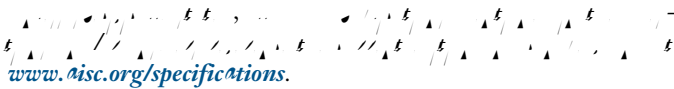


# steel interchange



## Bolt Head and Nut Angles

**Must bolt heads and nuts be oriented at the same angle, as illustrated in Figure a? Or is the arrangement illustrated in Figure b acceptable?**

Generally, there is no requirement related to the orientation of bolt heads and nuts. The bolts can be entered from either side, and all bolts in a joint need not be placed from the same side. Bolt heads can be placed on either or both sides of the joint.

However, when addressing fabrication and erection requirements for architecturally exposed structural steel (AESS), Sections 10.4.1 and 10.6 of the AISC (ANSI/AISC 303) state: "(f) All bolt heads in connections shall be on the same side, as specified, and consistent from one connection to another." These requirements address only the location of the bolt head, not its angle. If the connection will need to be applied at each bolt to provide firm contact. For a

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## Nondestructive Testing of Weld Access Holes

**Section N5.5c of the 2010 *Specification* states: “Thermally cut surfaces of access holes shall be tested by QA using MT or PT when the flange thickness exceeds 2 in. (50 mm) for rolled shapes or when the web thickness exceeds 2 in. (50 mm) for built-up shapes. Any crack shall be deemed unacceptable regardless of size or location.” A similar requirement does not appear in the 2016 *Specification*. Can you provide some background for the change?**

Yes. This requirement was removed in the 2016 *Specification* based on reports that the required nondestructive testing (NDT) did not reveal cracks in weld access holes in practice. Either the cracks are simply not present or if they are, then the grinding required in Section M2.2 is sufficient to remove them. Therefore, it was decided that there was no reason to continue a practice that apparently served no purpose.

## Overstrength and Headed Stud Anchors

**There is a discussion about collector elements and their connections on page 8-14 of the 2nd Edition AISC *Seismic Design Manual*. My interpretation of this discussion is that if steel headed-stud anchors are used to transfer horizontal shear to the steel wide-flange beams, then the connection must be designed for the amplified seismic load (0.9 level loads). This is not common practice in my experience. Is my interpretation correct?**

Your interpretation of what is done in the example is correct. The example reflects the interpretation of requirements in other codes (ASCE 7) by the AISC Committee on Manuals. If you have questions relative to the intent of other codes, you will need to contact the organization that produces the code in question—in this case, ASCE. I will provide some additional thoughts.

The Commentary to Section B5.1 of the *Specification* (ANSI/AISC 341) states: “For recommendations on the design of diaphragms, see Sabelli et al. (2011).” The NEHRP document referenced is freely available online ([tinyurl.com/nehpsdtb5](http://tinyurl.com/nehpsdtb5)) and provides some further insight into the various approaches that can be used and further considerations. It states: “To complete the diaphragm analysis, forces on