

# Orientation and Mobility Strategies for Low Vision Wheelchair Users

Adapted from Materials by

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This information was originally presented in workshop format by James Scott Crawford, an O & M instructor whose work addresses the needs of people with visual impairment who use wheelchairs as their primary mode of transportation. Crawford's ideas are easily applied to students with deafblindness.

## **SIGHTED GUIDE Technique**

“Sighted guide technique” is a basic travel strategy in which a person with a visual impairment receives assistance from a sighted travel partner. The “sighted guide” takes responsibility for alerting the visually impaired person to drop-offs, doorways, ramped inclines and declines, etc. in order for both of them to move safely and comfortably through the environment. Effective sighted guide travel relies on the ability of a guide to give meaningful physical and verbal/signed information to the person they are guiding, and also on the ability of the blind person to correctly interpret and respond to those cues. These cues have been standardized so that no matter who serves as the sighted guide, the cues are the same. **Everyone who serves as a sighted guide for a DB student needs to know exactly what cues to give in which contexts.**

It is often difficult to imagine how a person who uses a wheelchair can use Sighted Guide technique, since we usually think of Sighted Guide as a strategy for ambulatory people.

**The first step in developing a cooperative Sighted Guide technique with a person who depends on a wheelchair for mobility is to determine how best to help.**

The most obvious application of sighted guide technique for wheelchair users with visual difficulties is for the sighted person to push the wheelchair. In many cases however, this is not the best answer. For many people who use wheelchairs, pushing themselves is a matter of independence, dignity and self-respect. Having another person push your wheelchair can be restrictive, and it alters the power dynamics between the two people involved. There are also some mechanical disadvantages to relying on a sighted guide to push a wheelchair. Some people use scooters or electric wheelchairs, and these cannot be effectively pushed by a guide. Many ultra-light wheelchairs do not have push handles on their frames, so pushing them for more than a few feet at a time is impractical.

### **Method ONE: The Sighted Guide Operates the Wheelchair with Input from the User**

Begin by turning the power/speed control to a low setting. This allows the sighted guide a safe period of time in which to become accustomed to the controls. Especially at first, don't operate the chair from in front. It is easier for the guide to position herself at the wheelchair user's side and face the same direction they are. The chair controls are very sensitive and standing to the person's side more closely replicates the experience of being in the usual driver's seat. *As much as possible, the sighted guide's body should be in positions similar to those used in ambulatory sighted guide travel.*

### **Method TWO: Sighted Guide Walks Next to the Wheelchair while the User Holds Onto the Guide's Arm**

Holding onto a guide's arm requires adequate arm strength and flexibility. This method works well only if the user can react quickly and efficiently to changes in the guide's pace and position. Instead of holding on at the elbow, it is easier for the wheelchair user to put their hand on top of the guide's forearm, which is held parallel to the floor. This allows the guide to point in the directions they want to turn. Especially for turns toward the wheelchair user, this facilitates smooth turns. For manual chairs, the forearm position allows the guide to help pull the chair, while the person is pushing the far side wheel with their other hand.

If the chair is unintentionally turning away from the guide, slow down so that the person can keep up with their free hand.

### **Method THREE: The Wheelchair User follows the Sighted Guide**

If the wheelchair user has sufficient vision and adequate reaction times, they can visually follow their guide. Make sure that they are observant of the guide's movements and able to use the guide's movement as a cue for their own.

By picking a particular spot on the guide's body to follow, like a belt or the transition from shirt to pants, many people can detect the drop or rise at stairs or ramps. The guide also has to remember that each movement they make is a cue for the wheelchair user, which means that guides cannot use stairs, or cut corners while traveling. Humans handle corners more sharply than the chairs. Wheelchair users need to remember to use their landmarks for making turns.

**Check Following Distance:** Have the person follow you as you walk down the hall. Randomly adjust your speed or stop suddenly. If they come close to running into you, they either need to reduce their power/speed control or follow at a greater distance.

## **TRAILING**

Many wheelchair users can trail walls in the same way as ambulatory people do. They can either use their hand or a cane. Caution: Hand trailing in a wheelchair does not allow for detection of front obstacles or drop-offs, so it's best to use hand trailing in very familiar environments.

