**PITTSBURGH CORNING™**

**Mortar**
**Glass Block**
**Installation System**

# assembly
# instructions

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# Pittsburgh Corning
**Mortar Glass Block Installation System**
**Assembly Instructions**

## Introduction:
The **Mortar I System** utilizes Pittsburgh Corning perimeter channels on all four sides. You will also use Universal Mortar Spacers and glass block mortar to produce clean, consistent 1/4" joints and a traditional grid look.
The **Mortar II System** does not use the Pittsburgh Corning perimeter channels but instead utilizes expansion strips, panel reinforcing and panel anchors. You will also use Universal Mortar Spacers and glass block mortar to produce clean, consistent 1/4" joints and a traditional grid look.

Here is additional information about each method.

## Mortar I: (page 3)
• This method is designed for use with Pittsburgh Corning Premiere (4" thick) and Thinline® (3" thick) Series Glass Block.
• The installation recommendations are for small residential panels of 25 sq. ft. or less.
• Not for use in constructing curved glass block walls.
• Interior and exterior panels must be framed on all four sides.

*Note: This instruction is not to be used in constructing curved glass block applications. All glass block panels are non-load bearing, so adequate provisions must be made for support of construction around the panel.*

## Mortar II: (page 14)

• This method is designed for use with Pittsburgh Corning Premiere (4" thick) and Thinline® (3" thick) Series Glass Block.
• The installation recommendations are for interior or exterior residential panels larger than 25 sq. ft.
• This method may be used to install projects framed on two, three, or four sides.
• Premiere Series - Panel size limitations - Interior (250 sq. ft. max) and *Exterior (144 sq. ft. max.).
• Thinline® Series - Panel size limitations - Interior (150 sq. ft. max.) and *Exterior (85 sq. ft. max.).

* Exterior panel size limitations are based on a 20 PSF. For higher windloads consult local building codes or call Pittsburgh Corning Corporation at 1-800-624-2120.

*Note: All glass block panels are non-load bearing, so adequate provisions must be made for support of construction around the panel.*

The joints of the Mortar I and Mortar II Systems utilize a traditional installation method using a mortar finish for the classic "grid" look. Glass block sealant should be used to seal the perimeter on both sides of the panel.

Before you begin installing your glass blocks, decide which installation method is right for your project.

The materials required for Mortar System glass block installation are:

1. Pittsburgh Corning Premiere Series or Thinline® Series Glass Block

2. Universal Mortar Spacers

3. Perimeter Channels - Premiere (4") or Thinline® (3") *(Mortar I System)*

4. Expansion Strips

5. #6 x 1" zinc-plated flat head screws (approx. three per lineal foot of perimeter channel) *(Mortar I System)*

6. Panel reinforcing *(Mortar II System)*

7. Panel anchors *(Mortar II System)*

8. #12 x 1" zinc-plated pan head screws *(Mortar II System)*

9. Glass Block white premixed mortar

10. Pittsburgh Corning Glass Block Sealant

11. White touch up paint *(Mortar I System)*

12. Latex paint, Weldbond® adhesive, or asphalt emulsion depending upon application.

## Mortar I System

The tools required for the Mortar I glass block installation system are a margin trowel, mortar pan, polyfoam brush, sponge, tin snips, screwdriver or power drill, fine tooth saw or miter saw, caulking gun, utility knife, metal file, tape measure, 3/8" to 1/2" striking tool and 2' level.

### 1. Prepare The Rough Opening

A. Make sure the opening is the correct size. To determine the correct size of the rough opening, add 1/4" to the sum of the nominal block sizes for both the height and width.

**Example:** Panel (using 8" x 8" block) is four block wide (8 x 4 + 1/4" = 32-1/4") and five block high (8 x 5 + 1/4" = 40-1/4"). Rough opening needs to be 32-1/4" wide and 40-1/4" high.

B. Use a level to make sure the opening is level and plumb.
C. Measure the opening diagonally from corner to corner in both directions, and compare the dimensions to check for squareness. These dimensions should be equal to within 1/8".

Note: If there are any problems with the opening, make adjustments before proceeding.
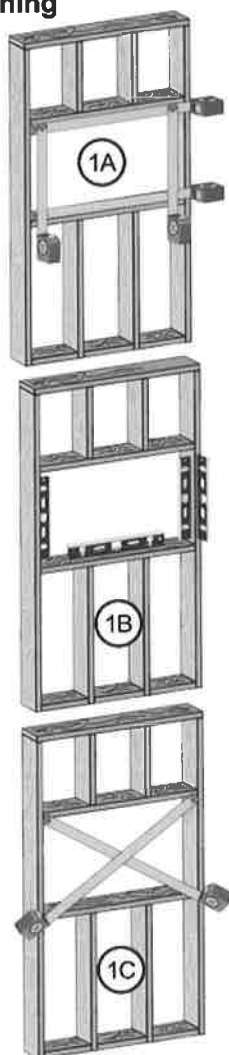
### 2. Install Perimeter Channel

A. Cut the channel to fit the perimeter of the opening. The channel ends may be cut straight or mitered.

   a. If cutting the ends straight:
   • Cut the top and bottom channels to the width of the opening.
   • Cut the side channels to the height of the opening minus 1-1/2" so they will fit between the top and bottom channels.
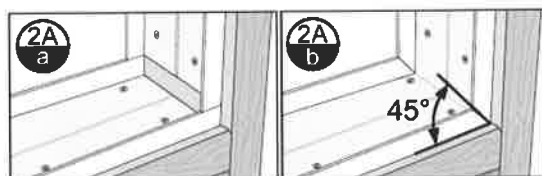
   b. If mitering the ends, make all cuts at a 45° angle.
B. Cut the top channel in half lengthwise with a utility knife. Score the center groove with the knife and break the channel in half.

