# DYNAMICS IN THE PRACTICE OF STRUCTURAL DESIGN

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# Preface

Structural dynamics is a theme of wide-ranging knowledge covering a variety of topics, some of them of direct application in structural design. Among the latter a clear distinction can be made between those necessary for the engineer in the daily practice of structural design and those related to academic activities, research, and the development of commercial products.

This book was conceived and is written as an overview of some aspects of structural dynamics. It is intended for engineers who normally tackle design situations involving dynamic loads with the appropriate computer software in the daily practice of design. Presumably, the book will be complemented by (a) the technical information required for any particular dynamic problem; (b) consultation with experts about unusual dynamic design situations.

The usual practice in structural design offices is to continuously collect and update valuable technical information in this field of practice. This collection includes textbooks, a variety of Codes of Practice, Committee's Guidelines, National and International Reports on natural events and disasters, expert and especially professionally oriented reports, scientific publications, professional journals, professional catalogues of commercial products, and more.

Each chapter of the book deals independently with a subject in structural dynamics without a necessary link to the foregoing chapters, as is the case with textbooks. This approach allows the engineer to go directly to the topic of his interest at any given moment, with one exception: this is the sequence of chapters 9–12, where a certain continuity and correlation was considered for reasons of clarity of presentation. To minimize difficulties for the reader, in these chapters only a schematic elaboration of the mathematical treatment of structural dynamics is included.

In the other chapters mathematical formulations are given just by way of complementary information, so as to refresh the background of the practicing engineer. This particular means is necessary for the acquisition of a thorough insight into structural dynamics.

In some chapters portions of text are set in italic, which is designed to bring the reader's attention to topics or other text of particular importance.

This book has benefited from countless publications, mainly textbooks, reports, papers, symposium and conference proceedings, journals, and many more, dealing with structural dynamics, published in the course of decades. Together they have created a vast, rich, and deep panorama on the theme. Structural engineers, working in design and consulting engineering, like the

author of this book, are indebted to them for furnishing the professional knowledge required in their daily practice.

Last but not least, this book was conceived and written with the most profound regard for the author's colleagues, structural engineers in the daily practice of design, who carry on their shoulders enormous responsibility for the stability of structures built everywhere.

Oscar Sircovich Saar
2005