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**1997
Annual
Forum**

Montreal • Quebec

39th Annual Meeting Proceedings

Volume 1





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PROCEEDINGS

OF THE 39TH ANNUAL MEETING OF THE

TRANSPORTATION RESEARCH FORUM

Montreal, PQ, Canada
October 16 - 18, 1997

Volume 1

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Welcome to the Transportation Research Forum's 1997 Annual Meeting

These proceedings contain those papers presented at the 39th Annual Meeting of the Transportation Research Forum, held in Montreal from October 16-18, 1997, that were received by the deadline publishing date. All papers were reviewed by the Program Vice President to assess their suitability for inclusion in these volumes. Additional papers may be made available by some of the presenters at the time of the Conference.

The Transportation Research Forum (TRF) is an independent organization of transportation professionals providing pertinent and timely information to those who conduct research and those who use and benefit from research. It functions as an impartial meeting ground for carriers, shippers, government officials, consultants, university researchers, suppliers, and others seeking an exchange of information and ideas related to both passenger and freight transportation. The Transportation Research Forum started with a small group of transportation researchers in New York in 1958 and the first national meeting was held in St. Louis in 1960. National meetings have been held annually since 1960 at various cities throughout the U.S. and Canada.

The preparations for this year's Annual Forum represent a new direction in planning and execution. The Executive Council authorized the appointment of a committee to assist in planning the conference. Several persons were especially helpful in shaping the direction of this year's program, including Gordon Baldwin and Clint Oster in setting up and reviewing aviation sessions, Michael Belzer for arranging a very strong motor carrier program, and Carl Martland and Joe Sussman for carrying the rail freight. Also noteworthy was the tremendous assistance from Ron Rice and other CTRF members, who agreed to hold their semi-annual meetings in conjunction with TRF, and then worked harder than I did to make both meetings a success. Rich Golaszewski, the Program Vice President-Elect, managed the review and selection process for the various awards given by TRF and supporting organizations. Rich will host the 1998 Annual Forum in Philadelphia. Jim Kling, Academic Vice President, managed the process of reviewing student papers and awards. This year we included six student papers in the proceedings and meetings. Rob Harrison, TRF President, offered guidance and encouragement throughout all phases of program preparation, helping shape the conference. I firmly believe that the use of committees to plan these Forums strengthens the program and TRF, and hope it will continue. Rick Guggolz, TRF's Executive Director, provided a wide variety of assistance throughout the entire planning process. Finally, my wife Judy provided administrative support and was particularly helpful with preparing these volumes.

Notwithstanding the important contributions that all these individuals made, it is the authors of the papers, the organizers and contributors to the various panels, and the session chairs who make TRF annual meetings so worthwhile and enjoyable. The conference program simply reflects the interests, enthusiasm and commitment of those members of the transportation community.

We are also grateful to those companies and organizations who have sponsored awards or made other contributions to the success of the Forum. These include RailTex, The Metropolitan Transit Association, Conrail, and Multimodal Applied Systems. A warm *merci* goes to Bombardier, CANAC, CN Rail, KPMG, and the Quebec Ministry of Transport for their support. Among our own members, we are especially indebted to the TRF Foundation, the Cost Analysis Chapter and the Aviation Chapter for their assistance and support.

These proceedings are prepared and distributed at the TRF Annual Forum as a means of disseminating information and stimulating an exchange of ideas during the meeting. Every effort has been made to reproduce these papers accurately. TRF, however, assumes no responsibility for the content of the papers contained in these volumes.

Patrick Little
Vice President - Program
October, 1997

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