**Note:** Cutting the top channel in half will allow the top row of blocks to be installed.

C. Install the bottom channel:

   • The channel may be installed in the center of the opening, or flush with the interior or exterior side of the opening.
   • Attach the channel to the opening by inserting #6 x 1" flat head galvanized screws through the predrilled holes in the channel. Insert two screws in each end of the channel.

**Note:** If the predrilled holes at the ends were trimmed off when cutting the channel to length, drill new ones at the ends of the cut piece.
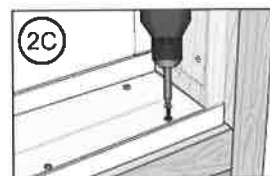
D. Install the side channels in the same manner making sure they are plumb before attaching with screws.

*Note: You may want to slide a glass block into the bottom channel at both corners to make sure the side channels are aligned with the bottom channel.*

E. Install the half top channel:

- Place the half channel in the top of the opening making sure it is aligned with the side channels.
- Attach the channel to the opening by inserting #6 x 1" flat head galvanized screws through the predrilled holes in the channel. Insert a screw at each end of the channel.
- On exterior windows, the screwed in half channel should always be the exterior side.

*Note: If the predrilled hole at the end was trimmed off when cutting the channel to length, drill a new one at the end of the cut piece.*

F. Paint all of the screw heads white to reduce their visibility.
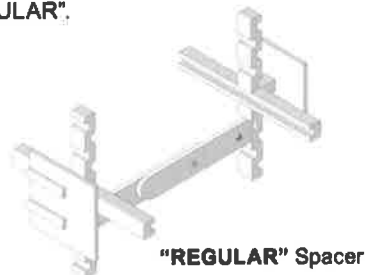
## 3. Preparation of Universal Mortar Spacers

A. Assemble the spacers for the series of block you are installing. The spacers come in two halves, snap the spacers together to fit the width of the block.
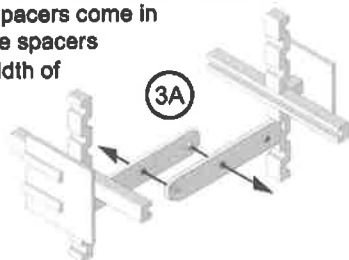
B. Modify the spacers using tin snips based on their location:

- Where four block come together, spacers are used as assembled. These are called "REGULAR".



**"REGULAR"** Spacer

- Where block meet the side perimeter channel, clip off both sets of smooth legs. Twist-off tabs remain in place. File off any burrs so the spacer will lay flat. These are called "FLAT".



"REGULAR" Spacer
Modified Called **"FLAT"**
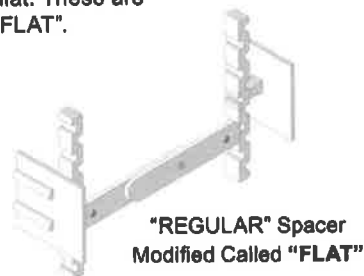
- For the top row of block, clip off one upper toothed leg and cut the twist off tab in half. These are called "H".
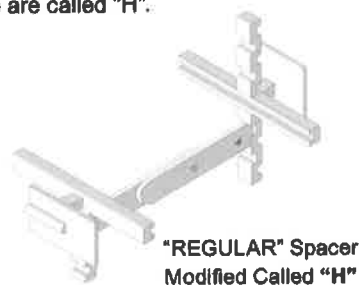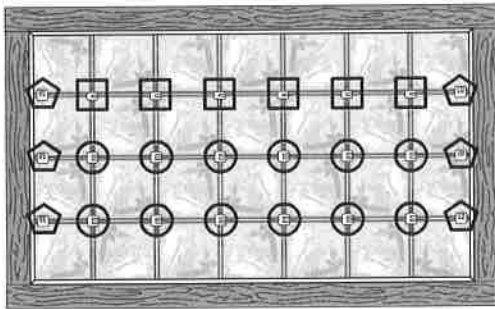


"REGULAR" Spacer
Modified Called **"H"**

*Note: It is important to file off any burrs.*

This is a reference guide for where "REGULAR" and modified spacers are used.

○ = "REGULAR" Spacer
⬠ = "FLAT" Spacer
▢ = "H" Spacer



## 4. Mortar Preparation

The following gives an idea of the number of blocks that can be installed per 50 pound bag of mortar.

| White Premixed Glass Block Mortar Number of blocks per 50 lb. bag of mortar | | | | | |
|---|---|---|---|---|---|
| Block Sizes (Nominal) | 4" x 8" | 6" x 6" | 6" x 8" | 8" x 8" | 12" x 12" |
| No. of Premiere Series (4" thick) | 34 | 34 | 30 | 26 | 18 |
| No. of Thinline® Series (3" thick) | 42 | 42 | 36 | 32 | N/A |

Based on 1/4" mortar joints

A. Mix mortar according to the instructions on the premix mortar bag. When mixed to the proper consistency, mortar should stick to the edge of the glass block when turned on edge. Be sure to read and understand all precautions outlined by the mortar manufacturer. Freshly mixed mortar may cause skin irritation.

