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SIMTEK - Installation Instructions

These written instructions follow closely and include script from SimTek′s Installation Video. The video will be helpful if **used in conjunction with these instructions.** However, there is additional information throughout these instructions and at the end including fastener sizes, tools required, and illustrative photos and drawings.

1. **Introduction**
   These instructions are designed to instruct both professional installers and do-it-yourselfers in the installation of SimTek Decorative Rock Walls. These instructions are detailed to insure an excellent finished wall. Installation on level ground and on sloping terrain, gate installation, and thoroughly proven installation techniques are included.

2. **A quality installation**
   A quality finished wall is the result of a quality installation. The layout must be consistent with ground contours; posts must be appropriately spaced and properly anchored. Follow SimTek installation instructions carefully and your wall will be both structurally correct and a beautiful addition to your project or property.

3. **Prior to beginning installation**
   a. Before beginning any installation, check all local regulations regarding fencing, location of all buried utility lines, and correct property lines. Be certain you are in compliance with all utility line locator requirements, local codes and laws.
   b. The complete wall configuration will have already been determined prior to order, including each line of wall, corner posts, end posts and gate locations.

4. **Pre-install panel support brackets**
   a. If posts are to be installed in level ground, panel support brackets will be set so that the bottom edge of the panel is 73.5″ from the top of the post. Attaching brackets in advance of post installation is easiest when using a measuring template of 73.5″ long for faster repetitive bracket installation. It is easier to change a bracket in the field if

necessary than to install brackets once posts are installed in the ground. Installed brackets provide a leveling point on each post.

5. **Digging holes at appropriate locations.**
   a. If a laser is available, it will be an excellent tool to assist in determining grade and slope.
   b. For a level ground installation, begin at a corner or an end post. This will give you a good starting point. If there is a slope, it is easier to begin at the top and work your way down hill.
   c. Dig all post holes 10″- 12″ diameter by 24″- 36″ deep.
   d. Make sure to check local building codes to ensure required depth and diameter is met.
   e. Holes must be 71.5″ apart, center to center.
   f. Walls will rarely measure out to an exact number of full panels; therefore it will likely require cutting one or more panels to complete a wall.
   g. Depending on personal preference, you may wish to narrow the width of the last 2 to 3 panels or cut the first and last panels evenly so that there is not one very narrow panel. Panels can be cut with any cutoff saw, although the steel stiffeners will require a metal cutting blade.
   h. Dig the remainder of the holes.
   i. Alternatively for do-it-yourselfers, you may want to mark and drill only a few holes at a time, just to be safe.
   j. Stretch a string on the outside line of the posts from the beginning of the fence to the end of the fence, this will ensure a straight line of holes. If curves are required, the line may be broken, but posthole spacing must remain 71.5″ (or less if you wish to cut the panel). The string will assist in keeping the posts lined up.
   k. For more information, see Illustration A at the bottom of this document

6. **Setting Posts.**
   a. Set the top of each post 73.5″ above the level you want the bottom of the panel. Panel support brackets should already be attached at 73.5″. A string tied from start to finish of the fence line or a laser can accomplish this.
   b. Set a post in the hole with concrete. Using a mallet or hammer, tap

the post into the concrete until the top of the post meets the desired height.

c. Fill the remainder of the hole with concrete. Make sure the post remains at the desired height.
d. Using a level, check two adjacent sides of the post. Two-way levels are useful. Adjust the post until it is both vertical and at the correct height.
e. **If using a dry mix method**, first place the post in the hole in the approximate position at the bottom of the hole. Pour the dry mix in the hole, positioning the post as soon as it is feasible.
f. Using the steel stiffener out of the panel, which is exactly 70.25″, as a spacer, set the next post the same as the first.
g. Place a level on the stiffener when the next post is in place to ensure the panels will be level.
h. Do not move the post which is now in position.
i. Leave the spacer in place for one hour minimum, as concrete begins to cure, to keep the posts from moving.
j. Set 3 to 4 posts with spacers, then advance them one at a time, by moving the first spacer placed.
k. Allow the concrete to cure for a minimum of 24 to 48 hours.
l. For more information, see Illustration B at the bottom of this document.

7. **Installing Panels.**
   a. Panel support brackets must be attached to all posts.
   b. Be certain steel stiffeners are inserted in the top and bottom rails of each panel; they come installed from the factory, but may have been removed to use as post spacers.
   c. Panels are universal; there is no front or back, and no top or bottom edge. Randomly installing panels gives the most pleasing aesthetic effect.
   d. Lift the panel bottom edge to approximately 4′ off the ground.
   e. Place one edge of the panel into the post. Have one person flex the next post outward until the groove will receive the panel. Once the panel is captured, ease the panel down onto the support brackets. This process requires two people.
   f. Install caps, which are pressure fitted, over the posts.

g. If there are concerns about caps being knocked off or taken off, caps can be attached with special primer and adhesive available from SimTek. Another option is to drive a 3″ screw through the top of the cap into the middle of the post. However, attaching caps is usually unnecessary.
h. If you are concerned about unauthorized panel removal from a finished wall, attach each panel with one screw through the panel edge into a post. This can be done at any location, but down low would be less noticeable.

