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Sommario/riassunto

Framework for scanning modal parameters of bridges from vehicle responses utilizing the Vehicle Scanning Method (VSM) Advanced Vehicle Scanning Method: Bridge Modal Parameter Identification delivers a complete theoretical framework for scanning of the modal parameters (frequencies, damping ratios, and mode shapes) of bridges from vehicle responses. This book provides comprehensive coverage of the application of the Vehicle Scanning Method (VSM) for different types of bridges, which has the advantage of mobility, economy, and efficiency over the conventional, direct method. Most of the materials presented in each chapter have been published as technical papers in high-ranking international journals, which were subjected to critical reviews. The contents of the book have been arranged such that they are reflective of the progressive advancement of the VSM technique. Edited by a highly qualified team of authors including one of the original developers of the VSM technique, Advanced Vehicle Scanning Method includes information on: The theoretical basis for bridge frequency identification and scanning methods enhanced by software and hardware tools The damping formula for determining the bridge damping ratio from the spatial correlation of the front and rear wheels of a two-axle test vehicle The methods for removing the damping distortion effect on bridge mode shape recovery with no prior knowledge of bridge damping ratios The theoretical basis of scanning frequencies, damping ratios, and mode shapes using VSM for various types of bridges, such as curved bridges and thin-walled girders Advanced Vehicle Scanning Method is an essential reference on the subject for researchers working on bridge dynamics, graduate students in programs of study related to vehicle-bridge interaction, and practicing bridge engineers.

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