

TRB BUS TRANSIT SYSTEMS Committee Newsletter

Center for Urban Transportation Research at the University of South Florida

Volume 1, No 2, April 2001

(Report of TRB Session No. 336, George Pierlott presiding)

New developments in Bus Transit Systems

The session was held on January 10th at 8:00 a.m. in the Hilton's Cabinet Room. During the course of the session, more than 60 people attended. Four papers were presented, two by Committee members, Avi Ceder and Herb Levinson. All of the papers presented in Session 336 were very well received.

The first paper, presented by Professor Avi Ceder of the Technion-Israel Institute of Technology in Haifa, Israel, entitled "Bus Timetables with Even Passenger Loads as Opposed to Even Headways," focused on improving bus schedules to better reflect the fluctuations in passenger demand. During his presentation, Prof. Ceder pointed out the expectation that even headways often create overcrowding situations and thereby reduce service reliability. Prof. Ceder then presented his methodology for devel-

oping an algorithm to derive vehicle departure times that result in even average loads so as to prevent overcrowding.

Prof. Theo Muller of the Delft University of Technology in the Netherlands presented the second paper. The paper, co-authored by Peter Furth of Northeastern University's Department of Civil and Environmental Engineering, was entitled "Trip Time Analyzers: Key to Transit Service Quality." In his presentation, Prof. Muller discussed the benefits of trip time analyzers in monitoring operational quality, improving schedules, and diagnosing operational problems, as well as numerous other capabilities. Prof. Muller pointed out that trip time analyzers, while distinct from AVL and APC systems, can share many of the same components. The third paper presented was "Bus Transit Op-

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Report from Committee AIE01 Chairman John Dockendorf

Thanks to the volunteer assistance of Committee members Elliot Hurwitz, George Pierlott, Frank Spielberg, and Dennis Hinebaugh and his CUTR associates, we are able to produce our second Committee newsletter. Also, Bert Arrillaga of FTA deserves a special thanks for contributing a summary of TRB Session #24 on Bus Rapid Transit.

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Bus Transit—continued

erations Control: Review of an Experiment Involving Tri-Met's Automated Bus Dispatching System" by Prof. James Strathman of the Center for Urban Studies at Portland State University. The paper was co-authored with Profs. Thomas Kimpel and Kenneth Dueker, also of Portland State, as well as Mr. Richard Gerhart of Tri-Met. The objective of the experiment was to determine the effect of headway control and schedule-based holding using Tri-Met's Automated BDS on service regularity and passenger load variance. The results of their research indicated that the effect of implementing operations control by dispatchers was not statistically significant in the Tri-Met experiment. However, Prof. Strathman pointed out that the experiment is only an intermediate step and that improvement in operations control may occur by extending the availability of real-time information to supervisors in the field, where operations control traditionally has been managed. Prof. Strathman's presentation generated quite a number of questions from the audience.

The final paper was presented by Mr. Herb Levinson, Member Emeritus of the Bus Transit Systems Committee. The paper, entitled "Bus Transit in the 21st Century: Perspectives and Prospects," presented a brief history of bus transit and identified the various challenges and opportunities that bus transit systems will face as we move into the 21st century. Mr. Levinson indicated that, to enhance bus transit in the future, agencies will have to depend on the continued support of government at all levels as well as support for more transit-friendly land use policies. ♦

Committee chairman report—continued

This edition, like our previous issue, features a summary of conference and paper sessions that our committee either sponsored or co-sponsored at the TRB Annual Meeting in January. Hopefully, many of you were able to attend these sessions, but, in case you missed some of the meetings, these summaries will provide a general review of some of the topics covered and session highlights.

Our next newsletter is scheduled for later this spring and will feature advance information on the upcoming Mid-Year TRB Bus Rapid Transit Conference in Pittsburgh that we and selected other Section E Committees are helping to organize. As you already know, this three-day conference will begin on Sunday morning, August 12, and end late Tuesday afternoon on August 14. The Port Authority of Allegheny County (PAT) has agreed to be a co-sponsor of this conference and will provide interesting field trips to their East, South, and newly-opened West Busways. The meeting site will be the Hilton Hotel in downtown Pittsburgh, which has offered an extremely reasonable rate of just \$79 per night for conference attendees.

I expect to have more specific information on the conference in our next Bus Transit Committee newsletter, including the planned BRT topics that will be included on the agenda, confirmed TRB speakers, and the representatives from FTA's BRT consortium cities who will be making presentations. Also, conference and hotel reservation forms will be made available by then. In the meantime, please make sure to include this conference in your schedule of planned activities for the summer. A block of time has been reserved on Sunday morning, August 12, for a Section A1E01 Summer Committee meeting in conjunction with the mid-year conference. I hope everybody will be able to attend! ♦



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To stimulate research, disseminate research findings, and encourage the application of research findings on bus transit systems.

