

OCBFS IN LOW BUILDINGS

I have a low building in Seismic Design Category D and have run into a problem designing the bracing connection in an Ordinary Concentrically Braced Frame (OCBF). There used to be an exemption for low buildings (Section 14.5 of the 1997 Seismic Provisions) in OCBFs. It is unclear to me whether or not these exemptions still exist in AISC Seismic Provisions Supplement No. 2. The new provisions make it look as if the engineer has to design the brace connection in this low building to develop the full tensile capacity of the brace...for serviceability reasons, my brace is a 6 x 6 HSS (with a tensile capacity of about 300 kips). However, the greatest design load on the brace is only about 30 kips. Does the bracing connection have to be designed for the tensile capacity of the brace? Is there a good way out of this?

Question sent to AISC Steel Solutions Center

The first question that needs to be asked is "What is the Applicable Building Code?" The 2000 IBC refers to the 1997 AISC Seismic Provisions including Supplement No. 1. The 1997 UBC doesn't refer to the AISC Seismic Provisions Supplement No. 2 may not be applicable.

If the 1997 AISC Seismic Provisions including Supplement No. 2 (or later) is applicable for his project, the brace connection needs to be designed for the tensile capacity of the brace. Supplement No. 2 reflects a definite change in philosophy, reflecting the potentially non-ductile performance of OCBFs. The revised Provisions are clear, simple to use, and definitely encourage the use of the highly ductile SCBFs. The same holds true for the 2000 Seismic Provisions

The OCBF strength requirements are not serviceability related, they are to assure that the connections have a strength to match the maximum load the member can deliver. From a practical standpoint, if the bracing members are so long that slenderness requirements govern the connections, then the design should be based on the slenderness requirements.

