people who cannot climb aboard (no steps, elevated floors, or seats); visual paging and announcement systems. Only airport operators and designers can create a demand for these products.

Needed Research

It is the consensus of the authors that the application of new and emerging technologies and universal design principles is more important to airport accessibility than additional research at this time. In this vein, the following recommendations are made.

1. A careful study should be made of airport facilities built in the last ten years using modern accessibility standards. The evaluations should be made by multidisciplinary teams involving airport operators, designers, researchers, airline personnel, and people with disabilities who have extensive travel experience. The goal for this research is to identify what works and what doesn't in providing accessibility to airports, to identify where the standards fall short and what solutions work best in providing services, and to identify what solutions work best at different types of airports.
2. Convene a structured, design-focused, consensus conference with the same cross-disciplinary group and universal designers. This group would use the information gathered from the above study along with other information. The goal would be to achieve agreement on the kinds and types of features and equipment that would improve airport use. The involvement of all user groups is essential to this effort.

NOTE:

1. A Disability, Functional Limitation, and Health Insurance Coverage: 1984/85, U.S. Department of Commerce, Bureau of the Census, 1986.

APPENDIX D
PROVISIONS FOR DISABLED AND ELDERLY IN AIRPORT AUTOMATED PEOPLE MOVER SYSTEMS

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INTRODUCTION

The purpose of this brief is to summarize the provisions typically made by Lea+Elliott, Inc., for disabled and elderly access in Automated People-Mover (APM) systems. Numerous provisions are made which strive to make use of the airport APM system a barrier-free experience for the disabled or elderly passenger. The following summarizes the major provisions that are made and generally describes the manner in which they are implemented.

FACILITIES PROVISIONS

Facilities provisions are accomplished through a process of APM system design and facilities interface. Typically, the APM system is procured through the use of a specification that defines the performance requirements of the system. An APM supplier will then contract to provide the system, including vehicles, controls, and guideway equipment.

The station and boarding platform are implemented through the preparation of drawings and specifications. Station construction, however, is usually completed by the terminal building general contractor. Lea+Elliott, Inc., writes the APM system specifications and provides APM facilities design criteria to the terminal design team to ensure that the proper interface occurs between the APM system and the station facilities.

The following provisions are included in airport APM systems:

1. *Level Boarding.* The elevation of the station boarding platform is set to correspond to the floor level of the vehicle. The APM system specification allows a maximum deviation of 7/8 inch from the station platform elevation.

2. *Platform Walls and Doors.* Typical airport APM design criteria call for walls between the station platform and the guideway and bi-parting automatic platform doors that align and operate simultaneously with vehicle doors. This system of walls and doors is designed to prevent accidental access into the guideway.
3. *Tactile Floor Surfaces.* Airport APM system specifications require a tactile floor surface at the automatic door opening into the vehicle to inform passengers of their relative location.
4. *Horizontal Gap.* The horizontal gap between the threshold of the vehicle and the edge of the platform is specified to be a maximum of 2 inches.
5. *Station Access.* In airport APM facilities the use of turnstiles to control the entry of stations is discouraged whenever possible, due to the barrier to access that they form for many passengers.

SYSTEMS PROVISIONS

In addition to the facilities provisions, numerous communications systems are provided to assist all passengers, including the disabled and elderly, in their use of the APM system:

1. *Signage.* Both static and programmable dynamic signage are provided on the station platform to assist passengers in understanding the use of the APM system.
2. *Door Chimes.* Chimes are provided to inform passengers audibly of vehicle arrival and of imminent door closing.
3. *Closed Circuit Television System.* A closed circuit television system is provided in stations to allow the APM central control operator to monitor platform activities and provide assistance to passengers as needed.
4. *Public Address System.* A public address system is provided to allow the APM central control operator to assist passengers as required.
5. *Emergency Telephone.* An emergency telephone linked directly to APM central control operations is provided in the station area.

VEHICLE PROVISIONS

The final major area in which disabled and elderly access provisions are made is in the APM vehicle. These provisions are accomplished through the APM system specifications:

1. *Vehicle Door Width.* A minimum clear vehicle door width of 36 inches is specified in order to provide ease of access while boarding and deboarding the vehicle for all passengers, including wheelchair users.
2. *Aisle Width.* On board the vehicles, wide aisles are specified to allow for wheelchair maneuvering.
3. *Wheelchair Restraints.* Wheelchair restraints are required on board the vehicle to allow the wheelchair user the option of securing the wheelchair during the trip.
4. *Designated Seating.* The vehicles of many systems include seats near the doors which are reserved for the disabled and elderly.
5. *Handholds and Stanchions.* Numerous handholds and stanchions are provided to aid the passenger while riding the APM system.
6. *Acceleration and Deceleration.* Limitations are placed on acceleration and deceleration rates to maximize passenger ride comfort and safety.
7. *Onboard Announcements.* Onboard announcements from central control inform passengers of operational aspects as well as upcoming station information.
8. *Onboard Visual Displays.* On some systems, onboard visual displays inform passengers of their location within the system.
9. *Emergency Communications.* Emergency communications, from on board the vehicle, are provided in the form of a passenger-activated microphone and speaker system within easy access of all passengers.

SUMMARY

The provisions described above are those typically found in airport APM systems. The specific requirements of each project, such as interfacing with existing facilities and unusual owner or operator requirements, must be taken into consideration. However, the airport APM systems in operation, under construction, and being planned today all contain provisions that strive to make their use a barrier-free experience for all passengers.