NEWSLINE

CURRENT RESEARCH IN PUBLIC TRANSPORTATION

VOL. 25, NO. 2 SEPTEMBER 1999

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NEWSLINE is an online publication reporting current research and development in public transportation. Although great effort is made to select unbiased research studies, the findings and conclusions are those of the authors and not the Transportation Research Board. The publication of *NEWSLINE* is made possible through funding under the Technical Assistance Program of the Federal Transit Administration. *NEWSLINE* (George M. Smerk and Mary Ann Smerk, editors; Brenda Crohn, staff; Peter L. Shaw, TRB staff) is published periodically on the TRB website by the TRB Committee on Public Transportation Planning and Development (David R. Miller, Chair). Submit research summaries and other news items to the Institute for Urban Transportation, Indiana University, 809 East 9th Street, Bloomington, IN 47405, or to *NEWSLINE*, Transportation Research Board, 2101 Constitution Avenue, NW, Washington, DC 20418 (202-334-2966). ISSN 0148-8511.

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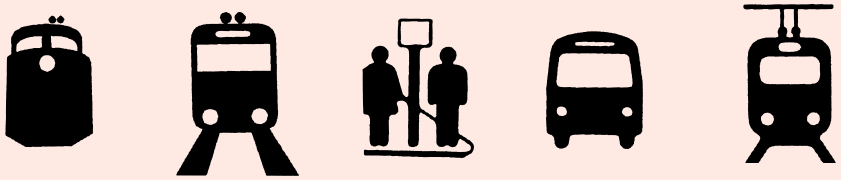
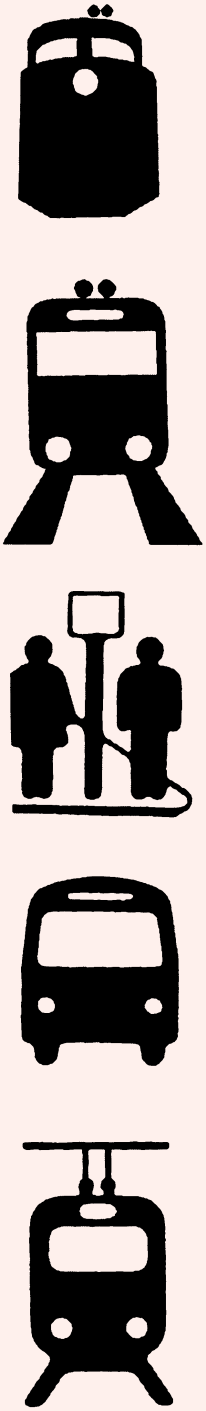


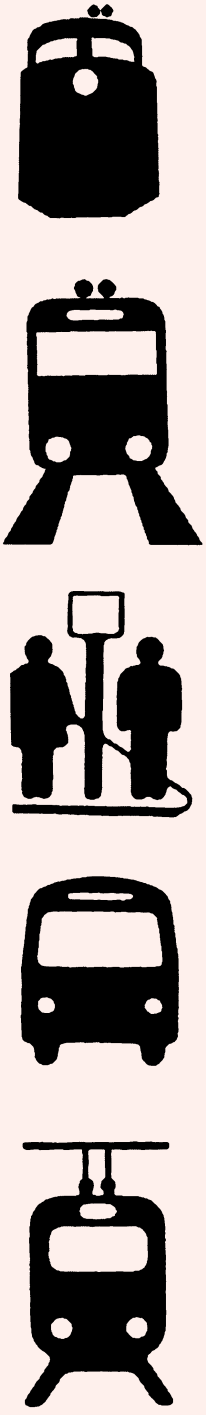


BUS RAPID TRANSIT REDUCES DELAY

The development of rail rapid transit and light rapid transit systems in the United States since the 1960s has helped to strengthen some downtowns and to sustain and rebuild transit ridership. The downside of the use of rail transit is its expense. Building rail lines is costly, and the construction work is usually time-consuming. Bus systems using ordinary roads can implement service changes and improvements more quickly than can rail, especially if the rail system has to be put in place before any major changes can develop. However, conventional urban bus operations are typically characterized in the public mind by slow-moving vehicles hauling through traffic and making long stops to pick up and drop off passengers. The perception that buses travel more slowly than automobiles is correct. The cumulative effects of traffic congestion, traffic signals, and passenger boarding typically make bus travel slow.

