

How to Measure a Stair Lift with EPhoto

When taking photos for an ETemplate Stairlift project you must bear in mind what it is you are trying to do and what the system needs to calculate accurate results.

The chair lift and rails can not be installed or function in an obstructed area. The area from the point on the front of the tread that is plumb with the furthest inside position of the hand rail to the opposite front corner of the tread is where the measurement is needed.



Do not use any tape or other adhesive backed materials on the markers as it may damage or remove the printed target.

General Information

If there are hand rails on both sides of the stairs you must place your markers inside both plumb positions right and left. The locations of the stair risers are not important as they are obstructed by the tread overhang. You need to identify the incline and breathe of the stairs that will accommodate installation and operation of the lift. All upper and lower landing areas must be clearly marked and photographed in order to define available area for installation and operation of equipment for boarding and exiting the chair.

Triangulation of light rays is the basis of the project processing. The camera collects the input in the form of photos taken from different perspectives of the target makers. The greater the angle between camera positions with the target as the vertex, the more accurate the measurement. Angle of triangulation on the steps is a simple matter of shooting photos down the stairs and up the stairs and will be covered in the procedures that follow.

Most landing areas will not be that complex if the lift system only runs a short distance for loading and un-loading the chair lift passenger. Only those with long runs at the top or bottom landing will require multi-sectional photos. All landing photo sets should contain at least one photo of the top few steps and landing targets in the same photo (see landing photos from page 11).

The **landing** areas will require the taking of photos from as far left and right as possible and at a height at which at least 15 coded targets are clearly visible. That is such that the center dots and ring code of all the targets are clearly discernable. The system will scan each photo during processing and identify the coded markers it can clearly see. Those that are not clear will be ignored. Try to include within the frame of your photo only pertinent subject matter. You have no need of blank walls or floors in the photo; they contain no calculatable information for processing. That first photo determines your first section of the project. Shoot additional photos of the same area of markers from the extreme left, right and center, again with the markers clearly visible. Don't forget that you can move up and down on a step stool or ladder to help get photos from extreme angles from each other while shooting each section. Move on to the next section overlapping several markers from the first section in the process. Repeat the left, center, right, up, down camera positions to create maximum angles in that second section. Before moving on and repeating the process for the third and any subsequent sections necessary to photograph the entire landing. Take a photo from a few feet further away that overlaps the first and second sections. This shot, repeated between each section, along with the 5 or 6 target overlap you have in common to both sections, will give the math the ability to put the entire project area in the proper perspective and create the fully oriented design file of all the coded markers.

Make sure your camera is set on the proper setting as specified on page 14. Do not change the settings you should just check the dial position on the top of the camera (set to “C”) and turn it on. **Do not use the zoom.** The camera will auto focus every time you take a photo. To accommodate this, press the shutter button down slightly until you see green bracket(s) or box(es); then hold, stay steady and press the button the rest of the way. Mashing the button in one motion usually results in blurry, out of focus or double image photos.

If you can't **see at least 15 coded targets** (there are two coded targets on each vinyl marker) clearly and distinctly in your camera's viewer, don't take the photo. The math will work so much more effectively with the proper point count that it is just not worth the trouble of trying to process projects with low point count and sometimes it is not possible to process. Use multiple landing markers to increase the numbers of targets in an area or to bridge gaps in marker placement. Always know what you are taking a photo of and why; don't take a series of random shots and hope you got it right. Triangulation at big angles, common points from one photo or section to another and enough points in each photo are necessary. Pay attention to what you are doing and collect the right input in order to make things easy, efficient and accurate.

Remember:

Make sure camera dial (on top) is set to “C”

Do Not use the zoom on the camera and check the settings.

Do have at least 15 coded targets in every photo and get overlap of common markers and stair markers as you move through out the landings.

Do not take numerous random photos or repetitive photos from practically the same position and hope you got the right input.

Do take landing photos from the extreme left, right, and the center of each section with variations of height to create angles for more accurate processing results.

Do not kick or otherwise move or try to relocate markers that have moved during the taking of photos. If a target has moved, put it back and start over.

Do take overlapping photos of landing and stair targets.

Do not use any tape or other adhesive backed materials on the markers as it may damage or remove the printed target.

Your Kit Contains:

Case

Base Plane level plate (three coded targets)

Zero Point marker (single coded target)

Plumb line

Camera with case and battery charger

80 – Step R markers (two coded targets on each)

80 – Step L markers (two coded targets on each)

100 – Landing markers (two coded targets on each)

Remember:

Do not use any tape or other adhesive backed materials on the markers as it may damage or remove the printed target.



Job Site Procedures:

Keep your markers organized numerically and follow these steps, so your work flow and that of the ETemplate processing staff will be much easier. All pointed markers will process the measurement point at the pointed end of the marker.

Take a photo of your work order form to identify the subject of the photos you are about to photograph.

Marking the Job:

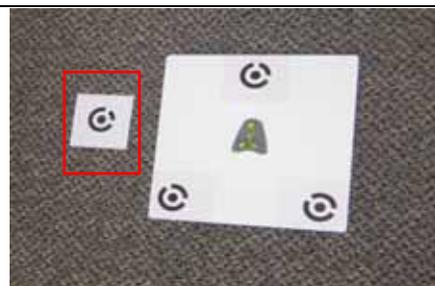
Start at the lower landing:

- 1- Position the base plan level plate** on the bean bag with the plate edge that contains the single coded target parallel to the bottom step riser at a distance of 12". **Level the plate** using the two bubble levels in the center of the plate.

Critical: For accurate measurements
- The plate must be as level as possible using both vials



- 2- Place the zero point single coded target** on the floor next to the plate. Be careful not to place it so close to the plate or under the tread lip so that it may be partially blocked from view when taking the photos.



