David Beneke Consulting

Finite Element Analysis for Engineering

CSR Cemintel FibreTek Fastener Substitution

Date: June to December 2025
Client: CSR Building Products

CEMINTEL

David Beneke Consulting have been commissioned by CSR Building Products to assess the viability of replacing an existing fastener used within their Cemintel products range with another equivalent fastener from another manufacturer. In response to this requirement, we formulated a series of small-scale connection test regimes to evaluate the Ultimate Limit State (ULS) Tension and Shear capacity of the existing and replacement fasteners in a side-by-side manner.

The ULS tension capacity of the subject fasteners attached to light gauge steel can be determined using Pull-Over/Pull-Through (POPT) tests, where the substrate and fastener are fixed to steel framing and loaded in tension until failure (Figures 1 and 2). The ULS shear capacity can be determined using lap shear tests, in which the substrate and fastener are fixed to steel framing on one side and to a stronger reaction board on the other, then loaded in tension until failure (Figure 3). The results of such tension and shear testing was undertaken and then comparisons were made which dictated whether or not the substitution was allowable.

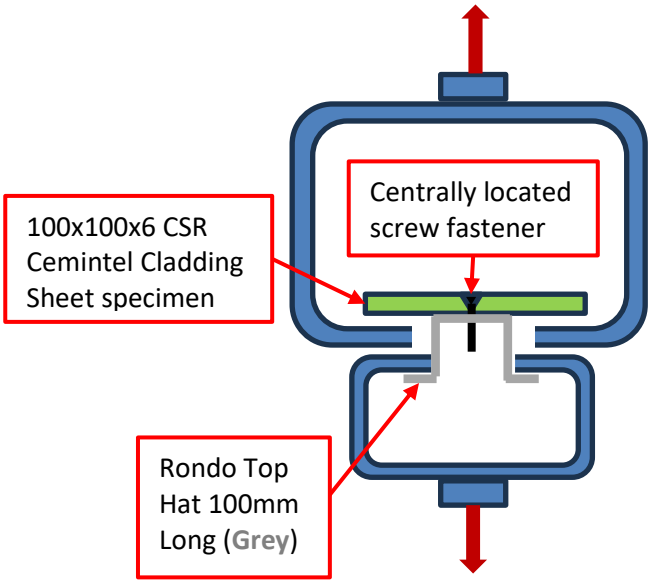

Figure 1: POPT Test Setup

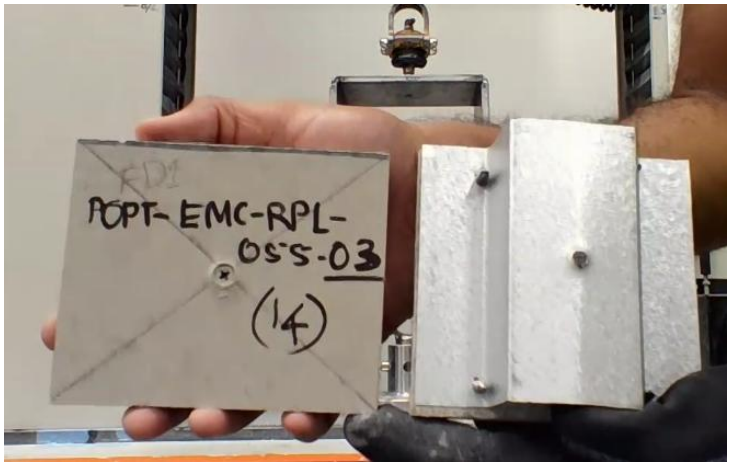

Figure 2: POPT Specimen after Pull-Through Failure

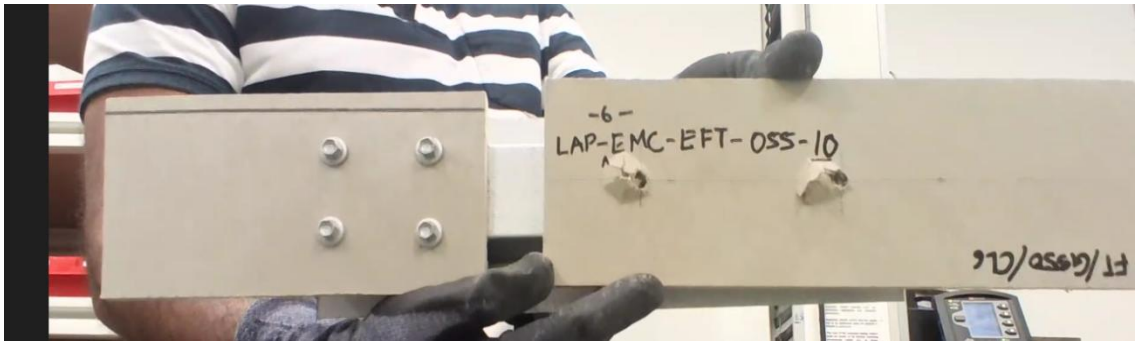

Figure 3: Lap Shear Test Specimen after Screw Bearing Failure

Contact:
dbconsulting@live.com.au
www.davidbenekeconsulting.com
Ph +614 1257 5693
23 Narabang Way, Belrose NSW 2085