



EZ HANDRAIL ALUMINUM RAILING SYSTEMS



CODE COMPLIANT RAILING FOR YOUR LIFESTYLE



CONTENTS

Introduction	2
Tools You Will Need (not included).....	3
Components and Assembly Instructions.....	4
EZ Post Installation with Separate Mounting Flange	5
EZ Post Installation with Welded Base Plate	6
Pre Sizing and Cutting Top and Bottom Rails (prior to assembly).....	8
Railing Assembly and Installation	9
Stair Railing Assembly and Installation	12
Stair Railing Helpful Hints & Apps	13
Gate Instructions.....	15
Care and Maintenance	16
10-year Limited Warranty	16
Engineered Drawings.....	17

Congratulations!

Congratulations! You are on your way to a maintenance free handrail system that is easily assembled and installed. With your EZ Handrail system, you'll feel safe being protected by the tremendous strength of its aluminum alloy components, plus be comforted knowing the hardened powder coated finish will last year after year.

Please take a moment to read the instructions before you begin assembling your EZ Handrail.

Introduction

Check the contents of EZ Handrail box with these instructions to verify all parts are present. This will allow you to become familiar with the components of your new EZ Handrail system.

- Inspect all component parts for familiarity
- Layout recommended tools
- Before cutting any component, know its use – “measure twice and cut once.”
- The included wood fasteners are ACQ treated lumber approved.
- The included concrete fasteners are for brick and concrete.



EZ Handrail shown with EZ Posts and Base Covers sold separately.

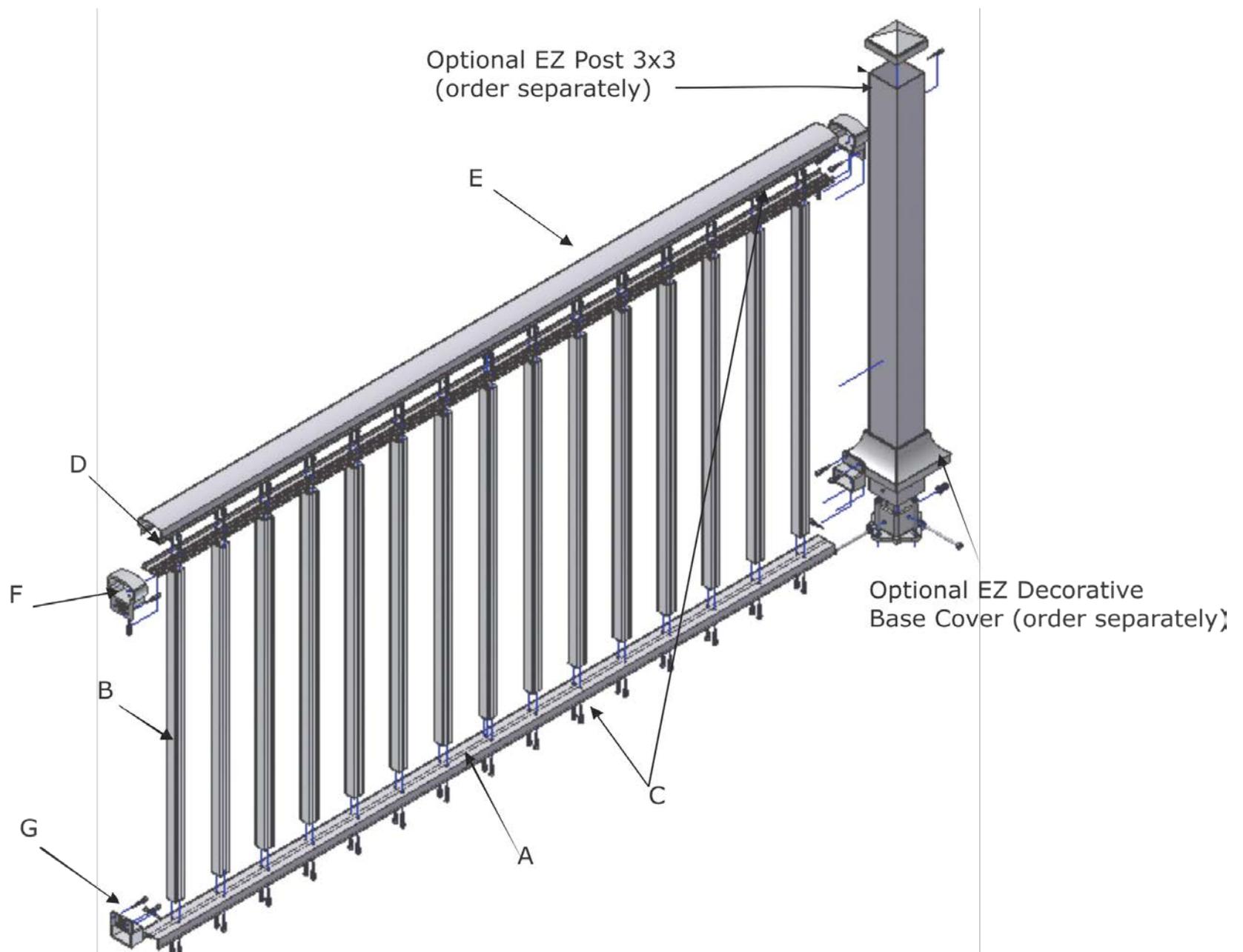
Tools You Will Need (not included)

<p>Level</p>		<p>Tape Measure</p>	
<p>Chop Saw (60 tooth wood blade)</p>		<p>Pencil</p>	
<p>Screw or Impact Gun</p>		<p>1/4" Hex Bit Driver</p>	
<p>(2) pcs 10" 2x4 lumber to support railing during installation (optional)</p>		<p>5/16" Hex Bit Driver</p>	
<p>Safety Glasses</p>		<p>Drill Bits: 1/4" wood 1/4" x 3 1/2" concrete 1/8" metal/wood</p>	

- For saltwater environments we recommend grade 18-8 stainless steel fasteners or equivalent. Stainless steel fasteners not included.

