

related test method	ENV 13381: Test methods for determining the contribution to the fire resistance of structural members. Part 5: Applied protection to concrete / profiled sheet steel composite members
subject	Avoidance of problems associated with loading to be applied to large concrete / profiled sheet steel composite member test specimens (> the 3.2 m minimum span length given in the test standard)
reference of original query	TC2 N309rev1 Helpdesk 2003-04

Problem

The Standard defines the exposed length of the large concrete / profiled steel composite slab test specimen as being 3m minimum (span 3.2m minimum and overall length 3.4m minimum).

The applied load (§5.3) is calculated such that the moment caused by that load and the dead weight of the specimen represents 60 % of the design moment resistance according to equation 7.5 of ENV 1994-1-1:1992.

The original philosophy of the test was that 'before applying the fire protection material the "dead weight" curvature of the specimen should be the same for any span length (>3.2m)'. Also, after application of the fire protection material the "dead weight + applied load" curvature of the specimen should still be the same irrespective of specimen length.

In creating the standard the large test specimen construction was chosen such that the initial deflection would be at the curvature limit up to 3.2m span. Unfortunately, a span of greater than 3.2 m puts it beyond that limit. Therefore, testing concrete / profiled sheet steel composite members of span > 3.2m will cause two types of problem:

- the initial deadweight deflection will be very high [excessively high the greater the span – note possible safety issue]
- as a consequence, the load to be applied to the concrete / profiled sheet steel composite member test specimen will be very low.

Recommendation

EGOLF members when testing concrete / profiled sheet steel composite members according to ENV 13381-5: 2002 shall implement the following instruction:



- **Laboratories shall not test concrete / profiled sheet steel composite members to ENV 13381-5 with test specimens of span outside the range 3.2m to 3.4m.**

This instruction shall be followed until CEN TC127 completes an exercise to define and approve (by modification of the standard) the specification of concrete thickness or reinforcing bars thickness / distribution for slab and beam test specimens of each incremental increase in test specimen length.