

Structural Surveying

MACMILLAN BUILDING AND SURVEYING SERIES

Series Editor: Professor Ivor H. Seeley

Advanced Building Measurement Ivor H. Seeley

Applied Valuation D. Butler

Asset Valuation M. Rayner

Building Economics Ivor H. Seeley

Building Maintenance Ivor H. Seeley

Building Quantities Explained Ivor H. Seeley

Building Surveys, Reports and Dilapidations Ivor H. Seeley

Building Technology Ivor H. Seeley

Civil Engineering Contract Administration and Control Ivor H. Seeley

Civil Engineering Quantities Ivor H. Seeley

Civil Engineering Specification Ivor H. Seeley

Contract Planning and Contractual Procedures B. Cooke

Contract Planning Case Studies B. Cooke

Environmental Science in Building R. McMullan

Guide to the J.C.T. Standard Form of Building Contract 1980 R. Fellows

Introduction to Building Services C. Howard

Introduction to Valuation D. Richmond

Principles of Property Investment and Pricing W.D. Fraser

Quantity Surveying Practice Ivor H. Seeley

Structural Detailing P. Newton

Urban Land Economics and Public Policy Paul N. Balchin, J. L. Kieve and G. H. Bull

Title of related interest

Microcomputers for Building Surveyors S.L.J. Mika (published by Surveyor Publications)

Structural Surveying

S.L.J. Mika

ARICS, MCIQB

Lecturer, Consultant and Chartered Building Surveyor

and

S.C. Desch

*QC, BCL, MA (Oxon); of Gray's Inn;
a Recorder*

Second Edition

M

MACMILLAN
EDUCATION

© H.E. Desch 1970

© S.L.J. Mika and S.C. Desch 1988

All rights reserved. No reproduction, copy or transmission of this publication may be made without written permission.

No paragraph of this publication may be reproduced, copied or transmitted save with written permission or in accordance with the provisions of the Copyright Act 1956 (as amended), or under the terms of any licence permitting limited copying issued by the Copyright Licensing Agency, 33–4 Alfred Place, London WC1E 7DP.

Any person who does any unauthorised act in relation to this publication may be liable to criminal prosecution and civil claims for damages

First edition (by [the late] H.E. Desch, with legal notes by Stephen Desch) 1970

Second edition 1988

Published by

MACMILLAN EDUCATION LTD

Houndmills, Basingstoke, Hampshire RG 21 2XS

and London

Companies and representatives
throughout the world

British Library Cataloguing in Publication Data

Mika, Stephen

Structural surveying — 2nd ed

1. Surveying 2. Building sites 3. Real property surveys

I. Title II. Desch, S.C. III. Desch, H.E.

692

TH153

ISBN 978-0-333-31824-9 ISBN 978-1-349-19570-1 (eBook)

DOI 10.1007/978-1-349-19570-1

Contents

<i>List of Illustrations</i>	ix
<i>Preface I</i>	xi
<i>Preface II</i>	xii
<i>Acknowledgments</i>	xiii
1 The Survey	1
Types of survey	1
Procedure	2
Equipment	3
Instructions from the client	5
Background to the survey	5
Practice notes	6
Form surveys	6
Notes	7
Measuring building plots	7
Measuring buildings	11
2 Decay	14
Change of appearance	14
Weathering	16
Failure	16
Performance and reliability	17
Cause and effect	20
Contributory factors	21
3 Substructure	22
Building plans	22
Foundation depth	23
Geological survey maps	23

Soil investigations	23
Tree roots	26
Soil recovery and trees	27
Recognition of tree root damage	29
Claims for damages	30
Erosion and movement of subsoil	31
Mining subsidence	31
4 Floors	32
Underfloor ventilation	32
Beetle infestation	36
Fill	36
Upper floors	36
Framed floors	37
Baths and WC floors	42
Floor repairs	42
Attic floors and conversions	43
Skirtings	44
Cellars and basements	45
Cellar and basement floors	46
Underground room regulations	47
Sound-proofing of floors and partitions	48
5 Walls	49
Stone walls	49
Flint walls	52
<i>Pisé de terre</i> and cob walls	52
Brick walls	53
Features for further investigation	55
Weatherboarding and cladding	55
Shingles	57
Vertical tile and slate hanging	57
Timber-framed buildings	58
Walls and floors	59
Damp-proof courses and rising damp	60
Ventilation	63
Ground levels	63
Penetrating damp	65
Condensation	66

Defective rainwater goods	66
Cooling flue gases	66
Boundaries	67
Cracking	68
Wall ties	76
Corrosion of steel	77
Cavity insulation	77
Non-traditional walls	79
6 Roofs	80
Roof forms	84
Roof coverings	85
Thatch	86
Wood shingles	86
Slate and stone roof coverings	86
Tiles	88
Ridges and hips	89
Copings	90
Flashings	91
Chimneys	92
Rainwater disposal	92
Balconies, porches and projecting features	94
Roof construction	97
Inspection of roof voids	101
Fungal infection of roof timbers	104
Flat roofs	105
7 Joinery and Finishes	111
Defects during construction	111
Survey of external joinery	112
Windows	113
Doors	114
Ceilings, cornices and picture rails	114
Skirtings	115
Glazing	115
Timber references	116
Door and window furniture	116
Decorations	117
Paintwork	117
Fixtures and fittings	117

