

CODE

COMMENTARY

17.11.1.1.6 Concrete breakout strength of the shear lug shall satisfy $\phi V_{cb,sl} \geq V_u$ with $\phi = 0.65$.

17.11.1.1.7 Nominal concrete breakout strength, $V_{cb,sl}$, shall be determined by 17.11.3.

17.11.1.1.8 For attachments with anchors in tension, both (a) and (b) shall be satisfied:

- (a) $h_{ef}/h_{sl} \geq 2.5$
- (b) $h_{ef}/c_{sl} \geq 2.5$

17.11.1.1.9 The moment from the couple developed by the bearing reaction on the shear lug and the shear shall be considered in the design of the anchors for tension.

17.11.1.2 Horizontally installed steel base plates with shear lugs shall have a minimum 25 mm diameter hole along each of the long sides of the shear lug.

R17.11.1.1.8 The lower bound limitations on the ratios of anchor embedment depth to shear lug embedment depth and anchor embedment depth to the distance between the centerline of the anchors in tension and the centerline of the shear lug in the direction of shear are based on available test data. The required lower limits reduce potential interaction between concrete breakout of the anchors in tension and bearing failure in shear of the shear lug.

R17.11.1.1.9 The bearing reaction on shear lugs occurs further below the surface of the concrete than the bearing reaction on anchors and embedded plates. As a result, the couple caused by the bearing reaction and the shear load needs to be considered when determining anchor tension.

R17.11.1.2 Base plate holes are necessary to verify proper concrete or grout consolidation around the shear lug and to avoid trapping air immediately below a horizontal plate. Holes in the base plate should be placed close to each face of the shear lug. For a single shear lug, place at least one inspection hole near the center of each long side of the shear lug. For a cruciform-shaped shear lug, four inspection holes are recommended, one per quadrant. For other configurations or long shear lug lengths, the licensed design professional should specify inspection hole locations that will permit adequate observation and allow trapped air to escape.

17.11.2 *Bearing strength in shear of attachments with shear lugs, $V_{brg,sl}$*

R17.11.2 *Bearing strength in shear of attachments with shear lugs, $V_{brg,sl}$*

17.11.2.1 Nominal bearing strength in shear of a shear lug, $V_{brg,sl}$, shall be calculated as:

$$V_{brg,sl} = 1.7f'_c A_{ef,sl} \psi_{brg,sl} \quad (17.11.2.1)$$

where $\psi_{brg,sl}$ is given in 17.11.2.2.

R17.11.2.1 The nominal bearing strength in shear of a shear lug, $V_{brg,sl}$, given by Eq. (17.11.2.1) is based on a uniform bearing stress of $1.7f'_c$ acting over the effective area of the shear lug as discussed in [Cook and Michler \(2017\)](#). Although the bearing strength in shear of attachments with shear lugs is a function of bearing on the shear lug, embedded plate (if present), and welded anchors (if present), the method presented in 17.11.2 only includes the contribution of shear lugs. Cook and Michler (2017) discuss development of the method and a less conservative procedure to include bearing on the embedded plate and welded anchors.