ABLEDATA Database of Assistive Technology

Ramps & Accessible Thresholds

ABLEDATA Fact Sheet Number 27 May 1997

Introduction

Ramps should be employed in addition to (rather than in place of) stairs since many ambulatory individuals find stairs easier to climb than walking on an incline.

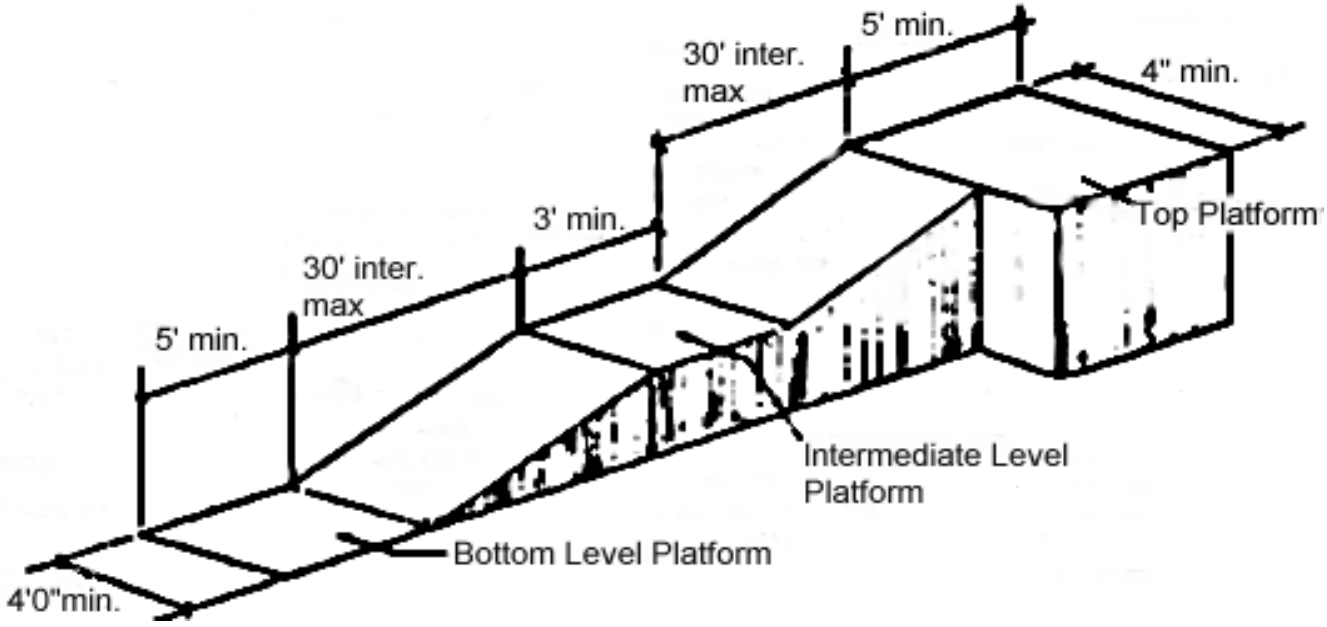
For most wheelchair and scooter users, just one step may as well be a mountain. This, and other access barriers involving ground level differences, can be eliminated with the use of one or more ramps. Ramps should be employed in addition to (rather than in place of) stairs since many ambulatory individuals find stairs easier to climb than walking on an incline.

Thresholds at doorways can also pose problems. They may increase the risk of tripping for pedestrians and, while not always an access barrier per se, can make for a very uncomfortable ride for wheelchair users. To make the threshold accessible without structural modifications, miniature ramps can be fitted to provide the appropriate slope for a more comfortable—and safer—transition through the doorway.

This Fact Sheet on Ramps and Accessible Thresholds[1] will cover all types of incline devices for traversing raised or lowered levels including portable and permanent ramps for vans, buses, curbs, single or multiple stairs, different building levels, and pools, and telescoping and folding tracks for manual wheelchairs and four-wheeled powered chairs or scooters. Mechanical, hydraulic, or electrically powered lifts and platforms for buildings and vehicles are discussed in separate fact sheets.

The types of ramps and thresholds discussed here are appropriate to both public and private facilities and residences. The passing of the Americans with Disabilities Act requires that modifications to or new construction of public access areas adhere to the standards and guidelines provided for in this law. Excerpts of these guidelines are highlighted in this publication, but property managers, contractors, and business owners affected by this legislation should consult the regulations in their entirety during planning and construction of ramps, thresholds and other accessibility modifications.

