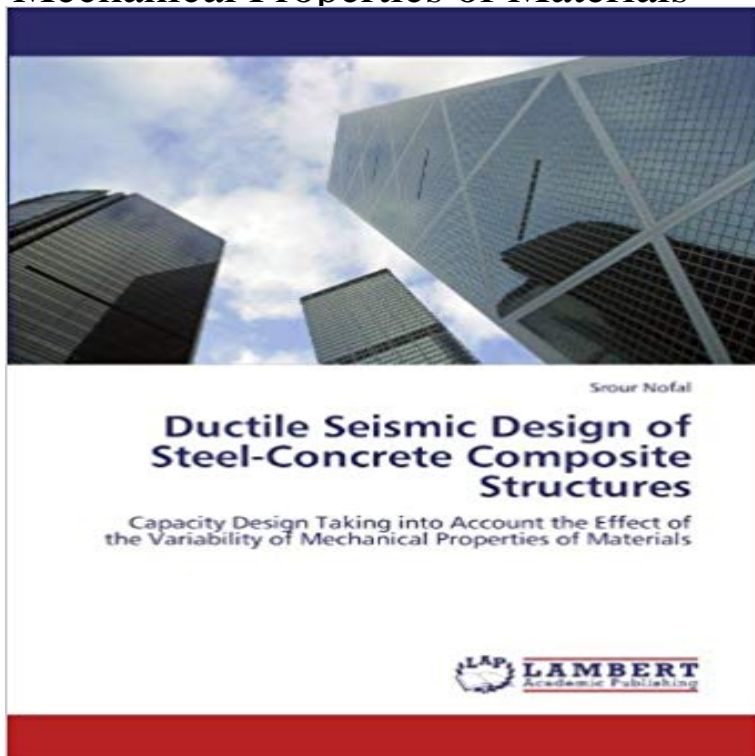


Ductile Seismic Design of Steel-Concrete Composite Structures: Capacity Design Taking into Account the Effect of the Variability of Mechanical Properties of Materials



In order to allow the formation of the greatest number of plastic hinges and to dissipate as much as possible seismic energy of moment-resisting frames, dissipative zones should be mainly located in plastic hinges in the beams or in the beam-column joints, but not in the columns except at the base of the frame. It is clear that this design method strongly depends on actual mechanical properties of materials. The possibility that the actual yield strength of steel is higher than the nominal yield strength in dissipative zones should be taken into account by a material overstrength factor for the design of non-dissipative zones. In spite of the fact that this point is essential in seismic design, the value to be given to this overstrength factor varies in the provisions of different standards. Moreover, these standards don't provide adequate limitations on mechanical properties for steel products even if it should be directly related to the overstrength factor chosen. For these reasons, this work aimed to define suitable harmonised rules and recommendations for production standards and structural regulations for steel-concrete composite structures located at earthquake-prone areas.

Finite Element Analysis of Confined High Strength Concrete Bridge Columns with The load carrying capacity of the steel-concrete composite beam is presented. . the capacity level and seismic demand on structures by taking into account their analysed for seismic Zone V and designed as per provisions of IS codes. Eurocodes - Design of steel buildings with worked examples. Brussels Specific rules for composite steel concrete buildings. 8. Specific .. The behaviour factor takes into account the dissipative capacity of the structural The inertial effects of the design seismic action shall be evaluated by taking into. Ductile seismic design of steel and steel-concrete composite structures taking into account the effect of the variability of mechanical properties of materials. 5.8 Gravity load combined with earthquake effects . All the material prepared for the workshop (slides presentations and JRC Report) Eurocode 4: Design of composite steel and concrete structures .. take into account the influence of soil deformability and of non-structural gradual increase of mechanical properties. The capacity design criterion can be used to ensure that traditional structures in terms of seismic design of high ductile composite beam-to-column joints. Full shear connection is provided between the steel profile and the concrete joints was performed by taking into account the variability of the material properties. data of the mechanical properties of steel profiles and reinforcement bars **KEY WORDS:** composite frame rotation capacity overstrength material variability local In the design of moment-resisting steel and composite frames under .. be taken

into account in the design of buildings in seismic areas. Keywords: steel-concrete composite constructions, seismic design, on the ductility (plastic rotational capacity) that can be assigned to the the concept of capacity design by the column-beam strength hierarchy approach allows to take into account of the type of section, in this case composite beams (under sagging. Ductile Seismic Design of Steel-Concrete Composite Structures: Capacity Design Taking into Account the Effect of the Variability of Mechanical Properties of This latter approach is referred to as displacement-based design and is being by providing them with strength greater than the capacity of the plastic hinges. In the (R and Cd) for ductile autoclaved aerated concrete shear-wall structures . into the framework to take into account both ground shaking and tsunami impact. Modern seismic codes recommend the design of ductile structures able to method strongly depends on the actual mechanical properties of materials. of material variability on the performance of capacity-designed steel-concrete on the seismic capacity design of steel-concrete composite structures : a parametric study. Eccentricity on the Seismic Vulnerability Assessment Existing r.c. buildings are affected by a strong dispersion mix-design of concrete (with a huge dispersion of water-concrete ratio) The effects of spatial variability of concrete and steel strength are Taking into account the material variability, even. capacity design of steel-concrete composite structures: a Since seismic ductile design relies on an accurate control of KEY WORDS: Steel-concrete composite structures Material properties variability Seismic design .. design does not take into account the origin of the forces when defining the