**Note:** *Slowly add water to mortar mix. DO NOT mix more mortar than you can install in one hour.*

**Note:** *Avoid direct contact when possible and wash exposed skin areas promptly with water. If any gets into eyes, rinse immediately with water and seek prompt medical attention.*
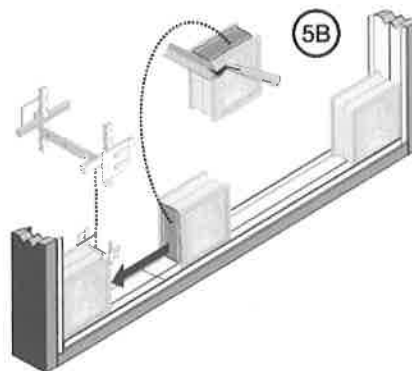
## 5. Install The First Row

A. Place two glass blocks in the sill channel, sliding one block into the right jamb and one block into the left jamb. Make sure the blocks are seated in the channels.

**Note:** *No mortar is applied to the edges of the blocks that meet the channel. DO NOT apply mortar to the channels.*
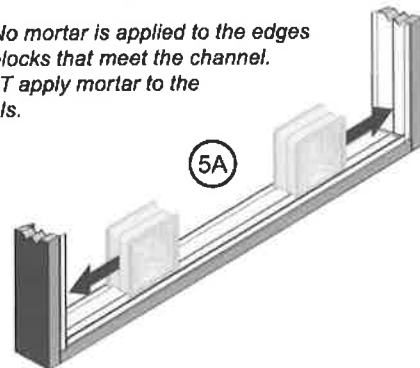


B. Install the next block:

- Apply 3/8" to 1/2" of mortar to the edge of the next block.
- Place the block in the channel with the mortar facing a previously installed block.
- As you install the block, insert a "REGULAR" spacer with the cross arm down where the two blocks meet.
- Push the block firmly in place, forming a 1/4" mortar joint. Make sure the joint is completely filled with mortar.

C. Install the remaining blocks in the first row in the same manner.

- Apply 3/8" to 1/2" of mortar to both edges of the last block installed in the row.
- Be sure to insert "REGULAR" spacers with the cross arm down, where two blocks meet.
- Push the blocks firmly in place, forming 1/4" mortar joints. Make sure the joints are completely filled with mortar.
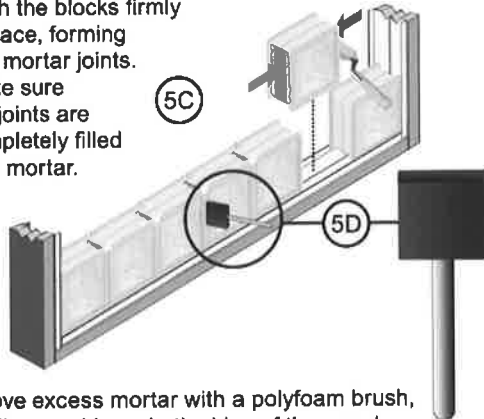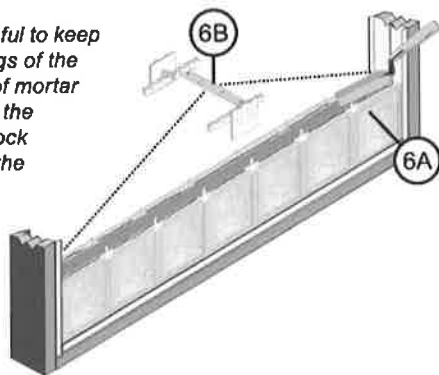


D. Remove excess mortar with a polyfoam brush, and fill any voids on both sides of the panel.
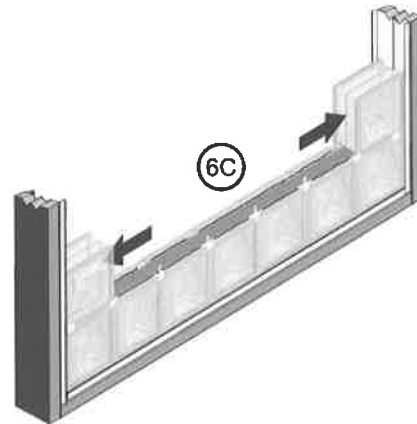
## 6. Install The Remaining Rows

A. Apply a 3/8" to 1/2" mortar bed on top of the first row.

**Note:** Be careful to keep the smooth legs of the spacers free of mortar to ensure that the next row of block will sit flat on the spacers.



B. Place a "FLAT" spacer on top of the first and last block of the previous row where they meet the side channels.

C. Set the first block and last block of the next row into the side channels on top of the "FLAT" spacers.



D. Install the remaining blocks in the row in the same manner as the first row.

- Apply 3/8" to 1/2" of mortar to the edge of each block that meets a previous block. Apply mortar to both edges of the last block installed in the row.
- Be sure to insert "REGULAR" spacers with the cross arm down, where two blocks meet.
- Push the blocks firmly in place, forming 1/4" mortar joints. Make sure the joints are completely filled with mortar.
- Remove excess mortar with a polyfoam brush, and fill any voids on both sides of the panel.
- Check periodically to ensure that the blocks are straight, level and plumb. Adjust as needed.