[1] This Fact Sheet replaces ABLEDATA Fact Sheet #6, first released in 1990 and discontinued in December 1994 due to new information and standards concerning this topic.



SAFETY & STANDARDS

Ramps

Ramps and accessible thresholds can alleviate architectural barriers for persons with mobility disabilities, but if not installed or designed properly they can also be a safety hazard. The Americans with Disabilities Act Accessibility Guidelines (ADAAG) of the U.S. Architectural and Transportation Barriers Compliance Board (ATBCB) require public facilities and grounds to comply with design, construction, and installation standards. These guidelines echo most of the American National Standards Institute (ANSI) standards regarding ramps, found in regulation A117.1. Although not binding to private residences, both sets of standards should nonetheless be taken into consideration when purchasing or building a ramp to accommodate a loved one or guest at your home. Safety hazards include too steep an incline, an uneven platform which may cause tipping of a wheelchair, unsupported planks which may buckle under a user's weight, and unanchored planks, platforms or tracks which may "fall off" the step.

By ATBCB definition (ADAAG 4.8), ramps are "any part of an accessible route with a slope greater than 1:20...," and applies to curb ramps as well as alternatives to steps.

> **4.8.2 Slope and Rise**. *The least possible slope shall be used for any ramp. The maximum slope of a ramp in new construction shall be 1:12 [one inch of rise to 12 inches in slope]. The maximum rise for any run shall be 30 inches (760 millimeters).*

"The least possible slope shall be used for any ramp. The maximum slope of a ramp in new construction shall be 1:12 [one inch of rise to 12 inches in slope]."

In other words, to build or purchase a ramp for a single step four inches high, the ramp would have to be four feet long to provide an accessible slope which complies with ADA guidelines. For levels higher than 30 inches, a minimum of two ramps would have to be used. This might be accomplished by two successive ramps with a landing (surface area with no slope) in between or by zigzagging the two ramps in a switch-back design if sufficient space is not provided for two in-line ramps.

For private residences, space restrictions may not allow for ramps to be built to comply with ADAAG standards (although whenever possible this is recommended). Construction or placement of a ramp in these situations should take into account a manual wheelchair user's upper body strength to push up a steeper incline, the stress on the motor of a scooter or power wheelchair of such an incline, and the tipping potential posed by descending a steeper ramp.

Another consideration for a safe ramp is its width. According to ADAAG regulation 4.8.3, the clear width (the entire width of the ramp unobstructed by handrails or other implements) is to be 36 inches (915 millimeters, or mm). Some power wheelchairs and extra wide wheelchairs may be accommodated by this width, but would more easily be accommodated with a wider ramp. Similarly, the landings in between ramps need to be wide enough for the turning capabilities of the chair and the expertise of the user as well as the turning radius of scooters. For public facilities which may encounter heavy wheelchair traffic, widths of up to 6 feet to accommodate two wheelchairs or one wheelchair and a companion may be desirable.

"Detectable warning surfaces and/or color contrasts between the ramp and level surface are recommended to indicate the impending incline or decline of a ramp to persons with low vision or blindness."

> **4.8.4 Landings.** *Ramps shall have level landings at bottom and top of each ramp and each ramp run. Landings shall have the following features:*
>
> *(1) The landing shall be at least as wide as the ramp run leading to it.*
>
> *(2) The landing length shall be a minimum of 60 inches (1525 mm) clear.*
>
> *(3) If ramps change direction at landings, the minimum landing size shall be 60 inches by 60 inches*

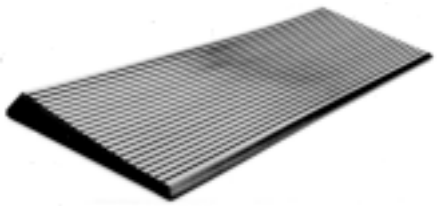
(1525 mm by 1525 mm).

(4) If a doorway is located at a landing, then the area in front of the doorway shall comply with 4.13.6.

"Three-quarters of an inch is the maximum threshold height for exterior sliding doors or half an inch for other types of doors without modification. Beveled edges with a slope no greater than 1:2 are required for thresholds above these specifications..."

In compliance with regulation 4.5 on ground and floor surfaces (which applies to ramps and curb ramps in public areas) ramps must be "...stable, firm, and slip-resistant..." Facilities considering any carpeted areas on landings should see regulation 4.5.3 concerning the pile thicknesses allowed and fastening considerations. Unless particularly firm with a short pile, carpet makes operating a wheelchair more difficult than an uncarpeted surface. This includes more energy output for manual wheelchair users and greater stress on the batteries and machinery of power wheelchairs or scooters. Detectable warning surfaces and/or color contrasts between the ramp and level surface are recommended to indicate the impending incline or decline of a ramp to persons with low vision or blindness.

