

Editorial

WELCOME to new and existing readers of *Transport*, the newsletter produced by the Transport Research Laboratory (TRL) on behalf of the Department for International Development (DFID), the British Government's Aid Department, to disseminate information on research and development projects in the transport sector. This edition does not concentrate on any specific theme or topic but brings the reader up to date on current activities on a wide range of transport issues.

A list of transport research projects currently funded by DFID is given on page 6. Historically, these have been known as Technology Development and Research Projects (TDRs) but in 1998 are now classified under the new name of Knowledge and Research projects (KARs). If the reader requires further information on any of the projects listed he or she should contact the relevant project manager whose name is given with each project. However, it should be noted that most of the projects are ongoing and therefore it is likely that published reports or outputs are not yet available.

It is clearly important that research findings are disseminated as widely as possible and this edition reports on training initiatives by the World Bank and DFID and the launch of two new UK postgraduate courses.

DFID are interested to know of the take-up of their research results and the editor or project managers would be pleased to hear from you if you have examples of where the results of DFID funded research have been shown to be beneficial.

Do you like it?

How do you enjoy this newsletter? Is it providing you with the information you want on DFID projects? We would appreciate you writing (letter, fax or E-mail) to tell us what you would like and if you feel there is anything missing. The Editor's address is on the back page.

This newsletter is available free of charge, aimed at those who are interested in Transport related issues in the developing world. To be included on the mailing list for future editions, please send your name and address to the editor or use the application form now available on the TRL World Wide Web Home Page: <http://www.trl.co.uk/orcmail.htm>

To optimise the dissemination process, it is important that this newsletter is reaching the right people. Please inform the editor of changes in address details or if you no longer want to remain on the mailing list.

Diary of Forthcoming Events

June 1998

International Conference on Transport and Regional Development (CONTRA-98)

9-11 June 1998, Gadjah Mada University, Yogyakarta, Indonesia.

Contact: Dr Danang Parikesit, CONTRA-98.

Tel: +62 274 902 246, Fax: +62 274 512 796,

Email: dan-dan@indo.net.id

Road Management for Senior Engineers

15-26 June 1998, Worthing, UK.

Course organised by: Crown Agents/SWK/TRL.

Contact: Crown Agents. Tel: +44 (0)181 643 3311,

Fax: +44 (0)181 770 7448.

Modified Binder, Special Bitumen & Additives - PIARC Conference

17-19 June 1998, Italy

Contact: LCPC. Tel: +33 240 845 815,

Fax: +33 240 845 997,

Email: jean-francois.corte@lpc.fr

Appropriate Technology Roadworks for Developing Countries

22-26 June 1998, Wokingham, Berkshire, UK.

Course organised by Intech Associates and TRL.

Contact: Linda Parsley, TRL. Tel: +44 (0)1344

770551, Fax: +44 (0)1344 770719,

Email: lparsley@trl.co.uk

TRL Roads and Transport in Developing Countries and Emerging Nations

29 June - 10 July 1998, Wokingham, Berkshire, UK.

Course organised by TRL. Contact: Linda Parsley,

TRL. Tel: +44 (0)1344 770551,

Fax: +44 (0)1344 770719, Email: lparsley@trl.co.uk

July 1998

Bearing Capacity of Roads & Airfields; 5th International Conference BCRA '98

6-8 July 1998, Trondheim, Norway

Organiser: SEVU Congress Department.

Fax: +47 73 595 150.

8th World Conference on Transport Research 12-17 July 1998, Antwerp, Belgium.

Organised by Antwerp University.

Contact: Viviane De Wacker, WCTR-S.

Tel: +32 3 220 4174, Fax: +32 3 220 4026,

Email: dse.dewacker.v@alpha.ufsia.ac.be

International Conference on Traffic and Transportation Studies

27-29 July 1998, Beijing, P R China.

Contact: Dr B. Mao, School of Traffic and

Transportation, Northern Jiatong University, Beijing

100044, PR China.

September 1998

International Conference on Transportation into the Next Millennium

9 September 1998, Singapore.

Organiser: Nanyang Technological University.

Tel: +81 65 799 4723, Fax: +81 65 793 0997,

Email: www.cts@ntu.edu.sg

Concrete roads; 8th International Symposium

13-16 September 1998, Lisbon, Portugal.

Organiser: ATIC. Tel: +351 1 354 7538,

Fax: +351 1 352 5095.

