

legs, the use of single bolts or the attachment of adjacent web members to opposite sides of the *gusset plate* or chord shall constitute different end conditions requiring the use of Chapter H provisions.

## E6. BUILT-UP MEMBERS

### 1. Compressive Strength

(a) The *nominal compressive strength* of *built-up members* composed of two or more shapes that are interconnected by bolts or welds shall be determined in accordance with Sections E3, E4, or E7 subject to the following modification. In lieu of more accurate analysis, if the buckling mode involves relative deformations that produce shear *forces* in the connectors between individual shapes,  $KL/r$  is replaced by  $(KL/r)_m$  determined as follows:

(i) For intermediate connectors that are snug-tight bolted:

$$\left(\frac{KL}{r}\right)_m = \sqrt{\left(\frac{KL}{r}\right)_o^2 + \left(\frac{a}{r_i}\right)^2} \quad (\text{E6-1})$$

(ii) For intermediate connectors that are welded or pretensioned bolted:

$$\left(\frac{KL}{r}\right)_m = \sqrt{\left(\frac{KL}{r}\right)_o^2 + 0.82 \frac{\alpha^2}{(1 + \alpha^2)} \left(\frac{a}{r_{ib}}\right)^2} \quad (\text{E6-2})$$

where

$\left(\frac{KL}{r}\right)_m$  = modified *column* slenderness of *built-up member*

$\left(\frac{KL}{r}\right)_o$  = column slenderness of built-up member acting as a unit in the buckling direction being considered

$a$  = distance between connectors, in. (mm)

$r_i$  = minimum radius of gyration of individual component, in. (mm)

$r_{ib}$  = radius of gyration of individual component relative to its centroidal axis parallel to member axis of buckling, in. (mm)

$\alpha$  = separation ratio =  $h/2r_{ib}$

$h$  = distance between centroids of individual components perpendicular to the member axis of buckling, in. (mm)

(b) The nominal compressive strength of built-up members composed of two or more shapes or plates with at least one open side interconnected by perforated *cover plates* or *lacing* with *tie plates* shall be determined in accordance with Sections E3, E4, or E7 subject to the modification given in Section E6.1(a).

### 2. Dimensional Requirements

Individual components of compression members composed of two or more shapes shall be connected to one another at intervals,  $a$ , such that the effective slenderness