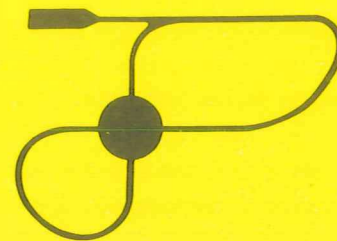


# TRANSPORT and ROAD RESEARCH LABORATORY

## LEAFLET



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CO-OPERATIVE RESEARCH BETWEEN TRANSPORT AND ROAD RESEARCH LABORATORY,  
THE ASPHALT COATED MACADAM ASSOCIATION, REFINED BITUMEN ASSOCIATION,  
AND BRITISH TAR INDUSTRY ASSOCIATION

### Objectives

The overall objective is to reduce the cost of bituminous pavements by improving the performance of bituminous base and basecourse macadams in relation to their cost, either by (1) developing improved materials of little or no extra cost, or by (2) cheapening the cost of existing materials without affecting performance or by (3) developing materials of marginally poorer performance but costing substantially less.

### Present situation

- 1) Although the performance of coated macadam is considered to be generally satisfactory it is commonly believed that the composition specification of some materials could be improved and that in some circumstances the use of even the best possible recipe specification can be less economic than employing other cheaper materials specified on the basis of mix-design testing.
- 2) The present loose method specification for the compaction of bituminous materials in which only the weight of the roller and the delivery or rolling temperature are defined suggests that there is scope for improving the performance of macadams by closer control of the compaction operation.
- 3) There has recently been an unprecedentedly large rise in the price of bitumen.

### Proposed Research Programme

The foregoing brief review indicates the need for a programme on the following lines:

- 1) Study of the performance of coated-macadam bases and basecourses with low binder-contents in relation to the performance of materials to present specifications.
- 2) Study of the compaction characteristics of these materials; the performance of materials of low binder content is likely to be critically dependent on effective compaction.
- 3) Assessment of possible techniques for the mix design of macadams.

- 4) Assessment of methods for the determination of their compacted state in the field.
- 5) Examination of the possibility of substituting coated macadams for rolled asphalt in base and basecourse material used in overlays.

#### Techniques to be adopted

The programme for the next two years concentrates on the first two items and will consist of a series of pilot-scale trials in which the compactibility of coated macadams will be assessed and measurements made of parameters related to performance. These include

- a) the deflection of the coated macadam base and its foundation
- b) the dynamic modulus of the macadam
- c) the deformation resistance of cores of macadam
- d) the fatigue resistance of samples of the macadam.

#### Materials

The materials studied initially are some of those incorporated in the full-scale road experiment built by the Laboratory in 1963 on the Wheatley By-pass. Aggregate gradings and binder content are shown in Figure 1 for sections containing bitumen macadam base; there are similar variations in grading and binder content in sections containing tarmacadam base material.

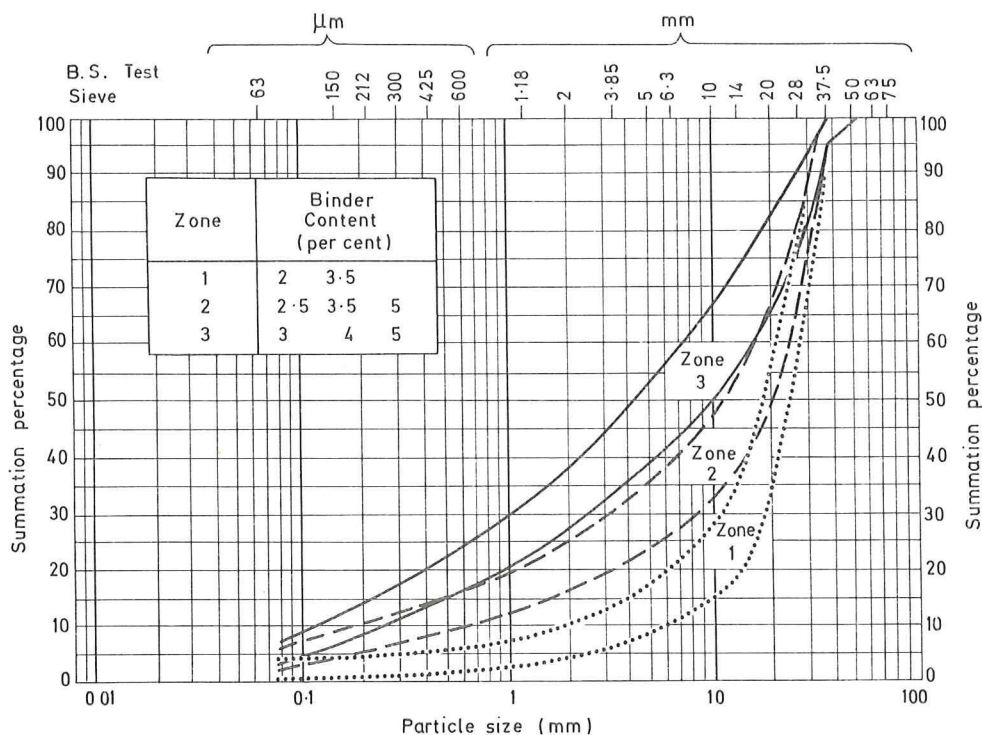


Fig. 1 GRADING ZONES FOR BITUMINOUS BASE MATERIALS AT WHEATLEY BYPASS