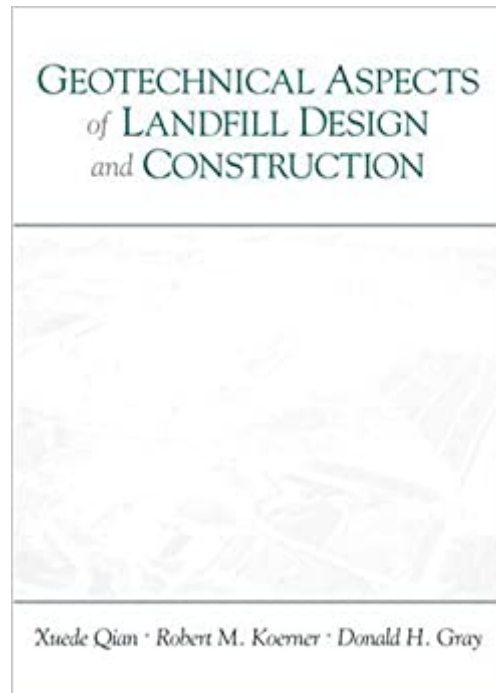




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# **Geotechnical Aspects Of Landfill Design And Construction**



## Synopsis

Focuses on actual, state-of-the-art design/construction procedures as opposed to a discussion of solid waste management issues and to general descriptions and/or conceptual designs. Provides an integrated package of analytical tools, design equations, and step-by-step construction procedures for all elements of a landfill, giving the reader a better sense of the necessary site investigation, planning, analysis, and organization that go into a landfill design and construction project. The characteristics of landfill containment envelopes and their design/construction are treated in detail. Physico-chemical and engineering properties of solid waste that are relevant and important to landfill design and construction are tabulated and described. Includes explanation of how to evaluate and assess potential problems that affect landfill performance such as sideslope stability, settlement, containment effectiveness, and erosion control. Discusses vertical landfill expansion; how leachate moves across a liner or barrier under both advection and diffusion; compares the containment effectiveness of different liner systems to the combined advective-diffusive transport of dissolved leachate solutes. Includes a detailed explanation with numerical examples and calculations of how to design a gas collection and piping system in a landfill including the collection and handling of condensate in the gas. Detailed installation and inspection guidelines are provided for both earthen and geosynthetic liner/cover systems comparing the relative advantages and limitations of each. For professional training courses in Geotechnical and Geoenvironmental Engineering.

## Book Information

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## Customer Reviews

This book, intended for professionals or students taking a course on geoenvironmental engineering, addresses landfill design and construction issues in a comprehensive manner. It does this by focusing on all elements of a landfill, from design to completion. The book also looks at actual, state-of-the-art construction procedures in a step-by-step manner, including carefully selected design equations and examples, diagrams, tables, and homework problems. Provides hundreds of useful design equations, specific guidance and protocols for design of a landfill envelope, leachate collection and removal system, and gas collection and control systems. Explains how to evaluate and assess potential problems that affect landfill performance including contaminant transport through landfill liners, landfill stability waste settlement, containment effectiveness, vertical expansions, bioreactor landfills, erosion control, and postclosure uses. Presents students and professionals with extensive coverage on potential problems that affect landfill performance; and provides decisionmaking and problem-solving techniques.

Xuede Qian is currently a statewide Geotechnical Engineering Specialist with the Waste Management Division, Michigan Department of Environmental Quality. He received the B.S. and M.S. degrees in hydraulic and geotechnical engineering from Hohai University Nanjing, China, and the Ph.D. degree in geotechnical engineering from the University of Michigan, Ann Arbor. He is also an adjunct faculty member with the Department of Civil and Environmental Engineering, University of Michigan, with responsibility for teaching a senior/graduate level course on landfill design and construction. He has been actively involved in landfill engineering research and has participated in many landfill design, construction, and remediation projects during the past decade. Dr. Qian has authored numerous technical papers in the geotechnical and geoenvironmental fields. His professional experiences include work for universities, regulatory agencies, and consulting firms.

Robert M. Koerner is currently an H. L. Bowman Professor of Civil Engineering with Drexel University, Philadelphia, PA. He received the B.S. and M.S. degrees in civil engineering from Drexel University and the Ph.D. degree in geotechnical engineering from Duke University. He is an Honorary Member of the ASCE and a member of the National Academy of Engineering. Dr. Koerner is the co-author of the first book on geotextiles and has authored or coauthored more than 300 papers on geosynthetics in major engineering journals and for national and international conference proceedings. His latest effort is the fourth edition of the textbook entitled *Designing with Geosynthetics*. As Director of the Geosynthetic Research Institute, his activities involve all aspects of waste disposal, but focus particularly on the liner and cover containment systems.

let me know if anyone has the solution manual for this book thank you

This is one excellent book and very useful for students and professionals involved in Environmental geotechnique and Landfill design

Precisely what I was expecting

arrived quick and as described

I study both geotechnical and geoenvironmental engineering. This book deals much more with the geotechnical aspects as is named. It doesn't contain chemical issues or any microscopic behaviors you may find in some geoenvironmental books such as Yong et al. I kind of appreciate the authors' hard work to combine a great deal of knowledge concerning the design of landfills. There are 18 chapters, and each of them talks about every possible component of a landfill (CCLs, GCLs, GM, cover, LCS, etc.) and also some important behaviors such as settlement & stability. A chapter about vertical barriers is not available because this is the "landfill" book. The book uses mechanical, macroscopic, and "rule of thumb" approaches. There are some topics missing in this book. I believe. For instance, it assumes that adsorption is not available (retardation factor equal to unity) in the liner system, and this more or less makes your design too conservative. Subsequently, because adsorption is neglected, you won't see the topics about batch test and column leaching test in this book. Also, the way to obtain diffusion coefficients of porous media is not presented. So far I've gone through some chapters and found errors from place to place. Pages 19, 122, 158, 162-163, etc. need corrections. To finish in a positive way, I believe that this book is "a must" for geotechnical engineers working on landfills. If your background is purely environmental, you'd better look for some other books. And if you are a geoenvironmental engineer, the book is one of the good references for your career. But it's not a bible.

OK it is a very useful tool, good product with high quality. would purchase again. Great product. Feels good in the hand.

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