

DESIGN OF STEEL STRUCTURES

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Introduction to steel structural systems and components; Properties of structural steel, Hot rolled sections; Analysis and design methods; Design philosophies: Working stress design, Ultimate load (plastic) design, and Limit states design; Partial safety factors and load combinations; Design of tension members based on net section including shear lag effects, staggered holes and block shear; Design of Bolts and Welds, Strength under combined stresses, Prying action, Common simple connections; Design of compression members for flexural and flexural-torsional buckling, Column formula, Buckling class, End restraints and effective length factor; Role of plate buckling; Strength of compression members as affected by local buckling; Classification of sections: plastic, compact, semi-compact, slender; Plastic hinge; Design strength of laterally supported beams; Shear buckling strength, post-critical method; Shear-moment interaction; Design strength of laterally unsupported beams; Lateral torsional buckling; Effect of restraints and effective length; Design of plate girders, Tension field method; Effect of axial load on flexure behaviour; Cross-section yielding and member instability, P-M interaction and moment amplification; Bi-axial bending; Plastic analysis and design of continuous beams and rigid frames; Eccentric bolted and welded joints and frame connections; Column bases.