8. **Panels requiring attachment:**
   a. Panels must be attached to all **end posts** and **corner posts.** Three spaced fasteners on the edge are recommended.
   b. Panels require attaching because they could conceivably become disengaged from the end and corner posts.
   c. **However, NEVER attach both edges of any panel to posts**.
   d. For more information, see Illustration C at the bottom of this document.

9. **Installation on sloping terrain.**
   a. Installation on sloping terrain is similar to that on flat terrain. Installation professionals typically use a laser to shoot and obtain a grade or grades if necessary, in order to determine the slope on the line of a wall.
   b. In relation to varying elevations, post placement is important. A post is typically placed at the point where the slope changes, whether that is a peak or a valley.
   c. A 6 foot wide panel can be stepped as much as 12″ per panel. For steeper slopes, instructions follow.
   d. **Caution: SimTek walls are not to be used as retaining walls**. Panels may be partially buried as long as the soil depth is the same on each side.
   e. Set the posts using the same methods to install posts on level ground.
   f. Panel support brackets will all be pre-attached at 73.5″.
   g. The bracket installed to receive the downhill side of the panel will remain at 73.5″ from the top of the post. Once the slope has been determined, and the drop per panel, one bracket can be removed and

reattached at the proper height. Panels will always be set level even on a slope.

h. Set the first post on the uphill side.
i. Set the second post and make any adjustments to bracket position.
j. Use a steel stiffener for spacing to set the distance to each succeeding post.
k. Use a level on the stiffener to insure panels will be level when installed.
l. For more information, see Illustrations D, E, and F at the bottom of this document.

10. **Cutting panels where required for steep slopes or a narrower width.**
    a. For steeper slopes, panels can be cut so the step, or drop, in each segment is 12″ or less. For example a panel could be cut to 2′ wide and stepped with a 12″ drop.
    b. Where a narrower panel is required to finish a wall, panels can be cut.
    c. Where panels requiring cutting, first determine the exact width for steel stiffeners between post grooves.
    d. Mark and cut the steel stiffeners for that panel to that width. Cut stiffeners with any metal cutting saw.
    e. Next mark and cut the panel to the **stiffener width, minus a ½″.** This will allow for thermal expansion of the panel without restriction. Make certain panels are cut accurately with edges parallel. Panels can be cut with any saw, such as a circular saw.
    f. If a cut panel is used with an end or corner post, use the factory edge for attachment to the post.

11. **Single Gate Installation.**
    a. Gate posts have extra steel reinforcing for strength and are different than all other posts.
    b. The flat surface must be in position to receive the gate and gate hardware.
    c. The four foot gate requires a minimum spacing between posts of 50 ½” and a six foot gate requires a minimum of 73 ½”.
    d. The ideal spacing is to have a one inch gap between the latch post and the striker bar side of the gate. The “extra” gap on the hinge side is to allow for plastic expansion.

e. Set posts utilizing the same methods as for other posts, making certain they are vertical.
f. Allow concrete to cure for at least 72 hours, due to the continuous tension on the posts after gates are mounted.
g. Attach gate striker bar using the two provided 3/8" stainless button head screws making sure not to pinch plastic between threaded inserts in frame and bracket. Position the rod on the outside of the gate (the direction that it swings).
h. Then thread the ½" hinge rods into the upper and lower inserts in the frame leaving about and 1 ½" from the edge of the gate to the bracket (this can be re-adjusted latter).
i. Next hold the gate and its hinges against the reinforced gate post in the proper position and thread the provided self tapping screws into the post using caution not to over tighten the screws crushing the internal foam. The elevation of the gate is left to the installer with the standard being level with the top of the panels on either side of the gate. Gates are designed with a gap at the bottom to facilitate an unobstructed swing.
j. After mounting gate hinges to post adjust the hinges using the ¾" nut on each hinge to set the gap at the latch (approximately 1") and level the gate so the top of the gate sits level.
k. Then fasten the gate latch to the post using the provided four self tapping screws, lining it up with the striker bar only after the gate is positioned correctly. **Do not screw through the two small tabs on the front of the latch. The tabs are for alignment only!**
l. Drop rods can be attached if desired by screwing directly through the plastic panel into the internal frame with self tapping screws.
m. For more information, see Illustration G at the bottom of this document.

12. **Double gate installations.**
a. Double gates are set the same as single gates.
b. The desired minimum spacing between double gate posts is as follows: two four foot gates 100 ½"; a four foot and a six foot gate 123 ½"; two six foot gates 146 ½" from reinforced gate post to reinforced gate post.
c. The gap between the double gates themselves should be approximately 1".

d. Install the striker as done in the single gate installation on the gate that will be used to open first. The drop rod and the latch get installed on the "fixed" gate.
e. Install the latch using the provided 3/8" stainless steel button head screws opposite the striker on the opposing gate. The latch can be disassembled and reverse if the opposite latch lever action is desired. On double gates you will be left with an "extra" striker and latch.
f. At least one drop rod is necessary for the proper functioning of the latch on all double gates. The drop rods screw directly through the plastic panel to the internal frame with self tapping screws.

