**Investigation on Instantaneous Center of Rotation Method**

**For Design of Eccentrically Loaded Weld Group**

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**Abstract**

The weld size of an eccentrically loaded weld group in plane can be determined using the instantaneous center of rotation method (ICRM) of the AISC design manual. ICRM assumes that the weld element farthest from the instantaneous center (IC), which can be determined upon the eccentricity and geometry of the weld group, controls the design strength of the eccentrically loaded weld group. However, in some cases, ICRM can unexpectedly provide two or more ICs. These multiple ICs may cause confusion among engineers on the selection of the mechanically correct IC. This paper illustrates the case of multiple ICs in designing weak-axis welded steel moment connections and discusses relevant problems, and proposes the recommendations to select correct IC.

**Keywords:** Instantaneous center of rotation method, weak-axis welded steel moment connections, Welded connections, Eccentric load

**Topics and Scope:** Connections