This book presents the latest research findings of the fast developing applications of fracture mechanics to concrete structures. Key papers from leading experts in the field describe existing and new modelling techniques in the analysis of materials and structures. The book explains the practical application of fracture mechanics to structural modelling, bending, shear, bond and anchorage. The proceedings of this RILEM Workshop will be an important reference for those engaged in design, development, research and teaching in the field of concrete structures. This book offers a complete diagnosis of concrete samples collected from a pile cap block of residential buildings affected by internal swelling reactions. Covering an extensive laboratory campaign to evaluate the transport properties of concrete samples, as well as their physical and chemical composition using advanced techniques to analyze cores extracted from real buildings that have concrete elements affected by internal swelling reactions (ISR). It features several rehabilitation procedures, pile caps repair and rehabilitation design, executed using strengthening procedures to provide the complete restoration of the structural integrity of the element deteriorated. These rehabilitation procedures proved to be a good solution to retrofit pile cap deteriorated by expansions due to internal swelling reactions of concrete. The book also offers a systematic review of the current state of knowledge and it is a valuable resource for scientists, students, and practitioners in various scientific and engineering disciplines, namely, civil and materials engineering, as well as other interested parties.

The book analyzes the current knowledge on structural behaviour of RC elements and structures strengthened with composite materials (experimental, analytical and numerical approaches for EBR and NSM), particularly in relation to the above topics, and the comparison of the predictions of the current available codes/recommendations/guidelines with selected experimental results. The book shows possible critical issues (discrepancies, lacunae, relevant parameters, test procedures, etc.) related to current code predictions or to evaluate their reliability, in order to develop more uniform methods and basic rules for design and control of FRP strengthened RC structures. General problems/critical issues are clarified on the basis of the actual experiences, detect discrepancies in existing codes, lacunae in knowledge and, concerning these identified subjects, provide proposals for improvements. The book will help to contribute to promote and consolidate a more qualified and conscious approach towards rehabilitation and strengthening existing RC structures with composites and their possible monitoring. This book deals with structural surveys for all types of building - domestic industrial and commercial - and includes diagnosis of a wide range of defects. It considers both modern and older construction methods, and deals with the particular problems of alterations and restoration work. Guidance is given on how to carry out measured surveys and on report writing. The third edition covers the latest definitions of types of property surveys, more information on report writing and a range of new developments. * Covers all types of building - commercial, industrial and historical - not just domestic * Deals with particular problems of conversion and renovation work - increasingly important today * New edition features latest definitions of survey types, more on report writing and a range of new developments * "A valuable reference book" - ASJ Journal

The research and its outcomes presented in this book treat applications of NDT techniques to on-site measurements. These on-site measurements have been marginally successful as each technique requires a particular analysis. In this regard, visualization and imaging of results are of great demand for practitioners and engineers for inspection. This volume, in which on-site measurements of concrete and masonry structures by NDT techniques are comprehensively summarized, focuses on the visualization procedure of the results measured. The book will therefore be of great value to the field.