### **HAND TRAILING WITH A POWER CHAIR/SCOOTER**

A patting method may be preferable to dragging. If sliding their hand along the wall, watch hand positioning very closely. With the power chair/scooter, jamming fingers can be more painful/severe due to the reaction time for stopping and the breaking distance of the chair. Also, people's arms are often in a less flexible position than they are when they are standing. If the joystick is on the side with the wall to be trailed, they may not be able to use their hand. They may need to use a cane or other method. Some people have used a folded or short cane to maintain contact with a wall.

### **HAND TRAILING WITH A MANUAL CHAIR**

1. The hand on the wall can be used to help with propulsion or to keep the chair pointed straight. **The outside hand propels the chair.** The arm near the wall is held forward as far as possible and exerts pressure on the wall to keep the feet from turning into the wall. If the person needs to, they can bend the elbow near the wall in time with the push of the outside hand, then re-extend the hand on the wall as they reach back for a new push with the outside hand.
2. If the arm is too weak to keep the chair from turning into the wall, they may have to use both hands to push the chair forward one push, then reach up to check. The person should not give more than 1 or 2 forwards pushes before checking the wall.
3. Some people have learned to use both hands to push the chair, but extend their elbow, pinky or side of the hand to contact the wall.

For those who can't use a cane or their hand to trail, some have successfully used CURB FEELERS from a car. When the wheelchair user maintains close proximity to the wall, the curb feelers indicate when the chair loses contact with the wall, but do not provide any information about how close to the wall they are.

ETA's like the Walkmate, Path sounder, Sonic Pathfinder or Sensory Six may also help with trailing. They have been successfully used to detect doorways, intersecting walls, open doors, and other obstacles.

## CANE TECHNIQUES

Constant contact is preferred to 2-point touch. A drop off of just 2 inches is enough to tip over a chair. Many people are unable to detect such small level changes. Also, constant contact will detect cracks that 2-point will jump over.

---If needed, use a blindfold or lower field occluder to practice reacting to cane contacts. Lay out obstacle courses or random low obstacles for the person to hit with their cane and see if they react in time to keep from rolling over the obstacles. If they don't learn to stop in time, the speed on the chair or the length of the cane may need to be adjusted.

----For people in manual chairs, if they can get a foot on the ground, it will help maintain the straight line of travel and free one hand up to use the cane. The line of travel will be straightest if the hand pushing the chair is on the side opposite of the foot being used to propel/guide the chair.

----Arc Width should be wider than the chair. Side drop offs are more dangerous than front drop offs. Make sure that the person is using a wide enough arc that they have time to detect the drop off and either stop or correct before the front wheel hits the drop off.

----Some people are unable to visually DETERMINE THE HEIGHT OF DROP OFFS. By locating the drop off with the cane, then pulling up to it, (just like finding the top of stairs) the cane can be raised until the tip clears the top of the drop off. This gives the person the height of the drop. By starting with the cane held as close to vertical as possible, then resting the cane against a solid object (handlebars, joystick box, lap desk, knee etc...) slide the hand holding the cane to the top of the solid object. Next, lift the hand and cane together until the tip clears the top of the drop off. The new distance between the hand and the top of the solid object is the height of the curb. The height that a chair can safely drive off of or climb over is determined by the make of the chair and the position of the wheelie bars. Safety is also affected by the person's ability to approach the drop off at a right angle. The two wheels (front or back) should drop/climb together. If they are not in sync, the chair could easily tip over.

----Teach all of the standard cane techniques.

--- A few quick tips on canes

1. For most people, the longer the cane the better. Adjust the length of cane to the person's speed.
2. Roller tips are often preferred. Try Jumbo rollers or Roller Ball tips (size of a pool cue ball) as well.
3. While most people like the compactness of telescoping canes, they tend to collapse while in motion. They have been successfully used indoors, but outdoors, they become a problem because the person has to stop every few feet to re-extend the cane.
4. Rigid canes are ideal, but they are hard to put away when not in use. One idea is to purchase a clip or clamp designed to hold reachers. The cane can be placed in the clamp when not in use. It will also help to identify the person as being visually impaired. Make sure the clamp will hold the cane tight so that it doesn't slip down and touch the ground. Also make sure that the clamp is positioned so that the person can reach it himself or herself. The cane sticking up may also help with visibility.
5. For power chairs/scooters, teach use of the cane in the non-dominant hand. The dominant hand is needed for driving.
6. Remove baskets, laptrays or other interfering attachments from the front of chairs. Many people like the baskets on the front of their chairs, but get one that is easily removable so that the cane can be used at night, in unfamiliar areas or as needed. People who choose to reach around their baskets tend to be less accurate with or responsive to their canes. Many lap desks have to be removed completely to get them out of the way. Lap trays that are hinged on one side can be moved out of the way when needed, then swung back when needed.