The idea of bus rapid transit is to be explored by the Federal Transit Administration (FTA). The key to bus rapid transit is reducing delays that cause buses to operate at only about 50 percent of the speed of other vehicles. Bus rapid transit would involve one or more of several features to reduce delay and increase speed. Bus lanes are an example; they are lanes on urban arterials or city streets reserved for the exclusive or nearly exclusive use of buses. Bus streets and busways are for the exclusive use of buses. Bus signal preference and preemptions and other treatments that might be given to buses at intersections can speed service. This could embrace the extension of green time or the actuation of a green light at intersections with traffic signals. Upon detection of an approaching bus, signals automatically turn green in favor of the transit vehicle. Intersection priority can be especially helpful when used in conjunction with bus lanes or bus streets because general-purpose traffic would not interfere with buses and traffic signals.

Other features considered are traffic management improvements, including low-cost infrastructure elements such as bus turnouts, bus-boarding islands, curb realignments, and general curbcuts at corners to permit right turns to be made more easily.



The on-board collection of fares on buses slows the boarding process, particularly when many different fares for various destinations and classes of passengers are collected. Alternatives to the typical fare collection process might be used, including self-service or proof-of-payment systems and stored-value prepaid smart cards providing for automated fare collection. The use of low-floor buses, raised platforms, or some combination to create a level boarding area between curb and bus may speed up entering and exiting as well as increase safety.

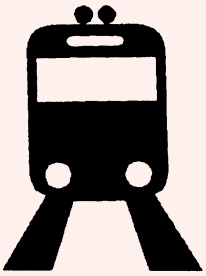
Another factor related to bus rapid transit is integration of transit development with land use policy. Tying bus rapid transit to compact, pedestrian-oriented land use development is usually a concept supported by FTA.

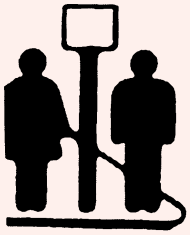
To foster development of bus rapid transit systems, the Bus Rapid Transit Demonstration Program has been initiated by FTA. The program will extend over the 6-year life of the Transportation Equity Act for the 21st century. Transit properties are encouraged to seek information and to begin planning implementation of bus rapid transit systems. Those interested in the program should contact FTA's regional and metropolitan offices. Contacting FTA's Washington, D.C., office for basic information concerning the program and procedural guidance is recommended.

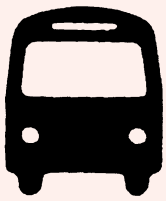
For further information, contact FTA, Office of Research, Demonstration and Innovation, 400 7th Street, SW, Suite 6107, Washington, DC 20590 (202-366-4991).

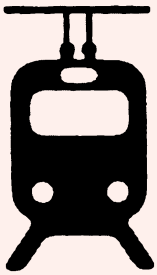
BUS SIGNAGE GUIDELINES HELP AGENCIES COMMUNICATE

Bus Signage Guidelines for Persons with Visual Impairments offers a reference source for transit agencies concerning visual communications–related regulations and guidelines contained in the American with Disabilities Act of 1990 (ADA), as amended. The handbook is aimed at clarifying the responsibilities and choices that transit agencies may face when improving visual communications to provide accessible transportation to persons









with disabilities. The handbook goes beyond mere regulations to help the professional transit person understand communications issues from the perspective of the customer; it aims at helping agencies form a better plan for addressing the communications needs of their customers and thus satisfy the spirit of ADA.

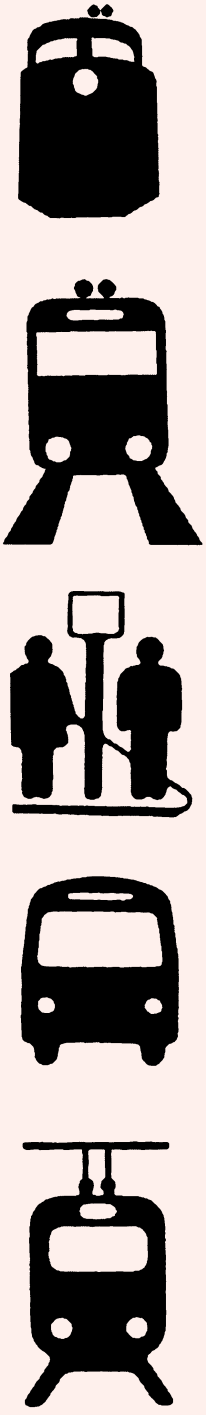
The handbook is composed of two parts. The first provides information to help transit management personnel understand and address the needs of customers and to improve visual communications. It also reviews the current regulatory mandates, discusses current transit sign technology, and provides an in-depth discussion of factors considered, such as the development of an ADA-compliant sign.