E. Repeat Steps 6A - 6D to install each row of block, except for the next to last row.

F. Install the next to last
   row of block using
   "H" spacers in place
   of "REGULAR"
   spacers. Insert
   "H" spacers and
   "FLAT" spacers
   as shown.
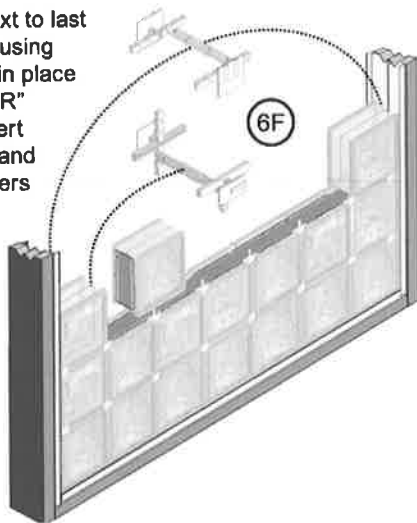


G. Lay a bed of mortar on top of the next to last row,
   installing "FLAT" spacers at each corner.

**Note:** For ease of block placement, you may want to
snap off the tab of the "FLAT" spacer before placing
both corner blocks.

H. Install the last row of block starting with a block
in each top corner, then work toward the middle.
Be sure to apply mortar to both sides of the last block.
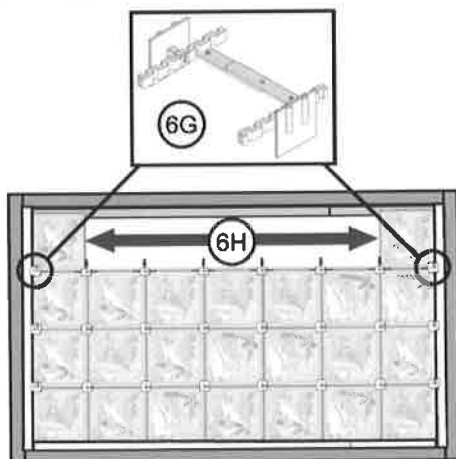


I. Press any mortar that has been forced out back
   into the joints using a polyfoam brush.

J. Remove all mortar from the glass block faces.

## 7. Finishing

**Note:** Allow the mortar to set up for about one hour
before proceeding.

**Note:** To prevent scratching of the glass DO NOT use
abrasive materials for this cleanup.

A. Twist off the spacer tabs on both sides of the panel.
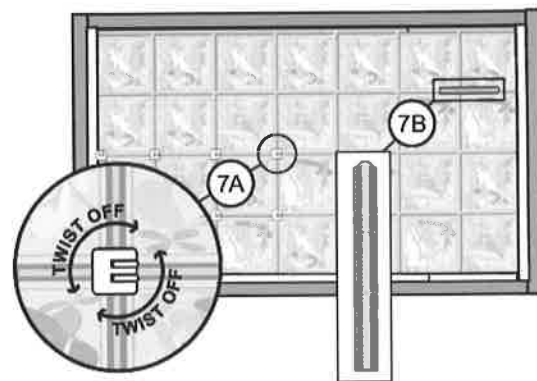


B. With moderate pressure, run the striking tool over
   all the joints. It is best to strike all the horizontal
   joints first, then the vertical joints so the pattern is
   uniform. Fill any voids with mortar.

**Note:** Striking removes excess mortar and compacts
the joint to create a smooth, concave, moisture-proof seal.

C. Use a damp sponge to remove the excess mortar
   from the block face, rinsing the sponge frequently.
   Do not be concerned about the dry film that
   remains on the blocks, it will be cleaned off later.

**Note:** Allow the mortar to dry for about two to three hours
before proceeding.

D. Use a soft, dry cloth to remove the excess film. A common household plastic scouring pad can also be used.

E. Cut the expansion strip to a 1-1/2" width and insert it between the top of the blocks and the frame.



TOP HALF CHANNEL
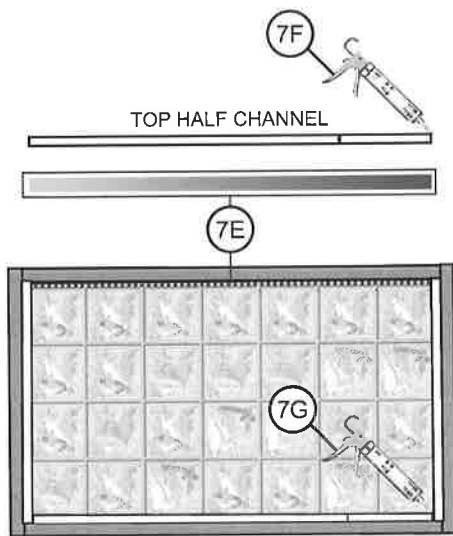
F. Apply sealant to the back of the half-section of channel and install it between the expansion strip and frame.

G. Apply glass block sealant around the perimeter to seal the glass block and channel. Also seal the top channel to the frame at the head.

*Note: For exterior panels or wet areas, also seal where the channels meet the framing.*

# Mortar II System

The tools required for the Mortar II glass block installation system are a margin trowel, mortar pan, 2 polyfoam brushes, sponge, tin snips, screwdriver or power drill, caulking gun, utility knife, metal file, tape measure, 3/8" to 1/2" striking tool, 2' level and rubber mallet.

## 1. Prepare The Rough Opening

*Note: For those glass block applications that begin at floor level, we recommend that you make a curb base as wide as the glass block being used. This will help protect the bottom row of glass block from damage (vacuum cleaners, mops, etc.).*

A. Make sure the opening is the correct size. To determine the correct size of the rough opening, add 1/2" to the sum of the nominal block sizes for both the height and width.
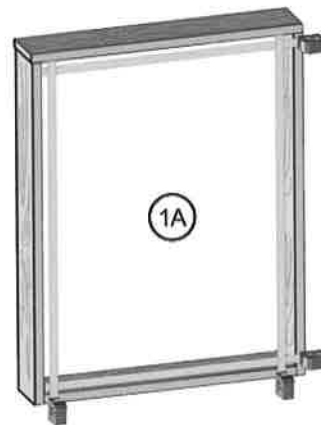


**Example:** Panel (using 8" x 8" block) is fourteen block wide (8 x 14 + 1/2" = 112-1/2") and ten block high (8 x 10 + 1/2" = 80-1/2"). Rough opening needs to be 112-1/2" wide and 80-1/2" high.