Avoidance of water accumulation on both the approach to and the surface of outdoor ramps and landings should be considered during planning of accessible routes. Also, conditions of the ramps and landings during the winter must also be considered, where applicable. Canopies may be built over these areas, or heating coils can be integrated into the surface materials to melt ice and snow.



ACCESS-ories RAMPS makes this ramp to bring thresholds into ADA compliance.

4.8.5 Handrails. *If a ramp run has a rise greater than 6 inches (150 mm) or a horizontal projection greater than 72 inches (1830 mm), then it shall have handrails on both sides. Handrails are not required on curb ramps or adjacent to seating in assembly areas. […]*

The use of handrails should be taken into consideration for private homes especially when ramps are built for ambulatory persons who need extra assistance with balance.

Thresholds

Thresholds at doorways are also addressed in the ADA Accessibility Guidelines. According to section 4.13.8, three-quarters of an inch (19 mm) is the maximum threshold height for exterior sliding doors or half an inch (13 mm) for other types of doors without modification. Beveled edges with a slope no greater than 1:2 are required for thresholds above these specifications, for raised thresholds, and for changes in floor levels in public areas.

Transportation Ramps and Thresholds

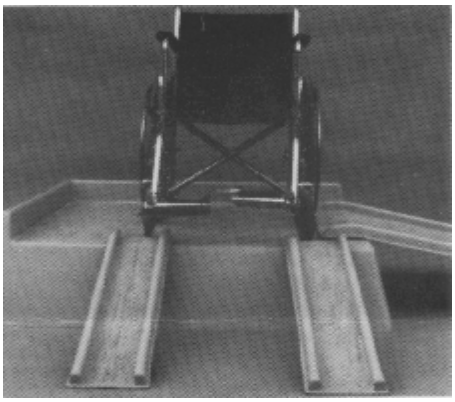
Thresholds in vehicles and boarding edges of ramps must be of a contrasting color the full width of the ramp or threshold. This contrast must either be a lighter color on a darker background, or vice versa. Mobility aid accessibility for public transportation vehicles (including light, commuter, and intercity rail service, and busses) are specifically addressed in the ADAAG regulations (36 CFR Part 1192).

Types of Ramps

Portable Ramps

The term *portable* is subjective; what one individual is able to carry or transport, another may not be able to pick up or move. The term is used here to indicate *movable* ramps of modular, telescoping or folding design intended for use with multiple entrance ways or access areas. Ramp weights for products designed to be movable vary from 90 pounds to only 8 pounds per track. Noting the total ramp weight, availability of integral handles, carrying cases and other transport features is an important part of selecting a "portable" ramp. Another consideration when selecting a ramp is how often the ramp will be moved. Many portable ramps are used for semipermanent applications.

Portable ramps offer many advantages over permanent ramps, not the least of which is lower cost. They provide individuals the opportunity to take a ramp with them



These Channel Porta-Ramps are lightweight and easily stored.

wherever they go, and facilities the ability to move ramps to different locations as they are needed. Different styles of portable ramps are available for use with vehicles, curbs, stairs, and other areas. Depending on their intended use, handrails are available. An important feature to look for in a portable ramp, especially if there are no handrails, is side wheel guards to assure the chair does not go off the ramp.

Portable ramps come in a variety of materials including steel, aluminum, and fiberglass. When choosing a portable ramp, the material should be appropriate for the weight of the intended user. Families looking to buy a portable ramp for their child, on the one hand, might choose a fiberglass ramp that is easily moved about the house. A public facility, on the other hand, needs to take into consideration that users of varying weights and chair types may be using the ramp and would therefore want to consider a reinforced or heavy duty steel ramp.

The design of some ramps includes the side supports between the ramp surface and the ground; others feature just the ramp surface and flanges. Still others involve telescoping or static tracks for use by traditional manual wheelchairs or four wheeled power chairs and scooters. Three-wheeled sport manual wheelchairs and scooters, however, will not be accommodated by the track design.

Modular Ramps

Ramp, curb, and deck systems with a modular design allow customized permanent or semipermanent placement. The units may include platforms, integral landings, self-contained leveling systems, supports, wheels, flanges, and handrails. The modules may be connected by bolts or clamps, or fitted together. Many manufacturers of modular ramps offer custom dimensions and will ship all of the parts with installation instructions.

