

Table of Contents

Preface	XI
Organization	XIII
 <i>Wave propagation</i>	
Sub and super seismic train induced ground vibrations-theoretical considerations and test results <i>A. Bodare & K. Petek</i>	3
Complex eigenvalue analyses of Love and Rayleigh waves <i>S. Morio, Y. Kato & S. Teachavorasinskun</i>	11
A study on damping and mitigation performance of side surfaces of foundations on soft soil – Part 1: Forced vibration tests of foundation block with various embedment conditions <i>Y. Ikeda, M. Kawamura, Y. Shimomura & S. Ishimaru</i>	17
A study on damping and mitigation performance of side surfaces of foundations on soft soil – Part 2: Analysis of records of The Mid Niigata prefecture Earthquake in 2004 and its simulations <i>Y. Shimomura, I. Hata, Y. Ikeda & S. Ishimaru</i>	25
 <i>Soil dynamics</i>	
Characteristics of stresses and settlement of ground induced by train <i>Y.M. Chen, C.J. Wang, Y.P. Chen & B. Zhu</i>	33
Experimental study on dynamic strain of structural soft clay under cyclic loading <i>Y.P. Chen, B. Huang & Y.M. Chen</i>	43
A developed dynamic elastoplastic constitutive model of soil based on the Davidenkov shear stress-strain skeleton curve <i>G.X. Chen & H.Y. Zhuang</i>	47
Research on lateral resistance of liquefying sand <i>S.L. Feng & J.H. Wang</i>	53
Discussions on dynamic triaxial tests of intact loess <i>Y.S. Luo, J.Y. Liu, J. Li & D.Y. Xie</i>	59
Dynamic response of the underlying nearly saturated loess tunnel <i>X.M. Zhou, T.D. Xia & P. Xu</i>	65
Analysis on the 3-D elastic-plastic dynamic response of roadbed and natural soil layer under shock load <i>A.H. Zhou, H.R. Zhong, M.L. Lu & Y. Yuan</i>	71
Measurement of reduction for ground response – Vibration test of soil-bag and 3D-FEM analysis <i>K. Yahata, T. Ishibashi, Y. Kiyota & K. Sakuraba</i>	79
On the load transfer mechanism of Cement-Flyash-Gravel pile in soft clay by dynamic testing <i>S.Y. Liu, P. Ji, Y.Q. Zhou, D.M. Ma, N.J. Lin & M.J. Hu</i>	87

Nonlinear discrete shear-slice model for dynamic analysis of seismic response of traffic embankment under earthquake <i>M.T. Luan & Z. Li</i>	93
 <i>Dynamic interaction of ground and traffic structures</i>	
The steady-state response of a periodically inhomogeneous model of a railway track to a moving load <i>A.V. Metrikine</i>	103
Critical velocities of Timoshenko beam on an elastic half-space under moving load <i>C.J. Wang, Y.M. Chen & X.W. Tang</i>	115
Steady-state response of the plate on Kelvin foundation under moving loads <i>J.Q. Jiang & H.F. Zhou</i>	121
Dynamic simulation of vehicle-track coupling vibrations for linear metro system <i>Y.W. Feng, Q.C. Wei, L. Gao & J. Shi</i>	131
Dynamic analysis of vehicle-bridge-foundation interaction system <i>N. Zhang, H. Xia & J.W. Zhan</i>	137
Simulation of track vibration due to high speed train passing through track transition with irregularity and rigidity abrupt change <i>X. Lei</i>	145
Source characteristics and generation mechanism of road traffic vibrations and some remarks for mitigation <i>R. Ishida & I. Masuda</i>	153
Ground vibrations induced by Shinkansen high-speed trains in view of viaduct-ground interaction <i>X.C. Bian & H. Takemiya</i>	161
 <i>Dynamics of traffic structures</i>	
Measuring the bridge frequencies from the response of a passing vehicle <i>Y.B. Yang & C.W. Lin</i>	173
Resonance analysis of train-bridge dynamic interaction system <i>W.W. Guo, H. Xia & N. Zhang</i>	181
Dynamic analysis of the light-rail-station viaduct under moving vehicle loads <i>D.S. Shan, Q. Li & X.W. Yang</i>	189
Study on the dynamics vibration character of the concrete slab track in track traffic system of linear induction motor <i>L. Liao, L. Gao & J.F. Hao</i>	197
Coupled vibration analysis of X-style arch bridge and moving vehicles <i>Q. Li & D.S. Shan</i>	203
Analysis of railway continuous bridges subjected to running trains and non-uniform seismic excitations <i>Y. Han, H. Xia & N. Zhang</i>	211
Study on dynamic characteristic of the EMS maglev guideway <i>J. Shi, Q.C. Wei & Y.W. Feng</i>	221
Modal identification from free vibration test using a neural network <i>C.H. Chen & M.C. Huang</i>	227