13. **Hinge Spring Adjustment**
    a. To tension the gate closings springs remove black rubber cap from top and bottom of hinge pivot to determine which side (top or bottom) has the curly Q tension set pin.
    b. Use the provided tool to rotate the castle cap by hooking it in the holes to rotate the tensioner.
    c. Install the curly Q pin and then rotate again and again until you reach the required tension. Remember to do each hinge in conjunction with the other to obtain the desired tension.
    d. Replace caps with slit in rubber cap facing the hinge body.

14. **Concrete Shoes.**

    SimTek can be installed on top of an 8″ minimum width, poured concrete wall or on flat concrete using SimTek′s Concrete Shoe. Concrete Shoes are a heavy steel plate with vertical members. It attaches to the concrete with anchors and bolts to the posts. Specific Concrete shoes are available for end posts, line posts and corner posts. Skirts in six colors to match wall colors, cover the plates and anchor bolts for a finished look.

    a. Cut the posts to 73.5″ if the concrete surface is level. Posts may need to be cut longer to accommodate slopes if the concrete wall is stepped. Always cut off the bottom of the posts, retaining the factory finished post top.
    b. Panel support brackets are unnecessary when using Concrete shoes. The panels will sit directly on the wall or driveway surface.
    c. Start with either a corner or an end post position. Locate the concrete shoe an equal distance from the edges of the concrete.

d. Mark the position of the plate. Drill all four holes through the pre-drilled holes in the steel plate.
e. Next install four concrete anchor bolts with a minimum tension and shear strength of at least 4,000 pounds. Position the bolts to fasten the mounting plate of the shoe.
f. Place the shoe over the bolts and attach the shoes to the concrete with specified fasteners.
g. If the concrete surface is not level, washers may be placed over anchor bolts and before shoes are bolted down to serve as leveling devices.
h. Position the skirt covers over shoes, covering the shoe plates. **Skirts must be inserted prior to posts being attached.**
i. Attach the shoe straps to the posts with fasteners in pre-drilled holes.
j. With the first shoe anchored, and the post attached, determine and mark the next shoe position using a steel spacer. It will measure 72″ from the center of the post to the center of the next post.
k. Mark and drill the four holes for the next shoe.
l. Repeat previous steps.
    i. Mark and drill the holes.
    ii. Attach the shoes to the concrete.
    iii. Insert the skirts.
    iv. Attach the posts to the shoes.
m. Once all shoes and posts are securely anchored to the concrete wall and skirts are in place, insert the panels.
n. Be certain that steel stiffeners are in both the top and bottom rails of each panel.
o. Once the panels are inserted, they will hold the skirts in position
p. Finally, place the caps on the posts for a finished look.
q. For more information, see Illustration H at the bottom of this document.

15. **Installing gap fillers.**

Gap fillers are designed to fill the gap primarily on the edge where a 6′ high wall transitions to a 3′ high wall.

a. Cut the gap filler to the desired length and using two screws, attach it from the back side of the line post. This will provide a finished look with hidden fasteners.

b. For more information, see Illustration I at the bottom of this document.

Summary of Installation, questions.

These instructions are meant to be both thorough and concise. Most questions will be answered by paying close attention to details and recommended installation procedures. If you have questions or encounter unusual circumstances, please contact SimTek for direction.

To initiate warranty coverage, please register online as soon as your SimTek Wall is complete. SimTek cannot be responsible for unregistered projects, and associated future warranty claims.

Thank you for choosing SimTek. Your Decorative Rock Wall will provide many years of trouble-free beauty and owner satisfaction.

TOOLS and FASTENERS Required:

1. Two way level
2. Bubble level
3. Laser level for significant changes in slope.
4. String at least as long as your longest run.
5. Power drill with:
   - 3/8″ hex driver (deep socket to allow installation of brackets)
   - Phillips screw driver
6. Mallet or hammer
7. Metal cutting saw (to cut steel stiffeners – if required)
8. Circular saw (if any panels are to be cut)
9. Allen Wrench to adjust gate position.
10. Spray paint to mark locations of holes to be drilled in soil.
11. List of self-tapping fasteners
    - Attaching support brackets to line posts – #14 Hex washer head, 1.5″ fastener
    - Attaching support brackets to end posts – #14 Hex washer head, 3.0″ fastener
    - Attaching support brackets to corner posts - #14 Hex washer head, 3.0″ fastener

- Attaching panels to End posts – #14 Hex washer head, 3.0″ fastener
- Attaching panels to Corner posts – #14 Hex washer head, 3.0″ fastener
- Attaching panels to Line posts – #14 Hex washer head, 3.0″ fastener
- Fasteners to attach shoes to the posts – #14 Hex washer head, 1.5″ fastener