The second part offers a summary of the human factors testing and focus group research that was carried out in creating the handbook. The reasons for the human factors testing and the focus group studies were to

- Determine the extent to which the experiences of the focus group participants with transit bus signage were consistent with the human factors testing,
- Learn about the factors that persons with visual impairments believe affect the readability of signs in dynamic transit environments, and
- Explore additional factors that persons with visual impairments believe are related to reading changeable message signs.

Overall, through both human factors testing and focus group discussions, the research project led to a few general conclusions:

1. There are specific signage characteristics for both conventional and electronic signs that make reading easier for persons with low vision.
2. The specific sign characteristics that enhance readability by persons who are visually impaired also enhance signage ability for persons who report having normal sight.
3. Other variables that can enhance or detract from sign readability exist in the transit environment.



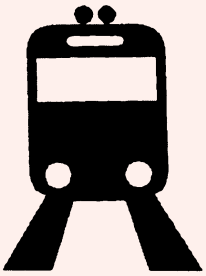
For more information contact Booz-Allen and Hamilton, Inc., 8251 Greensburg Drive, McLean, VA 22101 (703-902-5000). The May 1998 report (FTA-MD-26-0001-98-1) is available through the National Technical Information Service, 5285 Port Road, Springfield, VA 22161 (703-605-6000).

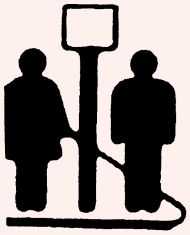
AUTOMATIC IDENTIFICATION EQUIPMENT TESTED AS SUBSTITUTE FOR TRADITIONAL TRAIN-TO-WAYSIDE COMMUNICATION

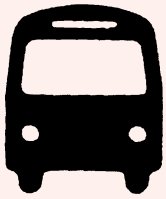
The research reported in *Train-to-Wayside Demonstration Project* was initiated to demonstrate the applicability of automatic identification equipment as a substitute for traditional train-to-wayside communication systems that are used in some of the more advanced rail transit systems. The findings of the study are published in *Train-to-Wayside Identification System.*

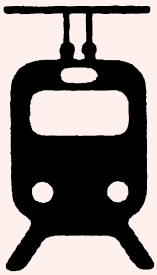
Traditional two-way communication (TWC) systems use the rail or wayside transponders as the medium of communication. Such systems provide for the passing of information and controls between operating trains and wayside signaling and operation control centers. Information such as train consist, destination, identification, and mechanical help is passed from the train to the wayside. In turn, the wayside equipment and control center passes information and commands concerning location, acceleration profiles, train number, assignment, and destination updates to the train. Automatic identification equipment is typically, as in the project at hand, composed of one-way communication devices.

The rapid transit system of the Maryland Department of Transportation was used for the demonstration. Automatic identification equipment is significantly less costly than traditional TWC systems and still provides automatic identification. The automatic vehicle identification demonstration included the installation of RF transponder tags on the transit authority's 50 married pair METRO rail car fleet. Six wayside reader locations were installed along the line to receive the data of trains as they passed. The sites were selected at even intervals and in critical locations, such as the midline entrance to the yards and terminal









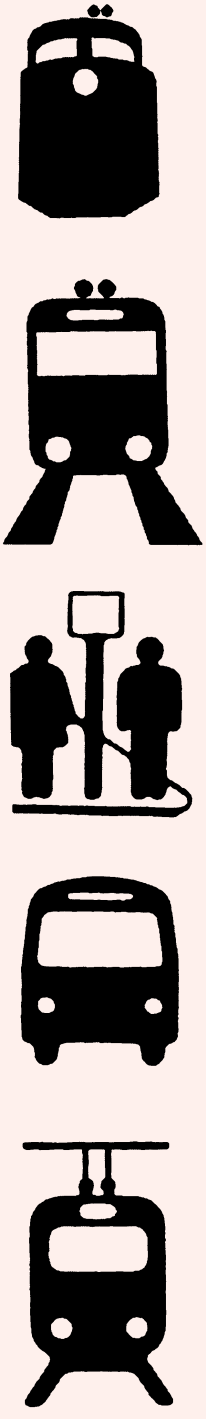
stations. The data are transmitted from the six wayside locations to the operations control center by the existing carrier system.

