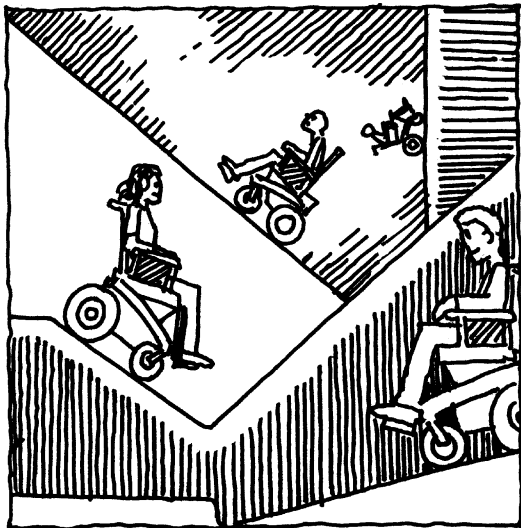


Section 3.5

Ramps



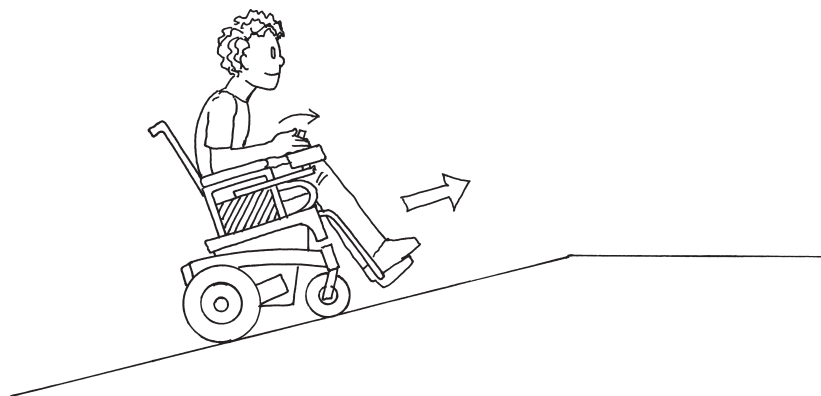
According to the Americans with Disabilities Act (ADA) Accessibility Guidelines, a standard ramp in the built environment should have a grade no steeper than 1:12. This means that for every inch of rise (change in height), there should be 12 inches of run (change in length). This is sometimes referred to as an 8 percent grade or slope. Using this formula, a ramp going to a door with two 8-inch steps should be at least 16 feet long.

A standard ramp is gradual enough for powered wheelchairs to climb safely, but the limit beyond that is different for each powered wheelchair.

With experimentation, you will learn how steep a ramp you can negotiate without assistance. Always use a spotter when practicing on ramps and when driving up a steeper ramp for the first time. Practice descending steep ramps with a spotter until you find one that is at the limit of your trunk stability. Experience the loss of stability, and remember the steepness of the slope that caused this to happen. When climbing steeper ramps you may reach a point where you will begin to tip to the rear or the wheelchair may just run out of power. Obtain assistance before going up or down slopes this steep, or steeper, in the future. Loading docks are good places to find steeper than normal ramps for practice on steep ramps.

Going Up a Ramp

- There will be a tendency for the wheelchair to tip backward when driving up a steep ramp. A backpack or other gear on the back of your wheelchair will cause you to tip backward more easily. If you use a reclining back wheelchair or a tilt-in-space seating system, you will find that having your back support in the fully upright position gives you the greatest stability when driving up a ramp.
- Drive slowly to maintain control.
- On steep ramps, it is best to keep a straight path. Approaching a steep ramp at an angle will increase the severity of the cross slope. Cross slopes are discussed later in this section.



Lean forward when you are going up a steep ramp facing forward.

How a spotter can help

- Walk behind the wheelchair and place your hands close to the push handles or back posts. Try not to influence the movement of the wheelchair.
- Prevent the front casters from lifting off the ground by lifting up or by pushing forward on the push handles or back support.
- If the wheelchair runs out of power, assist by pushing the wheelchair up the slope.

Going Down a Ramp

Before descending a ramp, always check for obstacles such as cracks and changes in level. Also examine the base of the ramp for obstacles you may need to cross, such as drainage grates.

Always shift your weight back when going down ramps, and proceed slowly to maintain control. As you get more comfortable and confident with ramps, you will be able to increase your speed and remain safe.

