Environmental Engineering and Management Journal xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx
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"Gheorghe Asachi" Technical University of Iasi, Romania

IMPROVING RUNWAY STRIP PERFORMANCE TO FULFILL INTERNATIONAL REQUIREMENTS THROUGH ECO-EFFICIENT SOIL TREATMENTS: CASE STUDY OF A MAJOR ITALIAN AIRPORT

Maurizio Crispino, Emanuele Toraldo, Filippo Giustozzi*

Department of Civil and Environmental Engineering, Transportation Infrastructures and Geosciences, Politecnico di Milano, P.zza Leonardo da Vinci 32, 20133 Milan, Italy

Abstract

The paper presents a case study of a significant intervention conducted on a major Italian airport for improving the structural and functional properties of the runway safety STRIP in order to fulfill specific national and international standards.
The STRIP had to accomplish strict requirements in terms of the maximum longitudinal and transversal terrain slope and minimum values of bearing capacity; in particular, soil bearing capacity was identified as the main lack and thus the most urgent action to be carried out in the airport. However, the STRIP itself is located in a very critical area due to its closeness to the runway and several constraints were therefore identified during the design stage. The optimal strategy was identified as the one that minimized the intervention timing and costs, reducing the handling of construction material to/from the airport, avoiding delays to the air traffic, and maximizing the performance of the treated soils in terms of bearing capacity. In this framework, an energy-controlled stabilization technique of in-situ soils was developed.
Several measurements, in both laboratory and field environment, were also conducted at different stages: *i)* before the intervention took place, *ii)* during the construction stage, and *iii)* at the conclusion of the work to monitor and validate the expected results.
The intervention was able to provide the STRIP areas with a smooth surface presenting terrain slopes and bearing capacity in accordance with the standards. The illustrated methodology could also be applied to other airports saving time, costs, materials, and limiting air traffic delays.

Key words: airport pavement, cement-treated soil, recycling, soil bearing capacity

Received: January, 2014; Revised final: June, 2014; Accepted: August, 2014

*Author to whom all correspondence should be addressed: e-mail: filippo.giustozzi@polimi.it; Phone: +39 02 2399 6617; Fax: +39 02 2399 6602