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MATHEMATICAL MODELING OF THE LOCAL BUCKLING OF CONTINUOUS COMPOSITE BEAMS WITH PARTIAL CONNECTION

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ABSTRACT

Mixed constructions are particularly used in building because of their advantages over steel constructions due to their better fire resistance, better material optimization, a better limitation of the instability phenomena (local and lateral torsional buckling).

The calculation of the mixed sections with the hypothesis of a partial connection is essential, from the conceptional view point, whenever the complete resistance of a mixed section does not take place in order to be completely exploitable. It is the case when the shear connectors are not completely anchored in the concrete slab or when prefabricated slabs are used using shear connectors anchored at necessarily spaced points; from which comes the necessity to study the influence of the partial connection on local buckling of a continuous beam in order to seek for an analytical model which permits the evaluation , with sufficient precision, the rotation capacity of the mixed cross sections on an intermediate support of mixed cross sections of class 2.

In this paper, the influence of partial connection on local buckling of composite continuous beams has been investigated since most of the research work carried out in this field dealt with the full connection behaviour. An analytical model capable of evaluating the rotation capacity on an intermediate support of mixed cross sections of class 2, according to Eurocode 4, has been proposed. This model has been inspired from the model which uses full connection proposed by M.TEHAMI [1].

The results of the present model are found to be in good agreement with experimental data given in the literature.

REFERENCES

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