Best-practice guide to pavement stabilisation published

The Transport Agency has published a comprehensive best practice technical guide for pavement stabilisation in New Zealand.

Contained in a report by Opus International Consultants, the guide brings together informed, current technical advice from a variety of sources to enable road controlling authorities, consultants and contractors in New Zealand to successfully investigate, design, construct, maintain and operate pavements with stabilised components.

The guide will also enable the Transport Agency to promote best practice for stabilisation and make maximum use of the opportunities that stabilisation enables. It will provide a starting point for the ongoing review and development of pavement stabilisation best practice in New Zealand.

Pavement stabilisation in New Zealand

New Zealand pavement engineers, along with their colleagues in South Africa and Australia, are recognised internationally as leaders in the use of stabilisation in highway, road, airport, port and industrial hardstand pavement construction.

Research and developments in stabilisation plant and practices mean stabilisation now offers a safe, efficient, affordable and sustainable technique for use in pavement construction, rehabilitation and maintenance.

Stabilisation is used to rectify deficiencies in the soil, aggregate or surfacing materials used in pavement construction. Stabilised materials contribute to the strength and performance of pavements at all levels, including the subgrade, subbase, base and surfacing. The four types of stabilisation most commonly used in New Zealand pavements can be broadly categorised as: cementitious; bituminous; chemical or mechanical.

Both sealed and unsealed roads can be stabilised. For unsealed roads, pavement stabilisation is used to develop strength in the subgrade and pavement layers, and to control water sensitivity, rutting, dust and aggregate loss. For sealed roads, pavement layer strength (stiffness) improvements and reducing moisture sensitivity at all pavement system levels following stabilisation enable pavements to carry more traffic and to be operated and maintained effectively.

The new best practice guide is based on existing research and the expertise of pavement stabilisation specialists worldwide. To develop it, Opus did not carry out further investigation or testing into stabilisation techniques, as this information was already available. Instead, the research team examined current best practice and research findings from around the globe to determine which approaches were best suited to the New Zealand context.

How to use the guide

The best practice guide provides users with practical technical advice on:

- pavement stabilisation principles
- treatment selection for stabilised pavements
- laboratory and field tests for stabilised pavements
- structural design for stabilised pavements
- construction of stabilised pavements
- quality management
- ongoing research.

Users will gain a clear understanding of how they can incorporate the science behind material stabilisation in their pavement treatment selection processes. They will also understand how the investigation, design and construction processes employed in pavement stabilisation are best used in the New Zealand context.

The guide assumes users have a background in engineering, and a sound technical understanding of mechanical stress and the resultant response in engineered soils and aggregate. First-time users are encouraged to read the guide from the beginning where they will find an overview of the history and background of pavement stabilisation techniques and materials used in New Zealand.

The guide includes extensive references to previously published information about pavement stabilisation, including related Transport Agency and Austroads design guides, material and construction specifications.

There are also worked structural design examples, to demonstrate current design best practice. The examples include references to frequently used design charts, catalogue solutions and other design methods.