CODATU; 8th International Conference

21-25 September 1998, Cape Town, South Africa.

Contact: Christian Jamet, President CODATU

Scientific Committee. Tel: +33 472 047 701,

Fax: +33 472 047 702, Email: codatu@entpe.fr

October 1998

Managing and Financing Rural Transport

12 -23 October 1998, Wokingham, Berkshire, UK.

Course organised by TRL. Contact: Linda Parsley,

TRL. Tel: +44 (0)1344 770551,

Fax: +44 (0)1344 770719, Email: lindap@o.trl.co.uk

December 1998

Investing in Transport; 19th ARRB Conference

6 December 1998, Sydney, Australia.

Contact: ARRB Transport Research.

Tel: +61 398 811 578, Fax: +61 398 878 104,

Email: marghu@arrb.org.au

TRL EMAIL ADDRESS

An Email address is now available for general enquiries to TRL Overseas Centre:

Email: International_Enquiries@o.trl.co.uk

Individuals can still be contacted directly.

INTERNET

The DFID World Wide Web Home Page can be found at:

<http://www.oneworld.org/dfid>

The text of the latest DFID Transport newsletter can be found on the TRL Overseas WWW Home Page:

<http://www.trl.co.uk/oseas.htm>

Low cost structures for rural roads



Reconstruction of culvert, Democratic Republic of Congo

One of the important issues often overlooked in road projects is the provision of low cost and readily maintainable structures to cross streams and rivers. Many feeder and village roads are rendered impassable at a few points along their length where they are crossed by water courses. Although many technical manuals and standard design briefs have been published, they often describe structures that require the import of expensive construction materials and equipment, ie resources that are often not available to road authorities or contractors working in rural areas of many countries.

DFID are currently supporting a project to prepare a manual that will offer guidelines on the design and construction of low cost structures that use local resources available in low income countries. The manual will cover the provision of all structures that may be encountered on rural roads, including; small and large culverts, vented fords and simple bridges. This will make it a useful companion to TRL Overseas Road Note 9: *Design Manual for Small Bridges* which predominately deals with structures on principal roads.

As the data and technical knowledge required to design and construct the proposed range of highway structures is very broad it is envisaged that a series of design flow diagrams will be used in the manual. These flow diagrams will enable users to bypass the non-applicable sections for the structure that they are designing and highlight areas where more expert technical assistance may be required. This format will make the manual useful to local and regional government highway departments, private contractors and consultants. The initial phase of the project has now been completed with the publication of a report reviewing existing design briefs and guides. Copies of the report may be obtained from Loughborough University (address on back page)°.

For further information contact Paul Larcher,
Construction Enterprise Unit, Loughborough University,
Tel: +44 (0) 1509 222612, Email: p.a.larcher@lboro.ac.uk

DFID Project Reference R6851:
"Low cost structures for rural roads: A field manual"
Theme Objective T2



A comparison of freight transport operations in Tanzania and Indonesia

Previous research has shown that freight transport costs in Francophone Africa were in the region of four to five times the costs of freight transport in Pakistan.

To investigate further the differences in freight transport efficiency between Africa and Asia and to identify ways that African freight transport costs could be reduced a DFID funded research study was carried out by Mott MacDonald and TRL.

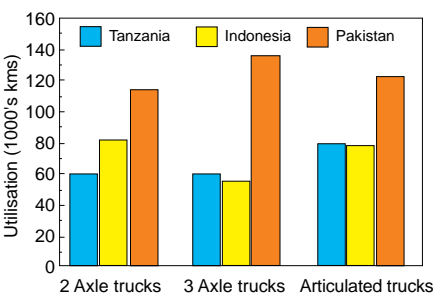
Surveys of freight transport operators were carried out in Tanzania and Indonesia. The results have been published in TRL Report 267 and suggest that in Tanzania long distance freight transport tariff rates and overall tariff revenues per tonne-km are



Freight haulage in Indonesia

approximately half the equivalent in Tanzania. Fuel is particularly cheap in Indonesia at US\$ 0.166 per litre compared to US\$ 0.435 per litre in Tanzania. Although there are some differences in tax rates this was not a major factor in explaining the differences in import prices.

The report identifies a range of factors contributing to these differences including disparities in input prices, utilisation, load factors, fuel efficiency and maintenance practices. A range of suggested measures are also proposed to help improve efficiency and reduce transport costs.



Annual truck utilisation (1000's kms)

between two and five times those of Indonesia and Pakistan respectively for various vehicle types and load categories.