## CONTROLLING CHAIR POWER

---Most (I want to say all, but someone would prove me wrong) electric chairs and scooters have controls to Adjust the Speed at which the chairs move. Some have an adjustment for the sensitivity level of the joystick. For indoor travel, turning the power control to half speed is usually sufficient for maintaining control. Outdoors and especially at street crossings, they may want to turn the power back up to full speed.

----When the person lets off the “Gas pedal” there is a delay before the chair actually stops. Work with the person so that they know their own “Breaking Distance.”

-One method is to have the person drive down the hall at top speed, then yell stop. Measure the distance that the chair rolls after the “Gas Pedal” has been released. If this distance is greater than the distance at which the person can detect obstacles, drop offs, or hazards, then the speed is not safe and they need to keep their chair at a lower power/speed setting.

-A second way to check is to place something that the person can see on the floor at a random place in the hall. Have them drive down the hall at full speed and stop as soon as they see the obstacle. If the chair fails to stop before reaching the obstacle, their speed is too high. (SEE... SIGHTED GUIDE)

-A third method is to walk in front of the client with a cane pointed back to the client, but just out of reach. Randomly plant the cane on the floor so the person hit it with their cane. Without moving the instructor’s cane check to see if the person can stop before running into it. If they can’t, they are going too fast. The instructor should be ready to drop their cane just in case the person does not stop.

----For some people, the factory speed settings are too fast for them to control. At the dealer, they can adjust the power settings for various actions. In particular, Turning Speed may need to be adjusted. Often, the turning speed is preset at 75-80% of full power. Many students have needed to reduce their turning speed to 50% of full power. Reducing Turning Speed gives the person more control over their turns. If when turning, they frequently overturn, reducing the speed of the turns is in order.

## **MONITORING SAFETY**

---It is critical that the instructor has a means to stop a person’s progress. Yelling stop does not always work. Instructor positioning is distinctly different for wheelchairs and scooters.

----Wheelie bars are a very important part of safe chair operation. Many people remove them because they can get in the way when climbing/descending level changes. The wheelie bars are designed to keep the chair from tipping over backwards. They are also important in the technique described below for INSTRUCTOR CONTROLLED EMERGENCY STOPS.

### ***Wheelchairs***

**For most situations, safety can be effectively monitored from behind a wheelchair.**

#### **INSTRUCTOR CONTROLLED EMERGENCY STOPS.**

1. As the person approaches a hazard, step up directly behind the chair and lightly place both hands on the handles.
2. If they fail to detect/stop for the obstacle, grab both handles and pull back. The chair should pop a wheelie. If the instructor’s body falls back in a sitting type position, their body weight will help lift the front of the chair.

**Keep pulling back until the chair stops moving forward. It should rock back onto its wheelie bars. Once on the wheelie bars, the drive wheels should spin, but not continue the forward momentum. If the momentum continues, pull the handles farther back and down. This should lift the feet farther up**

**DON’T LET GO!**

**After the person stops trying to continue forward, begin pulling the chair back from the hazard. Do not lower the front wheels until you are certain that they are back on safe ground. You may have to tell the client to back up. If the client is using the chair controls to back up, the instructor must make sure that they move back as fast as the chair does so that the front wheels don’t drop until over safe ground.**

**This is a scary process. Practice the technique in a safe environment before assessing skills in other environments. Both the student and the instructor need to be prepared for when the technique is needed. The hardest part is backing up and keeping the front wheels up at the same time. (Some**

**light weight instructor's were not able to perform the technique when the student and chair outweighed the instructor by too large a margin.)**

### **INSTRUCTOR CONTROLLED CHANGE OF DIRECTION**

1. While following the chair, if the student begins to approach a hazard to the side, step up behind the chair and lightly grasp both handles.
2. If they don't detect/react to the hazard in time, tightly grab the handle in the direction of the desired turn, (side opposite of the hazard) stop walking and pull hard on the tightly grasped handle. The chair should turn in that direction. If it doesn't, perform the EMERGENCY STOP described above.
3. The process may need to be repeated more than once.
4. Practice this technique in a safe environment before assessing skills in other environments.
5. As an alternative, the instructor can walk beside the student on the same side as the joystick and when necessary, reach out and overpower the student's control the joystick
6. With manual chairs, a quick pull or push on the armrests can change the chair's direction.

