

Economic aspects of continuous construction for multi-storey unbraced steel frames

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Abstrak

In multi-storey steel frame structure, the requirements of lateral load resistance are very critical in the design. Shear wall, core wall and bracing system are commonly applied to resist the lateral loads. However for some case, due to the architectural requirements, the design of unbraced frame which utilized only the stiffness of connections, columns and beams could not be avoided. As loads in unbraced frames are to be resisted by bending action of the frames's members without the need of a bracing system, the most common design approach is to use rigid joints. The objective of this paper is to compare the design of unbraced frames bending on major axis with rigid connections using S275 and S355. The frames were designed to satisfy the ultimate limit state and service limit state based on the BS 5950-1:2000. The limit of the sway-deflection is $h_t/300$ for rigid connections. The analysis has shown better construction design for continuous with the total steel weight saving for frame design with steel S355 was up to 17% less than the frame design using steel S275.