Components and Assembly Instructions

Components:	
A.	Bottom Channel
B.	1" Sq. Balusters
C.	1 1/2" Fasteners
D.	Top Snap
E.	Top Cap
F.	Top Post Mount
G.	Bottom Post Mount

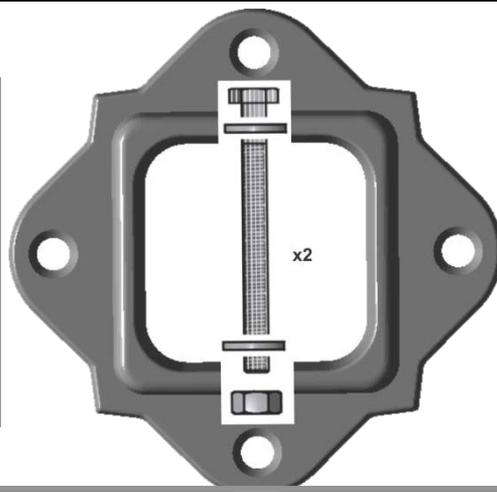


EZ Post Installation with Separate Mounting Flange

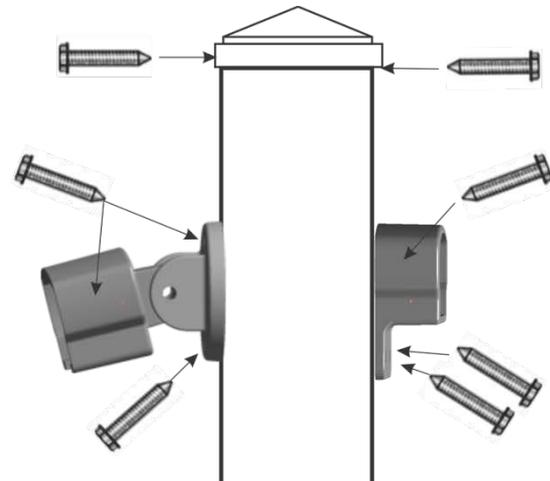
Ensure that you have a solid mounting surface for your EZ Post base fasteners. Existing posts or the EZ Posts (sold separately), may be used with this system. If you are installing EZ Posts, refer to the steps and illustration below.

1. Layout posts uniformly or as desired across entire project.
2. Ensure spacing between posts does not exceed 6 ft. for elevated decks (or greater than local codes specify).
3. Starting at a corner post, attach post flange to deck/patio using appropriate fasteners provided with the EZ Post Kit. **MAKE SURE TO USE ADDITIONAL LUMBER BLOCKING UNDER THE DECK TO SECURELY FASTEN THE FLANGE!!!**
In some instances, fully threaded lag screws may be necessary – but are not included. **LAG SCREWS LOOSEN OVER TIME AND REQUIRE QUARTERLY SAFETY CHECKS.**
4. Slide 3"x3" post over post flange and plum using level.
5. Drill ¼" hole front-to-back through the entire post and post flange coming out on the back side. **IT IS IMPORTANT TO DRILL HOLES WITH POST LEVEL.**
6. Drill 2nd ¼" hole front-to-back. Start hole 1" above the first hole. *The vertical hole pattern creates the best deflection strength. Note that hole patterns can be modified if necessary.*
7. Fasten post to post flange with 3 ½" bolt, washer, and standard nut provided. Washers must be placed on both sides of the post.
8. After post is level and securely fastened, slide decorative base cover (optional and sold separately) over post covering the post flange.
9. Secure next post using same procedure. At this point you may size (cut) and install a railing section to verify your desired layout. Then continue to set the remainder of the posts.

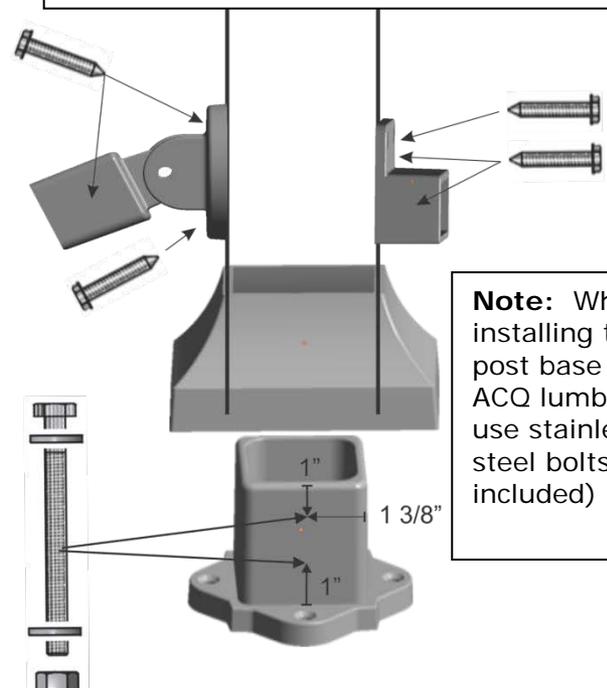
IMPORTANT: Install supporting lumber below composite/wood decking when surface mounting posts to a deck. Fasten the 4" bolts through the decking and supporting underside lumber with the provided tee nuts.



Post Mounts are installed with railing sections in STEP 5. Mounts shown for informational purpose only in this step.



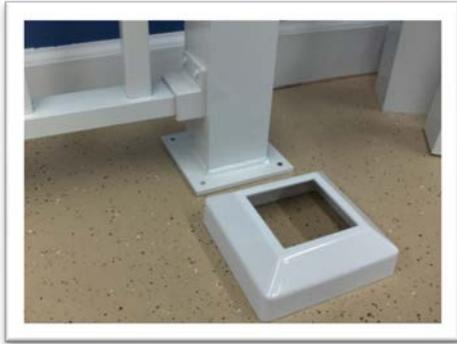
IMPORTANT: The distance between posts should not exceed 6 ft. when installed above ground level. Always refer to your local building department for building code clarification.