### **Scooters**

-----With scooters, they can not be stopped or turned from the back. Movement is usually controlled by a two sided lever that can toggle forward or backward, allowing the driver to go forward or backward from the same side of the lever. Most people will drive with light pressure on the side that involves squeezing the lever to the handlebars to drive forward. Squeezing on the opposite side will initiate backward movement.

### **INSTRUCTOR CONTROLLED EMERGENCY STOPS.**

1. To stop the scooter, the instructor should be on the side that when squeezed initiates backward travel. (Not the same from chair to chair.)
2. If the student fails to detect a hazard ahead, the instructor can reach in and squeeze the lever to initiate backward movement.
3. The instructor should just squeeze long enough to stop the forward movement and make sure that the student will not reapply pressure to the opposite side.
4. If the instructor squeezes too long, the chair can go out of control backwards.
5. This is a scary process. Practice the technique in a safe environment before assessing skills in other environments. Both the student and the instructor need to be prepared for when the technique is needed.

### **INSTRUCTOR CONTROLLED CHANGE OF DIRECTION**

1. Direction changes can be initiated by physical manipulation of the handlebars.
2. The instructor can be on either side of the scooter. Always walking on the side of the hazard will often prompt the student to move away from the hazard without recognizing it. It is actually easier to change the scooters line of the travel by being on the side opposite of the hazard.
3. To change the direction of the scooter, reach up and push or pull the handlebar to initiate the change of direction.
4. Be prepared to repeat the process or make the opposite adjustment in case of over correction.
5. Some students become frightened or flustered when the handlebars are grabbed. Be ready for them to react by letting go, jerking the handlebars back or squeezing the acceleration handle tighter.
6. Be cautious of large turns or adjustments. Some chairs, especially three wheeled chairs, can tip over during sharp turns.

Also see... RAMPS AT BUILDINGS.

### **NEGOTIATING TIGHT CORNERS - FORWARDS**

**Often, new users or people who have recently switched from manual to electric wheelchairs have a problem with turning too sharply and clipping the corners of hallways and doors. Specific landmarks, on the chair or their body, can be established to determine where to turn. Often the head**

is a good landmark. “When your head is even with the near side of the opening, then turn.” The specific landmark that will work depends on the design of the chair and the distance from the wall. With the head example, the student often needs to be at least arm’s reach from the wall. If they have to be closer, they may need a different landmark.

-----Telling clients to pull all the way into the intersecting opening before initiating the turn can be helpful.

## **NEGOTIATING TIGHT CORNERS – BACKWARDS**

Often, people drive into a situation where there is no room to go forward and no room to turn around.

-----People who have no trouble negotiating turns forward can have a very difficult time doing the same thing backwards. In particular, people who have never driven a car seem to have more trouble with the concepts of making backward turns.

-----Again, landmarks on the chair or the person’s body can be very helpful with successfully negotiating a turn. For example, When the far edge of the opening is even with the joystick, a pivot turn away from the wall will line the chair up to back through the opening.

-----Some people don’t know which way they need to turn to go through the opening. If they look over their shoulder and the opening is to their left, they don’t understand which way to move their feet to aim for the opening. Most people who get confused benefit from suggestions to move their feet away from the opening until it is straight behind or until the opening is even on both sides of them.

## **DOORS**

For DOORS THAT OPEN OUT, or away from the client, they can usually pull straight into the doorway until the chair lightly touches the door, exerting light pressure on the door. After operating the handle/latch, the door can be pushed open with the front of the chair. If they have the ability, it is better to push the door open and hold it open with a hand, because the chair can scratch the paint on the door. The chair should travel as straight as possible through the doorway, until the entire chair is through. Frequently, people turn too soon and get caught on the doorjamb.