A large proportion of the disparity in tariffs between Tanzania and Indonesia appears to relate to the differences in vehicle and fuel prices. For example a common two axle truck costs about US\$22,000 in Indonesia, compared with US\$65,000 in Tanzania. A tractor and trailer in Indonesia costs

For further information contact John Ebdon,
Mott MacDonald. Tel: +44 (0)181 686 5041,
Fax: +44 (0)181 681 5706.

DFID Project Reference R6420:
"Reducing the costs of freight in Africa".
Theme T2.



Management of Appropriate Road Technology (MART)

The DFID funded MART programme is preparing guidelines for the use of labour based and tractor technologies and the development of small construction enterprises. The focus is support for the roadworks and complementary sectors in economically emerging and developing countries. Separate guidelines are being prepared in the key areas of :-

- handtools
- intermediate equipment
- private sector development and institution building

The needs of the intermediate equipment sub-sector have been investigated through the MART initiative in cooperation with the International Labour Office (ILO) and other organisations working in the road sector. This has led to a recent MART publication: "Agricultural Tractors in Roadworks." This working paper reviews the role and potential use of wheeled agricultural tractors for road works in emerging and developing countries. It considers the rationale and range of activities suitable for tractor applications in paved and unpaved road works.



Light towed grader extensively used for routine maintenance of unpaved roads in southern Africa



Tractor equipment used in the rehabilitation of bituminous surfaced pavements in the UK

Heavy civil engineering plant may be appropriate for some large road construction and rehabilitation projects where the huge investment may be justified and supportable. However for most roadworks, particularly maintenance and smaller scale construction and rehabilitation works, tractor technology can offer a capable, cheaper and more flexible investment which is better suited to the situation of emerging and developing countries and their local contractors.

The paper demonstrates that tractor technology should be part of a natural progression from purely labour operations through to sophisticated heavy equipment roadworks, particularly with respect to capital requirements. It also shows that the owning and operating costs of tractor equipment can be considerably lower than for heavy plant to achieve the same work output.

The paper suggests that support for intermediate equipment hire organisations could help to establish tractor technology and reduce road infrastructure provision and maintenance costs.

For further information about the MART Initiative or publications contact:
Paul Larcher, Institute of Development Engineering, Loughborough University.
Fax: +44 (0)1509 211079, Email: p.a.larcher@lboro.ac.uk



DFID Project Reference R6238: "Management of Appropriate Technology"
Theme Objective T2.

Impact study on the effect of metro systems on the urban poor

PTRC Education and Research Services has recently been awarded a research contract by DFID to investigate the impact of the Cairo Metro on the city's urban poor and to compare the findings with other cities in the developing world including Rio de Janeiro and Santiago.

In the 1980s the population of Greater Cairo was growing in excess of 4% per year and car ownership at a staggering 17%, leading to severe traffic congestion, poor air quality and high accident rates. However the greatest proportion of daily trips - some 60% - or more were by public transport and hence bus passengers, mainly from the urban poor, were the main victims of traffic congestion.

In order to relieve the problems of congestion and poor public transport provision, the Egyptian Government embarked on large scale investment in a mass transit metro system. The first section of line 1 opened in 1989 and the first section of the second line, between Mubarak and Shoubra El-Khaima, opened in October 1996 serving a low income, high density area of the city thus offering a unique opportunity to examine its impact on the urban poor.

The research will be carried out as part of a collaborative project involving PTRC, the Transport Studies Group of the University of Westminster, and a team of young staff at the Egyptian National Institute of Transport (ENIT). The latter have returned to the Institute after gaining PhDs at various British Universities financed by DFID, as part of a programme of Institutional support to help ENIT



An example of Cairo's many existing multi-transport modes

become the focus point for transport education, training and research in Egypt and the Arab world.

For further information contact: Dr Andy Costain, PTRC
Tel: +44 (0)181 741 1516, Fax: +44 (0)181 741 5993.
DFID Project reference R6853: "Impact of metro systems on provision of rural and urban transport for the poor",
Theme Objective T3.

DFID funding of road improvements in Belize



Belize Southern Highway made impassable by annual floods

In January 1998 the Department for International Development agreed to fund the reconstruction of 35 km of the Southern Highway in Belize. This is currently a 150 km long earth road, which extends the length of the southern half of the country. It is progressively being upgraded to bitumen standard to help accelerate economic development. A current concern is the transportation of produce in the banana and citrus industries and future projects will involve expansion of the tourism and aquaculture industries.