Operations control personnel may invoke the automatic vehicle identification system in any of the existing workstations, and the operator of a train can view the entire system in real time as the trains pass the wayside locations. Data transmitted from the wayside locations include the location, time, track number, train direction, number of cars in the consist, and the identification of the cars in the order of passing. The operator can view and print as needed any of several reports generated from these data, including the system operating data log, specific site operating data log, train activity, vehicle mileage, and vehicle revenue hour operation. A vehicle maintenance schedule and report is also available and is included as part of the vehicle mileage and vehicle hours report.

The 1998 report was issued by the Office of Research, Demonstration, and Innovation of the Federal Transit Administration (202-366-9157). The project number is FTA-MD-03-3001-98-1.

INVESTIGATING EFFECTIVENESS OF EVENT RECORDERS

As a result of the January 6, 1996, fatal accident on the Washington Metropolitan Area Transit Authority, the National Transportation Safety Board recommended that the Federal Transit Administration investigate the effectiveness and efficiency of using event recorders on rapid transit rail cars. The purpose of *Event Recorders for Rail Rapid Transit Systems* was to gather information on event recorders used in various transportation industries; to determine the feasibility of the universal use of the event recorders on rail transit cars; to identify enhancements resulting from the correct identification of contributing causes of accidents; to identify the technical requirements for these devices; and to provide an exploratory cost-benefit assessment of accident/incident event recorders, including ancillary advantages such as combining the event recorders and the equipment condition monitoring system.



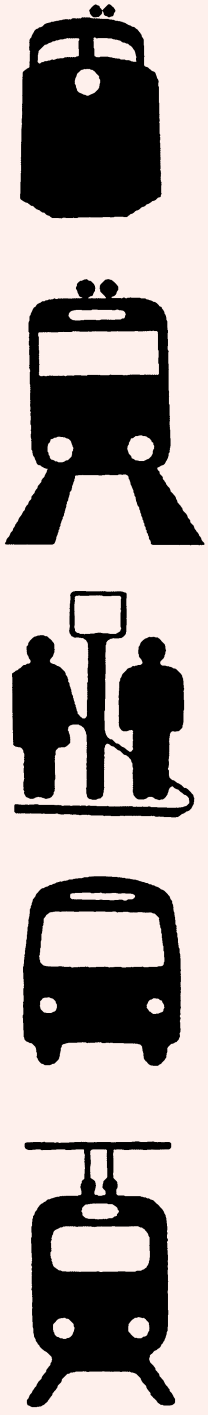
The event recorder is a common part of the equipment on airliners, in the form of the familiar "black box" mentioned in news coverage of airline accidents. Ninety percent of locomotives under the jurisdiction of the Federal Railroad Administration are equipped with event recorders, and they are usually built into new locomotives as original equipment.

A variety of technologies are available to serve any of the several approaches for implementation of recorders in rapid transit systems. Also, separate event recording devices may be used for accident/incident investigation purposes and for operation and maintenance, engineering, diagnosis, and administrative management. Many of the needed data elements for the various recorders are identical or overlap. The single integrated system appears to be the wiser approach.

Stumbling blocks to implementation are installing the needed sensors and cabling in existing equipment, as well as the cost of the recorders themselves. There are human elements as well. When event recorders were initially placed on airplanes, pilots and others were suspicious that the devices were being used to check up on them. The same attitude developed when event recorders were installed on transit equipment.

The researchers found that the benefits from the use of the event recorders in rail rapid transit are likely to outweigh the cost, even when considering the cost and difficulties of retrofitting older rail cars. It is assumed that the installation of enhanced recorders capable of recording more information than the minimum either for accident investigation or management purposes is more cost-effective than the installation of basic event recorders. Such installations are apt to improve operations and maintenance productivity as well as transit follow-up on accidents.