12. Concrete anchor bolts – 0.50″ x 2.75″ (if mounting SimTek on a wall)
13. Button Head Screw – Attaching hardware to gate (included with hardware)

14. **Hardware:**
    - 1.0″ Fasteners
        i. Drop Rod to Gate
    - 1.5″ Fasteners
        i. Bracket to Line Post (2 per post)
    - 2.5″ Fasteners
        i. Hinge to Post
        ii. Latch to Post
    - 3.0″ Fasteners
        i. Bracket to End Post (1 per post)
        ii. Bracket to Corner Post (2 per post)
        iii. Panel to Corner Post (6 per post)
        iv. Panel to End Post (3 per post)
    - Button Head Screw
        i. Hinge to Gate (2 per hinge)
        ii. Latch to Gate (2 per latch)
    - For more information, see Illustration J at the bottom of this document.

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Illustration A

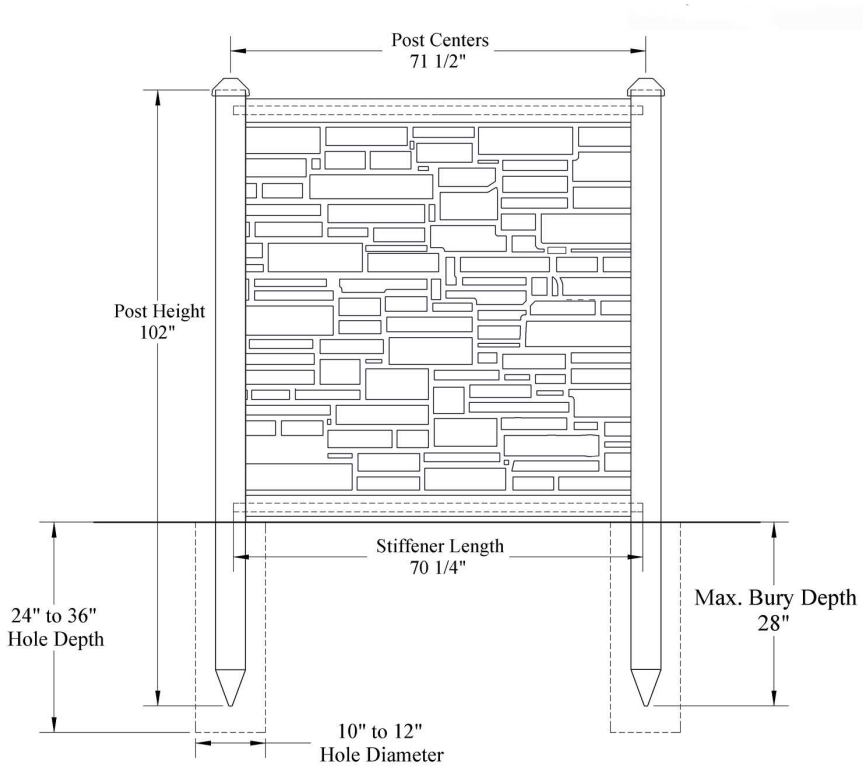
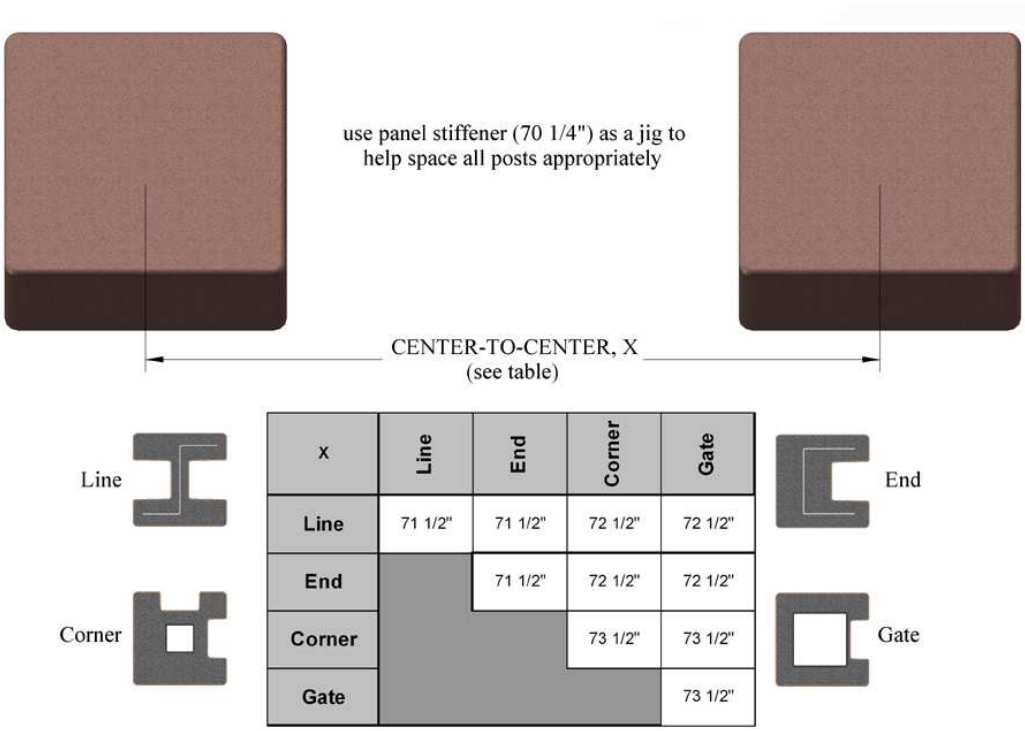


