

ATLSS Steel Beam-to-Column Connections

The ATLSS Connection (AC) is a new beam-to-column connection consisting of a tenon, which is bolted and welded to the end of the beam, and a mortise, which is attached to the column and into which the tenon piece is dropped. It is safer, easier, and faster to erect and fit-up than traditional beam-to-column connections. The cast-steel connection is self-guiding and self-aligning, and it requires a single bolt as a field fastener. It facilitates modular construction, speeds erection time, and increases worker safety.

During a recent pilot test in a chemical plant, a 20'x30' bay consisting of many individual members was pre-assembled on the ground using traditional connections and erected with the AC on each corner. It realized a 40% erection time savings compared to erection of a similar bay in an adjacent span using traditional methods. And there was no need for ironworkers to be on unsecured beams during erection, as required by traditional methods. Development work is continuing for other versions of the connection including a full moment connection, a composite concrete/steel system, and a version using tubular steel members. The current connection uses conventional cranes, but the ultimate goal is to develop automated crane systems that take full advantage of connection capabilities. ATLSS is developing a government/industry/university consortium and commercialization strategy to move AC to the field.

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