

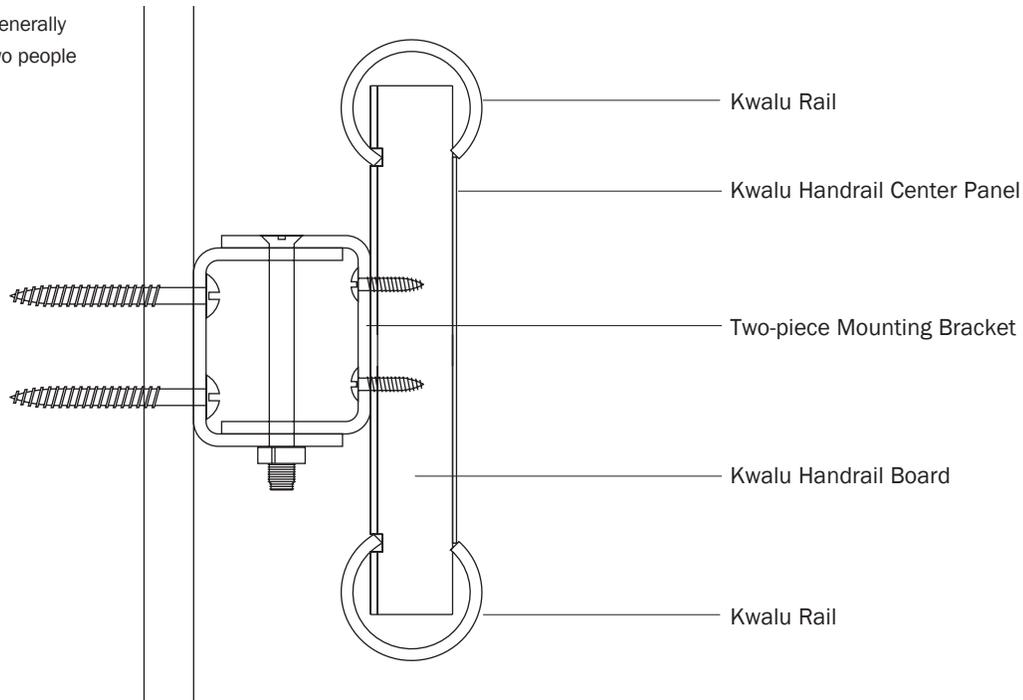
## Installation Instructions

### Transitional Handrails



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Note: Installation of Kwalu handrail systems generally requires at least two people working together.



#### Materials (supplied with order):

- Handrail Boards – 12' long
- Pre-assembled Wall Returns
- Pre-assembled Inside Corners\*
- Pre-assembled Outside Corners\*
- Color-matched Caulk
- Polymer Top and Bottom Handrail Pipes – 12' long
- Two-piece Steel Mounting Brackets
- #14 x 3/4" Pan Head Wood Screws
- Socket Bolts for Connecting 2 Halves of Brackets
- U-shaped Polymer Cover for Mounting Brackets

\* These components are optional and may not be included in your handrail system. Refer to Kwalu quotation for bill of materials included in your system.

#### Required Tools (supplied by installer):

- Safety Glasses
- Pencil/Felt Tip Marker
- Utility Knife
- Caulking Gun
- Tape Measure
- Laser Level and/or Chalk Line
- 220 grit Fine Sandpaper
- 3mm Allen Wrench
- Bucket of Water and Damp Cloth
- Minimum 10" Power Miter Saw w/ 80-Tooth Carbide Blade
- 6' Level and "Torpedo" Level
- Power Drill and Drill Bits
- '0000' Fine Steel Wool
- Rubber Mallet
- Fasteners for Attaching Mounting Brackets to Walls – Use Appropriate Type for Wall Conditions Present

**Delivery, Storage and Handling:**

1. All materials will be delivered to the jobsite in original unopened factory packaging. Upon delivery, carefully inspect all packages to ensure that all required materials have been delivered in an acceptable condition.
2. Store all materials flat in a dry, environmentally controlled area between 65° F and 80° F, and protected from the elements as well as direct sunlight.
3. Do not install handrail systems until all facility finish work has been completed, including painting.
4. All materials must be acclimated to installation conditions at least 24 hours before installation is to begin.

