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**Time Capsule**

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# Compaction of soils and granular materials

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## Introduction

The research described in the book is the culmination of nearly 50 years of research by the Transport Research Laboratory (TRL) into the compaction of soils and granular materials. This research undertaken by Tony Parsons and described by him in the book provides the basis for all modern UK (and a lot of international) earthworks and pavement compaction specifications and is the recommended method for good construction practice. Without this research there would be excessive settlements and instability in engineered fills, and increased costs of construction.

## The book

The book is 323 pages long in A4 portrait format. It is a reference book and presents all the research leading to good compaction and material specification practice. It's important to note the research by Tony Parsons involved pilot-scale studies firstly on a circular test track and latterly in five indoor bays (17mx5.5mx1m) of differing soil types, which could be mixed at different moisture contents. The scale of his work over such a lengthy timescale is extremely unlikely to be repeated.

The book provides the basis for specification of compaction, a basis which is becoming forgotten in the industry. Hence the assumptions in constructing engineered fills, including any conservatism and change in application, are being forgotten and opportunities unrealised. It's important to understand the basis of specifications to properly apply them in different situations, a role this work fully provides.

## The importance of the work

Specifications for design and construction can become like 'tick boxes' without fully understanding what the clauses are controlling, what conservatism there may be and how different properties and actions are linked to each other ie conservatism in one area may be offsetting risk in another. The work Tony Parsons presents provides, in considerable detail, data and information that allows the existing compaction methods to be understood and new situations and soil types to be addressed. In Design and Build contracts the specification is regularly challenged, usually for good reason, and the understanding Tony presents is essential in knowing what can and what cannot be changed.

Although published in 1992, and including data going back to 1945, the construction plant described and used in the research look dated. However, the research is by no means outdated. The plant properties, the soil characteristics and the research results described are still used and referenced today.

The link between compaction and specifying soil properties and limits is fully described in Tony's work and is an important application of the research. In particular, Tony invented the Moisture Condition Apparatus and Moisture Condition Value as a quick way of measuring soil condition for compaction, construction plant trafficability and fill stability, and he covers these aspects in detail within the book. MCV is now a routine earthworks test.

To place this work in the time capsule would ensure that the next generations were aware of the source of the design and specification of earthworks, that reference can be made to a single source of data and knowledge without repeating research already undertaken, and raise awareness of the basis of compaction for implementation in construction.

## Reference

Parsons A.W., (1992) *Compaction of soils and granular materials: a review of research performed at the Transport Research Laboratory.* HMSO, London.