

- 18 Road Oil Applied to Macadam Highways in Oregon, by W. A. Scott. Highway Engineer and Contractor, V 15, No 1, p 50 (July, 1926)
- 19 Surface Treatment of Roads (Maryland) Public Works, V 57, No 4, p 152 (May, 1926) Good Roads, V 69, No 5, p 185 (May, 1926) American City, V 34, No 6, p 636 (June, 1926)

SUBGRADE MATERIALS AND TESTS

H S MATTIMORE

Pennsylvania State Highway Department, Harrisburg, Pa

The subject of subgrades and subgrade materials for highway work has been given intensive study for the past several years. The relative object of all investigators is to try to develop methods of tests applicable to the laboratory, or preferably to the field, for the identification of subgrade soils, from the standpoint of determining their suitability for the efficient support of the surface.

Progress has been made in the determination of the suitability of certain soils for this proper support. For instance, it has been checked by numerous investigators that the clay content is one of the governing features of subgrade soils which effect their stability. Some laboratory tests for the identification of these soils have been developed, and one field test has been developed within the past several years known as the moisture equivalent determination, and has been applied to some extent.

METHODS OF REMEDYING POOR SUBGRADE CONDITIONS

One of the original methods for improving poor subgrade conditions was to endeavor to stabilize clay soils by admixtures of finer materials, such as Portland cement, hydrated lime, etc. The theory of a sand-clay surfacing also has been followed to some extent. The later reports on subgrade investigations seem to indicate that the finely ground materials, such as hydrated lime, Portland cement, etc., are not as efficient for this purpose as the coarser granular materials such as sand, stone, screenings, etc.¹

The Proceedings of the Fourth Annual Meeting of the Highway Research Board, page 66, tabulates digest of subgrade needs, suggested by the contact men in the various State highway departments:

¹ "The Present Status of Subgrade Studies," Public Roads, Volume 6, No 7, September, 1925, page 160

Standard methods for sampling, testing and classifying subsoils.

A practical field method for the determination of the character of subgrade materials.

Determination of subgrade supporting power and the effect of elasticity of soils on the design of pavement slabs

Advance determination of the character of subgrade materials

The best method for treating poor subgrade materials

Methods and economy of treating subgrades.

Establishment of the relations between initial bearing power of a soil and the amount and character of material to produce a desired bearing power

This digest illustrates the interest on this subject.

Mr A. C Rose, Associate Highway Engineer, U S Bureau of Public Roads, in a paper entitled "The Present Status of Subgrade Studies," published in Public Roads, September, 1925, gives an excellent digest of the condition of subgrade studies to that date. The progress of the laboratory and field test of soils is discussed and the needs for the study are tabulated.

The progress of subgrade studies to date seem to have been along the line of the identification of natural subgrade materials. Considerable work has been done on the bearing power of different materials with different moisture content. Further study is needed along this line from the standpoint of eventually developing tests to identify subgrade materials and remedies for the treatment of the poor subgrades.

The proposed subgrade studies of the U S Bureau of Public Roads by Messrs Hogentogler, Mullis and Terzaghi, which have recently been outlined, judging from their very comprehensive scope, should result in securing data relative to soil identification tests, and practical application of inestimable value to the highway field.