

## ABSTRACT

Both empirical and analytical methods are employed in Macau for the design of flexible pavements. An attempt had been made in this investigation to develop a computer programme "PAVED.BAS" for analytical design of a three layer system pavement. The programme enables the designer to choose the thickness of the bituminous layer and compute the thickness of the corresponding granular layer required for a given traffic loading or design life.

Reference had been made to a number of research papers and literature in forming the basis of the thesis. Traffic census and experimentation data for urban road construction are available for justification. Field CBR tests, and Field Density tests had been carried out in the subgrade soil of Macau. Marshall tests, softening point, penetration, ductility and flash point tests, and quantitative extraction of bitumen tests had been carried out in the laboratory. Knowing the properties of the bitumen and bituminous materials, air temperature and vehicular speed enable one to estimate the stiffness of the bituminous mixture. A set of design charts had been developed in this investigation that can readily be used by the field engineers to design the flexible pavement.

It had been found that comparison of the results by "PAVED.BAS" with other design methods gave intermediate values of thickness of granular layer and bituminous layer that lie between the values obtained by empirical and analytical methods. Therefore, it can be concluded that the

thickness of granular layer obtained by the method developed in this investigation is satisfactory.