Note: When installing the post base into ACQ lumber, use stainless steel bolts (not included)

EZ Post Installation with Welded Base Plate

Start by ensuring that you have a solid and level mounting surface for your Post(s). Washers or galvanized/stainless metal shims (not included) may be used to plum posts.



Installation into wood/composite decking/Non ACQ lumber:

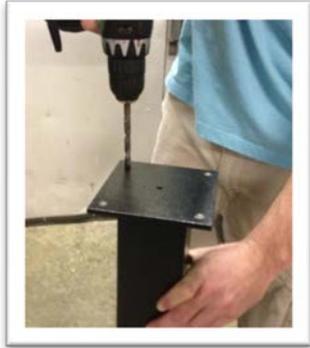
STEP 1:

1. Determine the 3"x3" post location(s). Spacing between posts should be 6' or less to meet IBC codes when installed 24" or higher above the ground.
2. We recommend the edge of the 5"x5" base plate is fastened at least 1 3/4" in from the edge of the deck (do not lag screw into the rim joist unless absolutely necessary).
3. Reinforce the decking with support lumber "backer board". A piece of 2"x10" lumber cut to fit tightly between the joists and installed flat under the decking works great.
4. Square up the post with the deck and mark all (4) holes with a pencil.
5. At your (4) pencil marks, drill a 1/4" hole through the decking and backer board.
6. Using a 7/16" socket bit in your drill, thread the 1/4"x4" Thru Bolt into the post plate, through the deck, and through the backer board. **
7. Thread the Tee Nut onto the 4" Thru Bolt underneath the decking and support lumber.
8. Tighten post firmly to deck.
9. Slide on optional post base cover to hide fasteners.
10. Attach post cap after railing has been installed using 1" fasteners provided.

** Note: The 4" Thru Bolt fits very tightly into the post base plate (especially Textured Black Posts due to thicker powder coat finish) and in some cases must be predrilled using a 1/4" drill bit.

Installation into concrete

STEP 1:



1. Turn the post upside down on a hard surface and prepare to drill larger holes in base plate.
Enlarge the (4) existing post base plate holes to 5/16" (using a 5/16" drill bit).
2. Determine the 3"x3" post location(s). Spacing between posts should be 6' or less to meet IBC codes when installed 24" or higher above the ground.
3. We recommend the edge of the 5"x5" base plate is fastened at least 1 1/2" in from the edge of any concrete face (assuming normal weight concrete).
4. Square up the post with the concrete surface and mark all (4) holes with a marker.
5. At your (4) marks, drill a 1/4" to 3 1/2" or deeper hole into the concrete using a masonry bit.
6. Fasten post in place with provided 1/4" x 3" Powers Wedge Bolts
7. Begin tightening the anchor with socket wrench or impact wrench by rotating clockwise and applying pressure in toward the concrete.
8. Continue tightening the anchor until the head is firmly seated against the post base plate. (Do not over tighten).
9. Slide on optional post base cover to hide fasteners.
Attach post cap after railing has been installed using 1" fasteners provided.

Pre Sizing and Cutting Top and Bottom Rails (prior to assembly)

Note: If you prefer, railing can be cut (sized) after assembly

There are two methods used when cutting the top and bottom rails to size. It is important to cut appropriate amounts from each end of the rails so the picket spacing from the post/wall appears symmetrical.

1. Measure the distance between your posts from the inside edge of the post to the inside edge of the other post. Measure at the top and then at the bottom, if the measurements are different, your posts may not be level and may need to be shimmed.

2. Divide the distance between posts by two ($\div 2$) to find the center of the railing.

Option A – Measure from the “center gap”:

- A) Find the center “gap” (space between picket holes) of the **top snap (D)**,

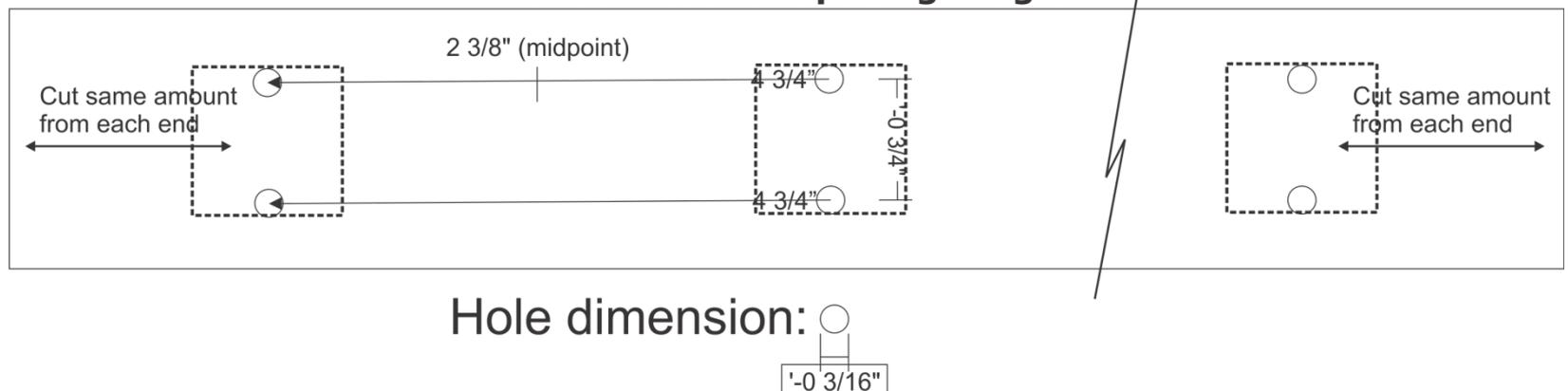
Make a pencil mark exactly in the middle of this gap (2-3/8" from either pair of holes). Measure from the pencil mark the distance from #2 above. Make another pencil mark 1/8" short of that (allows railing to fit between posts when installing the completed section), repeat at the other end.