For DOORS THAT OPEN IN, or towards the client, the biggest problem is getting the feet out of the way of the door.

1. Pull up to the handle side of the door, without blocking the door.
2. Pull the door open and fling it as wide open as possible.
3. Turn the feet to face the door.
4. When the door then swings shut on the feet push the door open as far as possible, or until the door is perpendicular to the wall.
5. Turn the feet to face the doorway. Once the chair is facing the opening, the person should be able to drive through the open doorway.
6. In some cases, the client may need to back up to the side of the door in step 1.

---Several spastic quadriplegics did not have sufficient range of motion, arm strength or trunk strength to reach the doorknob without blocking the door. They also only had one arm strong enough to pull the door open. They would follow the following procedure.

1. Pull up to the door so that the knob can be reached with the strongest arm. The feet will be blocking the door from swinging all the way open.
2. Place a lasso (Eyeglass strap) over the joystick, placing the loose end in their weak hand.
3. Use the stronger arm to grab the doorknob and pull the door open slightly.
4. Pull with the lasso, pulling the joystick, until the feet have turned out of the way of the door.
5. Fling the door open as far as possible
6. Turn the feet to face the door, allowing the door to swing back and hit the footrests. If necessary, push the door open again to untangle it from the footrests.

7. Use the footrest to push the door open as far as possible. Try to stay as close to the end of the door as possible (away from the hinges.)
8. Turn the chair to face the doorway.
9. Drive in, stopping to push the door if necessary to keep it from catching on the arm or shoulder.
10. The Lasso was made by threading one end of an eyeglass strap through the loop on the other end.

----Seatbelts, safety harnesses, laptrays, posture aides, wind conditions, weight of doors, spring tension settings, time of day, and many other things can have an effect on whether a person will be able to open a door or not. Some students who could not initially open heavy spring loaded doors, developed the ability to complete the task with practice.

**---Backing through doorways can be important when the room being backed into is too small to turn around in or can't be backed out of. Good examples include elevators, train doors, small offices, etc. SEE... NEGOTIATING TIGHT CORNERS – BACKWARDS**

## **SIDEWALK TRAVEL**

1. Stay to the inside shoreline. It is often flatter than the outside shoreline. The edges of driveways often have severe slopes, steep enough to tip a chair.
2. Watch out for lateral slopes. Some chairs will swing out of control on steep side slopes. Some people lose control because they become frightened. Some scooters will tip if the slope is steep enough.
3. People, who auditorially or visually trail walls indoors, will have a very difficult time without those walls to follow.
4. Some people may need to reduce their travelling speed. Often, the person doesn't realize the potential dangers outdoors that were not present familiar indoor environments.
5. Watch for large cracks, especially near large trees.
6. Match the pace of the other pedestrians. Weaving in and out of people can lead to accidents.
7. Don't forget to look up for overhangs. (One student tried to drive under the tines of a fork lift which were pointing perpendicularly across the sidewalk. He was looking down and never saw them. They were at his chin level.)
8. Be careful of driving off the side of the sidewalk into the grass. In most cases it is OK, but in some, there is a severe level change, which can tip the chair.
9. Slow down as driveways and intersections are approached.
10. Recheck the cane skills to see if changes need to be made. For a wide variety of reasons, the person's cane skills can deteriorate in the transition from indoor to outdoor.
11. Due to hills, cracks, and distances to be traveled, some people who use manual chairs indoors will need to switch to power chairs outdoors. (Many PT's will fight this change. They think in terms of getting from the house to the car, not from the house half a mile to the bus stop. Inviting them on a lesson or allowing them to watch a full-length video of the student on the route can help them change their mind.)

## **RAMPS AT BUILDINGS**

----For Manual Wheelchairs, ramps into buildings are often too steep for the person to pull independently, just using the wheels. In this case, the person can solicit assistance or if rails are available, use them to help pull up the ramp. There is a specific sequence that is suggested for the hand motions while using the ramp, (Going up or Down)

- A. UP, 1) With one hand on the rail, and the other on the wheel, at the same time, the hand on the rail should pull, while the hand on the wheel should push forward. Try to remain straight in

the process. Often, one hand or the other will move a greater distance. If not straight, adjust the down hill hand, and try again with just that hand. 2) Release with the hand on the rail and quickly reach forward to a new grasp. 3) Release with the wheel hand and quickly establish a new grasp. 4) Start over or reconsider seeking assistance. NEVER EVER LET GO WITH BOTH HANDS AT ONCE.