B. Use a level to make sure the opening is level and plumb.

C. Measure the opening diagonally from corner to corner in both directions, and compare the dimensions to check for squareness. These dimensions should be equal within 1/8".
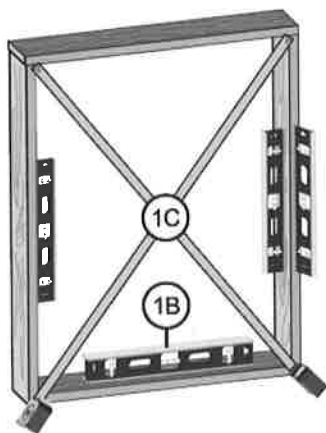


D. If there are any problems with the opening, make adjustments before proceeding.

E. Use a polyfoam brush to treat the sill with latex paint, Weldbond® adhesive or asphalt emulsion as specified below.

- For wood interior, non-shower applications use latex paint.
- For shower applications use Weldbond® adhesive. Rough up the surfce before applying adhesive.
- For all commercial applications, metal, brick or concrete, use asphalt emulsion.
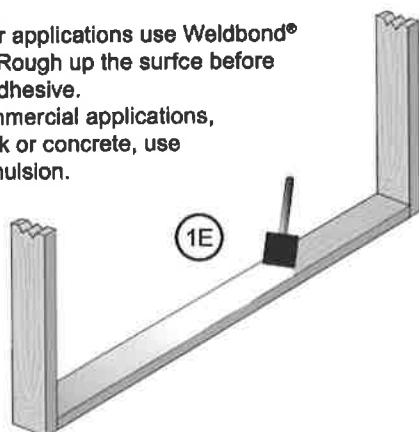


If using Weldbond®, apply mortar to the surface before it cures. Otherwise, let the treated area set up and cure before installing the first row of block.

## 2. Preparation of Universal Mortar Spacers, Panel Anchors, and Expansion Strips

A. Assemble the spacers for the series of block you are installing. The spacers come in two halves, snap the spacers together to fit the width of the block.
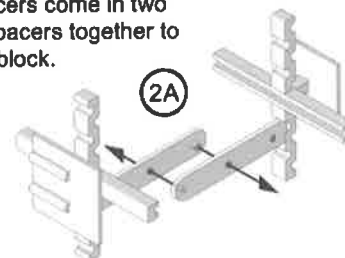


B. Modify the spacers using tin snips based on their location:

- Where four block come together spacers are used as assembled. These are called "REGULAR".



"REGULAR" Spacer
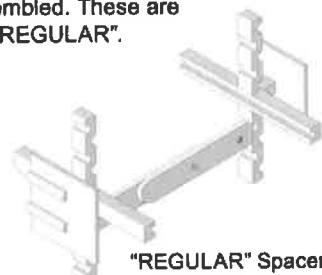
- For the two bottom corners of the panel, orient the spacer with the cross arm down and clip off the upper toothed legs. Clip off the upper half of the twist-off tabs. Cut off the left or right side of the remaining twist-off tab and the smooth legs on the same side. Only two of these spacers are required. Clip off the right set of smooth legs of one spacer, the left set of the other spacer. These are called "L".



"REGULAR" Spacer
Modified Called **"L"**

- Where glass block meet the jambs and curb, (except for the four corners) orient the spacer with the cross arm down and clip off the upper set of toothed legs, and the upper half of the twist-off tab. These are called "T".



"REGULAR" Spacer
Modified Called "T"
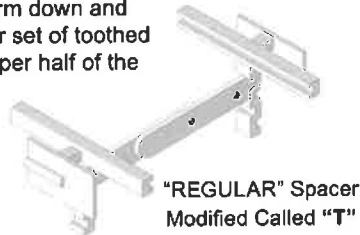
**Note:** *Prepare a supply of "T" spacers before you start, so that your panel construction can continue without interruption.*

**Note:** *It is important to file off any burrs.*

C. Dry construct your panel (without mortar) to ensure that your block fits the opening and you have an adequate supply of prepared spacers.

This is a reference guide for where "REGULAR" and modified spacers are used.

⭘ = "REGULAR" Spacer

⬠ = "L" Spacer

⬜ = "T" Spacer
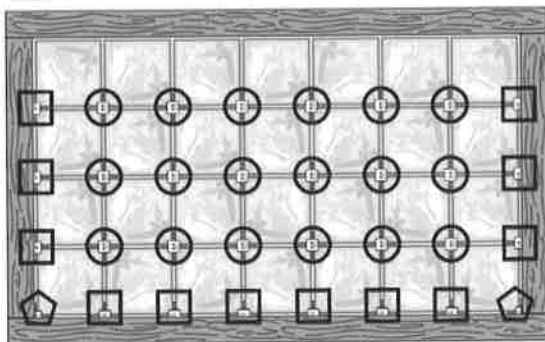


D. Bend each panel anchor 90° to produce a short arm (approximately 4").
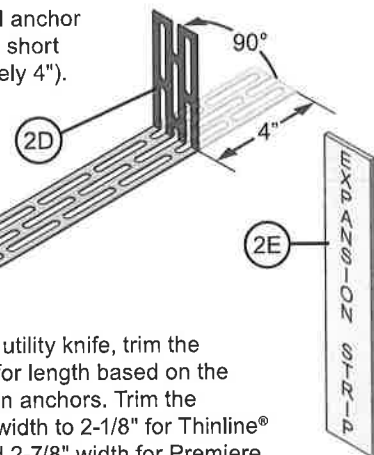


E. With scissors or utility knife, trim the expansion strip for length based on the distance between anchors. Trim the expansion strip width to 2-1/8" for Thinline® Series block and 2-7/8" width for Premiere Series block.