For more information, contact Siegbert P. Oritzky, Dev Chaudhari, David Cuppett, or Linda Sue Boehmer, Applied Techno-Management Systems, Inc., 7700 Leesburg Pike, Suite 405, Falls Church, VA 22043 (703-442-9880). The June 1998 report (FTA-VA-26-7004-98-1) is available through the National Technical Information Service, 5285 Port Royal Road, Springfield, VA 22161 (703-605-6000).



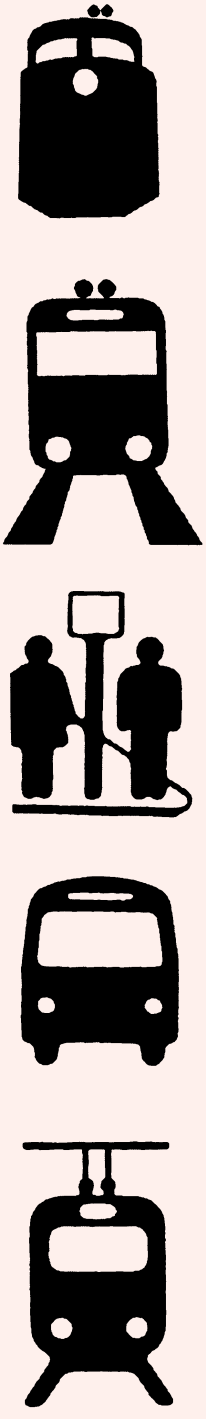
GUIDELINES AID TRANSIT PERSONNEL IN PLANNING FOR AND RECOVERING FROM DISASTERS

The public transportation industry in the United States embraces 15 commuter railroads and 508 bus and rail agencies. These properties offer 22 million daily trips and about 8 billion rides annually. The agencies employ just under 300,000 people who provide about 41 billion passenger miles of travel, half by rail and half by nonrail service. Emergencies and disasters, whether occurring in the communities the transit agencies serve or in the transit agencies themselves, threaten the ability of public transportation to provide a safe travel environment.

There is a history of dramatic incidents affecting mass transit, including the 1918 Malbone Street wreck on the Brooklyn Rapid Transit. This most disastrous of U.S. rapid transit accidents exemplified the need for managing crises.

Responding to critical incidents is one of the most difficult functions that can be carried out in the environment of transit. People from many transit disciplines as well as outside agencies must come together to manage the incidents. Rescuing or evacuating passengers, extinguishing fires, controlling crowds, repairing track and wayside structures, and restoring service are all among the essential tasks. *Critical Incident Management Guidelines* has been designed to offer practical assistance to transit personnel who are responsible for planning for, managing, and recovering from emergencies and disasters. The report provides an overview of comprehensive emergency management, which is followed by detailed discussion of the Integrated Emergency Management System (IEMS) and how the IEMS is used by the Federal Emergency Management Agency. In addition, transit's specific requirements for implementing emergency management practices are outlined, including

- Detailing emergency preparedness, mitigation, response, and recovery strategies;
- Providing guidelines for developing plans and coordinating the outside resources required to manage emergencies and disasters in the transit setting; and



- Presenting examples of emergency management practices used by various transit systems throughout the United States.

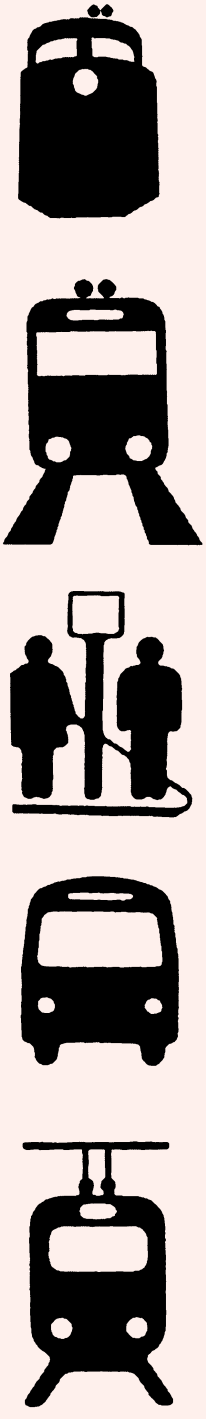
The July 1998 report includes many definitions and many examples of what transit agencies do.