Option B - Measure from “center picket”

- B) Choose one of the two sets of holes on either side of your pencil mark and do the same as in Option A except starting from the center hole instead of center of the gap.

3. Place your marked piece between the two posts and make sure there is not more than a 1/4" gap (1/8" for either side). When satisfied, make your cuts.
4. Place **top snap (D)** on **bottom channel (A)** with flat portions together. Drop a screw through a hole to line up pieces. Cut bottom channel (A) to equal length using the top snap (D) as a template. **MAKE SURE THE HOLES ARE ALIGNED!!**
5. Cut **Top Cap (E)** to same length as top snap and bottom channel.

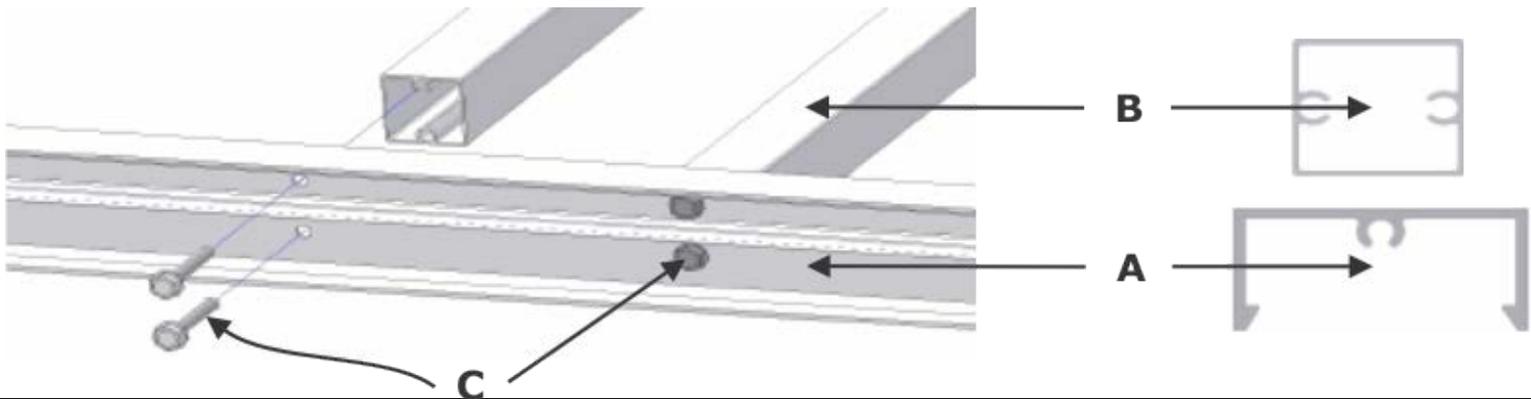
Picket Fastener Spacing Diagram



Railing Assembly and Installation

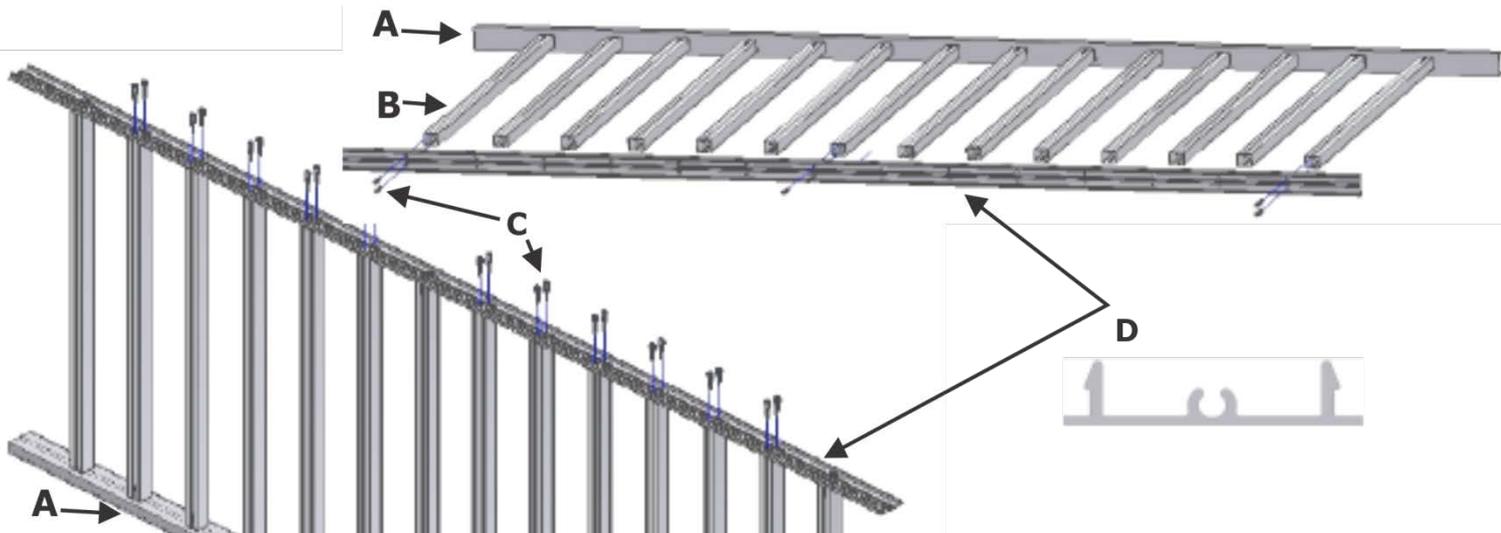
STEP 2:

1. Place predrilled **bottom channel (A)** on its side using non-abrasive work surface. Protect the painted surface from scratching.
2. Position one **picket (B)** above bottom channel aligning the predrilled holes.
3. Start both **1 1/2" fasteners (C)** thru bottom channel halfway into picket, and then tighten fasteners down fully. **Tighten fasteners until flush – DO NOT OVER TIGHTEN.**
4. Repeat these steps until all pickets are secured.