The Consulting Engineer, WSP International, invited TRL to identify and locate potential

construction materials and propose a pavement design.

The climate in this region is hot and wet and every year flooding results in the road being impassable. As part of the reconstruction, an embankment will be built to protect the road pavement and enable all year round transport. The embankment material will comprise of clay dug from drainage trenches on both sides of the road and from other selected areas.

The proposed pavement material is limestone that will be mined from a new quarry in adjacent hills. Identification of this quarry required careful field investigation: the terrain being precipitous and

thickly forested and the limestone riddled with caves and sink holes. Concern that quarrying would result in serious environmental impact led to a detailed investigation by officials from the Ministry of Natural Resources and overseas experts before the final selection of the quarry area. Quarrying activities will be subject to on-going environmental monitoring as the project proceeds.

Because of the inherent difficulties of the quarrying, further studies have been proposed to determine the suitability of local clays for pavement construction when stabilised with locally produced lime and/or cement.

For further information contact: mr Albie Hope,
WSP International, Tel: +44 (0)181 763 9363
Email: sueh@wsp-int.int.com



Limestone quarrying will be environmentally monitored.

Recycling of bituminous road materials

It is estimated that over £10 billion are spent annually on roads in developing countries, much of this on road rehabilitation. The most expensive element of the road pavement is the asphalt (bitumen/aggregate mixture) which forms the surfacing and often forms the principal load bearing layers of the road.

The cost of asphalt is typically more than three times the cost of unbound aggregate, but when roads are rehabilitated the asphalt is almost always removed and discarded as a waste product. Very large volumes of good quality aggregate are therefore lost and new materials must be quarried to replace the discarded material. The use of thick asphalt layers is increasing to keep pace with expanding networks and ever greater traffic loadings. Large cost savings and a reduced impact on the environment could be realised if the asphalt could be successfully recycled.

The composition and properties of damaged asphalts must be taken into account before they can be recycled. Environmental effects can cause asphalt surfacing materials to become brittle and severely cracked and in such materials the bitumen can be very hard. In contrast there have been many incidences in recent years of asphalt layers failing through plastic deformation under heavy traffic. These materials have been over-compacted by traffic

and their air voids content reduced to a level which has resulted in a severe reduction in shear resistance. Because these layers have low air voids contents the bitumen in the material remains relatively very soft.

The recycling of bituminous materials in road rehabilitation has been successfully carried out in Europe, USA, South Africa and Australia. In some of these countries bituminous pavements have been produced which contain in excess of 50% of recycled asphalt material.

Under a DFID funded research project, TRL is currently carrying out a laboratory based study to formulate mix designs incorporating recycled bituminous materials obtained from three road sites in East Africa. The materials range from a severely hardened and cracked surfacing material to one which has suffered catastrophic plastic deformation and contains bitumen which has remained soft. The intention is to construct surfacing trials to evaluate the performance of the recycled materials under significant levels of traffic loading.



A severely cracked road in Africa - can it be recycled?

For further information contact: Harry Smith, TRL
Tel: +44 (0)1344 770223, Email hsmith@trl.co.uk

DFID Project Reference R6474: "Recycling of bituminous road materials"
Theme Objective T2.



Current DFID funded Knowledge and Research (KAR) projects.

- Current Projects, •• New Projects

THEME T1

Reduce accidents and increase road safety in rural and urban areas

- Accident recording, investigation and evaluation systems (R6883), TRL: Mr C J Baguley. UK support and in country training provided for existing and new users of MAAP for sustainability in the least advanced countries. Training to develop accident investigation skills. Under reporting to be investigated using hospital records.

- Safety and road worthiness: assessing urban and rural public transport (R6888), TRL: Mr T C Pearce. Assess the scale of the problem resulting from accidents and the effect of varying maintenance practices on bus fleets' roadworthiness. Role of vehicle usage and design in bus accidents will be studied and recommendations developed for safer travel.

- Road safety education in developing country schools and communities (R6890), TRL: Mr I Sayer. Development of road safety education materials and teaching methods that bring about improved road safety knowledge and attitudes by young road users in schools and community groups in developing countries.

- Cost and safety design of rural roads in developing countries (R6891), TRL: Mr C J Baguley. Aspects of rural highway design identified that optimise costs and safety; detailed design manual drafted; lookup tables relevant to models such as HDM generated. Manual published and in country seminars conducted.