- B. Down. Basically, going down is the same thing. 1) Allow the chair to drop with both hands at the same time. 2) Quickly readjust the grip on the rail side. 3) Quickly readjust the grasp on the wheel. I repeat, NEVER LEVER LET GO WITH BOTH HANDS AT ONCE.
- C. "Hill Climbers" - An accessory called "Hill Climbers" allow the wheels to roll forward, but not backwards. "Hill Climbers" are essentially uni-directional breaks. They are attached above the wheel. When the lever is pushed back, the "Hill Climber" doesn't touch the tire. When the lever is pushed forward, a ridged half circle glides over the forward moving tire. When the tire moves backwards, the ridges grip and the "Hill Climber" rolls down to apply pressure, breaking the regress of the tire. The client has to be able to flip the "Hill Climber" on or off. If they are left on, the person cannot back up from a desk, obstacle, or make a backwards pivot turn.

## **RAMPS AT STREET CORNERS**

-----Ramps vary greatly from one to the next.

**----Often people can see that the end of the sidewalk is approaching, but not specifically where the wheelchair ramp begins and ends.**

-----The cane can be used to locate the center of the ramp. By reaching to both sides of the ramp with the cane, the person should be able to detect where the curb begins to either side. Then, the center of the ramp should be the midpoint between the two curbs. Some people can swing their cane back and forth across the ramp and detect the two sides that way. Others need to reach out with their cane as far as they can, then draw it ALL the way back to the chair to determine if there is a drop off in that direction. Using the clock face, they should reach out at 10, 11, 12, 1, and 2 O'clock to search the drop off. Once they think that they have found the ramp, they should face the ramp and repeat the process. When they repeat the process, they often find that the center is not where they initially thought it was.

-----Soliciting assistance with locating ramps. When a volunteer arrives, ask them to stand at the center of the top of the ramp and then walk to the bottom of the ramp. The person can then follow the volunteer's path down the ramp. The person may need the volunteer to wait at the top while they line up behind them.

## **STREET CROSSINGS**

### ***With Ramps***

1. Ramps can either face straight across the street, point diagonally across the intersection or take up the entire corner.
2. Don't wait at the top of the ramp to initiate the street crossing. Negotiate the ramp first, and then stop to wait when the front wheels reach the bottom. Negotiating ramps can be time consuming, and take away from time needed to complete the street crossings.
3. Make sure the chairs power is turned as high as the person can safely manage.
4. If the person can see the far side of the intersection, they can wait in the ramp, parallel to the slope. If they can not see the far side, they need to align to traffic while sitting at the bottom of the ramp. This may mean pulling onto the side of the road to turn and face the perpendicular street. Stay near the point of the corner. This keeps the person out of the path of the straight travelling traffic. Traffic turning right may have to go around the chair.
5. Watch out for V Shaped Ramps. Some times, the slope of the road and the slope of the ramp combine to create a situation where the front wheels and the wheelie bars both hit ground and the drive wheels are suspended. Sometimes, these can be navigated by turning slightly at the bottom of the ramp. In unfamiliar areas, the cane can be used to check the slopes to determine if it will be a problem.

6. If the student might have trouble crossing the street in adequate time, crossing on the left side of the street may allow the perpendicular traffic on the last half of the crossing a better view of the student trying to finish the crossing.
7. On streets with steep cambers, the chair may not be able to pull the hill quickly enough. The student can turn slightly away from the parallel street to see if the chair will pull better across the hill. If it does, they can turn back toward the parallel traffic and zig-zag up the hill. Sometimes this is only needed to get started and the first zig will be adequate to get the chair moving. The person must be able to reestablish their line of travel after the turns.

### ***Without ramps or sidewalkless***

----If the intersection doesn't have ramps, the person can go down the quieter of the two streets and locate the nearest driveway. They can access the street from the driveway and handle the intersection as if it didn't have sidewalks.

In areas with an adequate shoulder, the people who can not see the far side of the intersection should drive around the corner onto the perpendicular street and when the edge straightens out, put their back to the edge, indenting just like people without chairs.