**Preparation:**

1. Ensure that all wall surfaces and wall protection system components are free from moisture, oil, dust, dirt, and wet or chipping paint, etc.
2. Ensure that all walls are straight, plumb and free of imperfections.

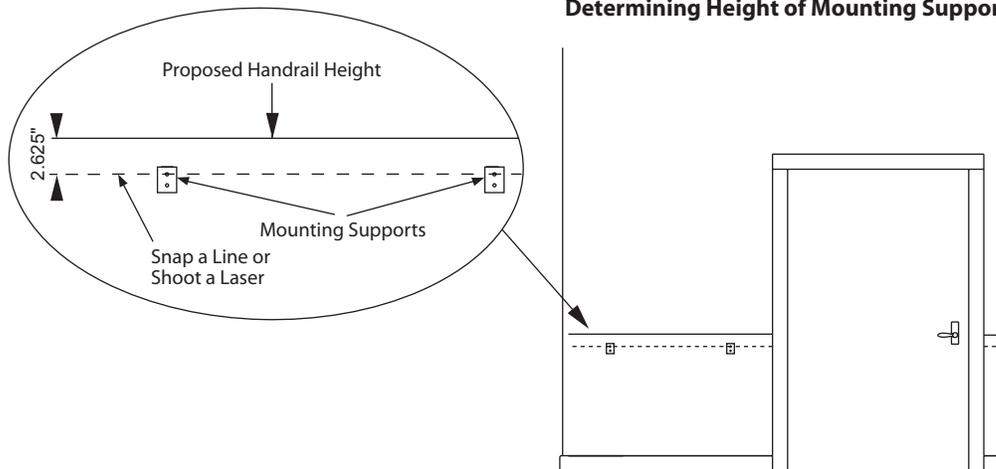
**Special Instructions:**

1. For proper cutting, use only sharp, fine-toothed carbide tipped blades in circular saws and miter saws.
2. Installation of Kwalu handrail systems generally requires at least two people working together.
3. The installed handrail system must withstand both downward and pulling forces. It is, therefore, essential that the handrail be installed on and into materials that will withstand these forces. Anchoring to poorly secured or damaged wall substrates will limit the forces that this handrail system can withstand.
4. Mounting brackets must also be applied perfectly plumb to both the walls and the handrails for proper fitting. Brackets applied off-plumb will result in twisting of the handrail system, and likely cause misalignment of joints in the handrail boards and pipes.
5. Wavy walls and corners that are out of square will affect the proper installation of the handrail system. These inconsistencies must either be remedied prior to installation, or accounted for during installation with shimming on the brackets, to permit properly aligned joints in the handrail boards and pipes.

**Installation:****1. Lay out the Handrail Installation on Walls**

- a. Locate the walls to receive handrails, and locate on each wall the height to which the top of the handrail system is to be installed. Installation height will vary with code requirements, applications, and preferences, but is typically between 32" and 36" above the finished floor.
- b. Measure down  $2\frac{5}{8}$ " from the top of the handrail and mark the wall lightly. This is the center point of the top screw hole on the mounting brackets. Snap a chalk line, draw a level line or use a laser level to mark this height across the entire wall (see **figure 1**). The bottom hole of the mounting brackets will fall exactly 1" below this line.
- c. Find the location of framing studs along the entire length of the wall, and mark those locations at the height of the mounting brackets. Mounting brackets are to be mounted no more than every 32" on center. For drywall or plaster walls, it is strongly recommended that, wherever possible, mounting blocks are fastened to metal or wood studs, or horizontal blocking between studs, for maximum

