

# Advanced Rail Geotechnology Ballasted Track

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Mechanics of Ballasted Rail Tracks  
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Canadian Geotechnical Journal  
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Transportation Geotechnics  
Indian Geotechnical Journal  
Geotechnical abstracts  
5th ICEG Environmental Geotechnics  
Geotechnical Risk in Rock Tunnels  
12o Conferencia Panamericana de Mecánica de Suelos E Ingenieria Geotécnica, 39th U.S. Rock Mechanics Symposium, June 22-26th, 2003, Cambridge, Massachusetts, USA.  
Bulletin - American Railway Engineering Association  
Engineering Geology and Geotechnical Engineering  
Manufacturing Processes and Systems  
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National Research Council (U.S.). Transportation Research Board  
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noise and vibration as well as passenger comfort depend on the behaviour of ballast through particle interlocking and the corresponding deformation of this granular assembly attrition and breakage of ballast occur progressively under heavy and continual cyclic loading causing track deterioration and rail misalignment affecting safety while exacerbating the intensity of track maintenance in the absence of realistic computational models the track substructure is traditionally designed using mostly empirical approaches in this book the authors present the detailed information on the strength deformation and degradation aspects of fresh and recycled ballast under monotonic cyclic and impact loading using innovative geotechnical testing devices a constitutive model for ballast incorporating particle breakage is presented representing a more realistic stress strain response the mathematical formulations and numerical models are validated using controlled experimental simulations and fully instrumented field trials revised ballast gradation is described to provide greater track resiliency and extended longevity the book also provides a detailed description of geosynthetics for substructure improvement considering track deterioration caused by particle degradation fouling and impeded drainage new to this second edition are extensive discussions on subgrade soil stabilisation causes and mechanisms of soil fluidisation mud pumping under cyclic loading and preventive and remedial measures to alleviate undue instability of ballast tracks this book should prove most beneficial for final year civil engineering students and for postgraduate teaching and learning it is an ideal supplement for practising railway engineers and researchers engaged in the challenging tasks of future track design for heavier and faster trains

this comprehensive study provides practical advice and guidance on the important topics of rail transport and ground engineering the use of which will result in optimum quality with the minimum maintenance effort and the most economical use of resources the authors have synthesized all of their international knowledge and experience in this field and produced for the first time a definitive guide for the design construction maintenance and renewal of railway track as they relate to geotechnology

links geotechnics with railway track engineering and railway operation good railway track and railway operations depend on good geotechnics in several different ways and at varying levels railway geotechnics covers track track substructure load environment materials mechanics design construction measurements and management illustrated by

in this book the authors discuss testing of ballast including the strength deformation and degradation aspects of fresh and recycled ballast under monotonic and cyclic loading the effectiveness of geosynthetics in stabilising recycled ballast has also been examined a new stress strain constitutive model for ballast incorporating particle breakage is presented finally a new range of particle gradations balancing the strength and permeability requirements has been proposed for future rail tracks this book is intended as a reference text for final year civil engineering students and postgraduates and for practicing railway engineers with the task of modernizing existing designs

soil mechanics for pavement engineers 1 use of geosynthetics in transportation projects 25 geotechnical aspects of large section jacked box tunnels 39 long term settlement of piles under repetitive loading from trains 67 the importance of shallow geotechnics in the performance of rail trackbeds 75 detecting voids beneath concrete pavements using

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this volume contains highly relevant contributions to the fundamental area of geotechnical risk assessment management and control and is of interest to all those involved in the planning construction and management of tunnels entrepreneurs designers consultants and contractors

vols for 19 include the directory issue of the american railway engineering association

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