8 Services	119
Water services	119
Drainage	120
Electrical installations	121
Gas	122
9 Report Writing	124
The written word	124
Limitations	125
Setting out	126
Report writing synopsis	129
10 Legal Aspects	131
Introduction	131
Legal liability of the surveyor	132
Liability of the surveyor for the acts of others	134
Professional Indemnity Insurance	135
Public Health and Environmental Requirements	136
Sundry aspects of property ownership	136
Limitation of action	139
Damages and other remedies	140
Appendix A: Wood-boring Insects	142
Beetle identification	143
Bats	152
Appendix B: Decay and Fungi	153
Wood-rotting fungi	154
Appendix C: Specimen Reconnaissance Survey Report	159
Report of survey	159
Appendix D: Period Classification	170
Listed buildings	172
Bibliography	173
Index	176

List of Illustrations

1	Site survey	8
2	Measuring buildings	10
3	Typical notebook sketches	12
4	Site sketch of construction	19
5	Tree heights and foundations	25
6	Solid and suspended floors	33
7	Framed floors	38
8	Fitch beams	39
9	Timber housings and supports	40
10	Stone walling	51
11	Typical causes of rising damp	61
12	Typical causes of penetrating damp	64
13	Recording and measuring cracks	69
14	Cracking patterns	74
15	Cracking patterns	75
16	Construction and defect of Airey houses	78
17	Simple roof forms	81
18	Twin pitch and flat roof forms	82
19	Internal gutters	83
20	Roof trusses	96
21	Removal of roof members	99

22 Check list	128
23 Pin-hole damage	144
24 House longhorn beetle and frass	145
25 <i>Lyctus</i> beetles, damage and frass	146
26 Common furniture beetle and frass	147
27 Common furniture beetle damage and weevil damage	148
28 Death watch beetle and frass	150
29 Wood-boring weevils and frass	151
30 Dry rot fruiting body	155
31 Dry rot damage	156
32 Cellar fungus damage	157

Preface I

When my father died in 1978 he had begun work on a second edition of this book. I persuaded a mutual colleague, Douglas Harrington, to undertake the work instead, but sadly he had not long embarked on it when he too died in harness. Happily, further enquiries led to Leonard Moseley at the College of Estate Management and finally to Reading University where Stephen Mika kindly agreed to accept the task. They have brought to it the resources of these institutions as well as their own considerable talents. On their behalf I also gratefully acknowledge help given by Peter Sealey.

The resulting book no longer bears the marks of my father's personal and particular interests in timber and trees, but it is hoped that as a result it may appeal to a wider audience whose members are otherwise essentially the same as those addressed in the first edition.

The scope of my notes on legal aspects is as limited as before. In these busy and fast-moving times the caveat at the start of them is especially important.

This illustrates a wider problem. The independent professions cannot hope or deserve to survive into the 21st Century unless they give an excellent service. The complications of modern building technology and the financial restraints of commercial and private clients make it increasingly difficult for surveyors to provide such a service. There is no chance of them doing so unless they attract new recruits of the highest ability who are prepared to dedicate most of their waking hours to their work, with their eyes on long-term achievement rather than short-term gain. My father believed passionately in the old aphorism, 'What's worth doing is worth doing well'. If this book converts others to the implementation of that view it will have served its object.

Temple, London.

Stephen Desch

Preface II

When I was approached by Macmillan Education to contribute to this revised edition it was with some trepidation for not only had Desch senior and Douglas Harrington sadly passed away, but Leonard Moseley was taken ill during the revision and was unable to complete the work. However, undaunted I agreed to take the reins and decided to start afresh with the original manuscript.

In this second edition I have restructured the book into what I hope is a simpler and more logical layout for its readers. The chapters do not follow the survey procedure itself but are loosely based upon individual elements and their interrelationship. I have retained a limited amount of the original book but have rewritten, updated and rationalised the text. I have added new material and included a number of additional illustrations. I hope readers will learn a little from this revision, and, if criticism can be made of its technical content, then this must fall upon my head alone.

I did not have the privilege of meeting Desch senior but having read his work over and over, I have come to respect the skilled surveyor he must have been. If he has been looking over my shoulder while I have been revising and extending his book, then I hope the changes I have made have met with his approval.

To Leonard Moseley I owe a great deal. His clear head and systematic approach has helped me not only in revising this publication but also, like so many others who have studied with the College of Estate Management, to pass their professional exams.

My final acknowledgements are to Philippa Sell for typing the manuscript, to Peter Dornan for his excellent drawings and to Jeanne Lapsley for her moral support.

University of Reading

Stephen L.J. Mika

Acknowledgements

Extracts from *Building Research Establishment (BRE) Digests* are reproduced by permission of the Controller of H.M. Stationery Office.

Permission to reproduce extracts from *Surveying Cracked Property—A Guide for Pynford Engineers* was kindly given by John F.S. Pryke MA, CEng, FICE, FStructE, FBIM.

Permission to reproduce the extract from *Maintenance Management—a guide to good practice* was kindly given by the Chartered Institute of Building.