For more information, contact M. Annabelle Boyd, M. Patricia Maier, or James E. Caton, Boyd, Maier and Associates, 402 Greenwood Farms Road, Barboursville, VA 22923 (804-985-1033). The report (FTA-MA-26-7009-98-1) is available from the National Technical Information Service, 5285 Port Royal Road, Spring, VA 22161 (703-605-6000).

TRANSIT SECURITY REQUIREMENTS ARE EXPLAINED

Transit Security Handbook is sponsored by the Federal Transit Administration and the Volpe National Transportation Systems Center to explain the security requirements that have been specified in the Federal Transit Administration's State Safety Oversight Rule (49 CFR Part 659). The handbook also provides an overview of security as currently provided by rail transit systems affected by the State Safety Oversight Rule. It establishes a reference for oversight agencies on security in the rail transit environment.

Security is essential and is the fundamental responsibility for operators of rail transit systems. The State Safety Oversight Rule was prepared to respond to Section 3029 of the Intermodal Surface Transportation Efficiency Act, which directed the Federal Transit Administration to issue regulations requiring that states oversee the safety and security of rail fixed-guideway systems. The handbook offers an overview of the rail security function, which includes the development of the state security oversight program; the establishment of a rail transit police or security department; the development of a system security program plan; the deployment of uniformed and plainclothes police and security personnel; crime prevention through environmental design and situational crime prevention techniques for rail



facility design and operation; the management of security technology; and techniques for crime data collection and analysis. The handbook provides information to help users develop a systems security plan. It covers perceptions as well as real crime levels, including rail fixed-guideway system crime and motor bus crime.

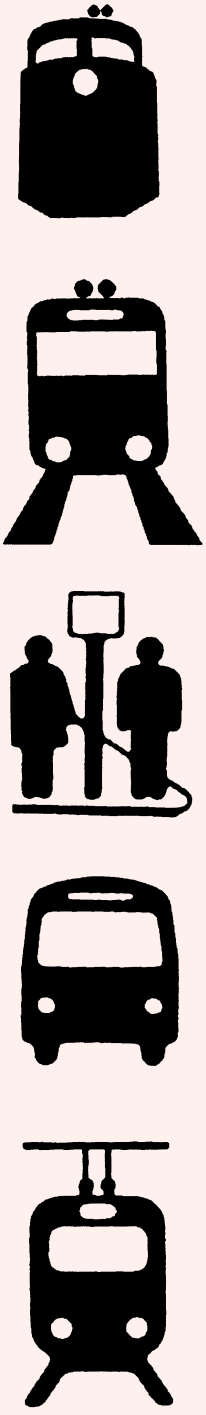
For more information, contact M. Annabelle Boyd or M. Patricia Maier, Boyd, Maier and Associates, 402 Greenwood Farms Road, Barboursville, VA 22923 (804-985-1033). The May 1998 report is available from the National Technical Information Service, 5285 Port Royal Road, Springfield, VA 22161 (703-605-6000).

DEPLOYMENT OF ADVANCED PUBLIC TRANSPORTATION SYSTEMS

The Federal Transit Administration and other agencies have been encouraging the use of advanced public transportation systems (APTS). *Advanced Public Transportation Systems Deployment in the United States Updates* documents the work performed under the APTS program. It compiles existing and planned deployments of APTS technologies and services. The information was collected in fall 1998 through contacts at the involved transit agencies. The aim was to include all agencies that submitted information for the 1996 National Transit Database Report Year, the last year for which National Transit Database data were available. A total of 551 agencies provided information for this study.

The most common APTS element used is advanced communications. Automatic transit information is the next most common technique, along with paratransit computer-assisted dispatching. The researchers found that APTS technologies and methods are gradually being adopted by transit properties in the United States.