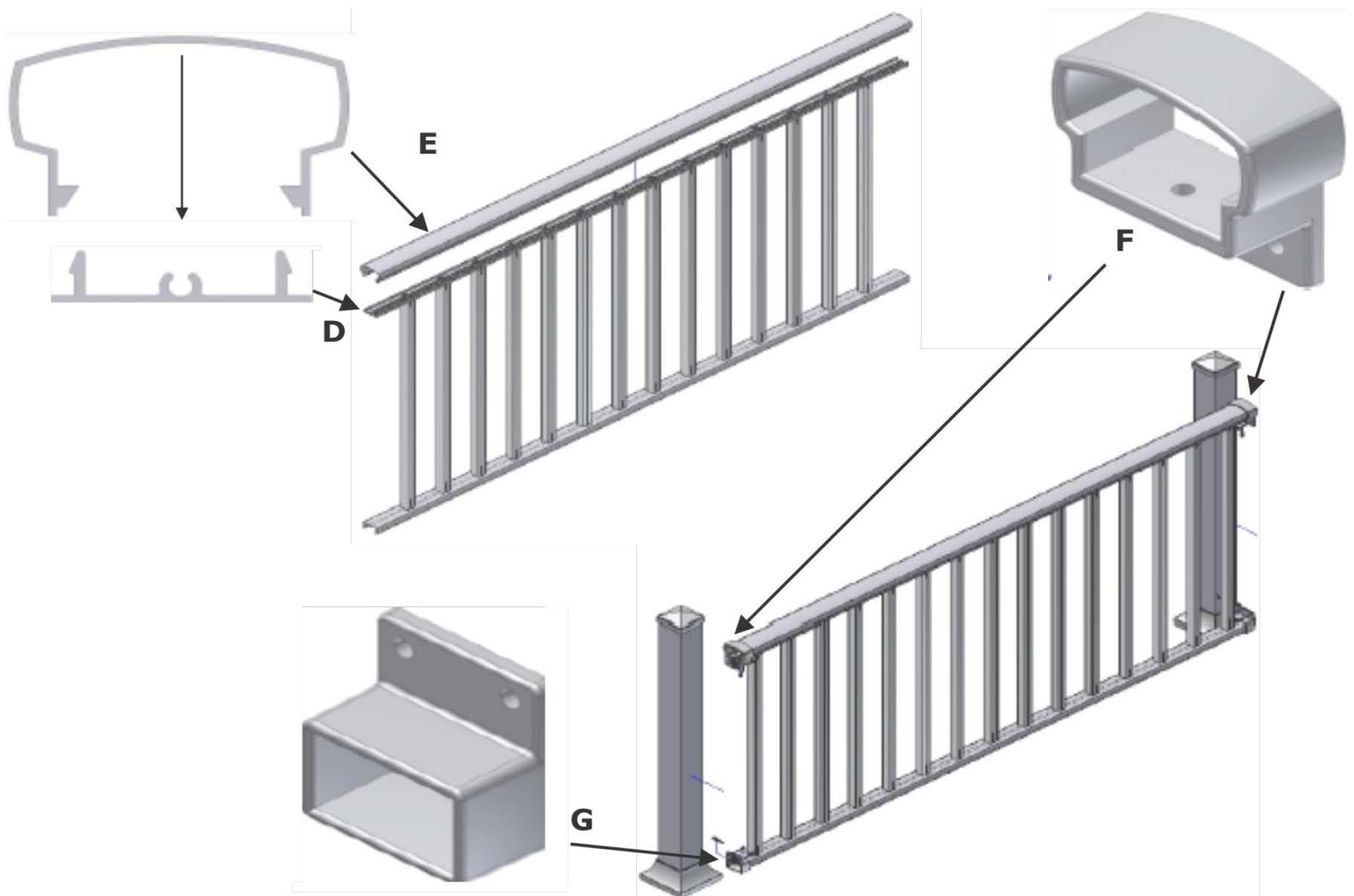
STEP 3:

1. Place predrilled **top snap (D)** on the opposing side of pickets.
2. Loosely fasten top snap to the first and the last picket making sure the predrilled holes are aligned correctly. Next, loosely fasten a picket near the center. **Make sure not to tighten until all pickets are in place.**
3. Once the top snap is **loosely fastened** to all pickets, stand the EZ Handrail upright and secure all pickets – **Tighten fasteners until flush – DO NOT OVER TIGHTEN.**



STEP 4:

1. Align the **top cap (E)** with your top snap making sure one end is flush. Starting at one end, squeeze the top cap and **top snap (D)** together until it pops in place. Continue snapping down the top cap until reaching the end of your railing.
2. Slide the **top post mounts (F)** and **bottom post mounts (G)** over the ends of your railing (4 mounts total).
3. Place assembled EZ Handrail section between posts. If the handrail section need to be shortened, **CUT EQUAL LENGTHS FROM BOTH ENDS OF THE RAILING**. Example: If the railing is 3" too long, cut 1 1/2" from each end.



