

SUSTAINABLE  
CONCRETE  
ARCHITECTURE

David Bennett

# CONTENTS

<b>Preface</b>	v
<b>Introduction</b>	
Global warming and carbon dioxide	1
How to use this book	3
<b>PART I TECHNOLOGY</b>	
<b>1 Estimating construction CO<sub>2</sub></b>	
Cement and cement replacements	5
Aggregates and concrete blocks	18
Reinforcement	27
Formwork	32
Ready-mixed concrete production	38
Precast concrete manufacture	42
Embodied CO <sub>2</sub> in building materials	47
The Construction CO <sub>2</sub> Audit	50
<b>2 Reducing long-term CO<sub>2</sub></b>	
Heating, cooling and thermal mass	63
Insulation	70
Dundee University research on U-values	71
Examples of CO <sub>2</sub> reduction	73
Summary: lowering operational CO <sub>2</sub> and energy	83
<b>Appendix CO<sub>2</sub> source data</b>	
Embodied CO <sub>2</sub> tables	84
Construction industry CO <sub>2</sub> audits	88
Defra conversion tables	90
<b>PART II CASE STUDIES</b>	
Residential buildings	94
Office buildings	140
Education buildings	190
Visitor centres	230
Explanatory notes to the case studies	256
Abbreviations	257
Bibliography	259
Picture credits	261
Index	263