Illustration B



X	Line	End	Corner	Gate
Line	71 1/2"	71 1/2"	72 1/2"	72 1/2"
End		71 1/2"	72 1/2"	72 1/2"
Corner			73 1/2"	73 1/2"
Gate				73 1/2"

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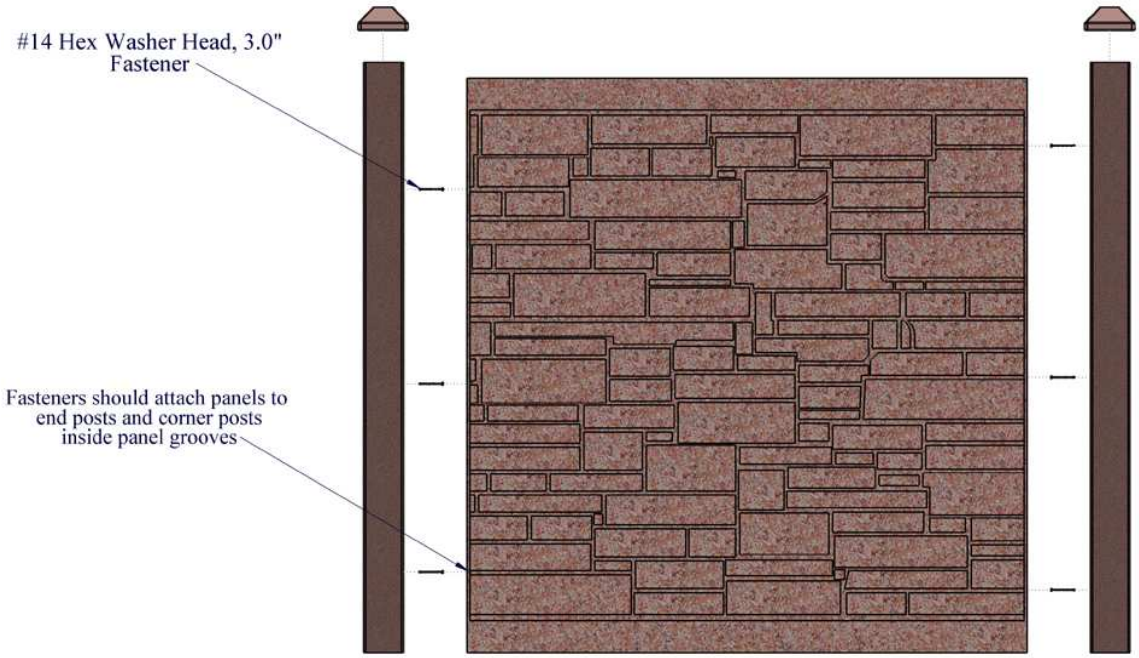
Illustration C