**If the person can see the far side of the intersection, or there is not an adequate shoreline, the person should wait at the point of the corner, the person who can not see the far side needs to align with the traffic. The person who can see the far side may want to keep their chair parallel to the curb, taking up as little space as possible.**

### ***Other suggestions***

1. If the street has a severe slope and the crossing is initiated uphill, turning away from the parallel street may help the chair pick up speed faster. The person may have to zig zag to the top of the hill.
2. At busy lights, cross on the left side of the road. This will increase visibility by being as far as possible from the waiting cars in the last lanes to be crossed.
3. If caught in the middle of the crossing, turn right and straddle the yellow line. This leaves you facing the traffic in the lanes remaining to be crossed.
4. Timing methods for determining safety in street crossings can be very important.

## **LIFTS**

Most professionals have suggested that lifts should always be ridden with the person's back to the van or bus. This means backing on to the lift as it sits on the ground. This allows the person to then pull straight onto the lift as it is in the air without turning around in the vehicle. It also puts the smaller front wheels toward the small guard which is to keep the chair from sliding off the lift. If the bigger wheels are toward that edge, they might roll over the guard or allow the chair to tip over backwards, tossing the person off the lift.

### ***Technique for backing on a lift***

1. Drive across in front of the lift until the joystick (exact landmark needs to be determined for each person/chair) is even with the far edge of the lift.
2. Execute a pivot turn to put the person's back to the vehicle.
3. Back straight onto the lift until the front wheels are felt climbing the lift or until the front edge can be seen (some lifts have handrails that can be used as landmarks to stop.)
4. Stop and apply breaks.
5. If the chair doesn't back straight on, look to see which side of the lift has the most space
6. Pull forwards a few inches.
7. Turn the feet away from the side that had the most space.
8. Back up again.
9. Repeat until on the lift.

- Some people may have seat lifts, which the person transfers to, then is lifted to a car/van/truck seat, leaving the wheelchair out on the ground. Someone else then has to store the wheelchair.

## PARKING LOTS

**Drive down the center of the parking rows, if a car approaches from either side, then move over. It is very hard for a driver backing out of a space to see the chair. Being in the middle of the lane gives the driver a better chance to see the chair.**

----Most chairs do not have enough clearance to go over speed bumps. Drive to either end of the speed bump and look for the space left for rainwater to run through.

## **ACCESSORIES WORTH LOOKING INTO:**

### ***Hill Climbers – See RAMPS and HILLS***

**Emergency Poncho.** Often less than a dollar from Wal-Mart, K-mart or the Dollar Store. It folds up into a pocket sized Ziplock bag and can be put into a pouch that is always with the chair.

**Backpacks** are specially designed for chairs. While more expensive than standard ones, they are made without loose straps to get caught in the wheels. Make sure no valuables are inside, because it is easy to sneak up from behind and steal the contents.

**Under seat pouches** attach to the frame of the chair and must be accessed from between the person's legs. These are wonderful, even if the people can't access the pack themselves. Then at least, the person knows when someone grabs his or her keys or billfold.

**Fanny packs** can be easier to access than under seat pouches, especially for things that are needed frequently. Some people find them uncomfortable.

**Lap Boards.** Some lapboards are permanently attached to the chair and can be flipped out of the way. Others clip on and off. Both can be helpful, but the permanent ones can get in the way during travel and some clients can't put on/off the temporary ones. Which is best depends on the person's needs.

**Footrests** come in a million shapes and sizes. There are advantages and disadvantages to each. Basically they can be divided into one piece or separate. The one-piece footrests tend to do better with pushing open doors and are often better padded which saves on the paint on the doors and walls. The separate ones are often better for positioning the feet and can be removed individually if one leg can help propel the chair.

**Umbrella's.** Almost every client has asked about clip on umbrellas. They may work for the sun or very light rain, but do not do well in the wind or rain that is coming in at a slant. At speed, they can collapse or over extend. They also get in the way in tight spaces.

**Bicycle flags** can be used to improve visibility, but every client who has had one eventually took it off. They tended to get in the way more than they helped.

**Prism glasses.** Some people whose heads tended to droop were given glasses with prisms to make it easier to see people without lifting their heads. They helped in safe familiar environments, but they also displaced the position of drop offs and low obstacles making them seem farther away than they really were. One solution was to have separate "driving" glasses without the prisms for travelling.