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Least Cost Design of Simply Supported Beams using Genetically Optimized Artificial Neural Network

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Abstract: Beam elements are designed and the total cost of each of these has been estimated. The grade of concrete has been varied from M20 to M40 and grade of steel varied from Fe 250 to Fe 550. The singly reinforced beams have been designed for various values of live loads and adopting the ratio of b/D from 0.4 to 0.9. In this paper, it is shown that how the decision variables like b , D , F_{ck} , F_y , A_{sprov} , μ , V_u etc. and the Main Objective of this project has been finalized Minimizing Beam Element Total Cost (BETC). Material and labor and formwork costs are found out. This paper deals with designing a low cost RCC beam in MATLAB. The results from the software and the results from manual design are compared and finally the optimal design of the beams is explained in detail from the various graphs obtained from both the sources.

Key Words : Decision Variables, Objective function, MATLAB, cost, Singly Reinforced beams, Minimization beam.

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