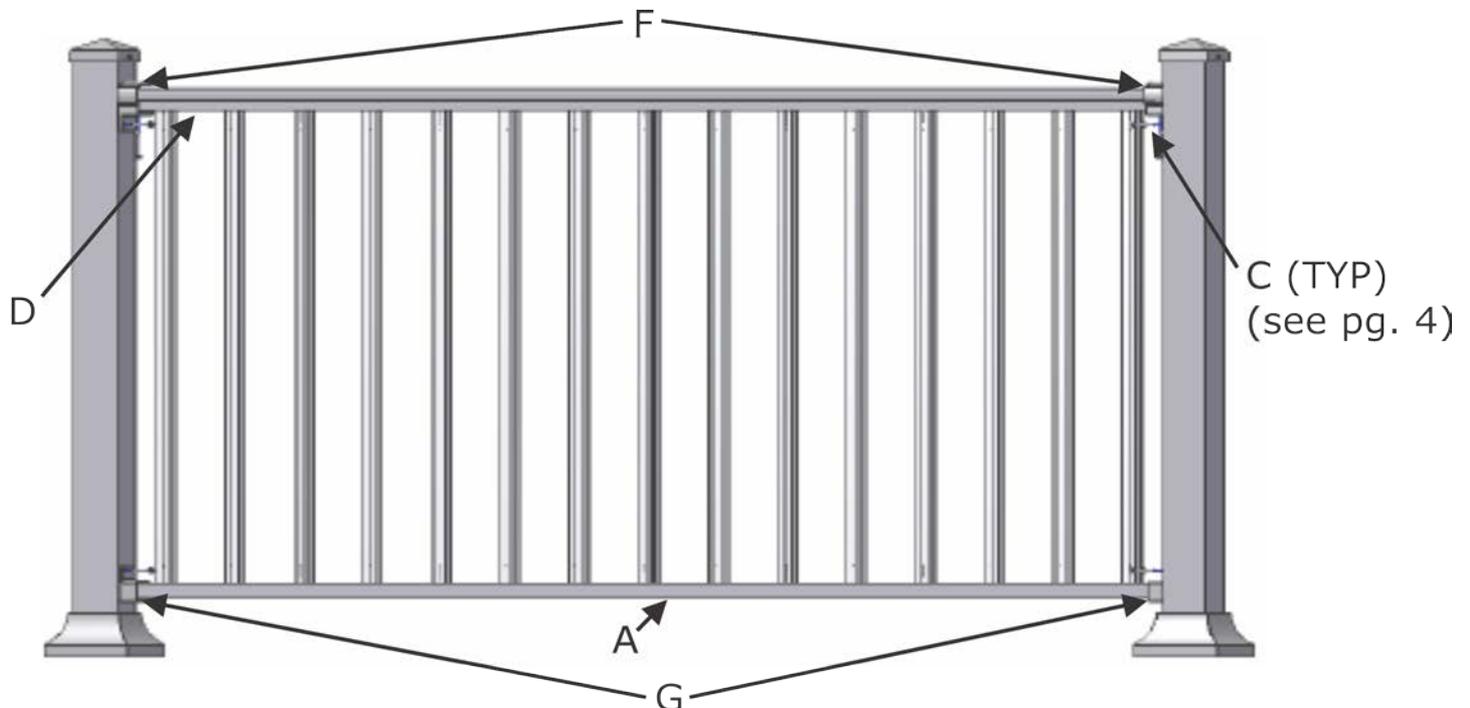
STEP 5:

Hint:

Place railing section on edge of 2x4 lumber to fasten bottom post mounts.

1. Ensuring the gap from the top of the deck (ground) to the bottom of the **bottom channel (A)** is less than 4", and that the top of the rail meets your code requirements, vertically center your EZ Handrail. Now attach the **bottom post mounts (G)** to the existing or EZ Post using the proper fasteners (C) provided. Reminder: Typically residential minimum handrail height is 36" and commercial handrail height is 42".
2. Ensuring your EZ Handrail is centered vertically on the post, fasten the **top post mount (F)** using the proper fasteners provided.
3. Now move to the other end of the railing section. Using a level (or resting railing on edge of 2x4 lumber) confirm your EZ Handrail section is positioned at the correct height. Vertically center on post and fasten the **2nd bottom post** mount using the proper fasteners provided.
4. Vertically center the top rail to the post and fasten the **2nd top post mount** using the proper fasteners provided.
5. **Fasten the top post mounts (F) to the top snap (D) on non-visible side of railing.** PILOT HOLE MUST BE DRILLED! Use the 1" self tapping fasteners provided. Repeat steps for bottom rail mounts (G).

Note: Refer to Post Installation Page near beginning of instructions for proper post installation