Vehicle Ramps

Ramps designed to allow wheelchair access to busses, vans, and pickup trucks are also available in a variety of materials and forms. Some attach permanently to the interior of the vehicle and fold out for use either by mechanical, electrical, or manual operation. Others connect to the lip of a sliding van door when open. Consideration of the connection between the ramp and vehicle is important to ensure a stable platform and flush transition from ramp to the vehicle's interior. Attendant and wheelchair user operation/placement styles are available.

Emergency exit route access for commercial and scholastic busses can also be achieved with a ramp. The Evac/Ramp by ProMotion Inc. is designed specifically for evacuating individuals from a bus when the power lift is inoperable. This ramp has a folding design which quickly extends into a ramp or stairs for safe exits. The unit folds accordion-style for storage.

Funding Sources

Funding for residential and vehicle ramps may be available through medical or social services, income support or vocational assistance from any of a number of different resources, depending upon eligibility. Depending upon the terms of the policy, some medical insurance providers may cover a portion of the cost of a ramp with a doctor's prescription and justification of medical need. Additional funding sources include community agencies, community organizations, and churches.

Further information on resources and methods of funding assistive devices is available from the Assistive Technology Funding & Systems Change Project, a project of the National Institute on Disability and Rehabilitation Research (NIDRR) run by the United Cerebral Palsy Associations, Inc. Individuals requiring information and technical assistance on funding may call 800-827-0093 (voice) or 800-833-8272 (TTY) or fax 404-919-8305.

Conclusion

Ramps offer individuals with mobility disabilities access alternatives which allow them to independently enter and exit transportation, their homes, and public buildings. They also alleviate difficulties for family members, care givers, and attendants. When selecting a ramp—whether for a vehicle or for a building, or to eliminate a threshold—purchasers should be aware of whether they are to negotiate the ramp independently or with assistance. If the user is to use the ramp without assistance, it should be designed to accommodate the users abilities and eliminate tipping and other safety hazards. Those acquiring ramps for residences or vehicles for the first time are advised to consult with their physicians, therapists, or other rehabilitations professional for an evaluation to determine whether ramps are the best access option and what features are required.

The Quick-Deck modular platform system can be used to create accessible ramps.

For those seeking information on assistive technology and available features, the ABLEDATA database provides information about more than 23,500 products for people with disabilities. Included in the ABLEDATA database are descriptions of threshold ramps, building, and vehicle ramps currently available in the United States, as well as information about ramp manufacturers and local distributors. ABLEDATA can be reached by calling 800/227-0216 or 301/608-8998 (V) or 301-608-8912 (TTY). Information specialists are on hand to assist callers locate the information they need. For a small fee, ABLEDATA can provide patrons with computer printouts of information on specific ramps listed in the database. Costs are determined by the size of the database search requested.

ABLEDATA also has a series of Fact Sheets on a variety of assistive devices. Titles include *Manual Wheelchairs*, *Powered Wheelchairs, Wheelchairs for Children, Scooters,* and the *Informed Consumer Guide to Wheelchair Selection.* Contact the ABLEDATA office for a complete list of titles and prices.

Ramp Manufacturer Contact Information

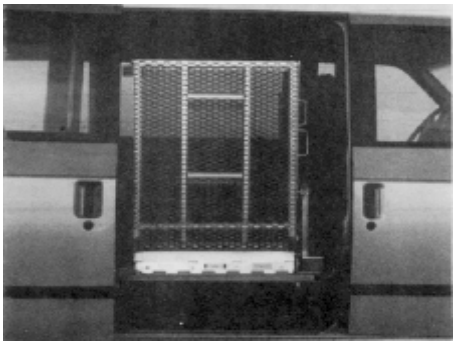
ACCESSories
426 Broadway, Suite 207
Chico, CA 95928
800-497-2003

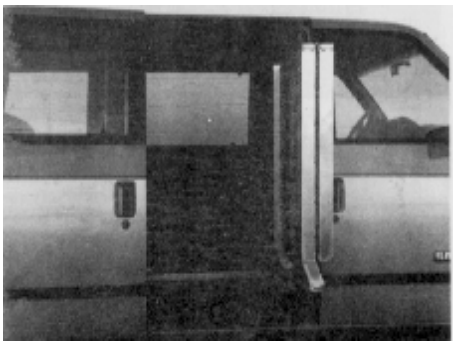
Advanced Mobility Inc.
12555 Sherman Way
North Hollywood, CA 91605
818-982-1004

