URETEK USA

LACKLAND AIR FORCE BASE APRON REPAIR PROJECT

PROBLEM

LOCATION: LACKLAND AFB, TEXAS (433d AW APRON)
PROJECT EXECUTION: FALL 2011 (FY 2012)

SITUATION:

Representatives from URETEK USA and the 802d Civil Engineering Squadron performed a site visit to problem areas on the 433d Air Wing (AW) Apron. The 433d Air Wing is an Air Force Reserve (AFRES) unit that operates the C-5 Galaxy out of its home at Lackland AFB, Texas. The 802d representatives identified the following problem areas to URETEK USA personnel:

- Problem Area 1 – Faulted slabs near the intersection of Taxiway H and the 433 AW Apron
- Problem Area 2 – Prematurely cracked slabs on and near the Apron taxilane extending from Taxiway H
- Problem Area 3 – Pumping slabs near the Entry Control Point (ECP) where the Apron taxilane (extending from Taxiway H) ends

A URETEK USA crew deployed to Lackland to gather additional information on the problem areas by performing Dynamic Cone Penetrometer (DCP) tests, mapping pavement distresses, and collecting slab elevation data. URETEK USA engineering personnel also benefitted from Air Force-provided insights, particularly those in the September 2007 *Airfield Pavement Evaluation Report* prepared by the Air Force Civil Engineer Support Agency (AFCESA).

LEADERSHIP

Leader in cost and time savings, accuracy and precision

Environmentally inert materials and processes

INNOVATION

Inventor of polymer-based technology in use today

Most patents in industry - Period

Ongoing engineering research and development

EXPERTISE

Developed the industry's most accurate, monitoring process

Developed URETEK 486 STAR material

Pioneered the URETEK Deep Injection Process

Most experienced technicians and best safety record in industry

PROVEN SUCCESS

85,000+ successful projects

20+ years experience solving complex soil/pavement problems

Industry-leading warranty and customer care

FACTORS FOR CONSIDERATION:

The following considerations were also applied to proposals for lifting faulted pavement and performing insitu stabilization of soils beneath the pavement:

- Minimize disruption to 433d AW operations during the project
- Accommodate future slab replacement projects, i.e., stabilization of foundation soils should withstand the removal of the current slabs and the construction of the new slabs
- Reduce Foreign Object Damage (FOD) potential

SOLUTION

URETEK USA's solution involved the URETEK Deep Injection® (UDI) Soil Stabilization process, which relies on a two-part polymer system, injected beneath the pavement through pre-drilled holes of 5/8-inch diameter (penny-size). The polymer system travels through tubing to elevations beneath the pavement surface characterized by weak soils (determined by cone penetration testing). Expansion of the polymer compacts the surrounding soils – eliminating voids in the soil mass and improving bearing capacity. After stabilization is achieved, injection into the soils can continue to achieve pavement lifting, as needed. For this project, one injection depth was used in Repair Area 1 while two injection depths were used in Repair Areas 2 and 3.

RESULTS

- URETEK USA realigned the 14 faulted slabs in Problem Area 1
- URETEK USA stabilized the soils down to -10' elevation (measured from the surface) for 54 slabs in Problem Area 2
- URETEK USA displaced the water and stabilized the soils under 26 slabs in Problem Area 3

BENEFITS

MINIMIZED DOWNTIME

REPAIR TIME: 26 WEEKDAYS

SLABS RE-ALIGNED OR STABILIZED: 94

APRON REOPENED:
EVERY NIGHT FOR THEIR USE

Minimized Mission Disruption
- Kept small footprint during repair operations
- Cleaned repair area after each day's work
- Airfield Management inspected area after each day's work
- Apron returned to 433d each night for their use

Accommodated Future Slab Replacement Projects
- Injection tubes countersunk beneath bottom of pavement

Reduced FOD Potential
- Capped injection holes with rapid set epoxy
- Buffed caps after they set to restore a smooth pavement surface

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