Dynamics of soil-structure interaction

Soil dynamics considerations in the automobile industry <i>R.D. Woods</i>	235
Effect of foundation rigidity on train-bridge coupling vibration response <i>M.M. Gao, J.Y. Pan & Y.Q. Yang</i>	243
System identification of a high-speed railway bridge with consideration of bridge-soil interaction <i>M.C. Huang, C.H. Chen & T.C. Chen</i>	249
Vertical impedance for stiff and flexible embedded foundations <i>M. Liingaard, L. Andersen & L.B. Ibsen</i>	255
Dynamic response of culvert – Embankment transitions in high speed railways <i>Z.Q. Li, H.R. Zhang, J.K. Liu, J. Zhang & Y.F. Hou</i>	265
Damage evaluation of bridge foundations considering subsoil properties <i>J.W. Zhan, H. Xia & J.B. Yao</i>	271
Impact analysis and absorber design for collision protection of part-buried structures <i>B. Zhu & A.Y.T. Leung</i>	279

Simulation of ground vibrations due to traffic and other sources

A unified approach to numerical modelling of traffic induced vibrations <i>G. Degrande & G. Lombaert</i>	291
An extended analytical model including a layered embankment to simulate ground vibrations from railway traffic <i>A. Karlström & A. Boström</i>	303
Propagation of ground vibrations induced by moving trains <i>J. Lu, H. Xia & Y.M. Cao</i>	311
Evaluation of site vibration around Shinkansen viaducts under bullet train <i>X. He, M. Kawatani, S. Yamaguchi & S. Nishiyama</i>	317
Ground vibration around adjacent buildings due to a nearby source <i>H. Pezeshki & Y. Kitamura</i>	327
Effect of track parameters to the ground dynamic response due to metro train <i>Y.Q. Zhang, W. Chen & W.N. Liu</i>	333
The subway-train-induced vibration effects on surrounding buildings <i>W.Q. Liu & J.Q. Hong</i>	337

Empirical prediction of ground vibrations due to traffic and construction work

An evaluation method for train-speed dependency of Shinkansen-induced vibration <i>H. Yokoyama, K. Ashiya & N. Iwata</i>	345
Field test of a semi-empirical model for prediction of train-induced ground vibration <i>C. With & A. Bodare</i>	351
Environmental ground-borne vibrations from train operations in the US 36 Corridor (Denver-Boulder, CO) <i>D.A. Towers</i>	357
Ground vibration caused by magnetic-levitating train and its effects on surroundings <i>G.Y. Gao, Z.Y. Li & Z.Q. Yue</i>	363