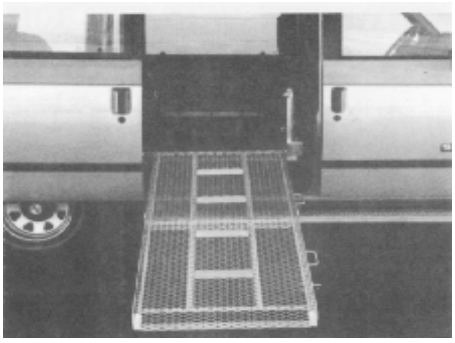
AlumiRamp Inc.
855 West Chicago Road
Quincy, MI 49082
517-639-877

Barrier Free Access Systems Inc
339 Wardlaw Ave.
Winnipeg, Manitoba R3L 0L5 Canada
204-475-9500

Braun Corporation
P.O. Box 310
1014 South Monticello
Winamac, IN 46996
800-843-5438 or 219-946-6135







The Vartanian Industries Inc. Swing-Out folding ramp provides wheel chair access to vans.

Crump Products Inc.
952 South 3rd Street
Louisville, KY 40203-2216
502-583-6046

Electric Mobility Corp.
#1 Mobility Plaza
Sewell, NJ 08080
800-662-4548 or 609-468-0270

Guardian Products Inc.
A Sunrise Medical Company
12800 Wentworth Street
Arleta, CA 91331-4522
800-255-5022 or 818-504-2820

Handi Ramp, Inc.
P.O. Box 745
1414 Armour Blvd.
Mundelein, IL 60060-0745
800-876-7267 or 708-816-7525

Homecare Products Inc.
15824 S.E. 296th Street
Kent, WA 98042
800-451-1903 or 206-631-4633

Indiana Ramps Inc.
P.O. Box 504
Goshen, IN 46526
219-534-2451

Infinite Access Corporation
P.O. Box 942
Mt. Vernon, IL 62864
618-244-7823

JH Industries
P.O. Box 31267
8901 East Pleasant Valley Road
Cleveland, OH 44131
216-524-7520

Kelco Building Products
P.O. Box 216
Scituate, MA 02066
617-545-9255

Mobile Tech Inc.
P.O. Box 2326
Hutchinson, KS 67504-2326
800-835-5007 or 316-663-4441

A Redd Team Manufacturing Inc. Universal Ramp Systems modular ramp in use at a school.

Murphys Products Corp.
P.O. Box 1826
Murphys, CA 95247
800-334-4896 or 209-728-2075

National Guard Products Inc.
P.O. Box 7853
540 North Parkway
Memphis, TN 38107
800-647-7874

National Medical Industries Inc.
P.O. Box 3268
1440 West Bannock St.
Boise, ID 83703
208-343-3639

Porta Ramps
Division of Young Enterprises
5592 East La Palma Avenue
Anaheim, CA 92807
800-654-7267 or 714-970-0683

Pre-Cast Reddi-Ramp, Inc.
P.O. Box 2288
Lenox, MA 01240
413-637-2644

ProMotion Inc.
8705 Unicorn Drive
Suite A-122
Knoxville, TN 37923
800-933-2557 or 615-690-6684

Quick Deck Inc.
P.O. Box 607
Livermore, CA 94550
415-449-8686

Ramp Systems
Box 352
Andover, NJ 07821
800-967-2671

Rampus Inc.
P.O. Box 37
Coldwater, MI 49036
800-876-9498

Reese Enterprises Inc.
P.O. Box 4059
Rosemount, MN 55068
800-334-8823 or 612-423-1126

Stanley Works
P.O. Box 1800
New Britain, CT 06050
800-232-3663 or 203-225-5111

Thor Weld Industries
137 Millwick Drive
Weston, Ontario M9L 1Y7 Canada
416-741-2501

Travel Ramp Inc.
P.O. Box 2015
Alachua, FL 32615
904-462-5267

Universal Ramp Systems
A Division of REDD Team Manufacturing
P.O. Box 658
6587 Hwy. 21 North
Keystone Heights, FL 32656
800-648-3696 or 904-473-7246

Van Duerr Industries Inc.
426 Broadway, Suite 207
Chico, CA 95928
800-497-2003 or 916-893-1596

Vartanian Industries Inc.
P.O. Box 636
Switzgable Drive
Broadheadsville, PA 18322
717-992-5700

Wheelchair Carrier Inc.
P.O. Box 79
726 Farnsworth Road
Waterville, OH 43566
800-541-3213 or 419-878-9438

Zero International Inc.
415 Concord Avenue
Bronx, NY 10455-4801
718-585-3230

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http://www.abledata.com.