

Preface

Earthquakes have long been feared as one of nature's most terrifying phenomena due to its destruction power. Without any prior warning, the earthquake can and does, in a few seconds, create a level of death and destruction that can only be equaled by the most extreme weapons of war. The earthquake damage is almost entirely associated with man-made structures such as buildings, dams, bridges, etc.

In the current context, prevention of disasters caused by earthquake has become significantly important. Disaster prevention includes the reduction of seismic risk through retrofitting existing buildings in order to meet seismic safety requirements. To make alterations to existing buildings in comparison to new construction, the planning has to be different. The existing construction must be taken as the basis for all planning and building actions.

In developed countries, the codes were changed and new codes were prepared, which contain the provision of lateral loads. The new structures can be built sufficiently earthquake resistant by adopting these new design methodologies and controlling the construction quality at a higher level. However, existing old structures, which have mostly been planned without considering this important aspect, stands at enormous seismic risk.

The objective of this book is to understand the analysis and design of high-rise building for gravity and seismic analysis. The designing of structure for gravity and seismic is usual in the real field. However, retrofitting of high-rise building is less common, though it is very important to study. In this analysis, retrofitting techniques are also proposed for high-rise buildings taking into account the gravity and seismic loads. The understanding of the current software for design is the need of the hour, especially for design structural engineers. In this analysis ETABS was used for gravity and earthquake loads. The gravity analysis and design is based on ACI-99 and earthquake analysis is based on UBC-97. Furthermore, FRP retrofitting and fire retrofitting is also discussed in detail by manual approach.

This book covers all features of assessment of the retrofitting of existing structures, and the authors of the book believe that it will be of immense use to the student community, academicians, consultants, practicing professional engineers/scientists

involved in planning, design, execution, inspection and supervision for proper retrofitting of buildings.

The authors will be pleased to hear from the readers with positive feedback to improve the book quality, and also to erase the errors and misprints. This will be highly regarded and will be acknowledged accordingly.

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Existing High Rise Reinforced Concrete Buildings

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