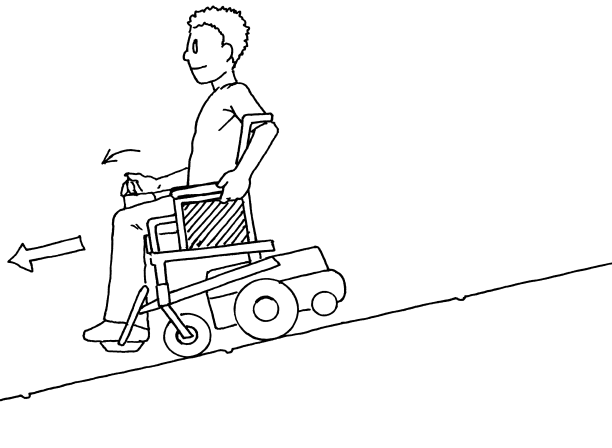
Be careful of foot support clearance when you get to the base of the ramp. Drive slowly in case your foot supports contact the ground. If they do, you will come to an abrupt stop.

Always practice descending ramps with a spotter. Travel down ramps of increasing steepness until you find the angle where you can no longer descend the ramp alone with confidence. Always obtain assistance when you do not feel comfortable descending a ramp independently.

Practice with a spotter on the non-joystick side of your wheelchair, ready to catch your upper body if you should fall forward.

Going down a ramp forward independently

- Examine the ramp for obstacles.
- Drive slowly to maintain control.
- The ramp may be so steep that you will lose forward balance. If this happens, compensate by shifting your weight back (see Section 2.3 for more information about shifting your weight).
- Putting the joystick in reverse can further slow the speed of some chairs. However, this technique is not recommended for wheelchairs with non-digital controllers on a continuous basis, as the braking action could permanently damage the controller or motors.
- Some ramps might be so steep that you will lose traction under the rear wheels and begin to slide. You will maintain more control by driving forward than you will sliding forward.



Hooking one arm around a push handle and leaning back into your back support may help you keep your balance when going down ramps.

How a spotter can help

- Walk on the non-joystick side of the wheelchair rider as the rider moves down the ramp.
- Be ready to catch the wheelchair rider's upper body if the rider falls forward.
- Stand behind the wheelchair rider and reach over the shoulder to provide additional trunk support.

Going down a ramp backward independently

Traveling down a steep ramp can cause you to lose trunk stability in the forward direction. When shifting your weight back during the descent or hooking your elbow on the push handle is not enough to maintain your balance, descend the ramp backward. You should also descend a ramp backward if you believe it is so steep that the foot supports will hit the ground at the bottom.

- Check the ramp for any obstacles.
- Move slowly to maintain control.

- It may be difficult to maintain the direction you want to go when you are driving backward down a ramp. Have a spotter or an assistant ready to help guide the wheelchair from the rear.
- If you are using anti-tippers, watch for clearance of the anti-tippers at the bottom of the ramp. If your anti-tippers get caught at the bottom of the ramp, you could tip over backwards.
- Letting go of the joystick should cause the wheelchair to dynamically brake and slow or stop.

How a spotter can help

- Walk on the non-joystick side of the wheelchair and hold on to the wheelchair frame to physically assist with guiding the wheelchair straight.
- If the ramp is steep, position yourself behind the wheelchair, hold the push handles, and walk backward down the ramp. Move with the wheelchair as it drives backward.

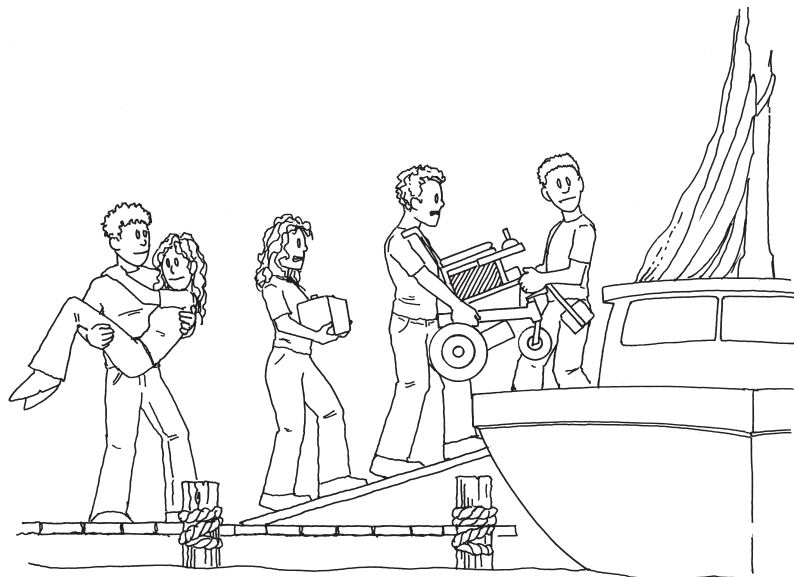


To slow the wheelchair, a spotter can walk behind the wheelchair with his or her hands on the push handles, leaning forward into the back support.