**figure 1**  
Determining Height of Mounting Supports

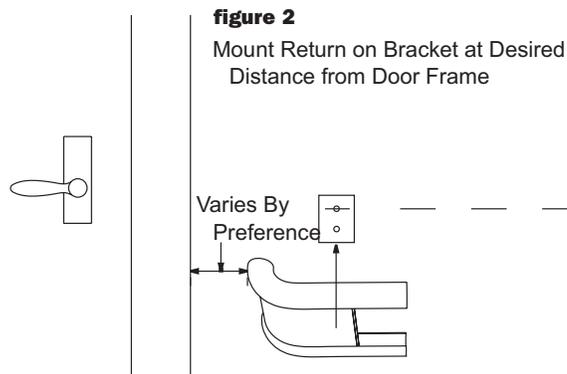


strength. Where studs or blocking are not available, use heavy-duty toggle bolts (such as ¼" x 4") to attach handrail system to drywall or plaster. For masonry walls, use the appropriate masonry anchor. (As Kwalu cannot know the appropriate fastener type to use in each application, fasteners are to be supplied by the installer.)

- d. Measure the entire distance of the wall section, from door frame to door frame, and record that measurement. You will use it later.

**2. Assembling the Handrail System**

- a. Determine the desired set-back between door frames, window frames, etc., and handrail returns (this distance will vary with preference, but is typically between 0" and 3") (see **figure 2**).

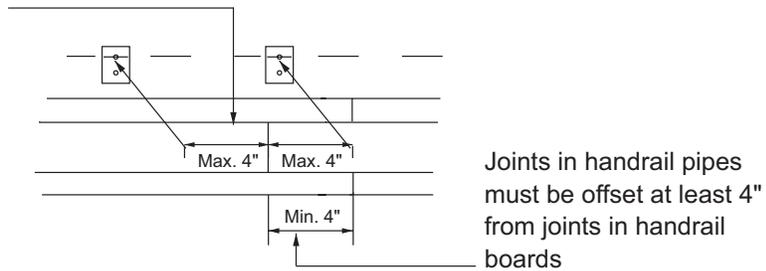


- b. Using the measurement for the total length of the wall section being worked on, previously noted in **section 1, step d**, subtract 6 ½" for each return to be mounted. Then, for each return, subtract the desired set-back measurement for returns from door frames. The resulting measurement is the length of the center handrail board required to span the wall from one return to the other.
- c. Cut a handrail board to length, being careful to make square, accurate cuts to ensure that all board joints are clean and tight. If the distance is longer than 12', you will need to use at least two pieces of handrail board to span it. If so, lay out on the wall the best place to have a joint in the board. If there is no horizontal blocking in the wall between studs, this should be done in proximity of a wall

stud. Any joint in the handrail board must have one bracket within 4" of *each* side of the joint. It is a good idea to have one of these brackets placed at a framing stud (see **figure 3**).

**figure 3**

Mounting brackets must be placed within 4" of each side of joints in handrail boards