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(Report on TRB Session No. 24, Bert Arrillaga, Federal Transit Administration presiding)

Latest developments in the Bus Rapid Transit Initiative

On the first day of the TRB Annual Meeting, the Bus Transit Systems Committee sponsored a session on the latest developments in the Bus Rapid Transit Initiative. Mr. Bert Arrillaga of the Federal Transit Administration opened the session, recalling how the initiative was presented in a previous Annual Meeting of the TRB a few years ago. He expressed his enthusiasm for the progress in bus rapid transit and the renewed focus of the initiative on securing successful launches of additional projects.

Mr. Samuel Zimmerman described the progress on TCRP Project A-23, which was launched one year ago to produce a promotional brochure and video to support bus rapid transit and to develop Bus Rapid Transit Implementation Guidelines. He cited the project's objective as providing information required to objectively consider BRT as an option during transportation planning, and to implement BRT systems if they are selected for investment. The brochure would provide 12 glossy pages of photographs and other graphics illustrating BRT possibilities. He also indicated how the project has evolved from the original concept of producing an original stand-alone video to collecting a library of already-existing videos. Mr.

Zimmerman concluded by citing a list of proposed topics for the guidelines: systems concepts, stations, vehicles, running way considerations, ITS, service planning and marketing, economics and finance, and architecture and design.



The session continued with presentations on three bus rapid transit projects in the United States. Mr. Michael Sanders cited the evolution of the New Britain to Hartford Busway project. He noted how the decision on the busway was notable for the Major Investment Study that included a wide variety of modal options, including several highway options. Mr. Sanders described how the corridor serves several major communities along the corridor and how the proposed investment will be able to provide overlapping services—express, shuttle, collectors, and feeders. Mr. Sanders also noted several issues peculiar to the project includ-

ing right-of-way geometry issues (related to the constrained right-of-way widths and coordination with other modes) and rail grade crossing issues (related to having a parallel railroad and accommodation of pedestrian and railway crossings). Mr. Sanders noted the need for coordination among the many parties involved, including other departments within government and the public.

Mr. Rex Gephart continued with a presentation of the Metro Rapid Project in Los Angeles. He described how the Metro Rapid project was implemented in the Ventura Boulevard corridor and the Wilshire and Whittier corridors in June 2000 in coordination with the inauguration of expanded subway service. Mr. Gephart cited

how the project was borne out of studies by the City of Los Angeles Department of Transportation that cited how average bus speeds have steadily declined a cumulative 12% and found that 50% of this delay was due to dwell time and signal delay at stops. Mr. Gephart indicated that, since the launch of the Metro Rapid project, which currently includes traffic signal priority, limited stops, low-floor buses, high frequencies, and coordinated marketing, that travel times have improved by 23 to 29% (about 1/3 from the signal system and 2/3 from transit operations modifications). Mr. Gephart also cited preliminary statistics that one in ten of

Metro Rapid's riders previously did not ride transit.

The session concluded with Mr. Richard Feder's description of the long-standing busway program in Pittsburgh. He cited the development of the South Busway in 1977, Martin Luther King Jr. East busway in 1983, the I-279 HOV lanes to the north in 1983, and the new West Busway, which inaugurated service in 2000. Mr. Feder described the busways as

exclusive lanes for buses that travel from downtown Pittsburgh to serve suburban neighborhoods in all directions. These facilities demonstrate several unique design features. Busways have extra width at station sites to allow express buses to pass buses stopped at the station. Other features include joint operation on one stretch of light rail tracks, an intermodal connection with light rail and intercity rail at the main railroad

station, and operation in a short section of tunnel. Mr. Feder also described the evolution of design around the busway from more utilitarian designs in initial stages to designs that paid more attention to aesthetics and passenger amenity in the new West Busway. Mr. Feder described plans for future extension of the West Busway to the airport from its current junction with the main highway leading to the airport. ♦

(Report of TRB Session No. 59, Frank Spielberg presiding)

Pedestrian Access to Transit

Session 59, Pedestrian Access to Transit, held on January 8th at 10:15 a.m., was co-sponsored by the Committee on Pedestrians and the Committee on Bus Transit Systems. Frank Spielberg of the Bus Transit Committee served as the presiding officer for the session, which consisted of four presentations and one paper. The panelists were individuals with expertise in the topic area whose participation was solicited by the two committees.

The two panelists designated by the Committee on Pedestrians were Dorothea Hass of Boston Affiliates and James Purdy of the Wallace Floyd Design Group, both from the Boston area. Ms. Hass discussed the overall problem of accommodations for pedestrians both at bus stops and at road crossings. Photos accompanying her presentation illustrated some typical problems at bus stops and

solutions, developed as part of a Boston project, that are documented in a guidebook prepared for and distributed by the Federal Transit Administration.

Mr. Purdy also discussed pedestrian crossing areas, again with illustrative photographs, but also described the particular problems at transit terminals and approaches accommodating pedestrians and guiding pedestrian flows in terminal areas.

