

Research Leads to Advancement













DEPARTMENT OF CIVIL ENGINEERING TRANSPORTATION ENGINEERING DIVISION

Transport Research Forum 2020



Abstracts

11th and 12th December 2020 University of Moratuwa, Sri Lanka

Transportation Engineering Group Department of Civil Engineering University of Moratuwa

Introduction

Transport Research Forum (TRF) is an annual conference organised by the Transportation Engineering Division of the Department of Civil Engineering, University of Moratuwa. The prime objective of this conference is to create a platform for researchers in the transportation field to build up their research career and to share their research findings with other colleagues and the industry. Practitioners, researchers and academics including a number of international experts in the areas of Highway Engineering, Transportation Engineering and Planning are the participants for this event. Representatives from the industry and the related government institutions are also invited every year.

Department of Civil Engineering conducted the first ever Sri Lanka Transportation Forum in 1983 and since late 90's the Transportation Engineering Group continued with Transport Research Forums and bi annual International Conferences. This is the 13th Transportation Research Forum conducted in consecutive years since 2010. Many of the research findings presented in Transport Research Forums have been put in to practice and the one of the main objectives of Transport Research Forum is to come up with solutions to address transport related problems in the country.

Table of Contents

Introduction Message from the Conference Chair TRF 2020 Organising Committee Reviewers

Session 1:

1.1 Strategies into Practice Through the Pavement Management System **Prageeth Gunarathna** and Amutha Thananjeyan [*on invitation*]

- 1.2 Effectiveness of Demolished Concrete Waste for Resurfacing of Low Volume Roads in Sri Lanka Using Roller Compacted Concrete (RCC) Technology W.R.A.N. Jayantha and W.K. Mampearachchi
- 1.3 Statistical Approach to Develop High Mobility Road Network Plan for Sri Lanka Sumudu Weththasinghe and Saman Bandara
- 1.4 Estimating the Follower Vehicle Platoon Delay due to "U" Turn Vehicles at Centre Median Openings

Chathuma Abeygunawardana and Vasantha Wickramasinghe

- 1.5 Development of Fine Aggregate Using Coal Fly Ash with Internal Curing Characteristics **Tharmarasa Tharshigan**, Ishara Pradeep and Wasantha Mampearachchi
- 1.6 Enabling ITS Applications with Affordable Communication Technologies Tilan Wickramarachchi, Nayan Dharmaraj, Danuka. Malinda, Gayan. Nettasinghe, Isuru Senevirathne, Sandalika Weerasuriya, Dileeka Dias, Tharaka Samarasinghe, Kasun Hemachandra
- 1.7 Review of Traffic Parameters Required in Performance Measuring Schemes in Traffic Signal Systems to Fulfil Multi-Stakeholder Objectives

S.C. Withana, J.M.S.J. Bandara and H.L.K. Perera

1.8 Experience in Calibrating the VISSIM Microscopic Simulation Model for a Signalized Intersection

Dinakara Gunathne, Niranga Amarasingha, Vasantha Wickramasighe, and Asiri Kulathunga

1.9 Application of Intelligent Transport System (ITS) in Passenger Boarding and Alighting Surveys

Chathura Vidanapathirana, **Thisaiveerasingam Thilakshan**, Sabeen Sharic and Saman Bandara

- 1.10 A Data Acquisition Methodology for the Development of Local Driving Cycles Surath Gajanayake, Saman Bandara and Thusitha Sugathapala
- 1.11 Assessing the Walk-Score of Walking Paths in Kandy City Area for Better Walking Experience for the Tourists

K.P. Wijeweera and T.W.K.I.M. Dias

1.12 Social Impact Assessment and Mitigation of the Negative Impacts in the Light Rail Transit Projects in Colombo Metropolitan Region of Sri Lanka

K. Karunathilake

1.13 Study of the Impact on Road Safety on Arterial Roads due to Close Distance Access Roads

W.T.G. Rathnasiri and T.W.K.I.M. Dias

1.14 GAP Acceptance of Crossing Pedestrians at Urban Unprotected Mid- Block Crosswalks in Divided Highways

Vishma Diddeniya, Lakmali Guruge and Vasantha Wikramasinghe

1.15 Effect of Crash Barriers on Driver Behaviour

Sachintha Rajapaksha and Vasantha Wickramasinghe

Session 2

- 2.1 Effect of Blending Temperature and Blending Duration on the Degree of Blending of Reclaimed Asphalt Binders Chamod Hettiarachchi, Xiangdao Hou, Qian Xiang, Dara Yong and Feipeng Xiao [on invitation]
- 2.2 Axle Load Distribution Characterization for Mechanistic Pavement Design Shanika Sumanasekara and Wasantha Mampearachchi
- 2.3 Feasibility Study of Using Calicut Tile Waste as an Internal Curing Fine Aggregate in Construction Industry

K. I. Pradeep, T. Tharshigan and W. K. Mampearachchi

2.4 Development of Performance Indicators to Evaluate Performance Based Road Maintenance Contracts

G.L. Mullevithana and J.M.S.J. Bandara

2.5 Development of a 3D Model of Open-Graded Friction Course to Evaluate the Inter-Connected Air Void with Aggregate Gradation

