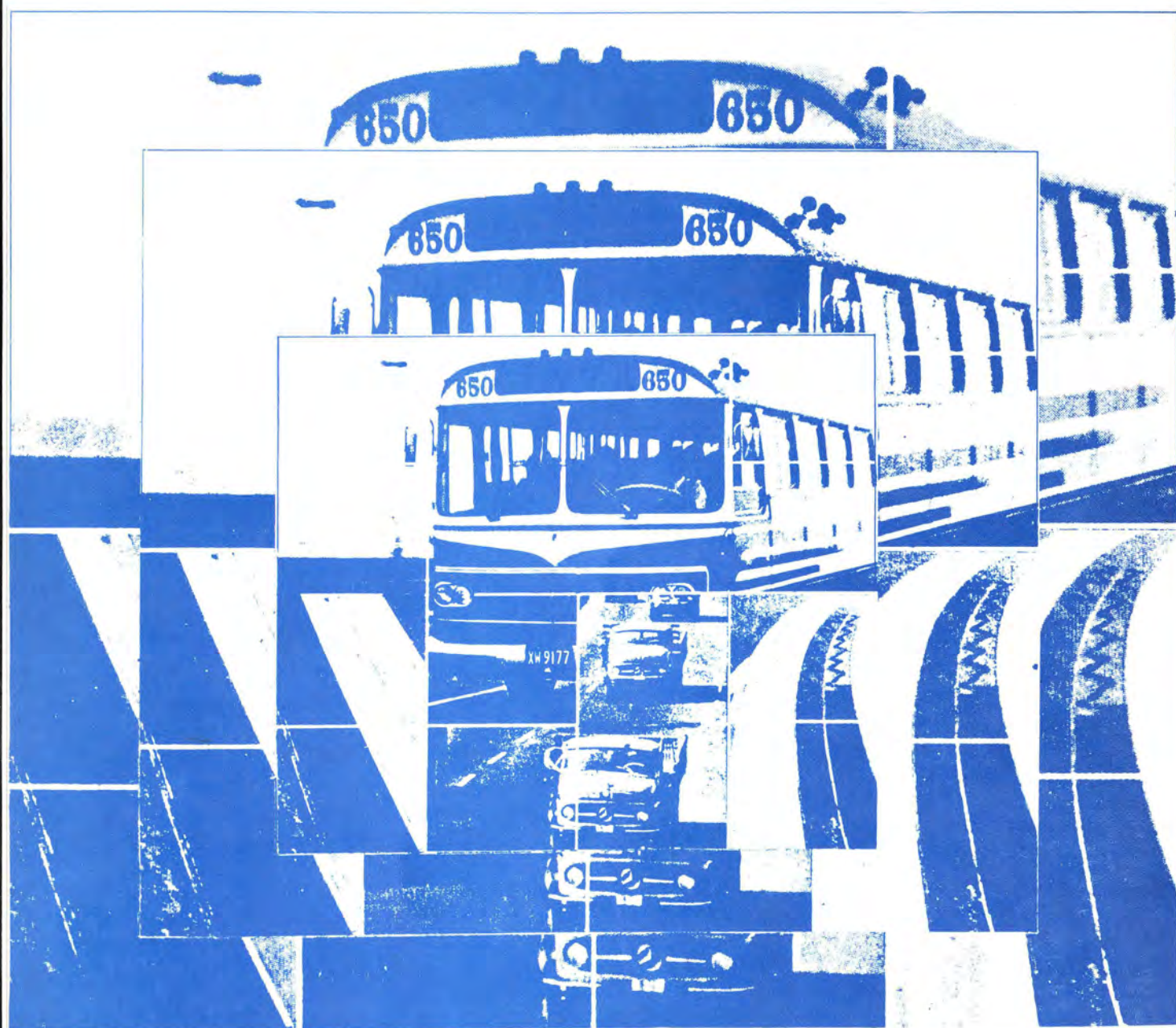


Research on the Interrelationships Between Costs of Highway Construction Maintenance and Utilization



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* On loan from Departamento de Estradas de Rodagem de Goiás.

