1 Aerial view **2** Underpass approach perspective **3** Pickering Bridge

Design Guidance for Bridges in New Zealand for Liquefaction and Lateral Spreading Effects

Project Location: Nationwide

Opus International Consultants for NZ Transport Agency

Disciplines: Geotechnical engineering, Structural

The "Design Guide for New Zealand Bridges: Liquefaction and Lateral Spreading Effects'" specifies the first-ever bridge design procedures for New Zealand conditions. It offers a sound basis for more reliable, consistent, cost-efficient design against liquefaction and lateral spreading effects. The client, NZ Transport Agency, supports this application to the Innovate NZ Awards of Excellence.

The Guide's methodology covers a wide range of design issues important to New Zealand's geological environment. These include: geotechnical investigations; liquefaction and lateral spreading assessments; ground improvement methods; design procedures; geotechnical and structural measures for mitigating liquefaction and lateral spreading effects. Until its publication, there were no instructions available anywhere providing a complete design manual for designing bridges on sites prone to liquefaction and lateral spreading. The Guide therefore offers a major advance in foundation design development for specific geotechnical conditions. Furthermore, its state-of-the-art framework and procedures can be used for designing other infrastructure on liquefiable ground, (like wharf structures and buildings). In addition, its methodology satisfies the Resource Management Act's requirements for addressing natural hazards like earthquake-shaking, liquefaction and ground deformation.

Key contributors were: Prof Misko Cubrinovsky and staff from the Department Civil and Natural Resources Engineering, University of Canterbury, and Prof Rolando Orense and Staff from the Department of Civil and Environmental Engineering, The University of Auckland. Dr Alexei Murashev of Opus led and co-ordinated the project. His role included leading the development team and working with academics and senior engineers to create a practical solution to a serious problem.

Judging & Copyright Statement

This project is a Finalist entry in the 2015 INNOVATE NZ Awards of Excellence competition. The winners will be announced on Saturday 1 August, 2015.

For more media information and high resolution images, please contact Holly Morchat
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