

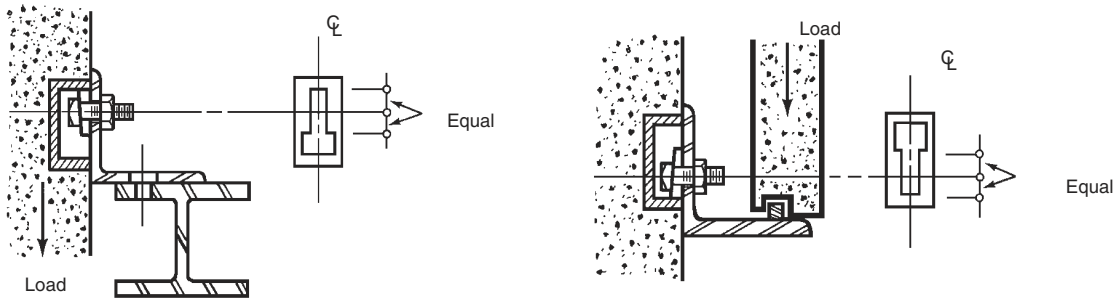
## Shelf Angle Inserts for Secondary Connections

The concrete surface surrounding the Dayton Superior Shelf Angle Insert must be smooth and flat to ensure that the connection angle will bear against the concrete. To achieve this, it is recommended that the insert body be recessed 1/8" below the concrete surface. Care must be taken not to overtighten the bolt to prevent damage to the insert. Shelf angle inserts are used with connection angles and an askew head bolt. The minimum bolt size should be 3/4", and the shear and tension capacities of the bolts should be checked to ensure that they provide the required capacity.

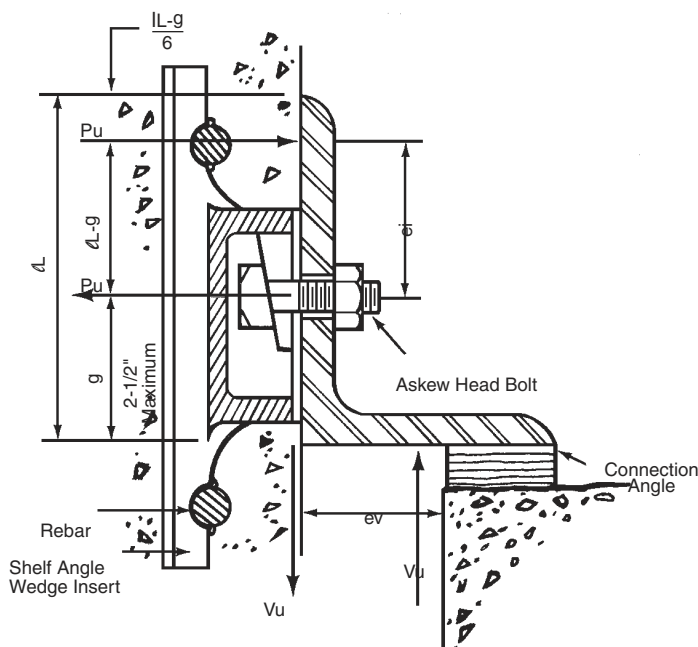
The successful use of shelf angle inserts depends on a full engagement of the askew bolt head in the wedge, snug tightening of the nut and the full fit of the nut with the wedge surface. If this cannot reliably be achieved, stress concentrations at the bolt head may lead to unpredictable behavior.

The problems connected with the use of these inserts often outweigh the advantages: (1) the insert must be oriented correctly; (2) insert must be perfectly level; (3) no inspection of the askew head is possible after panel is erected; (4) connection is very sensitive to over-or undertightening of nut; and (5) connection is not able to resist force reversals or earthquake loadings. Considering these limitations, it is recommended that shelf angle inserts be used only for secondary type connections. Prime connections of precast elements to the building frame should not be made with shelf angle type inserts.

**Warning:** Do not use shelf angle inserts for lifting or handling precast elements.



**Note:** When using shelf angle inserts, care should be taken to install with proper orientation. Use for lightly loaded connections only.



**Note:**

$$\frac{ev}{ei} \leq 1.0$$

$$Pu = Vu \left( \frac{ev}{ei} \right)$$

Vu must not exceed the safe working load of the insert.

Vertical Loads Transferred To Insert\*

\*PCI-Manual for Structural Design of Architectural Precast Concrete