3- Place at least two Landing markers to position their pointed ends at either end of the landing area wall where the lift will be installed. You need only go along the wall to the point at which the installation will terminate. You must mark with multiple markers any curves or turns the railing makes till reaching the termination point. If any structure or permanent objects are close to the sweep of where the chair is intended to operate, place at least two markers at those positions, three or more if the object is curved. If the markers required for all of the above and spaced too far apart to comfortably photograph 15 targets at a time, add additional Landing markers to the area to build up point count.



4- For the free standing hand rail side of the stairs, position markers to indicate the plumb position of the railing. (use of plumb bob is shown)



Begin at first step:

5- The step markers are in pairs, step **1L**(eft) and step **1R**(ight) and so forth. There are enough for 80 stair tread front edges. On stair treads that are not rectangular, such as in the tight curves of circular stairways, use Landing markers to indicate the intersections of extra sides. Place the 1L marker to indicate the front left extremity of the tread and the 1R marker the front right extremity. Align the slanted side of the marker to the front edge of the step as the point indicates the tread extremity. Remember the extremity may not be the actual full width of the tread, but only that area within the plumb lines of handrails or other obstructions.



6- Continue up the steps and intermediate landings placing the L and R markers on the front tread edge of each appropriately numbered step. Use Landing markers to indicate opposite walls and obstructions that could interfere with chair lift operations. Landing markers should also be used on any intermediate landing as necessary to build point count to 15 targets per photo.



<p>7- At the top landing repeat the process of marking the area as for the bottom landing, except that there are no additional zero points or base plane level plates involved</p>	
<p>8- Align the long edge of a Landing marker along any bulkhead or possible upper obstructions to a lift passenger's head.</p>	
<p><u>Taking Photos</u></p> <p>Begin at Upper Landing:</p>	
<p>1- After placing all the necessary markers begin taking photos at the upper landing. Remember look for 15 or more clearly visible targets to be in each photo. Take photos of the landing from extreme left and right positions and from the middle. Vary the height where you are standing by using a small ladder or step stool or take some photos holding the camera extended above your head. Cover all the targets on the landing in at least two photo and get overlap of targets on larger landing areas. Take photos that include both landing and step markers.</p>	
<p>2- If available take a few photos over the upper rail to steps and landings below including any bulkhead targets in the picture if possible.</p>	
<p>3- Standing on the landing looking down the steps and holding the camera pointing flat down, take a photo that includes markers at your feet and as many full steps as clearly visible. Angling the camera to shoot down the stairs may include too many partial targets blocked by tread overhangs.</p>	
<p>4- Go down 3 steps and turn facing up the stairs and take a photo holding the camera high. This shot should get steps and landing targets in the photo. On the same step, turn facing down and take a photo, again with the camera flat including markers at your feet and as many full steps as clearly visible in the photo.</p>	
<p>5- Repeat the 3 step shooting up then down process until you reach the bottom. Along the way, if you have a clear shot of the bulkhead targets that would include a good number of other targets, take photos.</p>	

6- At intermediate landing repeat the upper landing procedure. At the bottom again repeat the landing procedure to get all markers in multiple photos at angles with overlap.

7- Take a final non-measurement close-up photo of the bubble levels to verify they remained level throughout the project.

Clean-up and Repacking:

Proceed up the steps picking up in order the L and R markers. As you go pick-up the landing markers keeping them separate. After retrieving all step, intermediate landing, bulkhead and upper landing markers, collect those at the bottom, including the zero point, and level plate. Repack all markers to the case in the proper place and order. When necessary clean markers with a damp cloth and dry before repacking.

Downloading Photos

Either download the photos using the provide cable or pop the SD card out and insert into your PC's card slot. **Do not use any camera or download wizards.** Simply locate the camera or removable drive under my computer in your windows browser, then copy and paste or drag and drop the .JPEG files to a project folder you have created.

Emailing the Photos

Right click on your project folder containing the photo files. Select the "send to" option from the list, then the "compressed (zipped) folder" option. Attached the zipped file to your email to:

Do not forget to include all order forms with your photos!

Sample Sequence of Stair Photos



1 LANDING – FROM SIDE



2 LANDING



3 LANDING SHOOT DOWN



4 SHOOT DOWN FROM TOP STEP



**5 GO 3 STEPS DOWN – TURN,
SHOOT UP**



6 TURN AROUND, SHOOT DOWN



**7 GO 3 STEPS DOWN –
TURN, SHOOT UP**



**8 TURN AROUND,
SHOOT DOWN**



**9 GO 3 STEPS DOWN –
TURN, SHOOT UP**



**10 TURN AROUND,
SHOOT DOWN**



**11 GO 3 STEPS DOWN –
TURN, SHOOT UP**



**12 TURN AROUND,
SHOOT DOWN**



**13 GO 3 STEPS DOWN –
TURN, SHOOT UP**



**14 TURN AROUND,
SHOOT DOWN**



**15 FROM FLOOR TOWARD
STAIRS**



16 VERIFY BUBBLE LEVEL

These pictures were taken with camera rotated 90 degrees.

When taking photos you may rotate the camera any direction desired to collect as much data as possible per photo.

Before turning on camera verify “Mode” dial is set to “C”

The “C” setting is programmed for the following settings.

<p><u>Funct Set</u> M1 – Normal (6M 2816x2112)</p>	
<p><u>Menu Settings</u> AF Frame Center AF Frame Size Normal Digital Zoom Off AF-Point Zoom Off Servo AF Off AF-Assist Beam On MF-Point Zoom On Safety MF On Flash Settings Do not change i-Contrast Off Review 2 sec Review Info Off Blink Detection Off Custom Display IS Mode Off (CRITICAL) Date Stamp Off Record Raw + L Off</p>	