Overview of a Shear Connection

A typical steel shear connection is a combination of structural elements and joints used to transfer vertical forces due to gravity between two or more members, primarily from a beam or girder to a column. These steel shear connections will utilize angle or plate material as a connection to join the two members using high-strength bolts or welds. To speed up the time it takes to assemble the connection at the project site, the connection material (angle, angles, plates, etc.) is usually joined to either to the end of the beam or to the column ahead of time in the fabrication shop.

The figure below shows how gravity loading is transferred through a shear connection in a structural steel frame. It is common to make a connection length equal to a minimum of half of the beam depth to provide beam stability (prevent rotation of the beam) during erection. For example, a 16" deep beam would typically have as a minimum, 3 rows of bolts (connection length about 9") or a weld length of 9". In both cases, the connection length provided, 9", exceeds half the depth of the beam which is 8". Just (3) ¾" diameter high-strength bolts can have a combined strength of around 70,000 lbs.