For information on fasteners, see SimTek Fastener Specifications

Illustration D

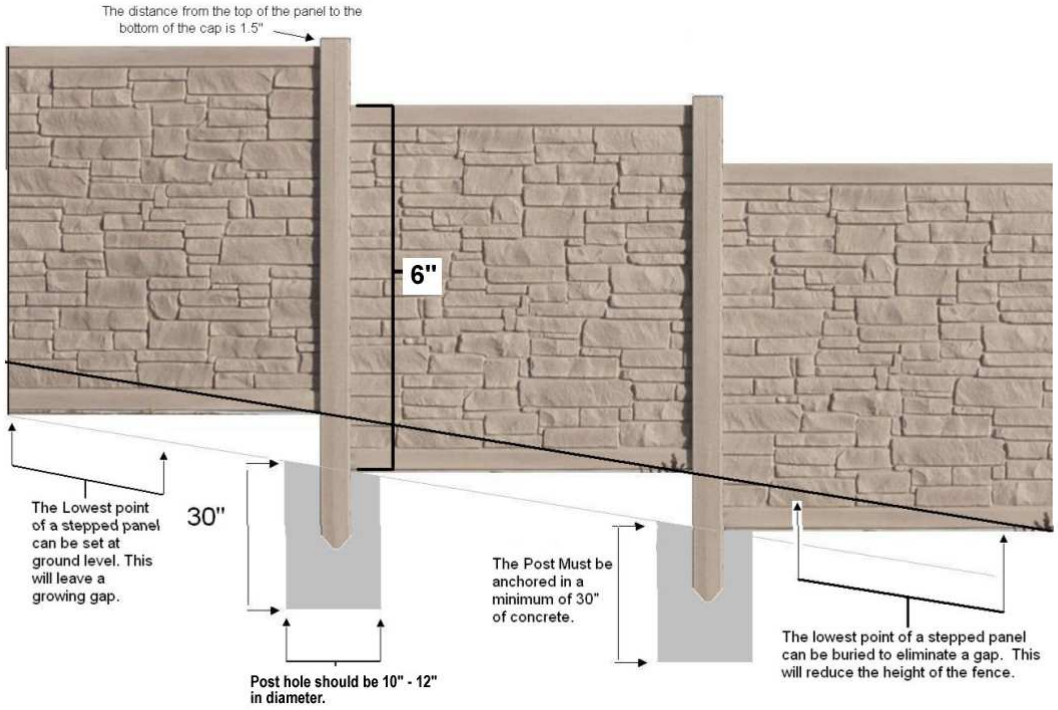


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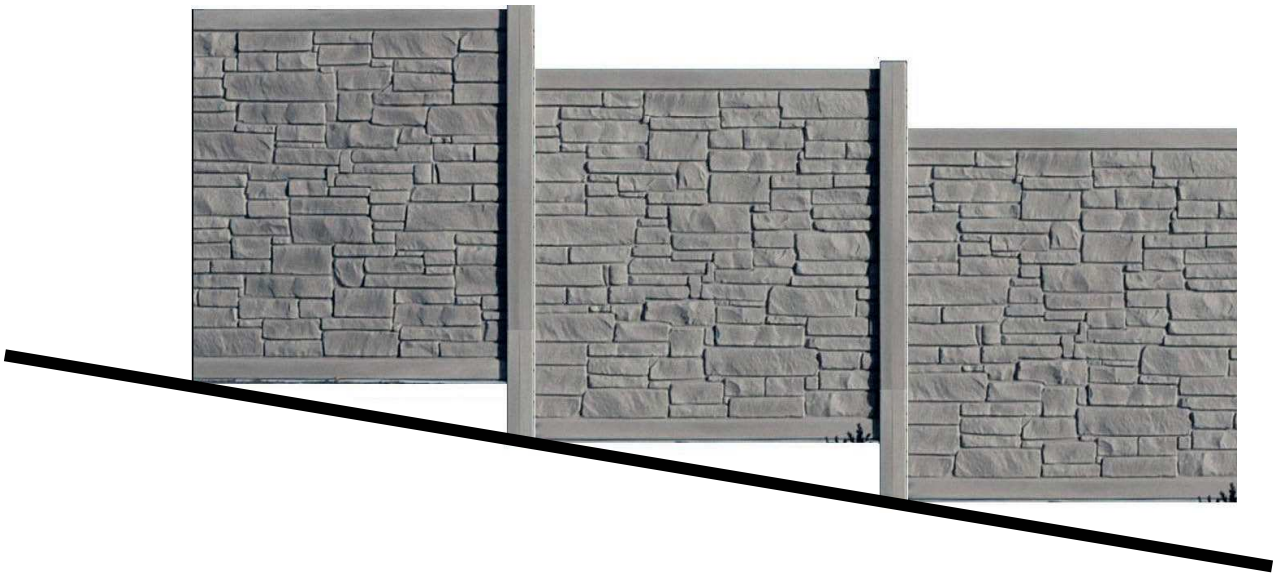
Illustration E



SLOPING GROUND INSTALLATION

There are two ways to handle sloping terrain. Illustration A shows gaps between the fence and the top of the step. Illustration B has no gaps because each panel has been buried a bit in the ground. In either case, a minimum of 30″ of concrete must extend below ground.