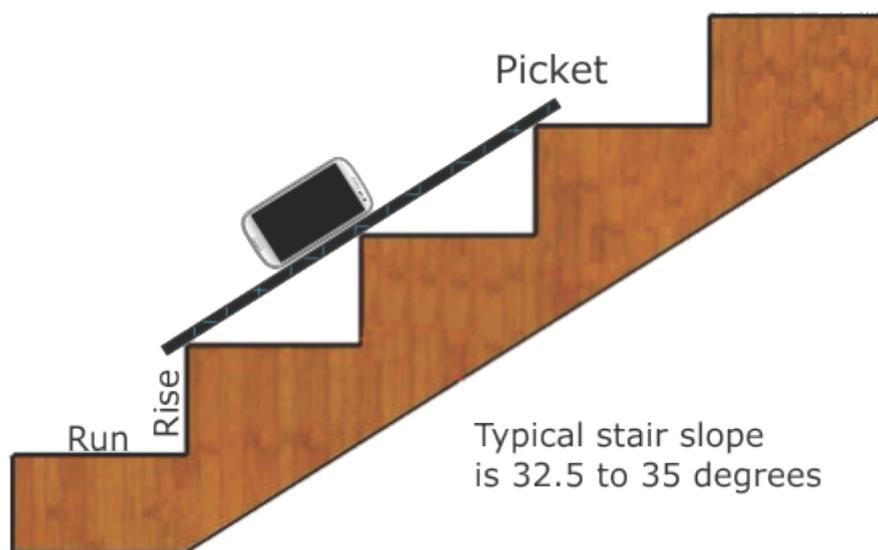


**YOU HAVE COMPLETED YOUR LEVEL EZ HANDRAIL INSTALLATION!
STAIRS AND GATE INSTRUCTIONS FOLLOW**

Stair Railing Assembly and Installation

STEP 1: STAIRS

1. Review the instructions and make yourself familiar with the included items.
2. Measure the stair rise and run then determine the angle using the **rise/run chart** on the following page. We also recommend verifying your angle using an angle finder app on your Android or iPhone – see recommendations on the following page. Make sure to measure the angle at the top, middle and bottom of stair run!
3. Set your miter box/chop saw to the appropriate stair slope angle and cut each end of the picket (B) (baluster). **MAKE SURE YOU CUT BOTH ENDS PARALLEL TO ONE ANOTHER SO TOP AND BOTTOM RAILS ATTACH PROPERLY. ALSO ALIGN THE SCREW CHANNELS!!!**
4. Visually verify the picket angle is correct by setting between top and bottom rails and holding in place on stair slope. Carefully cut the remainder of the pickets **EXACTLY THE SAME SIZE!**
5. After all the pickets are cut fasten them to the bottom channel (A) using the 1 ½" fasteners provided in your EZ Handrail kit. (Note: if the stair slope is steep, the 1" fasteners included with the EZ Pivot Mount Kit (sold separately) may install easier. Be sure to use the same fasteners at the top and bottom of the pickets).
6. Straighten the pickets by hand and fasten the top snap (D) to the top of the pickets.
7. Slide the Top and Bottom Pivot Mounts onto the ends of each rail. Set the railing section in place.
8. Position railing at proper height and mark or pilot holes in posts.
9. Attach pivot mounts to posts with railing section in proper position
10. After railing is securely in place pilot and secure fastener through pivot mount into top rail on non visible side of railing. Repeat for bottom rail.



Smartphone Angle Finder

Instructions: (apps on next pg.)

Start by laying a picket across multiple stair treads. After calibrating and testing your angle finder app, place your phone on the picket and record angle.

Now take a similar reading by placing the phone on the underside stair stringer and verify your stair angle.

Note: Measuring the slope at the top, middle, and bottom of the stair run is highly recommended.

Stair Railing Helpful Hints & Apps

Tip#1: Use rise and run chart for quick stair angle measurement

RISE	RUN (TREAD LENGTH)								
	10"	10.5"	11"	11.5"	12"	12.5"	13"	13.5"	14"
5"	27°	25°	24°	23°	23°	22°	21°	20°	20°
5.25"	28°	27°	26°	25°	24°	23°	22°	21°	21°
5.5"	29°	28°	27°	26°	25°	24°	23°	22°	21°
5.75"	30°	29°	28°	27°	26°	25°	24°	23°	22°
6"	31°	30°	29°	28°	27°	26°	25°	24°	23°
6.25"	32°	31°	30°	29°	28°	27°	26°	25°	24°
6.5"	33°	31°	30°	29°	28°	27°	27°	26°	25°
6.75"	34°	33°	32°	30°	29°	28°	27°	27°	26°
7"	35°	34°	32°	31°	30°	29°	28°	27°	27°
7.25"	36°	35°	33°	32°	31°	30°	29°	28°	27°
7.5"	37°	36°	34°	33°	32°	31°	30°	29°	28°
7.75"	38°	36°	35°	34°	33°	32°	31°	30°	29°

Tip#2: Smartphones and tablets have good (free) angle finder apps

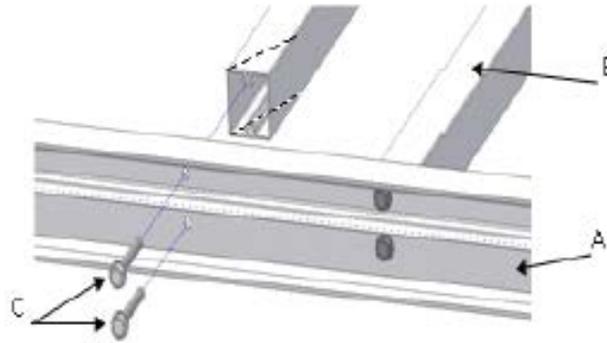
Android: Leveler by chkuentz



iPhone: Basic Angle Finder by Beginning to Sign

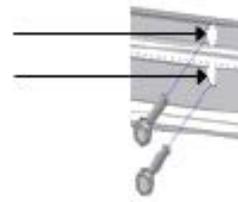


Tip#4: Elongating (enlarging) the picket fastener holes on top and bottom rails makes assembly easier



Stair runs may require elongated (enlarged) holes and/or shorter fasteners to secure pickets efficiently (shorter 1" fasteners are included with the EZ Pivot Mount Kits).

To elongate holes, use a $13/64$ " drill bit in an up and down motion within the existing hole and parallel with the rail. **IMPORTANT:** elongate the hole towards the point (tip) of the mitered picket to avoid any visible modifications. Do not widen the holes side to side.



Gate Instructions

EZ Gates can swing left or right depending on the hinge location. Standard hinges and gravity latch are included with all EZ Gates. Note: Self closing hinges and pool child safety latch sold separately.