## 3. Mortar Preparation

This chart will give you an idea of the number of blocks that can be installed per 50 pound bag of mortar.

| White Premixed Glass Block Mortar Number of blocks per 50 lb. bag of mortar | | | | | |
|---|---|---|---|---|---|
| Block Sizes (Nominal) | 4" x 8" | 6" x 6" | 6" x 8" | 8" x 8" | 12" x 12" |
| No. of Premiere Series (4" thick) | 34 | 34 | 30 | 26 | 18 |
| No. of Thinline® Series (3" thick) | 42 | 42 | 36 | 32 | N/A |

Based on 1/4" mortar joints

A. Mix mortar according to the instructions on the premix mortar bag. When mixed to the proper consistency, mortar should stick to the edge of the glass block when turned on edge. Be sure to read and understand all precautions outlined by the mortar manufacturer. Freshly mixed mortar may cause skin irritation.

**Note:** *Slowly add water to mortar mix. DO NOT mix more mortar than you can install in one hour.*

**Note:** *Avoid direct contact when possible and wash exposed shin areas promptly with water. If any gets into eyes, rinse immediately with water and seek prompt medical attention.*

## 4. Install The First Row

**Note:** If your project is framed on 3 or 4 sides, complete Steps A thru K. If your project is framed on 2 sides, skip to Step L.

A. Using a trowel apply approximately a 1/2" mortar bed to the treated curb or floor.
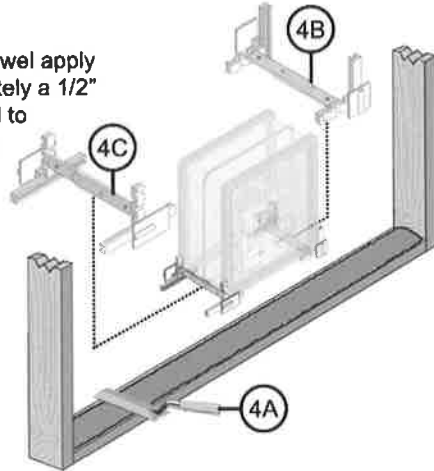


B. Without applying any mortar to the first block, place an "L" spacer at the lower outside corner of the block so that the spacer cross arm will be at the bottom, between the glass block and the curb.

C. Place a "T" spacer at the other lower corner of the block with the spacer cross arm up.

D. Slip a 16" long piece of trimmed expansion strip between the block and jamb, and push the block firmly into place.
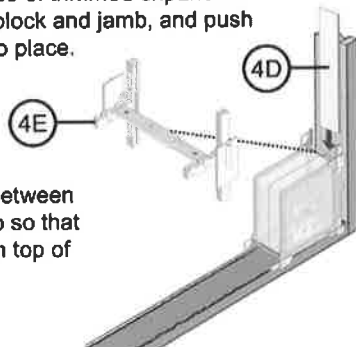


E. Slip a "T" spacer between the block and jamb so that the cross arm is on top of the block.

F. Apply 3/8" to 1/2" of mortar to the vertical edge of the second block that will contact the preceding block.
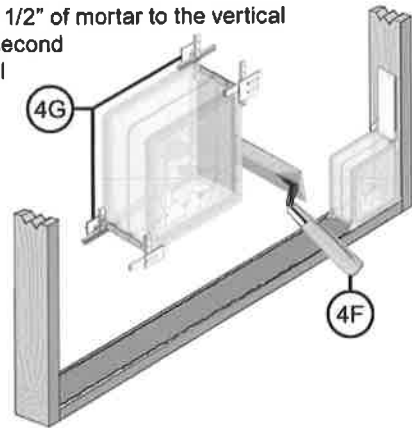


G. Place the second block using a "T" spacer on the bottom and "REGULAR" spacer at the top with the spacer cross arm between the two blocks. Push the two blocks together.

H. Follow this procedure for all remaining block in the first row except for the last block.

I. Install the last block similar to the first block, inserting an "L" spacer at the lower outside corner so that the cross arm is at the bottom, between the block and the curb.
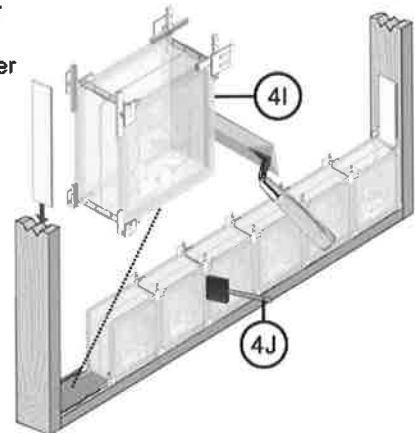


J. Check periodically to ensure that the glass blocks are straight, level and plumb.

**Note:** If you find a problem, adjust the block into place with a rubber mallet before proceeding.

K. Using a polyfoam brush, remove excess mortar and fill any voids on both sides of your panel.

## Projects frames on 2 sides:

L. Using a trowel apply approximately a 1/2" mortar bed to the treated curb or floor the length of 2 blocks.
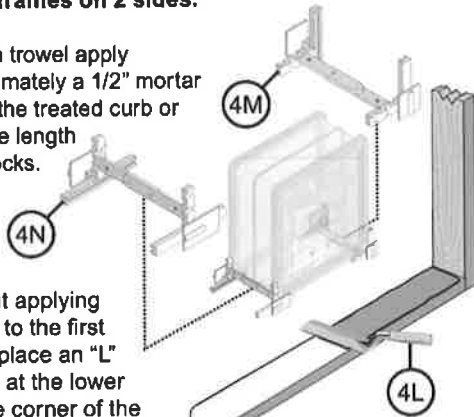
M. Without applying mortar to the first block, place an "L" spacer at the lower outside corner of the block so that the cross arm is at the bottom, between the glass block and curb.

