

WATER IN ROAD STRUCTURES

GEOTECHNICAL, GEOLOGICAL AND EARTHQUAKE ENGINEERING

Volume 5

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Water in Road Structures

Movement, Drainage and Effects

edited by

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Preface

Background

This book is the most obvious outcome of the “COST 351, WATMOVE” project (see www.watmove.org). For most readers these terms probably mean little so some explanation is called for. In 2001/2002 a small group led by Kent Gustafson of the Swedish Road and Traffic Institute (VTI) made a proposal to the European programme on “Co-operation in Science and Technology” (COST). They proposed that a pan-European team be set up to study the issue of “Water Movements in Road Pavements and Embankments” (acronym = WATMOVE). The COST organisation agreed the proposal and the study formally began in December 2003 with the support of COST. Due to ill-health, Kent was not able to lead the project and I was asked by the Management Committee to chair the project team.

Scope of the Book

This book is NOT about “Water and Roads”, nor on “Water on Roads”. There are other books which deal with surface water drainage in great detail and there are other source materials that deal with the impact of roads on water in the general environment. To cover every aspect of the interaction between water and highways would have required a much greater effort and a much thicker book. So this book seeks to limit itself to:

- (i) Water inside the road construction and the underlying subgrade soils and rocks;
- (ii) Water from the surface down to the phreatic surface,¹ and
- (iii) Water in the road and ground between the fence-lines of the highway.

Sometimes these boundaries to the book’s scope were a little bit too limiting so, from time-to-time the book wanders somewhat further. For example, it proved impossible (and undesirable) to discuss water in the road construction without

¹ Annex C contains a Glossary of terms that may be unfamiliar to some readers.

mentioning from where it comes. So, there is some consideration of run-off in so far as it is the major contributor to sub-surface road water, but readers will not find a full description of surface water drainage systems. Within these self-set limits the authors have tried to address most conceivable topics in some detail, bringing together both established theory and practice and some of the latest developments.

Acknowledgements

The job of chairman is not always easy, but in the case of WATMOVE it has been a privilege and a pleasure to work with a wonderful team of experts drawn from engineering, environmental and geological backgrounds across 18 European countries. Their hard work can be seen in the pages that follow. Every member of the WATMOVE project has contributed in some way or another. Most have authored and/or edited parts of the text and you will find the names of the chapter co-ordinator and the contributing authors at the head of each chapter. Many have provided raw information. Some have contributed nationally developed research findings. All have entered into developing a mutual understanding and appreciation of each other's viewpoints. By this method this book is more than a summary of individual contributions, it is truly a state-of-the-art-and-practice on subsurface road drainage. Mention should also be made of the many scientists and engineers who contributed indirectly by providing information and, in the case of a few, even contributed text.

The team, listed at page xiii, wish to thank their employers for actively supporting their contributions and the European Science Foundation's COST office in Brussels for all their support and funding. In particular we would like to single out the COST office's scientific and administrative secretaries, Jan Spousta, Marcu Zisenis, Thierry Groger, Isabel Silva and Carmencita Malimban for their understanding and responsive assistance in so many matters, great and small. This publication has been supported by COST.

It's their overall aim that the relevant and useful aspects of modern (and not-so-modern) research be implemented into practice. So this book is directed towards practitioners – engineers, environmentalists and hydrogeologists who have to provide for pavement and earthworks drainage – and those who will soon become practitioners – students taking advanced courses in pavement engineering, hydrogeology and geo-environmental engineering. Inevitably some will find some sections more pertinent and accessible than others . . . but we hope that readers will find this a valuable resource from which to learn and to which they will often turn for reference. If you still want more then you may find some other resources at our web-site – www.watmove.org

So, finally, a really big “thank you” to everyone in the WATMOVE team and also to you, the reader. If the contents of this book prove useful to you, the the efforts of the team will certainly have been worthwhile!

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The following have contributed to this book. Where a name is shown in bold, he or she is a contributor to one of the main chapters. Where a name is shown in bold and italics, the person was a contributor to one of the main chapters but not a member of the COST 351 project. Special thanks is due to these authors for being external contributors to the book. The others listed were members of the COST 351 project team but their contribution has not been separately identified. This doesn't mean that it was an unimportant part . . . in several cases these people have made major contributions in editing, providing material, organizing the appendices, etc. Some of those listed only participated in the COST 351 Action for a short period. Particular recognition is due to those who helped establish the direction of the study but were then unable to continue to the final stages of which this book is the principal result.

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