



Figure 3-16 Geometry of Stiffened End Plate Connection

3.6.3 Bolted Flange Plate Connections

This section provides procedures for design of bolted flange plate (BFP) connections utilizing plates welded to the column flanges and bolted to the beam flanges. The flange plates are welded to the column flange using CJP welds following the recommendations given in sections 3.3.2.1 through 3.3.2.5. The flange plates are bolted to beam flanges following the recommendations of Sections 3.3.4.1 and this Section. The beam web is connected to the column flange with a bolted shear tab. A detail for this connection type is shown in Figure 3-17. Table 3-10 presents the limitations for this connection prequalification. Figure 3-18 shows dimensions and nomenclature to be used with the design procedure of Section 3.6.3.1.

Commentary: The behavior of this type of connection can be controlled by a number of different modes including: flexural yielding of the beam section, flexural yielding of the cover plates, yielding of the column panel zone, net-section tensile failure of the beam flange or cover plates, shear failure of the bolted connections, or failure of the welded joints. Some of these modes are brittle, while others have significant ductility. Connections of this type must be controlled by a preferred ductile behavior where the various elements of the connection are designed with sufficient strength that the other modes are unlikely to occur. Tests of connection assemblies incorporating this detail, as described in FEMA-355D, indicate that the best inelastic behavior is achieved with balanced yielding in all of the three preferred mechanisms: beam flexure, cover plate extension and compression, and panel zone yielding. When this balanced behavior occurs, the required rotations may be met without any of the mechanisms fully developing their maximum strain-hardened strength. For