

Teretek® Raises and Re-levels Concrete Slabs at Busy International Airport

PROJECT PROFILE

UK21-800

mainmark



INDUSTRY

Infrastructure

STRUCTURE

Concrete slabs on taxiway

PROBLEM

Subsidence

LOCATION

Belfast International Airport, Belfast, Northern Ireland

DURATION / YEAR

1 Day / August 2021

TECHNOLOGY

Teretek®

BUSINESS UNIT

Mainmark UK

Summary

Belfast International Airport (BIA) serves as the main airport for Northern Ireland and is the second biggest airport on the island of Ireland. In 2018 it became part of the VINCI Group which manages the development and operation of over 45 airports worldwide. Passenger numbers exceeded 6 million in 2019, moving BIA into the top 10 busiest UK Airports for passenger traffic and into the top 5 for domestic passenger traffic. Most of the passenger traffic is through EasyJet, Jet 2 and TUI, offering routes to over 80 destinations. The airport is served by 2 runways and the overall footprint is approximately 1000 acres.

A cargo access taxiway, just off Lima taxiway at BIA was suffering from subsidence, causing three 2m² by 1.4m thick concrete slabs to sink by up to 66mm.

With around 30 aircraft using the taxiway each day, safety, as well as comfort, are critical factors and the taxiway needs to be level. Recent subsidence had caused gaps/steps to appear between several slabs, and movement over the slab joints caused concern for aircraft and support vehicles, with the effects most noticeable at the radar dome, or 'nose' of the planes. As a result of these concerns, the airport needed to rectify this issue.

The airport operators initially considered fixing the problem with a traditional solution of breaking out and reconstructing the slabs, but this would have been extremely time-consuming, taking days or even weeks to complete. A further disadvantage to this method is that the taxiway lighting would need to be disabled and replaced while work took place, increasing the downtime and requiring a temporary taxiway, which was a costly option.

Mainmark's solution was much more convenient, cost-effective and required the least amount of downtime for the airport and its passengers. Mainmark was also able to meet the project requirements and demonstrate compliance with the Airport's safety

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statement for working airside and as a result, Belfast International Airport commissioned Mainmark to complete the work.

Objectives

Mainmark was required to lift three 2m² concrete slabs, re-leveling them, to remove the joint steps that were causing the airport safety issues and inconvenience. The project had to be completed within a very short time frame to minimise disruption at the airport as the taxiway was still in operation.

Solution

To minimise disruption, Mainmark completed work in between aircraft arrivals. To lift the concrete slabs, Mainmark utilised Teretek®, its proprietary two-in-one resin injection solution, as it's fast-acting, cost-effective, and requires no excavation making it ideal for this project.

Upon starting the work, the Mainmark team discovered that the slabs were 1.4m thick, which was significantly more than expected and additional drilling was required. Nevertheless, Mainmark was able to finish the project on time, lifting the slabs by up to 44mm in some places, by applying Teretek in a targeted injection sequence, 2m below ground level.

Mainmark completed the project in one day and the slabs were ready to be used immediately after injection, helping to keep the taxiway operational.

Speaking about the project, Chris Horner, Projects Director, Belfast International Airport said: *"This was a project that required quick completion since we couldn't suspend the taxiway's use. Mainmark didn't see that as an issue as they were able to complete the project in just one day irrespective of the taxiway's continued operation. Additional drilling was also required because the slabs were thicker than expected, yet they were still able to finish everything on time. The team's quick planning and professionalism led to an outcome that I was very happy with. The project has contributed to a safer environment for both the Belfast International Airport workers and prospective passengers."*



Resin injection being carried out on the taxiway



Taxiway "before" resin injection



Taxiway "after" resin injection