Step 1	<ol style="list-style-type: none"> 1. Verify rough opening between posts is 1" greater than width of gate. 2. Set gate in opening and visually identify where hinges will attach to gate for the desired swing direction. 3. Measure 3" down from the very top of gate and attach hinge to appropriate gate face using the provided fasteners. 4. Attach 2nd hinge 3" above the very bottom of the gate to the appropriate gate face. 5. Measure 4" down from the very top of gate and attach gate latch arm to appropriate gate face using the provided fasteners. 6. Place (2) 2x4s on edge in the gate opening so the gate may rest in place while attaching the hinges to the post. 7. Level gate in position and fasten top hinge to appropriate post face <u>with a single fastener only.</u> 8. Confirm levelness and attach bottom hinge to post <u>using all three fasteners</u> 9. Complete installation of top hinge with remain two fasteners and remove 2x4's. Hold gate latch on latch arm, swing gate closed, mark holes and fasten latch to post.
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Available gate sizes:	Typical Railing Heights:
Residential: 36"W x 36"H	Residential: 36"
Commercial 36"W x 42"H	Commercial: 42"
Pool Gate: 36"W x 48"H	Pool Fencing: 48" – 54" (check local codes)



Photo of the EZ Gate in Bronze with pool code safety hardware:

- Self closing hinges
- Child safety pool latch

Care and Maintenance

While most powder coat finishes are tougher and much more flexible than conventional solvent based paints, they are about the same hardness as automotive paint and can scratch. To clean a powder coated surface, use the same care and methods you would use to clean your car. Gently wash with a clean, soft cloth and a mild detergent followed by a clear water rinse. Even though most powder coatings are highly resistant, certain solvents can harm them. Avoid contact with nail polish remover, paint or lacquer thinner, motor oils, transmission and brake fluids or solvent based cleaning fluids. If any of these should contact the powder coated surface, immediately wipe the area with a soft, clean cloth, and wash as described above.

10-year Limited Warranty

MADDEN MANUFACTURING

EZ HANDRAIL LIMITED WARRANTY

1. For a time of 10 years the manufacture warrants that EZ Handrail will not peel or blister as a direct result of defects solely arising from its manufacture process.

Notice of Claims

To procure performance of Madden Manufacturing's obligation under this warranty, you must simply notify Madden Manufacturing of your claim within thirty (30) days after the occurrence of damage covered by this warranty. Your notice must be in writing, mailed by certified mail or delivered to Madden Manufacturing, Warranty Service (PO Box 466 Lake Ozark, MO 65049).

This notice must (a) describe the defect claimed to exist, (b) give your name as it appears on this warranty, (c) give the purchase date and the name and address of the contractor who installed the product, and (d) include proof of purchase.

Inspection

Madden Manufacturing shall be given a reasonable opportunity to inspect the alleged defect on the property, or it may require a sample of the installed material sent in, before any repair, refinishing or replacement is begun. Madden Manufacturing or its appointee shall perform its inspection within one hundred twenty (120) days after receiving notice of the claim unless prevented by weather or other causes not under its reasonable control in which case Madden Manufacturing will inspect within a reasonable time.

Settlement

If after inspection it is determined that your claim is covered by this warranty, Madden Manufacturing shall, at its option, either, (a) repair, (b) refinish or (c) replace those panels found to have the defects warranted against or pay an amount in cash equivalent to the cost of the remedy elected by Madden Manufacturing based upon Madden Manufacturing reserves the right to discontinue any of its products or make any changes in any of its products during the term of this warranty. If the products covered by this warranty are not available, Madden Manufacturing shall have the right to substitute a product that, in Madden Manufacturing's sole discretion, is of equal quality or value. It is recognized that, in the event of such substitution, a perfect match may not always be possible. Your rights under this warranty shall end when Madden Manufacturing makes a repair, refinishing, replacement or payment under this warranty.

Limitations

Madden Manufacturing cannot be responsible for damages from causes outside of its control. The following are samples of external causes of product failure which are not manufacturing defects and which are not covered by this warranty:

- (a) Normal weathering: normal weathering is defined as exposure to sunlight and extremes of weather and atmosphere which will cause any colored or painted surface to gradually fade, chalk or suffer an accumulation of surface dirt, stains or fungus. The

severity of any of these conditions depends upon the geographical location of your home, the cleanliness of the air in your area and many other local influences over which Madden Manufacturing has no control.

- (b) Damage caused by faulty or improper installation or application of the EZ Handrail, or settlement, distortion, or warping.
- (c) Earthquake, hurricane, tornado, cyclone, gale, lightning, fire, acts of God, flood, wind-borne objects, ice, or weather of a catastrophic nature as defined by the United States Weather Bureau.
- (d) Damage caused by atmospheric pollution, acid rain, salt spray, and other harmful chemicals, fumes or vapors directly applied to the EZ Handrail or in the atmosphere.
- (e) Lap abrasion, vandalism, misuse, physical abuse, riot, insurrection or civil disorder.
- (f) Negligence in, or failure to provide, reasonable and necessary maintenance of the EZ Handrail to prevent an accumulation of surface dirt, chalk, staining, mildew or fungus.

BRIEFLY, WE ASSUME THE RESPONSIBILITY ONLY FOR DAMAGES WHICH ARE CAUSED BY MANUFACTURING DEFECTS IN OUR PRODUCT. MADDEN MANUFACTURING SHALL NOT BE RESPONSIBLE FOR ANY INJURIES TO PERSONS OR DAMAGES TO PURCHASER'S PREMISES OR THE CONTENTS THEREIN NOR FOR INCIDENTAL, SPECIAL OR CONSEQUENTIAL DAMAGES. NO DISTRIBUTOR, DEALER, CONTRACTOR OR APPLICATOR IS AUTHORIZED TO OBLIGATE MADDEN MANUFACTURING IN ANY MANNER EXCEPT TO AUTHENTICATE THE ISSUANCE OF THIS WARRANTY.

Validation and Commencement of Warranty

This warranty shall not be valid or enforceable

- (a) If it is not registered with Madden Manufacturing within 30 days after completion of installation of the product covered hereby by completing and delivering the registration form attached hereto to Madden Manufacturing,
- (b) If any statement thereon or any claim for defect shall be false.
- (c) If the registration form does not contain your true signature. The registration form shall be mailed to Madden Manufacturing at its address shown heron.

Documentation of Issuance

In the event of a claim under this warranty, you agree to supply adequate and reasonable proof upon Madden Manufacturing's request that you are the person to whom the warranty was originally issued.

Engineered Drawings

(SEE FOLLOWING PAGE)