

ENGLISH SUMMARIES

ANALYSIS OF GLUELAM TIMBER FRAME COLUMN WITH SEMIRIGID FOOTING

Mikko Kilpeläinen

Journal of Structural Mechanics, Vol. 33
No. 1, 2000, pp. 17-31

The article describes a theory for structural analysis of gluelam timber frame columns, which have semirigid connections at their footings. The method is based on the theory of linear elasticity and on the equilibrium of forces. The loads acting on the column are calculated using the theory of elastic frames. The eccentricity of the axial force of the column is calculated according to the 2. order theory and the factors affecting to the eccentricity are analysed. Finally some examples are calculated according to the presented theory and to the Finnish building code.

THE EFFECT OF COLDWORKING ON THE FATIGUE LIFE OF NOTCHED ALUMINIUM STRUCTURES

Markku Karttunen

Journal of Structural Mechanics, Vol. 33
No. 1, 2000, pp. 32-44

The introduction part contains physical background and the parameters of coldworking. Fatigue tests were made to investigate the efficiency of coldworking in two different aluminium alloys (2014-T6 and 2024-T3). Three different types of specimens were investigated: open hole, crack arrest hole and riveted specimens.

The test program included 14 test series (A-N) each containing 4-8 specimens. The tests were designed to study the effect of coldworking on the fatigue life and the crack growth rate. The specimens were fatigued under constant amplitude sine wave loading ($R = 0.1$ and $f = 10-15$ Hz).

The test results showed that coldworking increased the fatigue life of the open hole specimens by factor of four. The fatigue life improvement factor of the crack arrest hole specimens were 3.8-14.2. With the riveted specimens the life improvement factor were 3.3.