K.V. Dedigamuwa and W. K. Mampearachchi

2.6 Effect of Crowding Cost on Optimized Headway of an Urban Bus Route **Kaushan W. Devasurendra**, Sumedha C. Wirasinghe and Lina Kattan [*on invitation*]

2.7 Evaluation of Aircraft Excursion Risk at Bandaranaike International Airport Sameera Galagedera, H.R. Pasindu and Varuna Adikarivattage

2.8 Analysis on Transport Mode Choices of School Children in Colombo District, Sri Lanka **Pubudu Damsara**, Dimantha De Silva and Namali Sirisoma

2.9 Evaluation of Criteria for Setting Speed Limits to Sri Lankan Highways (Built-up Areas) Nadeesh Silva, Himaru Kumarage Malika Guruge and Vasantha Wickramasinghe 2.10 Evaluation of Criteria for Setting Speed Limits to Sri Lankan Highways (Non Built-up Areas)

Himaru Kumarage, Nadeesh Silva, Malika Lakmali Guruge and Vasantha Wickramasinghe

- 2.11 Impact on Traffic Flow due to the New Apartments in Colombo Municipal Council Area **Yasantha Perera**, Saman Bandara and Loshaka Perera
- 2.12 Use of Geographical Information System (GIS) in the Infrastructure Development Projects: A Case of Coastal Railway Line Development Project in Sri Lanka Auchithya Rathnayeke and K. Karunathilake
- 2.13 Applying Built Operate Transfer (BOT) Systems for Sri Lankan Expressways: A Case Study

Amila Prasadani Perera and Dimantha De Silva

2.14 Multi-Attribute Criterion to Identify Candidate Roads for Development Under Public-Private Partnership

Kopikah Tharmakulasingham and H.R. Pasindu

Message from the Conference Chair

Prof. W.K. Mampearachchi University of Moratuwa



As the Chairperson of the research committee, I am delighted and honoured to bring this message to the Transportation Research Forum 2020.

This year has been significant, as we the Transportation Engineering Group, have decided to hold this prestigious conference as a virtual conference due to the COVID-19 pandemic situation.

I hope that this conference will allow the participants a productive discourse. Our technical program is rich and varied with several invited presentations from expertise in foreign countries and around 30 technical papers split between 2 parallel oral sessions. Some of the underlying issues in the transport sector in Sri Lanka will be covered in-depth in our conference, by our invited speakers and guest speakers. I extend my heartfelt appreciation to them.

As a conference chair, I know that the success of the conference depends ultimately on the many people who have worked with us, in planning and organizing the conference. I take this opportunity to acknowledge the support given by the Vice-Chancellor, Prof. Niranjan. Gunawardana and our Dean, Prof. Nalin Wickramarachchi, who have a very clear desire to upgrade research in the community in which we live in.

In particular, I thank the committee for their wise advice and brilliant suggestions for organizing the conference. All recognition should go to the committee members who have all worked extremely hard on the details of important aspects of the conference programs. A note of appreciation to the academia and industry partners for their thorough and timely reviewing of the papers.

Most of all, I thank you, the presenters, for enriching the conferences by your presence. As is a tradition with the conferences, I hope you will enjoy the content, new fellowships, get new ideas, and above all, have a great deliberation.

On behalf of the Conference Committee, we're looking forward to seeing you at the virtual conference.

TRF 2020 Organising Committee

Conference Chair

Prof W. K. Mampearachchi

Conference Secretary

Dr H L K Perera

Committee Members

Prof J M S J Bandara Dr H R Pasindu Dr G L D I De Silva

Supporting Staff

Mrs G.N. Wijekoon Mrs G.A.N. Gurusingha Mrs Melani Jayakody Mr U.K. Padmaperuma

Reviewers

External

Dr Adeesha Wijayasiri (UoM-CSE) Dr Amila Silva (HBA Specto Inc., Canada) Dr Aruna Karunarathne (Swinburne University of Technology, Australia) Dr Chamali Hewawasam (UoM-TCP) Dr Chamod Hettiarachchi (Tongji University, China) Dr Hansinee Sitinamaluwa (UoM-MSE) Dr (Mrs) Ishani Dias (KDU) Mr Isuru Gamalath (Canada) Dr Kasun T. Hemachandra (UoM-ENTC) Prof Kolitha Weersekera (OUSL) Dr Mahinda Bandara (UoM-TLM) Dr Nadika Jayasooriya (ACE Solutions) Dr (Mrs) Niranga Amarasingha (SLIIT) Dr Prageeth Gunarathna (DoT, Australia) Mr R M Amarasekera (RDA-SL) Dr Ravindra Wijesundera (Kimley-Horn and Associates, USA) Mr Sajith Udayanga (Wayamba University) Dr Shamain Saparamadu (ITUM) Dr Shiran Jayakody (South Eastern University) Dr Varuna Adikariwattage (UoM-TLM)

Internal

Prof J M S J Bandara (UoM-CE) Prof W. K. Mampearachchi (UoM-CE) Dr H R Pasindu (UoM-CE) Dr G L D I De Silva (UoM-CE) Dr H L K Perera (UoM-CE)