



Sekure-Lok Pty. Ltd.

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6<sup>th</sup> October 2016

**Design of Clip, to be Used in Conjunction with Sekure Lok,  
to Attach Precast Panels to Structural Steel Members.**

Sekure-lok have produced a clip (as indicated in the appended photos) and have asked Henry and Hymas to comment on the design.

Precast concrete panels are frequently attached to structural steelwork by steel clips that attach to the panel by a single bolt to a cast in ferrule. Usually the purpose of the clip is to transfer winds on the panels into the steel structure. In some circumstances the clips are relied upon to connect the panels to the structure during a fire event.

The single bolt connection allows tolerance in the ferrule location. It is also possible for the clip to rotate about the bolt and disengage from the structural steelwork. This has historically been prevented by site welding the clip to steel member. However there are problems with such welding :

- 1) Paint or galvanised finishes to the structural steel member are compromised by the site welding and require subsequent repair. In the case of a galvanised finish the repair cannot restore the full integrity of the galvanising.
- 2) The welding is generally carried out some time after the initial panel erection leaving the clip vulnerable to rotation for part of the construction period.
- 3) Inspection to ensure all welds have been made is not always easy – particularly after paint finishes have been repaired.

The new Secure-Lok clip has a 5mm square bar welded behind it that will fit against the member flange or angle leg to which the clip will attach the panel. The fit of this bar against the panel will prevent rotation of the clip. The clip incorporates a slotted hole to accommodate attaching it to the panel with a single 20mm diameter bolt. The slotted hole provides tolerance with regard to the ferrule position. This may mean that the square bar is not directly in contact with flange or angle leg. However, even if the bolt is at the extreme of the slotted hole, the rotation of the clip will be sufficiently limited to prevent disengagement.



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The only way the clip could then rotate would be if the bolt was sufficiently loose to allow the 5mm bar to ride up over the flange on angle leg. Attachment of the Sekure- Lok anti rotation device to the bolt head will prevent such a failure.

The Sekure- Lok clip, used in conjunction with the Secure-Lok anti rotation device attached to the bolt head, will prevent rotation of the clip. Welding to prevent clip rotation will therefore not be required. The combination of clip and anti rotation device will eliminate the above mentioned problems with site welding.

It is noted that the clip is significantly wider than alternatives that are commonly used. The additional width not only reduces potential rotation but provides strength that better matches the capacity of the bolt.

**Henry and Hymas strongly endorse the use of the Secure-lok clip used in conjunction with the Secure-lok anti rotation device. Preventing the rotation of clips securing precast panels to a steel frame is fundamental to the clips reliably transferring wind loads between the two elements. Prevention of rotation of the clips is also fundamental to achieving the aim of clause C1.11 of the BCA which is that panels will remain attached to the steel structure in a fire and therefore not collapse in an outward direction.**

Yours faithfully,

For, and on behalf of

H & H Consulting Engineers Pty Ltd



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