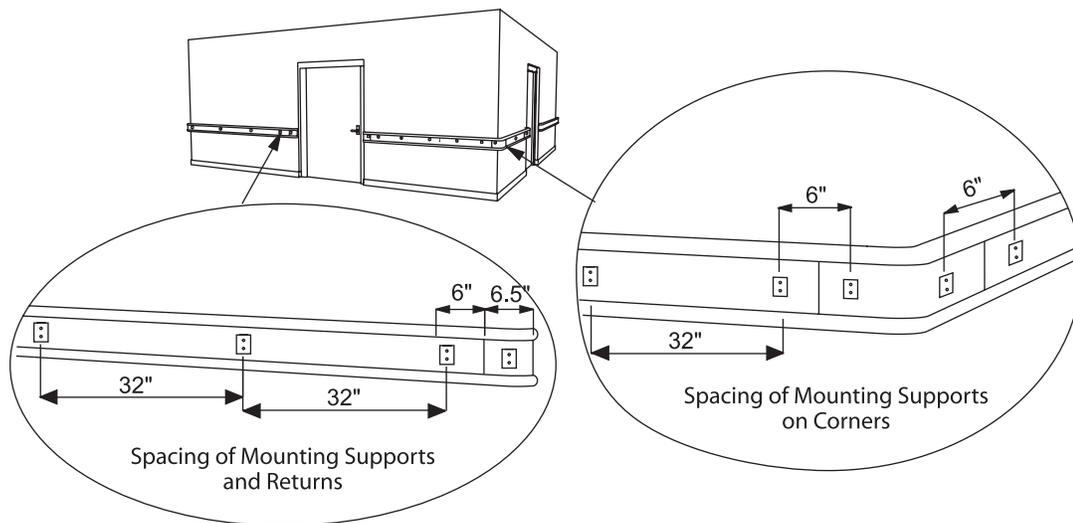


- d. Place the returns/corners and straight board on the floor, face down. Slide the two pipes on each of the returns/corners into the two grooves cut in straight board. Install one mending strap securing each joint between the returns/corners and straight board, and fasten using the screws provided.

### 3. Placement of Handrail Mounting Brackets

- a. Start with a pre-assembled handrail return, which will have holes pre-drilled on the back side for placement of a mounting bracket. Using two  $\frac{5}{8}$ " long wood screws supplied with your order, fasten one mounting bracket to the back side of the return, driving the screws into the pre-drilled holes.
- b. Measure 6" from the pre-drilled holes on the returns, across the joint in the handrail board. Cross this measurement with a mark measuring  $2\frac{1}{4}$ " down from the top edge of the exposed particle board on the straight run. This is the location of the second bracket on the back of the handrail. Attach a bracket at that location, again using the  $\frac{5}{8}$ " wood screws provided.
- c. Beginning with the desired set-back between door frames, etc. and handrail returns (determined in **section 2, step a** above), add  $4\frac{3}{8}$ " to that desired measurement, and mark the wall at the intersection of that measurement and the line marking the center of the top screw of the mounting bracket (from **section 3, step a** above). That intersection provides the exact location of the top fastener for the first bracket on the handrail run.
- d. Measuring along the level line on the wall, mark the wall 6" from the intersecting line just made. This will provide the placement of the second mounting bracket to go on the opposite side of the joint in the handrail board. (see **figure 4**).
- e. Place a mounting bracket over each of these two marks, so the marks show through the top screw hole on the bracket, and fasten the bracket to the wall. Repeat with a second fastener through the bottom hole in the bracket. Take care to choose the appropriate fastener for the wall conditions present. Also, make sure the bracket is perfectly plumb before and after the second fastener is tightened. Brackets applied to the wall off-plumb will cause the handrail to be twisted, and will likely cause board and pipe joints to be misaligned. Also, always make sure the brackets are at the right height according to the level line already marked on the wall. *This is crucial to having a level, well-fitting handrail system upon completion of the installation.*
- f. Repeat **section 3, steps b, c, and d** at the opposite end of the wall section you are working on.

figure 4

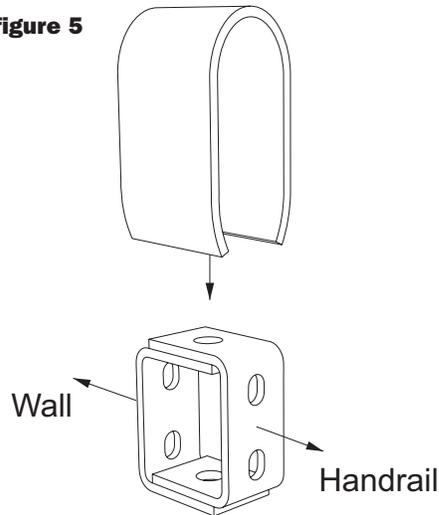


- g. Using the marks already made on the wall, locating framing studs, or at a maximum distance of 32" on center from the brackets mounted on each side of the wall section, place additional brackets on the wall as required.
- h. Transfer the location of the brackets on the wall to the back of the handrail board, measuring off of the second bracket on either end of the wall section. Attach brackets to the handrail board at each mark.

