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RUNWAY LOAD TESTS

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SUMMARY OF THE FRENCH REPORT

Runways for heavy aircraft must be designed to carry loads of 67.5 metric tons, distributed over an area of about 0,8 m2 (74,3 short tons over about 8,6 sq. feet), the average pressure being between 7 and 10 Kg/cm2 (100 to 142 psi); under certain conditions this pressure could amount to 20 Kg/cm2 (285 psi).

In the case of most soils and as far as foundations of flexible pavements are concerned, such loads require a thickness of base from 0.6 to 1 m (2' to 3'); for runways with rigid pavement the thickness of concrete varies from 30 to 40 cm (12" to 16").

The problem of determining the nature of the base course and the thickness of the various layers of material is very intricate. The mathematical method does not give a definite answer for, on one hand, it meets with considerable analytical difficulties, if an excessive simplification of the problem is to be avoided, on the other hand the problem is based on physical data, i.e. soil-characteristics which are determined by the soil's history. Experimentation is therefore called upon to play a highly important part in both the determination of soil-characteristics and the behaviour of runways under service conditions.

During road and runway construction at the ORLY Airport, the French Highway Administration has been lead to carry out a certain number of tests.

1) Tests with a view to determining the California Bearing Ratio and the modulus of soil reaction;

2) Direct load tests on subsoil, subgrade and finished pavement.

The numerous field-tests were not carried out systematically for a detailed study of a general subject. On the contrary, they were made in order to obtain results on particular points. (For instance, determination of the settlement of a runway under load increments on a plate of a given diameter).

Nevertheless, a comparison of the various test results, enables us to come to partial but interesting conclusions concerning;

1) Pressure distribution upon a subgrade consisting of various layers;
2) Settlement variation in terms of pressure;
3) Settlement variation in terms of the diameter of the load-plate,

and this for loads up to 40 Tons.

We therefore mainly submit test-results and endeavour to draw conclusions of a limited nature.

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SUB-SECTION VIII b

METHODS OF FLEXIBLE PAVEMENT DESIGN

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WYOMING METHOD OF FLEXIBLE PAVEMENT DESIGN

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SYNOPSIS

The purpose of this paper is fourfold:

1. A review of the fundamentals upon which the selection of the design method was based and an explanation of the method selected.
2. A presentation of a typical soil profile showing the data necessary to support this method of design.
3. An explanation of the use of the soil profile in developing the preliminary design.
4. A demonstration of the final or construction design based upon sample taken from the grade as constructed.

HISTORY

The first systematic method of design for flexible pavements, based on soil characteristics, was adopted in this State in 1940.

This method was based on a soil value formula as developed by the Keith Boyd 1).

Some changes in the original formula were made to more nearly fit local conditions and under the revised formula total surfacing thickness ranged from $4\frac{1}{2}$"-3"-$4\frac{1}{2}$" to $10\frac{1}{2}$"-9"-$10\frac{1}{2}$" de-