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Minimum Thickness of the Column Face in the Welded Unreinforced Flange-Welded Web (WUF-W) Moment Connection to Box Column without Continuity Plate

The Welded Unreinforced Flange-Welded Web (WUF-W) Moment Connection is one of the most common types of rigid connections in steel moment frames. However, due to continuity plates installing challenges in the box columns, developing the design equation of continuity plates and finding creative alternative solutions instead of installing inner continuity plates in box columns are the matter of interest to the researchers. Considering the new continuity plate design approach in the AISC 341-16 and the part 10 of the Iranian National Building Code and the ambiguities that have arisen, in this research 42 WUF-W connections have been modeled and numerically studied under monotonic and cyclic loading. The results show that the approach has been taken by the 5th editions of part 10 of the Iranian National Building Code based on mandatory installing the continuity plate in box columns is strict. It seems that the equation for design the minimum thickness of the continuity plates in 4th edition of part 10 of the Iranian National Building Code can be satisfy the seismic provisions of AISC 341-16 by the correction factor equal to 1.7.

Keywords: WUF-W Connection, Box Column, Rigidity, Cyclic Loading, Continuity Plate.