For more information contact Robert F. Casey, U.S. Department of Transportation, Research and Special Programs Administration, John A. Volpe National Transportation Systems Center, Cambridge, MA 02142-1093 (617-494-2000). The



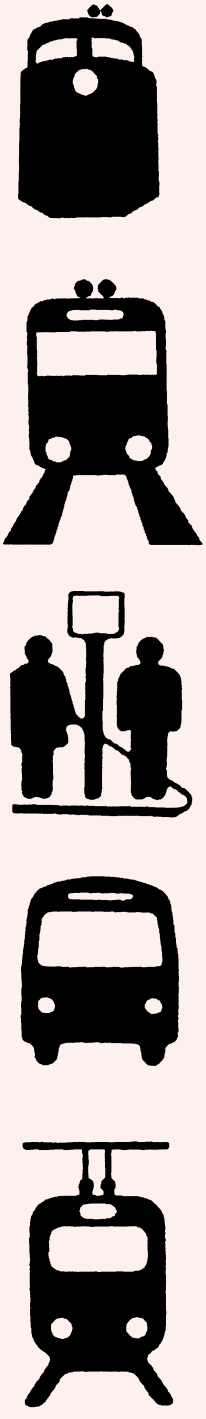
January 1999 report (FTA-MA-26-7007-99-1) is available from the National Technical Information Service, 5285 Port Royal Road, Springfield, VA 22161 (703-605-6000).

USING KIOSKS TO DISSEMINATE INFORMATION

A number of transit systems use kiosks to disseminate information. The Metro Dade Transit Agency wished to develop a better information system and engaged the Center for Urban Transportation Research at the University of South Florida to conduct a study. The survey research interviewers gathered considerable information about kiosk systems that had been deployed or tested at transit agencies in the United States. The research is published in *Review and Assessment of Information Kiosk Systems.*

Kiosks were used mainly to provide travelers with transit information concerning fares, routes, and schedules, and the information was presented both in static and real-time formats. Other kiosks were more embracing and provided information on restaurants, tourist attractions, and the weather. Researchers found that very few kiosk systems gave travelers much trip-planning or itinerary development information. None of the installations studied deployed kiosks that permitted users to purchase tickets or passes or to make other transactions.

In the case of most kiosk systems, an automatic vehicle location system was used to provide the kiosk with real-time information. In addition, these systems are usually linked to the transit operating system or the customer information system. The data used for most of the kiosk systems were maintained at the site location on CD-ROM or hard drive and by telecommunication links with a server. In general, the kiosk units include either a 486 or Pentium CPU touch screen monitor and thermal printer. Except for a few of the kiosks that were used at the Metropolitan Atlanta Rapid Transit Authority, most kiosks are found inside a building such as a transit station or a shopping center. The inside location offers a cost-effective strategy for maintaining the quality of the service provided by the kiosk against



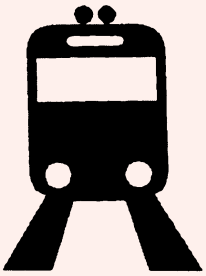
inclement weather, crime, and vandalism. The cost of the kiosks ranges from $15,000 to $20,000 per unit.

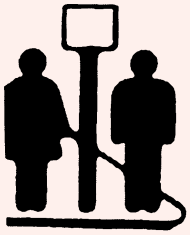
For more information, contact Eric Hill, Center for Urban Transportation Research, College of Engineering, University of South Florida, 4202 East Fowler Avenue, CUT100, Tampa Bay, FL 33620 (813-974-9845). The March 1997 report (FHWA-JPO-98-004; FL-26-7001) is available from the National Technical Information Service, 5285 Port Royal Road, Springfield, VA 22161 (703-605-6000).

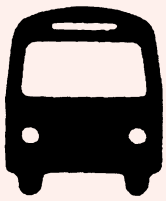
INNOVATIVE PRACTICES IN WELFARE-TO-WORK TRANSPORTATION

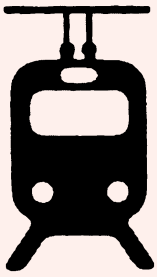
Nearly 40 percent of the 10 million daily public transit riders in the United States are considered low income. *Access to Jobs: A Guide to Innovative Practices in Welfare to Work Transportation* recognizes the fact that people with slim resources will probably use transit to find employment. The guidebook determines transit's needs in the sense of the disconnect between many public transit systems and suburban job growth: the buses just do not go where they are needed. The guide also reviews the efforts of the states and metropolitan planning organizations to improve welfare-to-work transportation.

The July 1998 document is made available under the sponsorship of the U.S. Department of Transportation, Federal Transit Administration, 400 7th Street, SW, Washington, DC 20590 (202-366-9157).









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