

## FIELD AND LABORATORY INVESTIGATIONS CONCERNING THE GROUND OF THE SAFETY LANE (RWY STRIP) AND THE SAFETY AREA PERTAINING TO THE TAKE OFF/LANDING RUNWAY (RESA)

### Goal of the project

The technical report aims at realizing field and laboratory investigations concerning the improvement of the ground of the safety lane of the runway (RWY STRIP) and the safety areas pertaining to the take off/landing runway (RESA), as well as offering solutions to make these areas adequate to the requirements of the technical regulations in the aeronautic field.

It is recommended that the objectives be built to minimize the dangers induced by a possible faulty taxiing, or by the differences in bearing capacity.

### Short description of the project

The report consists in researching the characteristics of the ground on the runway through in situ and laboratory testing. The following characteristics have been determined: - for the ground in the area: grading, plasticity, consistency index; layering of the ground in the runway strip through geotechnical drilling and sounding; the bearing capacity of the ground through light dynamic penetration (PDU) and the Californian bearing Ratio. The required value of the resistance parameter (CBR) of the soil ranges between 15 and 20%. In the case of inaccurate values, the laboratory study offered major technical solutions to obtain the required performances in respect to the bearing capacity, such as:

- stabilization with special hydraulic binders;
- mechanic stabilization.

### Project implemented by

S.N. AEROPORTUL INTERNAȚIONAL TIMIȘOARA TRAIAN VUIA S.A  
TRAIAN VUIA INTERNATIONAL AIRPORT TIMISOARA SA

### Implementation period

01.03.2016 – 01.07.2016

### Main activities

- identification of the stratigraphic succession of the soil layers in the foundation ground;
- determination of the underground water level;
- determination of the physical-mechanical characteristics of the soil layers in the foundation ground, through laboratory analyses and tests;
- determination of the resistance to shearing stress  $\Phi$  and  $c$  for the undisturbed samples through unconsolidated-undrained direct shearing (13x3 samples);
- determination of the CBR index (Californian Bearing Ratio) for the undisturbed soil samples (13 samples);
- determination of the optimal compaction moisture through the normal Proctor test (5 samples).

Realization of homogenous soil mixtures by adding different percentages of special hydraulic binder, 2%, 4% and 6% respectively.

### Results

The application of a 70/30 soil/gravel ratio with the CBR index of minimum 22% is recommended for mechanical stabilization.

The stabilization with special hydraulic binders requires the application of a dosage of 4% binder in the mixture for which a minimum 26% CBR index is obtained (28 days). Even with an adequate CBR index for a 2% binder stabilization, a 4% hydraulic binder dosage is recommended, in order to ensure a high quality behavior of the material in the accidental presence of infiltration waters.

### Applicability and transferability of the results

The results obtained intend to ensure the required bearing capacity  $CBR = 15 \dots 20\%$ , for the take off/landing runway strip RESA.

### Research Centre

Research Centre of Infrastructures for Constructions and Transportation – ICT –

### Research team

Project manager:

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