THEME T2

Reduce the costs of constructing, rehabilitating and maintaining road infrastructure and vehicle operations.

- The design of stabilised sub-bases for very heavy traffic (R6027), TRL: Mr M J O'Connell. To develop material specifications for stabilised sub-base layers suitable for roads in extreme tropical climates and with very high traffic loads to improve the performance of roads and reduce whole life costs.

- International study - highway development and management tools (R6472), University of Birmingham: Dr H Kerali. Final validation, implementation and dissemination of HDM-4 a road sector investment appraisal model (replacing HDM-3 and RTIM3). This will incorporate new methods for predicting road safety, environmental and non-motorised traffic effects, traffic congestion, concrete roads, and other factors excluded from HDM-3.

- Longer life road surfacing using bitumen modifiers (R6473), TRL: Mr H R Smith. Develop recommendations for the use of bitumen modifiers in asphalt and surface dressings which inhibit premature cracking associated with high temperatures and high levels of radiation in tropical environments

- Recycling of bituminous road materials (R6474), TRL: Mr H R Smith. To establish methodologies which will allow damaged bituminous materials to be recovered and modified for re-use in road structures.

- Promoting the use of volcanic ash, a natural pozzolan (R6841), TRL: Mr M J O'Connell. Use of volcanic ash for the construction of major civil engineering works to alleviate the damage caused by recent volcanic eruptions, develop road and building technology and promote commercial ventures.

- Low cost structures for rural roads: A field manual (R6851), Loughborough University: Mr D W J Miles. Preparation of a practical field manual to encourage local engineers and contractors to utilise local labour, skills and materials more effectively in the construction of low cost and readily maintainable structures on rural and urban roads.

- Appropriate and efficient maintenance of rural feeder roads (R6852), Roughton International: Mr M J Carr. An assessment and maintenance method will be developed for gravel rural feeder roads using simple, affordable, yet novel techniques. The result will promote appropriate technology and practice so maximising efficiency.

- Promoting the use of lower cost marginal materials (R6887), TRL: Mr M J O'Connell. Guidelines promoting the use of low cost marginal materials in the road industry. Using existing research where possible these will identify suitable applications for the use of such materials and warn of the associated risks.

- Transferring road maintenance into the private sector (R6889), TRL: Mr C Parkman. Critical assessment of the extent and nature of the adoption of contract road maintenance procedures and the factors governing the successful transfer of road maintenance into the private sector, to inform agency policy.

- Secondary compaction of bituminous materials (R6892), TRL: Mr H R Smith. Develop a method of assessing the susceptibility of bituminous mixes to secondary compaction under heavy traffic for use in the design of road surfacings which are more durable and resistant to plastic deformation.

- Benefits of structured highway and earthwork maintenance (R6893), TRL: Mr W Heath. Assess the benefit of applying maintenance programmes based on a number of identified key factors that at present contribute to the poor maintenance of mountainous roads. Full scale trials will be monitored using TRL's ECAT techniques. Guidelines will be produced.

- Management guidelines and performance models for unpaved roads (R6895), TRL: Mr T Toole. Provide management guidelines on unpaved roads and motorable tracks for use by senior engineers and planners and new road performance models for incorporation into HDM4 aimed at improved access quality on rural roads and increased use of local resources.

- Innovative compaction technology for low volume roads (R6896), TRL: Mr P A K Greening. Development of methods to improve compaction and performance of materials for low-volume, low-cost and labour based sealed roads.

- Dense bituminous surfacing for developing countries: A guide (R6897), TRL: Mr C R Jones. Produce a guide describing the design and construction of dense bituminous surfacings in tropical climates. It will be targeted at engineers in the developing world and enable them to supervise the construction of improved surfacings.

- Guidelines on the selection and use of road construction materials (R6898), TRL: Mr M J O'Connell. Production and dissemination of a new Overseas Road Note containing concise but comprehensive advice on the sampling and testing of granular materials and soils for the construction and rehabilitation of roads in the developing world.

- Optimisation of cuts in residual soils (R7114), University of Birmingham: Prof. M. Snaith. A procedure for the design of cuttings in areas with lightly cemented or residual soils to facilitate efficient resource management by reducing construction and maintenance costs and environmental impact on the local community.

THEME T3

Improve the availability of cost-effective transport for the rural and urban poor, including public transport and non-motorised modes.