N. Place a "T" spacer at the other lower corner of the block with the cross arm up.

O. Slip a 16" long piece of trimmed expansion strip between the block and jamb, and push the block firmly into place.

P. Slip a "T" spacer between the block and jamb so that the cross arm is on top of the block.

Q. Apply 3/8" to 1/2" of mortar to the vertical edge of the second block that will contact the preceding block.

R. Place the block using a "T" spacer on the bottom and "REGULAR" spacer at the top with the cross arm between the two blocks. Push the blocks together.

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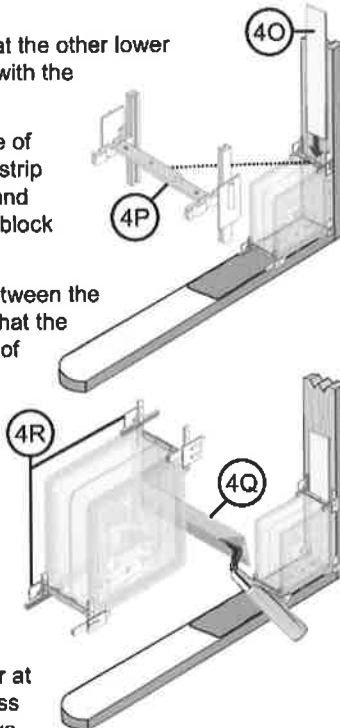
S. Install a vertical panel anchor after the second block and screw the short leg of the anchor to the curb. All panel anchors should be attached using #12 x 1" zinc-plated head screws. Use two screws per anchor.

**Note:** *If attaching the panel anchors to tile or masonry, plastic screw anchors should be used.*

T. Apply mortar so that the long leg of the anchor is embedded in the vertical joint.
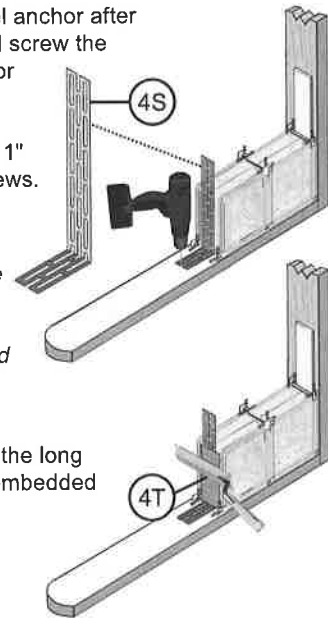
U. Follow this procedure for the rest of the blocks in the first row, installing a panel anchor after every 2 blocks.

V. Check periodically to ensure that the glass blocks are straight, level and plumb.

**Note:** *If you find a problem, adjust the block into place with a rubber mallet before proceeding.*

W. Using a polyfoam brush, remove excess mortar and fill any voids on both sides of your panel.

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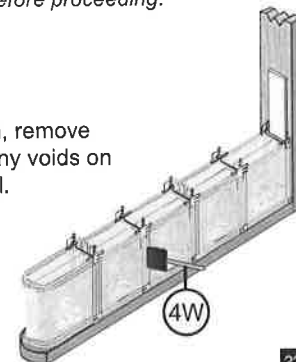
## 5. Installing The Remaining Rows

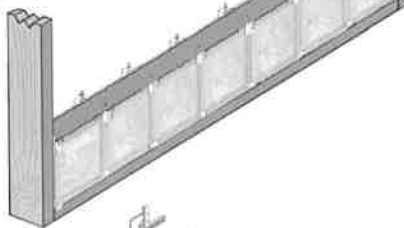A. Apply a 3/8" to 1/2" mortar bed on top of the first row.

*Note: Be careful to keep the smooth legs of the spacers free of mortar to ensure that the next row of block will sit flat on the spacers.*
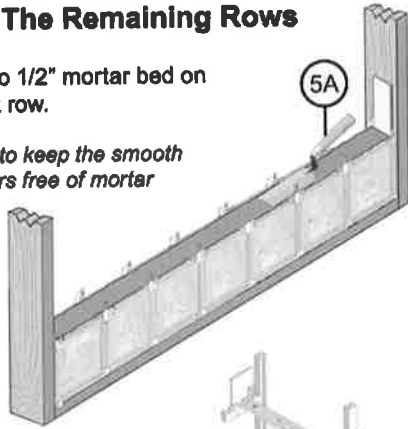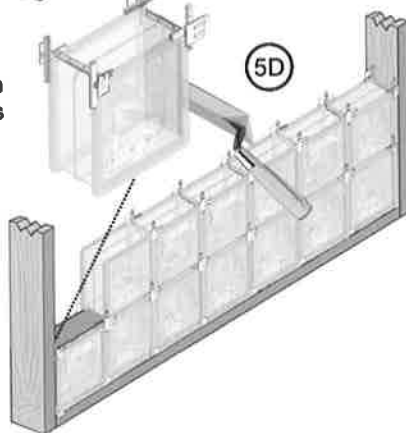
B. Place a block (without mortar) against the jamb using spacers that are already in place from the previous row, for alignment.
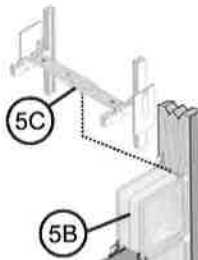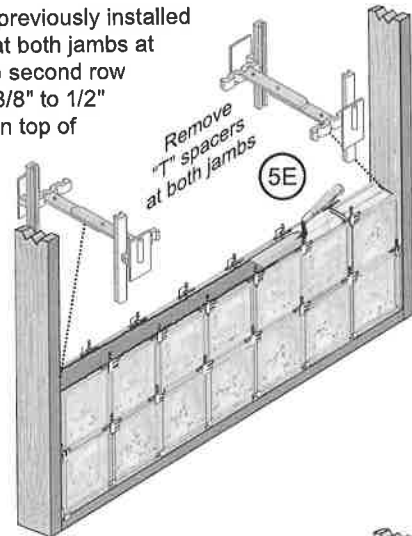
C. Place a "T" spacer at the upper corner of this block against the jamb.

