STRUCTURAL PERFORMANCE

TECBEAM™ – a light weight composite timber and steel 'I' beam with timber flanges and a continuous pressed steel web which transforms it's structural behaviour into a beam with exceptional features; functioning more like a steel beam.

TECBEAM™ JOIST CHARACTERISTICS

Stiffness – the continuous steel web enhances beam stiffness, reducing creep by over 60% compared with a seasoned timber beam, trussed joist or plywood 'I' beam, and over 80% for an unseasoned timber beam. No other timber engineered beams achieve this.

Strength – the continuous steel web enhances beam strength by up to 20%, floors can be designed for loads exceeding 15 kPa. (A quick solution for a short span bridge!)

Ductility – at the ultimate load capacity, testing shows that web tensile yielding and shear buckling generally occurs before flange stresses reach the timber capacity. Web yielding occurs at the point of maximum bending moment, this action forms a local mechanism which is analogous to the ductile action in a steel beam. The TECBEAM™ joist undergoes an increased deflection but continues to carry significant load; this is an important safety feature in the structural integrity of a floor. In comparison, solid timber, open web truss type joists, and plywood 'I' beams, all undergo catastrophic collapse at their ultimate strength limit states.

Creep factor – long term load testing has established the creep or duration factor to be in the order of 1.3. In comparison, for solid seasoned timber the creep factor is 2.0, and for unseasoned timber it is 3.0. This lower creep factor means TECBEAM™ joists can often be used to replace steel beams, with significant savings.

Point loads – high concentrated loads can be placed anywhere along the flange because of the continuous steel web support. (Open web truss joists can have excessive local bending stresses where point loads occur between the nodes). TECBEAM™ joists are ideally suited to residential, commercial, industrial and car park structures where there are high point loads.

Vibration – in long spans, all light weight joists exhibit vibration; in a TECBEAM™ floor this is easily controlled by using secondary beams installed at right angles to the joists, eg strongbacks, placed through the holes and securely fixed with wedges. The timber and steel web combination in TECBEAM™ joists provides better dampening characteristics than floor trusses, plywood 'I' beams, steel purlin sections and lightweight all-steel joists.