**On loan from the Government of the Federal District.

REPÚBLICA FEDERATIVA DO BRASIL

UNITED NATIONS DEVELOPMENT PROGRAM (UNDP)

Research on the Interrelationships Between Costs of Highway Construction Maintenance and Utilization

SPONSORED BY:

Secretaria de Planejamento da Presidência da República - SEPLAN
Instituto de Planejamento Econômico e Social - IPEA
International Bank for Reconstruction and Development - IBRD

PREPARED BY:

Ministério dos Transportes
Empresa Brasileira de Planejamento de Transportes - GEIPOT
Texas Research and Development Foundation - TRDF

WITH THE PARTICIPATION OF:

Departamento Nacional de Estradas de Rodagem - DNER
Departamento de Estradas de Rodagem de Goiás
Departamento de Estradas de Rodagem de Minas Gerais

EMPRESA BRASILEIRA DE PLANEJAMENTO DE TRANSPORTES
- GEIPOT. Research on the interrelationships
between costs of highway construction, maintenance and utilization; report n. 2, project mid
term report - preliminary results and analyses.
Brasília, 1977. 293 p. il.

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1. Highway investments - analysis models 2. Ve
hicles - operational cost 3. Drivers - behavior 4.
Pavements - performance I. Title II. Title: report
n.2; project midterm report - preliminary results
and analyses.

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PREFACE

This Midterm Report describes the research organization established for the project entitled "Research on the Interrelationships between Costs of Highway Construction, Maintenance and Utilization," the procedures being followed in the development of the information, the difficulties encountered, and some of the early results from the study.

The project is the result of an agreement signed in January 1975 between the Government of Brazil and the United Nations Development Program (UNDP). According to this agreement, the Ministry of Transport of Brazil is the Government Cooperating Agency, through *Empresa Brasileira de Planejamento de Transportes* - GEIPOT, and the International Bank for Reconstruction and Development (IBRD) is the executing agency for UNDP. The project is being conducted by GEIPOT and by the *Departamento Nacional de Estradas de Rodagem* (DNER), through its *Instituto de Pesquisas Rodoviárias* (IPR), and both have received grants from the *Instituto de Planejamento Econômico e Social* (IPEA) and from the *Secretaria de Cooperação Econômica e Técnica Internacional* (SUBIN), respectively.

The IBRD has contracted with the Texas Research and Development Foundation (TRDF) to provide the international staff, and to select and purchase overseas the equipment needed to conduct the project.

GEIPOT is thankful for the support received from highway authorities in the geographic area of the research, represented by the Federal Highway Districts of DNER and by the State Highway Departments of Goiás, Minas Gerais and São Paulo. Appreciation is also expressed for the cooperation extended the project by the Federal Universities of Minas Gerais, Rio de Janeiro and Juiz de Fora, and by the Universities of Texas and Birmingham, as well as by the Western Australia Main Roads Department, which have made it possible for highly qualified members of their staff to fill many key positions in the project's technical team.

Finally, GEIPOT wants to express its appreciation for advice received from the Transport and Road Research Laboratory (TRRL) at the project's inception, and from the Expert Working Group, which has periodically visited Brazil to review progress on the research with the project's technical team.

Eng. JOSÉ MENEZES SENNA
President

ABSTRACT

This status report on the project was developed to summarize project achievements and results at midterm, and to define a work program for the balance of the project. The study procedures and accomplishments of the 150-man research force are detailed for the three principal study groups which are addressing pavement performance, driver behavior and vehicle operating costs in Brazil. Preliminary equations are presented relating roadway characteristics to vehicle speed and fuel consumption. Extensive axle-loading data are summarized while the extent of vehicle overloads in Brazil is highlighted.

A work program and schedule are presented to accomplish project objectives and to produce an operational Brazil Highway Investment Analysis Model by November 1978.

