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DYNAMICS IN THE PRACTICE OF STRUCTURAL DESIGN

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WIT*PRESS* Southampton, Boston



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Published by

WIT Press

Ashurst Lodge, Ashurst, Southampton, SO40 7AA, UK
Tel: 44 (0) 238 029 3223; Fax: 44 (0) 238 029 2853
E-Mail: witpress@witpress.com
<http://www.witpress.com>

For USA, Canada and Mexico

WIT Press

25 Bridge Street, Billerica, MA 01821, USA
Tel: 978 667 5841; Fax: 978 667 7582
E-Mail: infousa@witpress.com
<http://www.witpress.com>

British Library Cataloguing-in-Publication Data

A Catalogue record for this book is available
from the British Library

ISBN: 1-84564-161-2

Library of Congress Catalog Card Number: 2005928180

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Printed in Great Britain by *****

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Contents

Preface	ix
Acknowledgements	xi
List of symbols	xv
Chapter 1	Structural design in dynamic situations 1
PART 1	Basics 3
Chapter 2	General overview 5
1	The dynamic response of structures 5
2	Dynamic equilibrium of forces 14
3	Energy in structural vibrations 20
4	Linear and nonlinear response of structures 24
5	Vibrations in existing structures 28
6	Working with the computer 29
7	Superposing static and dynamic effects 30
PART 2	Dynamics in design 33
Chapter 3	Dynamic events and effects 35
1	Introduction 35
2	Dynamic events and effects 35
3	Response of structures 37
Chapter 4	Dynamic loads on structures 39
1	General description 39
2	Working machines 41
3	Vehicle loads 44
4	Human activities 46
5	Construction loads 49

Chapter 5	Vibrations	51
1	Introduction	51
2	Vibrations of structures	51
3	Sources of vibrations	52
4	Vibrations in the design process	53
PART 3	Structural materials in dynamic situations	57
Chapter 6	The rate of strain	59
1	Introduction	59
2	The rate of loading	60
3	The rate of strain	60
4	Structural materials	62
5	Structural elements	64
Chapter 7	Fatigue	67
1	The phenomenon	67
2	Fatigue in structural materials	70
3	Fatigue in structural elements	72
Chapter 8	Damping	77
1	Introduction	77
2	Viscous damping	78
3	Hysteretic damping	78
4	Damping in structures	80
PART 4	Structural dynamics design	81
Chapter 9	Mathematics	83
1	Introduction	83
Chapter 10	Single degree of freedom system	87
1	Introduction to SDOF	87
2	Free vibration	88
3	Forced vibrations	93
4	Dynamic modification factor	96
5	Resonance	98
6	Dynamic loads	99
7	Mathematical approaches	100
8	The time domain	100
9	The frequency domain	101
10	Elastoplastic systems	106
11	Nonlinear systems	109
12	Torsion dynamic forces	110

Chapter 11	Multidegree of freedom: lumped mass system	111
1	Introduction to MDOF	111
2	Vibration modes	114
3	Forced vibrations	118
4	Pulsating load	119
5	Modal analysis	123
6	Damping in MDOF	124
7	The lumped masses	124
Chapter 12	Distributed mass system	127
1	Introduction	127
2	Mathematical approach	129
3	Design of a beam	132
PART 5	Natural dynamic loads	133
Chapter 13	Earthquakes	135
1	Introduction	135
2	Earthquakes	136
3	Earthquake loads	138
4	Earthquake response analysis	139
5	Static force procedure	140
6	Linear elastic response spectrum	142
7	Analytic procedures for linear elastic response	145
8	Nonlinear inelastic response	147
9	Ductility	149
10	Pushover analysis	151
11	Soil–foundation interaction	154
Chapter 14	Wind loads	161
1	Introduction	161
2	Quasi-static wind loads	163
3	The dynamic response	166
4	Aeroelastic phenomena	169
5	Vortex	169
6	Buffeting	171
7	Galloping	172
8	Flutter instabilities	173
Selected bibliography		177
Index		179

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