The two panelists designated by the Committee on Bus Transit Systems were John K. Leary, the General Manager of the Southeastern Pennsylvania Transportation Authority, and Ron Kilcoyne, a member of the Bus Transit Systems Committee and Manager of Santa Clarita Transit in Santa Clarita, California. Mr. Leary illustrated the history of transit passenger waiting areas with a series of historic photographs from the streetcar era. He discussed how the transit stop had continued with little change in to the bus

era and through the change in urban development patterns. He noted that the bus stop represents the initial contact point between transit and its customers and stressed the importance of providing a waiting experience in keeping with the expectations of consumers in the 21st century. Mr. Kilcoyne used photographs to illustrate issues related to bus stop placement and pedestrian access in Santa Clarita.

The paper at the session was presented by Prof. Robin Liggett of the University of California at Los Angeles. Together with her colleagues, Prof. Anastasia Loukaitou-Sideris and Prof. Hiroyuki Iseki, she investigated the possible linkages between crime at bus stops and the built environment surrounding the bus stop. Using data on passenger boardings in several areas

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Converting from Paper to Plastic: Fare Collection Case Study of Washington, D.C. Region

The session featured the Washington, D.C. area's smart card implementation and how fare strategies are being applied to both bus and rail modes in Maryland, Virginia, and the District of Columbia. While the Washington, D.C. area has had an advanced fare collection system for nearly 25 years, the overall fare pricing in the metropolitan area has been quite complicated and not very seamless between bus and rail. With the implementation of the smart card technology and a simpler fare structure, it appears that the Washington, D.C. area is moving toward a more seamless and easier-to-use fare system.

Mr. Greg Garback from the Washington Metropolitan Area Transit Authority (WMATA) presented the overview of the SmarTrip Card. He explained the rationale for moving toward a smart-card-based technology, with particular attention to minimizing throughput time. WMATA conducted a successful smart card demonstration on the rail system from October 1998 to May 1999 with about 1500 users. The system was refined and fully implemented on the METRO rail system in March 2000. More than 130,000 smart cards have now been issued, with the addition of more than 7,000 cards each month with no significant marketing and promotion campaign. Mr. Garback went on to explain how partnerships are also being developed with First Union Bank and the General Services Administration.

Mr. Richard Spatz of WMATA presented the details of a regional bus farebox procurement. To expand smart cards to the bus system, WMATA has completed a procurement for new fareboxes for the Metrobus system and for suburban bus operators in Maryland and Virginia. WMATA has older GFI fareboxes, purchased in the mid-1980s, that are in need of replacement. The procurement took approximately one year to complete, and more than 1600 fareboxes will be purchased for WMATA Metrobus. The fareboxes will validate currency fareboxes with built-in smart card readers. The fareboxes will not come with

magnetic capability to reduce capital and operating costs. The contract will include options so that suburban bus operators and Maryland Mass Transit Administration (Baltimore) can buy fareboxes or individual smart card readers from the same procurement. The decision to proceed without magnetic swipe capability on the bus system resulted in \$7.5 million lower capital cost and \$0.5 million lower annual operating cost for WMATA Metrobus. The bus farebox smart card system is projected to be implemented by Spring 2003.

Mr. Christopher Cipperly from WMATA discussed the customer service aspects of the electronic payments environment. He presented the need for a comprehensive service that will be contracted by WMATA to Lockheed Martin to handle customer service aspects of the WMATA SmarTrip program. This would include handling lost cards, customer service calls, electronic and computer functions to maintain the system, and the clearinghouse functions.

Ms. Cynthia Pollan of Booz-Allen & Hamilton, Inc. (BAH) presented the parallel efforts in the Washington, D.C. area for regional fare policy integration. The BAH team worked closely with WMATA and the suburban bus operators. The outcome of the study was a simplification of Washington, D.C.'s very complicated fare structure. Now, Maryland, Virginia, and District of Columbia buses have the same equitable transfer policy with MetroRail. Complicated zones were eliminated. A National Capital Regional One-Day Bus Pass has been developed that costs \$2.50.

The new policies for fare integration have resulted in bus ridership gains, but with some loss of fare revenue. The fare simplification was a first step in changing fares toward the future smart card technology. Once the suburban operators and the Metrobus system get upgraded fareboxes and/or smart card readers, then the regional-wide SmarTrip program can be expanded. ♦

of Los Angeles, crime statistics from local police agencies, and field inspection of bus stops, Dr. Liggett and her team assembled a database that permitted the application of statistical techniques to identify factors that contributed to greater or lesser crime at specific locations. The research suggests that locating bus stops near certain types of establishments (for example, check cashing services, liquor stores, or vacant buildings suggest high crime rates, while bus stops that have good visibility from the surrounding areas and passengers shelters experience lesser crime).

This proved to be a popular topic. More than 100 people attended all or part of the session. There were questions following each speaker and a general question session after all presentations were completed. There seemed to be general agreement among the speakers and the audience that pedestrian access to and egress from bus stops is an issue that requires attention and that both sponsoring committees should reach out to seek speakers representing traffic engineers and roadway design professionals to participate in joint sessions at subsequent annual meetings. ♦



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