTI assembly. Use the turn-of-nut method and tighten all bolts in the connection as determined from the "Target Rotation" in **FIGURE 712-1**. During the tightening operation, there must be no rotation of the part not turned by the wrench. Perform tightening systematically from the most rigid part of the joint to its free edges. Place appropriate marks on the bolt, nut and plate so that the amount of nut rotation relative to the bolt can be verified. Use the turn specified in **TABLE 712-2** for all connections other than girder splices and diaphragm connections.

Page 700-50, subsection 712.3b.(4) Installation. Delete the last paragraph on the page and replace with the following:

Do not reuse ASTM A 490 and A 325 bolts, or any bolt that has been fully tightened, as a permanent bolt.

10-16-09 BD(BS) (MAI)
Apr-10 Letting