- Low cost animal cart technology (R6475), University of Warwick: Dr C E Oram. Field test and develop existing low-cost, highly promising DTU cart components and designs: mild steel roller bearings, cast aluminium wheels and hubs, and easy-to-build carts, and their potential for self propagation.

- Community participation in road maintenance (R6476), IT Transport: Mr G A Taylor. The project will develop guidelines to improve the planning and implementation of initiatives to involve local rural communities in the maintenance and improvement of their local roads and tracks

- The establishment of small scale road transport contractors (R6477), Intech Associates: Mr W William. Identify and promote awareness by public and private sectors of the benefits of contracting road & maintenance work to small scale contractors using tractor technology.

- Gender issues in rural transport (R6854), IFRTD: Ms P Fernando. Through analysis of the impact of a range of interventions aims at developing practical guidelines for the incorporation of gender concerns into the planning, design and implementation of rural transport interventions.

- Rural transport services in sub-Saharan Africa enhancing the role of small and medium enterprises (R6882), Cranfield University: Dr C P Crossley. Enhance the contribution made by informal small industrial enterprises to the efficient provision of rural transport services that are vital to the economies of developing countries by identifying and reducing some key restraints.

- Availability of rural transport services (R6884), TRL: Mr S D Ellis. Identify factors that inhibit the supply of rural transport services. Also investigate the sensitivity of demand to changes in the price of transport. The findings will enhance the capability of planners to improve the provision of rural transport services.

- Barriers to the availability of cost-effective transport (R6886), TRL: Mr G Gardner. Provide a methodology for an Urban Transport Audit to rapidly assess a city's ability to introduce cost-effective transport systems. Determine where blockages are occurring that prevent the use of low cost appropriate traffic and safety measures.

- Effective means of transport of water for the rural poor and low-cost motorised ambulance service for the rural poor. (R number to be assigned) IT Transport: Mr I Barwell.

THEME T4

Increase the efficiency of national and regional transport systems.

- Road planning, funding and funds allocation (R6894), TRL: Mr J L Hine. Identify the main constraints preventing the efficient planning and funding of the road network, in particular procedural conflicts and institutional limitations. Innovative funding and management methods eg, DBFO and BOT will be explored.

World Bank / DFID training initiatives

The World Bank currently promote a number of training programmes, two of which were organised in 1997 with support from DFID. Birmingham University organised a programme on Innovations in Road Management and Road Fund Management, which will be repeated in April 1998.

TRL organised a programme on Managing and Financing Rural Transport, which was held in Washington DC, USA. Attended by 24 participants from Africa and Asia, the two-week programme focussed on the provision of rural transport in developing countries including both infrastructure and transport services (often ignored in rural accessibility initiatives). Following the success of this initial course, the next course will be held at TRL, UK in October 1998.

For further details contact: Ian Heggie, World Bank.
Fax: +1 202 522 3223, Email: iheggie@worldbank.org
Dr Henry Kerali, Birmingham University, Tel: +44 (0)121 414 5148.
Fax: +44 (0)121 414 3675, Email: r.h.g.kerali@bham.ac.uk
Linda Parsley, TRL. Tel: +44 (0)1344 770551,
Email: lindap@o.trl.co.uk

UK Universities launch new transportation courses

Cranfield University

Cranfield University's School of Management has launched two new transportation courses which will start in October 1998. The MSc and Postgraduate Diploma in Transportation Management have been specifically designed to cater for the needs of participants from all over the world, including those from emerging countries, and will have a specific focus upon the management and planning of transportation systems within a commercial and/or private context.

The MSc course involves 11 months of full-time study from the beginning of October to September the following year. The Postgraduate Diploma is essentially the first six months of the MSc course and runs concurrently with it, finishing in March. Both courses can be studied on a part-time basis.

For further information contact: Noreen Munnelly, Cranfield School of Management,
Tel: +44 (0)1234 754068, E-mail: n.munnelly@cranfield.ac.uk

Aston University

Aston University and the Chartered Institute of Transport (CIT) in the UK have developed two new MSc programmes in Logistics and Passenger Transport Management to enable planners and managers to respond to the challenges facing the industry worldwide.

The programmes, which start in September 1998 can be followed through CIT's proven Distance Learning system so that career and family life disruption are minimised throughout the study period. A three year programme structure leads to the award of a Post Graduate Certificate after 1 year, a Post Graduate Diploma after 2 years and the award of an MSc in either Logistics or Passenger Transport Management after 3 years (though the programme can be extended to 6 years if required). Flexible entry requirements take account of both work experience and prior academic attainments.