#### 4. Mounting Assembled Handrail System on the Wall

- a. Once all of the brackets are attached, lift the assembled handrail into place. Position the board so the flanges on the brackets attached to the board sit *on top of* the brackets mounted on the wall. Use the supplied 2" J-bolts to attach the two bracket pieces to one another.
- b. Find the U-shaped mounting bracket covers supplied with your order. They come in 4' long sections so they can be cut to exact fit on location. Measure the distance between the back of the handrail board and the wall at each bracket location, and cut lengths of bracket covers to fit each gap. The covers should fill the space adequately without being so tight as to damage the wall when installed. Slide a cover over the top of each bracket set on the installed handrail system.
- c. Measure the distance between the grips/pipes already mounted on the returns or corners, on both the top and bottom of the handrail board. Transfer this measurement to lengths of handrail pipe and cut to length. To ensure a tight fit, you may want to add  $\frac{1}{32}$ " or  $\frac{1}{16}$ " to the measurement. Make sure the cut is square. Test fit the pipes to make sure your cut is accurate by loosely fitting them between the pipes on the returns or corners (see **figure 5**).
- d. Using a piece of 220 grit Fine sandpaper and/or 0000 Fine steel wool, sand down the outer circumference of the pipes at both ends, just enough to remove the sharp cut edges.
- e. Start with the bottom grip/pipe. Beginning at one end of the handrail board, pry open the slot in the handrail pipe. Begin pressing the handrail pipe onto the bottom edge of the board. Keep moving along the length of the board until the entire pipe is on the board. Use a rubber mallet to ensure that the pipe snaps into the mounting grooves in the board. Make sure the joints between the pipes are tight and square.

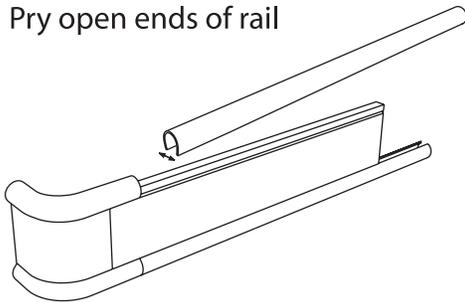
figure 5



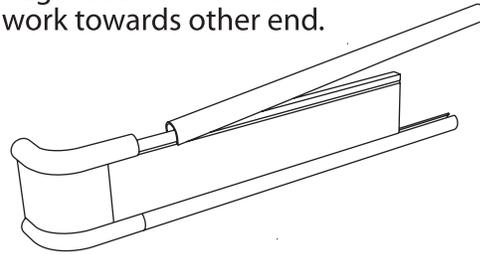
- f. Repeat the process on the top rail (see **figure 6**).

figure 6

Pry open ends of rail



Slide onto board.  
Begin at one end and  
work towards other end.



- g. Make sure that all joints between pipe sections are flush with one another, and do not present a hazard to anyone running a hand over them. If the joints are not aligned properly, check to make sure all brackets are mounted correctly, and that they are level to one another. Other possible reasons for misalignment may be that the cuts are not square, or that the wall has a wavy surface. Walls that are extremely wavy may cause the brackets to be out of line with one another. In these cases, determine the areas where brackets are mounted in wall depressions, remove the J-bolts and brackets, and shim the bracket against the handrail board until each bracket is on the same plane as the other brackets.
- h. If you still have trouble getting the pipe joints to align properly, apply superglue to the pipe joints and hold the two pipe ends tightly together until the glue hardens. This will stabilize the joint permanently.

## 5. Clean-up

- Where necessary, seams in the laminate center panel or between sections of handrail grips/pipes can be filled with the supplied color-matching caulk. Wipe away excess caulk with a clean, damp sponge or cloth.
- Polish out any scratches in the surface of the handrail pipe using '0000' fine steel wool.
- Wipe down the entire surface with a soft, clean cloth and a not-toxic, non-abrasive cleaning agent, such as Simple Green® or a citrus-based liquid.