Illustrator F

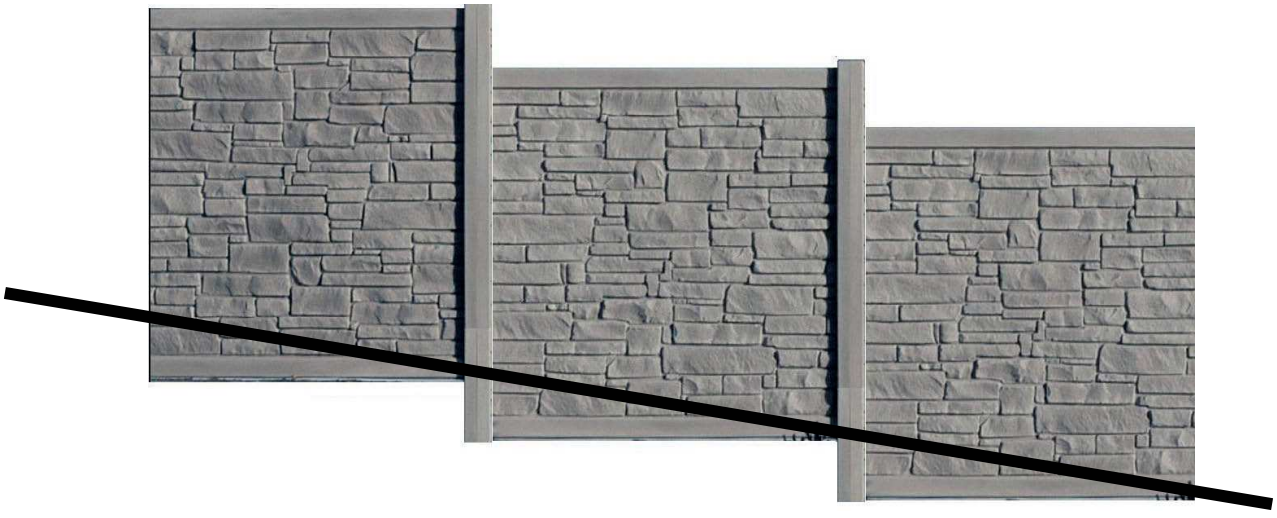


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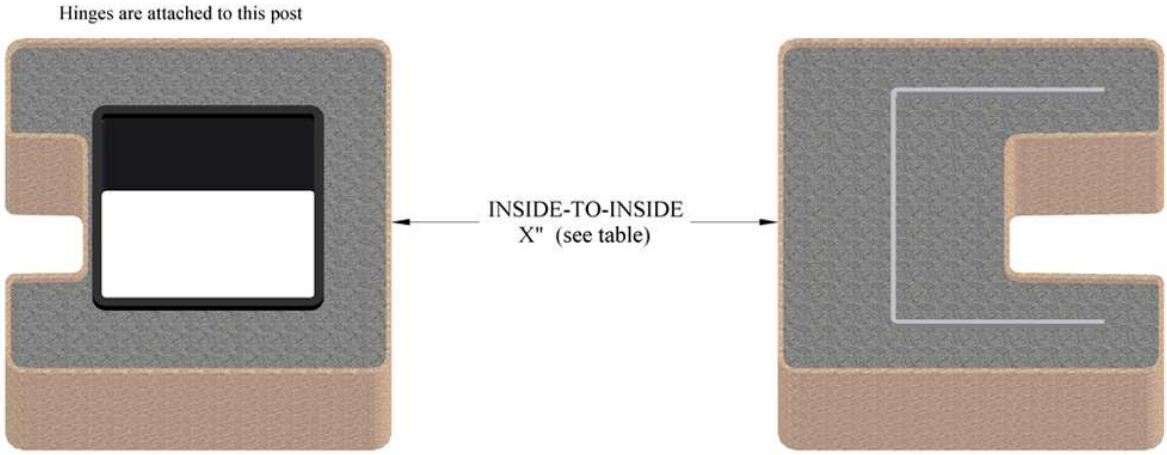
Illustration G



Gate Composition	X Dimension
4' - single 4' gate	50 ½"
6' - single 6' gate	73 ½"
8' - double 4' gate	100 ½"
10' - one 4' gate & one 6' gate	123 ½"
12' - double 6' gate	146 ½"

All gates require about a 1.5" gap between the gate and the gate post, and about a 1" gap between the gate and the end post or between the two gates when using double gates.

For single gate, use one gate post (left) and one end post (right).
For double gates, use two gate posts.

