

# Advanced Rail Geotechnology Ballasted Track

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Track Geotechnology and Substructure Management  
Rail International  
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Canadian Geotechnical Journal  
Géotechnique  
Geotechnical Engineering for Transportation Projects  
Mechanics of Track Support, Piles, and Geotechnical Data  
Indian Geotechnical Journal  
Railway Track and Structures  
Geotechnical abstracts  
Bulletin - American Railway Engineering Association  
Proceedings of the Annual Convention of the American Railway Engineering and Maintenance-of-Way Association  
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12o Conferencia Panamericana de Mecánica de Suelos E Ingenieria Geotécnica, 39th U.S. Rock Mechanics Symposium, June 22-26th, 2003, Cambridge, Massachusetts, USA.  
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ballast plays a vital role in transmitting and distributing train wheel loads to the underlying sub ballast and subgrade bearing capacity of track train speed riding quality and passenger comfort all depend on the stability of ballast through mechanical interlocking of particles ballast attrition and breakage occur progressively under heavy cyc

ballast plays a vital role in transmitting and distributing the train wheel loads to the underlying track substructure the load bearing capacity safe train speed and the levels of 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

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

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

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

gsp 126 contains 223 papers presented at geo trans 2004 held in los angeles california july 27 31 2004

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

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