For further information contact:
Education Department, The Chartered Institute of Transport
Tel: +44 (0)171 467 9400, E-mail gen@cittrans.org.uk

Book Reviews



Labour based road construction: A state of the art review. Edited by P Larcher. Published by IT publications, 1998.

An output of the MART project (an initiative funded by DFID at Loughborough University aiming to promote improvements in road construction and maintenance through the best use of local resources and skills) is this review which publishes information in the form of a series of papers which were submitted for a competition. The papers fall into the two areas of the initiative, firstly hand tools and intermediate equipment, and secondly private sector development and institution building.

The first five papers address the subject of intermediate equipment with particular emphasis on the need for robust designs. Specific examples are given of the Kenya 3m³ trailer design and suitable associated towing hitches, and more general overviews of other appropriate equipment are provided. The final paper in this category describes the experience of the Africa Highlands Produce Company in Kenya when maintaining their network of earth and gravel roads.

The remaining papers discuss the issues concerned with development of small scale local contractors and draw on the experience of Ghana, Kenya, Lesotho, Uganda and South Africa. Six papers give case studies

of individual countries, whilst the seventh provides a summary of the authors experience in a number of countries. Whilst contractors require training and development in both technical and business management skills, the lesson is also that client administrations also require a significant degree of change if they are to successfully administer the contracts.

The book will be of interest to those seeking a broad summary of the issues involved in developing a labour based road programme.

Reviewed by **Chis Parkman, TRL**



Transport and Developing Countries by David Hilling. Published by Routledge, 1996.

Unlike David Simon's introductory "Transport and Development in the Third World", also published by Routledge in 1996 and reviewed in *Transport* in November 1996, this book aims at providing "insights into the complex relationship between transport and development and the special problems of Developing Countries trying to provide transport systems which will serve their development aspirations and goals".

In an initial chapter on transport and development, Hilling acknowledges a link between levels of income

and mobility but pleads caution about assuming a casual supply-led link between transport and development. He quotes examples where development has followed transport provision (such as tin mining in Malaysia) and where it has not (such as railway construction in parts of Africa). He is critical of 'acts of faith' transport provision and advocates a focus on demand factors, both revealed and latent.

There is much of interest in what follows. Drawing upon over 350 references, Hilling provides a wealth of detail, if sometimes far from usual transport experience. In a chapter on inland waterways, for example, the reader is treated to the merits of 'pushing' versus 'pulling' of barges and Chinese river quay design. Informative and stimulating chapters on railways, air, road and city transport, ports and the development of maritime capability follow.

A final chapter on themes for the future lays stress on the need to consider environmental impacts, joint public/private enterprises, traffic regulation, enforcement of discipline and elimination of corrupt practices. The general message of this book, albeit sometimes obscured by the detail, is the need to provide transport services and facilities which match development aspirations and take account of local conditions. Clearly investment in transport is not always a good thing.

Reviewed by **Brian Parker, Independent Consultant.**

Recent publications

BOOKS

HILLING D, (1997). *Transport and Developing Countries.*
Published by Routledge, London, ISBN 0415 136 555, cost £1499 + p & p. (Routledge).

LARCHER P, (1998). *Labour-Based Road Construction: A State of the Art Review.*
Published by Intermediate Technology Publications Ltd, London. Cost: £11.95+p&p. (IT Publications)

REPORTS

ORN 17
TRL (1997). Road Safety Education in Developing Countries - Guidelines for Good Practice in Primary Schools. TRL Overseas Road Note 17. (£15*)(TRL)

TRL 265
SAYER, IA, CJ PALMER, G MURRAY and J GUY (1997). Improving Road Safety Education in Developing Countries; Ghana. TRL Report 265. (£15*)(TRL)

TRL 267
HINE, JL, JH EBDEN and P SWAN (1997). A Comparison of Freight Transport in Tanzania and Indonesia. TRL Report 267. (£10*)(TRL)

LARCHER, P (1998). Low Cost Structures for Rural Roads: A Review of existing books, manuals and design guides, 24pp, Institute of Development Engineering. (Loughborough University).

MART Working Paper 6
LARCHER, P (1997). Private Sector Development and Institution Building: A Select Bibliography and Literature Review, 32pp, Institute of Development Engineering. (Loughborough University).

MART Working Paper 7
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