

Settlement Mitigation Solution for Sinking Highway



INDUSTRY

Infrastructure

STRUCTURE

Road

PROBLEM

Ground Settlement & Voids

LOCATION

Colorado, USA

DURATION / YEAR

2010; 2012

TECHNOLOGY

Terefil™

BUSINESS UNIT

Aerix Industries USA

Pictured above:

A series of 3m and 6m deep columns of lightweight cellular concrete were installed, reducing the dead load on the slip zone and eliminating the subsidence.

Summary

The Interstate 70 highway in Colorado, USA is a major thoroughfare that runs through the centre of the state, connecting the east and west. Built on a landslide mass between 500ft and 700ft (152m and 213m) wide and 250ft (76m) high, the roadway undergoes regular movement which causes settlement of between 3in and 6in annually. This causes depressions on the roadway, resulting in traffic problems for motorists.

Historically, the Colorado Department of Transportation (CDOT) overlaid new asphalt when settlement reached more than 1in or 2in, resulting in costly and regular overlay maintenance. Over time, overlay had increased the thickness of the asphalt to more than 6ft in some areas. Milling had also revealed cracks and voids beneath the pavement.

The CDOT was seeking a settlement mitigation plan that would reduce the need for annual or more frequent overlays, minimising maintenance costs and the inconvenience of lane closures and congestion to motorists.

An economic settlement mitigation plan was developed to reduce long term maintenance costs. The plan involved filling drilled shafts with an advanced, engineered lightweight cementitious fill material suitable for projects where granular fills or aggregate material options are too heavy, site access is limited or project schedules are extremely tight.

The project was completed in a tight construction window of just 4 months and in difficult conditions. The location receives more than 400in (10m) of a snow a year, is surrounded by steep slopes and has limited access. In addition to sensitive environmental conditions and limited funding, the project faced the constraints of high traffic volumes and speeds.