Deflection limits for light steel framed walls with masonry cladding

AD 551

Guidance for the out-of-plane deflection limit to be applied to light steel framed walls with masonry cladding is provided in both ED017 and P402. The guidance in these publications is presented slightly differently which has caused ambiguity. The purpose of this advisory desk note is to provide clarity.

ED017 is for non-loadbearing infill walls and P402 is for loadbearing light steel framing, the same deflection limit should be used for both loadbearing and infill walls with masonry cladding. In both cases the out-of-plane deflection is due to wind load.

P402 states "The SCI proposes that a horizontal deflection limit of height/350 (including the combined stiffening effect of the brickwork) is used when checking stud walls supporting masonry". This guidance is correct, however:

a) The point about the stiffening effect of the brickwork may be considered ambiguous (see revised wording presented below).
b) The use of the word "supporting" is ambiguous. Generally the light steel framing will only be providing lateral support to the masonry and not carrying the weight of the masonry cladding.

ED017 states "Deflection limits under (unfactored) wind load may be taken as: L/500 for brickwork (ignoring the stiffening effect of the brickwork), or L/360 for brickwork (including the combined stiffening effect of the brickwork)". This guidance is also correct, and requires clarification:

a) The wording of the two alternative approaches is ambiguous. Revised wording is given below.
b) There is a discrepancy between the value of L/350 given in P402 and L/360 given in ED017. The difference is small and in reality it is unlikely to be significant to design, however, for consistency the value of L/350 is recommended.

Guidance with revised wording

The horizontal deflection limit for light steel framed walls with masonry cladding should be taken as:

- L/350 when disregarding the stiffness (i.e. beneficial effect) from the brickwork, or alternatively,
- L/500 if explicitly including the stiffness of the masonry in the calculation.

It should be noted that the second option of explicitly including the stiffness of the masonry is rarely used in practice.

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