

## Connection Bolts

Bolts used to make connections in primary framing members such as columns and rafters are usually ASTM A325 bolts. Bolts used to make connections in secondary framing members such as the purlins are usually ASTM A307 bolts. The size and grade of the bolts are marked on the Building Construction Drawings.

The following information is copied from the AISC ninth edition, "Specification For Structural Joints Using ASTM A325 or A490 Bolts". This is provided to you only as a guide. It is the responsibility of you as the installer to assure proper tightness of all bolts.

## Turn-Of-Nut Tightening

When turn-of-nut tightening is used, hardened washers are not required except ( as otherwise indicated on the Construction Drawings.)

A representative sample of not less than three bolts and nuts of each diameter, length, and grade to be used in the work shall be checked at the start of work in a device capable of indicating bolt tension. The test shall demonstrate that the method of estimating the snug-tight condition and controlling turns from snug tight to be used by the bolting crews develops a tension not less that five percent greater than the tension required by Table 4.

Bolts shall be installed in all holes of the connection and brought to a snug tight condition. Snug tight is defined as the tightness that exists when the plies of the joint are in firm contact. This may be attained by a few impacts of an impact wrench or the full effort of a man using an ordinary spud wrench. Snug tightening shall progress systematically from the most rigid part of the connection to the free edges, and then the bolts of the connection shall be retightened in a similar systematic manner as necessary until all bolts are simultaneously snug tight and the connection is fully compacted. Following the initial operation all bolts in the connection shall be tightened further by the applicable amount of rotation specified in Table 5. During the tightening operation there shall be no rotation of the part not turned by the wrench. Tightening shall progress systematically from the most rigid part of the joint to its free edges. Impact wrenches, if used, shall be of adequate capacity and sufficiently supplied with air to perform the required tightening of each bolt in approximately 10 seconds.

## Bolt Tightening

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NOTE: These drawings are intended to depict general installation of item(s) described above. Some item(s) may have been omitted for clarity of presentation. Consult your erection manual or additional SD-Sheets for further guidelines and/or clarifications.

DRAWING NO.

SD238