



METADATA

Title: Design of Reinforced Concrete Linear Members

Other Titles: Fundamental Principles and Design Codes

Language: Greek

Authors: Koutas, L., Assistant Professor, UTH

ISBN: 978-618-228-074-4

Subject: ENGINEERING AND TECHNOLOGY

Keywords: Reinforced Concrete / Structural Design / Linear Members / Basis of Design / Eurocodes

Bibliographic Reference: Koutas, L. (2023). Design of Reinforced Concrete Linear Members [Undergraduate textbook]. Kallipos, Open Academic Editions. <http://dx.doi.org/10.57713/kallipos-307>

Abstract

Owing to its favourable properties, reinforced concrete is the most used structural material in Greece and in many other countries worldwide. For this reason, structural design of reinforced concrete structures is included in the curriculum of all civil engineering undergraduate courses in Greek universities. While this textbook mainly targets undergraduate civil engineering students, it could also be helpful for professionals. The main goal of the book is to provide the reader with the fundamentals of structural mechanics and structural design of reinforced concrete linear members (beams, columns) when subjected in flexure (with or without axial load) and/or in shear. To achieve this goal, analytical procedures for

the design of such members in flexure/shear at the ultimate limit state (ULS) have been developed and described in detail. Reinforcement detailing rules of the structural Eurocodes are included. Wherever applicable, the seismic design code provisions for RC members with ductility requirements are described in detail. Besides the main goal, the phenomenon of passive confinement of concrete linear elements owing to the internal steel reinforcement is presented in detail along with analytical expressions for calculating the confinement factor. In most chapters, the theory is supported by analytically solved numerical examples, while the learning experience is enhanced by numerous original figures, pictures and videos.

