

SEISMIC DESIGN OF THE KAISER BOLTED BRACKET MOMENT CONNECTION

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ABSTRACT

Developed by Steel Cast Connections, Lehigh University, and IFC Kaiser Engineers, the Kaiser bolted bracket (KBB) is a steel beam-to-column moment-resisting connection. The connection consists of cast high-strength steel haunch brackets that are fastened to the flanges of a beam and then bolted to a column. The brackets can be either fillet welded or bolted to the beam. At high levels of inelastic drift, connection yielding and plastic hinge formation occur primarily in the beam near the tip of the bracket, thereby eliminating inelastic deformation demands at the face of the column. The connection is designed to eliminate field welding, facilitate erection, and reduce installation costs. The brackets are manufactured in a variety of sizes and are proportioned to develop the probable maximum moment capacity of the connecting flexural member.

The connection has been prequalified for a number of beam and column sizes with tested specimens exceeding 0.04 radian total rotation and behaving in a ductile manner. The connection has been used on a number of building construction projects and the all bolted version has also been used to retrofit pre-Northridge moment connections. This paper provides recommendations for the design and detailing of the Kaiser bolted bracket (KBB) moment connection. Included is a brief description of the connection, a design procedure, recommendations on detailing features, and a design example. The paper also summarizes the experimental data used for prequalification.

Short Version

This paper summarizes the prequalification testing, design and detailing recommendations for the Kaiser bolted bracket (KBB), a steel seismic moment resisting connection. The KBB is a cast high-strength steel haunch bracket that is fastened to the top and bottom flanges of a beam and then bolted to a column. The connection is designed to eliminate field welding, and facilitate steel erection.

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