Very Steep Ramps

If the ramp is too steep for your wheelchair to ascend or descend, even with an assistant, find an alternate route or have two or three assistants help you by pushing and/or pulling.

- Attach pull straps to the wheelchair near the front casters to enable helpers to pull on the left and right sides of the wheelchair. Have the strongest assistant behind the wheelchair assist by pushing.
- You can assist by driving the wheelchair slowly to apply as much power as possible.
- When going down, applying a very small amount of reverse power will keep the parking brakes from engaging. You will also be able to assist with steering. If this does not work, disengage the drive motors and have your assistant(s) manually roll the chair down.



If the ramp is too steep or narrow, have your assistant transport you and your wheelchair separately.

How a spotter can help

- Walk behind the wheelchair rider as the rider moves up the ramp with your hands near the push handles. If necessary, push the wheelchair to keep the casters from lifting off the ground, and to provide extra power to ascend the ramp or to slow the descent.
- The second spotter should walk on the joystick side of the wheelchair rider as they move up or down the ramp. Be prepared to shut the wheelchair off if there are any difficulties.

Telescoping or Portable Ramps

Telescoping or portable ramps are made so that they can be moved and used in different locations. Sometimes the ramp is wide enough for the whole wheelchair to fit on it. Other times, two narrow ramps are used under the wheels on each side. If these narrow ramps are used, make sure they are wide enough for your wheels. Some wheelchairs are made so the casters are not in line with the main wheels. If this is the case with your wheelchair, you may have more difficulty using portable ramps because individually they may not be wide enough for both the front and rear wheels. Before using telescoping or portable ramps:

- Stretch the ramps out on a flat surface and be sure your wheels can safely drive through the full length of the ramps before attempting to use them on an incline.

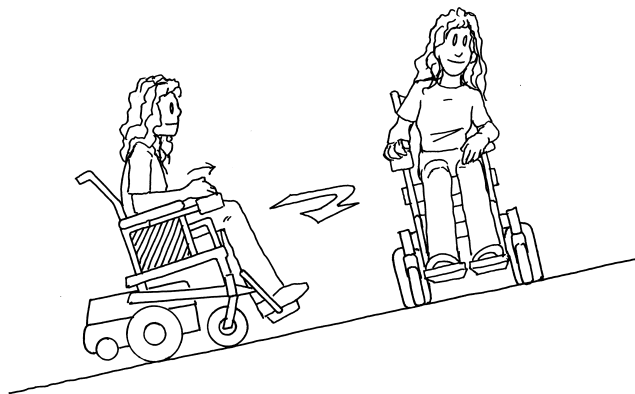
Turning Around on a Ramp

The safest way to turn around on a ramp is to continue traveling until you reach a level resting area or the end of the ramp. However, this is not always possible. For example, you might be driving on a road or trail that is a steep ramp. With a little practice, you will be able to turn around on a ramp safely. Lean and shift your weight in the uphill direction as you turn. This helps to move the center of mass uphill and will help to prevent your wheelchair from tipping.

How to turn around on a ramp

- Look behind you to check for oncoming traffic.
- If the path is clear, move to the non-joystick side of the ramp and stop.
- When you have come to a halt, turn your wheelchair in the direction of the joystick until you are sideways on the ramp. This allows you to maintain your upper body position with your joystick arm. You may find it easier to turn in the other direction if you have more ability to balance with the other arm.
- Keep your weight shifted uphill.
- Continue to turn your wheelchair using the joystick until you are facing downhill. Be sure to keep your weight shifted back.
- Drive your wheelchair forward down the ramp.

Note: It will be important for you to determine the steepest ramp on which you can ascend, descend, and turn around. Always have a spotter with you when determining the maximum limits of your wheelchair.



When you make a turn on a ramp, be careful that your wheelchair does not tip sideways.

How a spotter can help

- Stand downhill from the rider throughout the turn to keep the rider from falling forward out of the chair and to keep the chair from tipping.

Grade Transitions

Curb ramps are, unfortunately, often built up to or beyond the maximum slope allowance (8.3%), and at the bottom of the curb ramp the gutter slopes up in the opposite direction toward the center of the street. This creates a downslope-to-upslope transition where the foot supports can dig into the ramp or the gutter, bringing the wheelchair to an abrupt stop. This can cause you to be thrown forward in the chair or completely out of the chair if you do not use a lap belt.



Foot supports that are adjusted too low can get caught going through a curb ramp.



Anti-tip wheels can get caught where there is a lip at the base of the curb ramp and the ramp and gutter slopes create a rapidly changing grade.