Illustration H

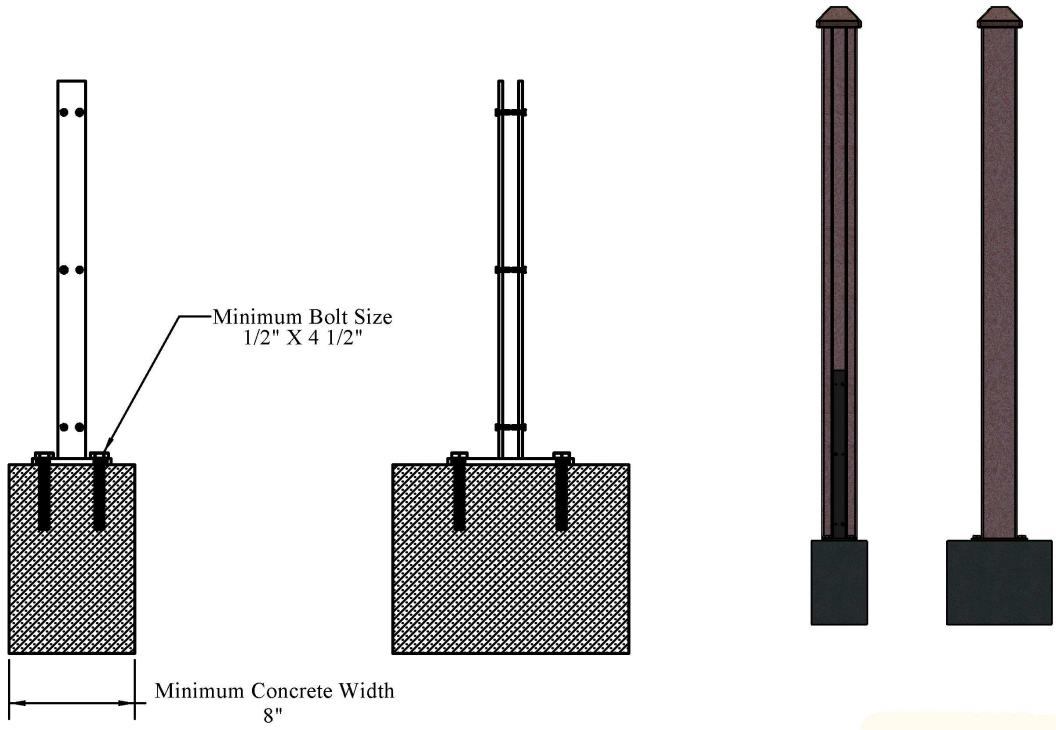


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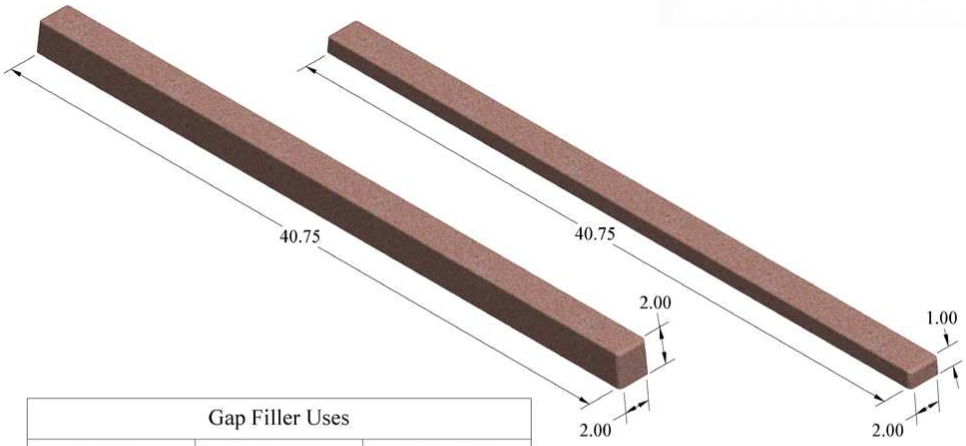
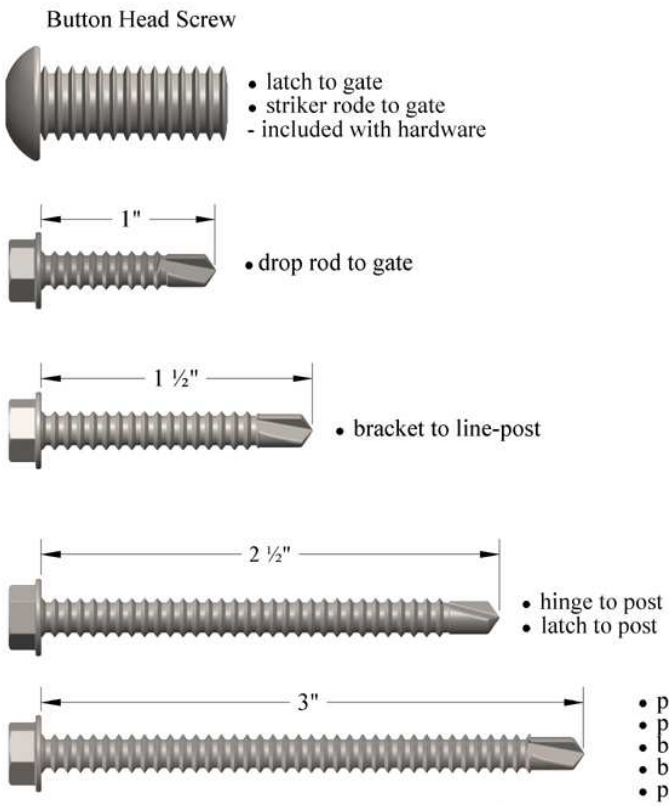
Illustration I



Gap Filler Uses		
Post Type	2" Gap Filler	1" Gap Filler
Line Post	X	
End Post	X	
Corner Post		X
Gate Post		X

Illustration J



Fastener Location & Quantity	#14 X 1"	#14 X 1 ½"	#14 X 2 ½"	#14 X 3"	Button Head Screw
Per Hinge (to post)			4		
Per Latch (to post)			4		
Per Latch (to gate)					2
Per Striker Rod (to gate)					2
Per Drop Rod (to gate)	8				
Per Line Post		2			
Per End Post				1 + 3	
Per Corner Post				2+6	

- #14
- 3/8 nut-driver
- Zinc plated
- self drilling
- always ensure the fastener captures the post stiffeners