Ground vibrations caused by impact pile driving <i>K.R. Massarsch</i>	369
Three-dimensional predictive analysis of ground vibrations produced by construction work <i>T. Hanazato, N. Taguchi, Y. Nagataki & Y. Ikeda</i>	381
The measured vibration data of construction sites <i>H. Yoshinaga, A. Hayashi, K. Yoshida & H. Yamamoto</i>	385
 <i>Mitigation theories and applications against traffic induced ground vibrations: numerical analyses</i>	
Scattering of Rayleigh waves by heavy masses as method of protection against traffic-induced ground vibrations <i>V.V. Krylov</i>	393
Prediction of train/traffic induced ground vibrations and mitigation by WIB <i>H. Takemiya</i>	399
Honeycomb-WIB for mitigation of traffic-induced ground vibrations <i>H. Takemiya & J. Shimabuku</i>	411
Passive/Active WIB for mitigating traffic-induced vibrations <i>F. Chen & H. Takemiya</i>	419
Vibration screening with sheet pile walls <i>L. Andersen & M. Liingaard</i>	429
Study on vibration effects upon precise instruments due to metro train and mitigation measures <i>X.J. Sun, W.N. Liu, H. Zhai, D.Y. Ding & J.P. Guo</i>	439
Theoretical study on phase interference method for passive reduction of multiple excitation forces – Reduction method of vibration due to rhythmic action of concert audience <i>R. Inoue, Y. Hashimoto & Y. Yokoyama</i>	445
Vibration isolation of gas/water-filled cushion wall barrier <i>T. Takatani & Y. Kato</i>	453
 <i>Mitigation measures against traffic induced ground vibrations: field measurements</i>	
Some examples about ground vibration isolation using wave barriers <i>K. Hayakawa</i>	463
Effect of PC wall-piles weight on ground vibration isolation in the field model tests <i>Y. Nabeshima, K. Hayakawa & Y. Kani</i>	471
Experimental study of railway-induced ground vibration reduction method <i>H. Suzuki, M. Kawakubo, S. Shibusawa, T. Nonaka & K. Sakai</i>	477
Development of isolation barrier for ground vibration by employing group of embedded circular drain in the soil <i>K. Onoda, H. Nagasawa, T. Ohshima & T. Tamura</i>	485
Environmental vibration control by active piezo-actuator system <i>H. Takemiya, S. Ikesue, T. Ozaki, T. Yamamoto, Y. Fujitsuka, A. Shiraga & T. Morimitsu</i>	493
Ground vibration control using PANDROL VANGUARD in a tunnel on Guangzhou Metro Line 1 <i>A. Wang, S.J. Cox, L. Liu, H. Huang & S. Chan</i>	499

Characteristic change of traffic vibration due to road surface continuation on viaducts <i>K. Sugioka, K. Yamamura, Y. Yamamoto & Y. Sanuki</i>	507
Effects of train-induced ground vibrations by stiffening structures <i>N. Iwata, H. Yokoyama & K. Ashiya</i>	513
Vibration characteristic of the buildings aiming at reduction of environmental vibrations and earthquake motion <i>T. Nakamura & M. Nakamura</i>	521
 <i>Building vibrations by traffic and other sources</i>	
Traffic induced vibrations of ground environments and buildings <i>H. Xia, P.B. Wei, Y.M. Cao & G. De Roeck</i>	529
Experimental study of moving train induced vibrations of a high-rise building <i>Y.M. Cao, H. Xia & J.W. Zhan</i>	541
Centile spectra, measurement times, and statistics of ground vibration <i>H. Amick, M. Gendreau & N. Wongprasert</i>	547
Measurements of vibrations in a wooden apartment house due to running trains <i>S. Yokoshima, K. Hiramatsu, Y. Sano, Y. Hirao, Y. Nagaseki & T. Goto</i>	553
A study on the prediction and measures of floor vibrations from aerobics <i>Y. Tanaka</i>	561
Traffic-induced vibrations and noises in elevated railway structures <i>R. Gao & H. Xia</i>	569
Establishment of evaluation method of floor vibration caused by human motion and presentation of criterion on actual house floor <i>Y. Yokoyama & H. Ono</i>	575
 <i>Assessment of environmental vibration for living condition</i>	
Committee activities on environmental vibration in Architectural Institute of Japan <i>T. Hamamoto, T. Ishikawa & T. Goto</i>	587
A review of standards for evaluation of vibration in living environment and studies of human perception of whole-body vibration <i>Y. Matsumoto & S. Kunitatsu</i>	599
The transition concerning the estimation of the ground environmental vibrations in Japan <i>M. Shioda</i>	607
Method of evaluating of the influence of occurrence vibrations generated by heavy traffic noise on acoustic conditions in residential buildings <i>M. Niemas</i>	611
The evaluation of habitability to long period wind-induced horizontal torsional motion <i>S. Shindo & T. Goto</i>	619
Experimental research relating to responsive appraisal of compound vibrations and noise stimuli <i>T. Goto, Y. Nagaseki, M. Shimura, R. Endo & Y. Kawakami</i>	625
Influence of visual sensation on sense of horizontal vibration <i>C. Noda & T. Ishikawa</i>	633
Indoor noise levels, annoyance and countermeasures in Assiut urban sites, Egypt <i>S.A. Ali</i>	639