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Analysis of Simply Supported Beams Using Elastic Beam Theory

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Abstract : The aim of this paper is to investigate the behavior of simply supported beams having rectangular section and subjected to uniformly distributed load (UDL). In this study five beams of span 5m, 6m, 7m and 8m have been considered. The width of all the beams is 400 mm and span to depth ratio has been taken as 12. The superimposed live load has been increased from 10 kN/m to 25 kN/m at the interval of 5 kN/m. The analysis of the beams has been carried out using the elastic beam theory. On the basis of present study it has been concluded that the maximum bending moment as well as deflection occurs at the mid-span of simply supported beam and its magnitude increases in proportion to magnitude of UDL. Moreover, the study suggests that the maximum moment is proportional to square of span and maximum deflection is proportional to fourth power of span.

Keywords : beam, UDL, bending moment, deflection, elastic beam theory
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