

Airport Drainage Channel Re-levelled

INDUSTRY
Infrastructure

STRUCTURE
Airport

PROBLEM
Sinking pavement

LOCATION
Nagoya, Japan

DURATION / YEAR
18 nights / 2012

TECHNOLOGY
Uretek Slab Lifting

BUSINESS UNIT
Mainmark Japan



Summary

The major drainage channel on the taxiways of Nagoya Airport had sunk, due to sub-base saturation, causing aircraft to become detached from the tug vehicles towing them. The channel was sinking more day by day.

In 2009 the airport authorities had undertaken a year-long test that proved the great durability of injected Uretek resins in airport conditions. That test led to a substantial section of channel being re-levelled in 2010.

That led directly to Mainmark being engaged to correct another large section in 2012. This section of 510m was raised from an average of -40mm up to 0mm in 18 nights.

Objectives

The primary aim was to raise the base of the drainage channel to its correct height profile, so that the covering grille was precisely level with the taxiway.

This meant that not only were bumps eliminated, but so too was the need for rubber matting that had been used to partially level the grille with the surrounding pavement.

The secondary objective was to restore the levels at the bottom of the channel to re-establish exact water flow.

Solution

The Uretek Slab Lifting method was employed, with 18 shifts of about six hours per night. Four Operations crew worked on this project on most nights.

The injection was carried out with extreme precision to achieve the exact levels required with the aid of continual laser level monitoring.

A special Uretek resin formulation was used giving an impact reaction in a very limited area to ensure that only the channel base was lifted and not the taxiway slabs on each side of the channel.

The channel was raised back to exactly the design levels. Bumps were eliminated allowing the rubber in-fill mats to be removed. Perfect water flow was also restored.

Pictured above: 1. Mats and grills removed as injection was carried out. 2. Mats removed showing grills in foreground. 3. Channel sunk 40mm. 4. Exact designed level re-established. 5. Airport operations continued uninterrupted.