D. Continue with each block as you did with the first row.

E. Remove the previously installed "T" spacers at both jambs at the top of the second row and apply a 3/8" to 1/2" mortar bed on top of this row.

Remove "T" spacers at both jambs

F. Install panel anchors at both jambs by completely embedding them in the mortar and fastening them to the jamb.
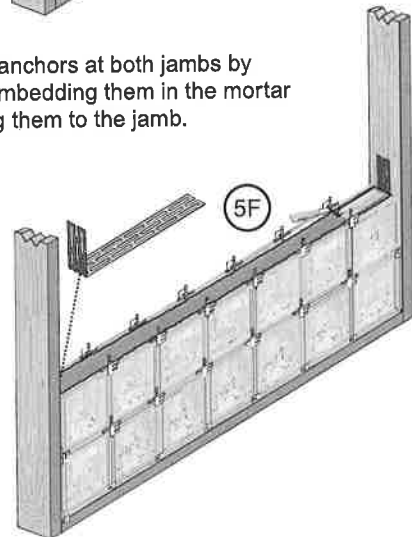
G. Reinsert the "T" spacers you previously removed.

*Note: Additional mortar may need to be applied to cover the anchor.*

H. Lightly press panel reinforcing into the mortar bed along the entire length of the panel so that it is completely embedded in the mortar. Where more than one reinforcing strip is needed, overlap them six inches.

*Note: Panel reinforcing is always installed in the same horizontal joints as the panel anchors.*
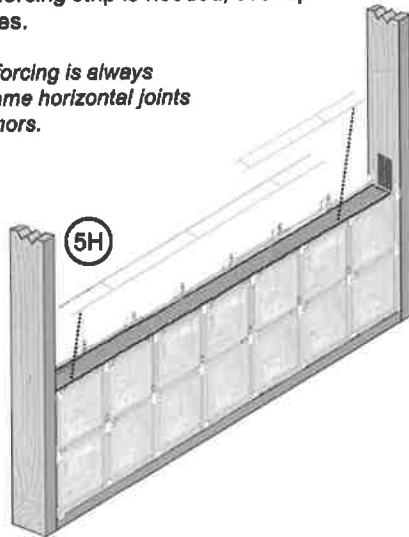


*Note: If using 12" x 12" nominal size glass block, panel anchors and panel reinforcement should be installed on top of every row, except the top row.*

I. Proceed with the remaining rows as previously described.

**Reminder:**
- Install expansion strips along the jambs as you continue.
- Check periodically to ensure that your panel remains level and plumb.
- Use a polyfoam brush to press squeezed out mortar back into the joints.

*Note: If your project is not framed at the top, install finishing units in the top row, then skip to the Finishing Instructions. If your project is framed at the top, continue with Step J.*

*Note: Installing the last row will be different than the previous rows in that you will be installing vertical panel anchors.*

J. Twist off the spacer tabs along the top of the next to last row on one side of the panel.
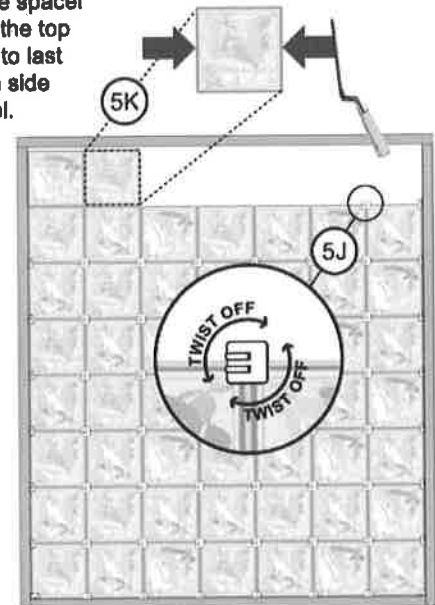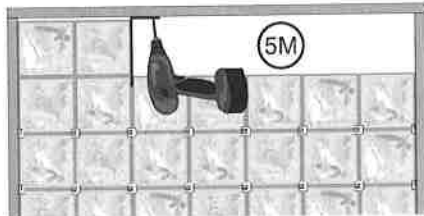


K. Install two blocks, buttering both vertical sides of the second block before installing.

*Note: Spacers are not required at the top of the panel.*

L. Install the vertical panel anchor with the long leg facing down. Completely embed the long leg of the anchor into the vertical mortar joint.
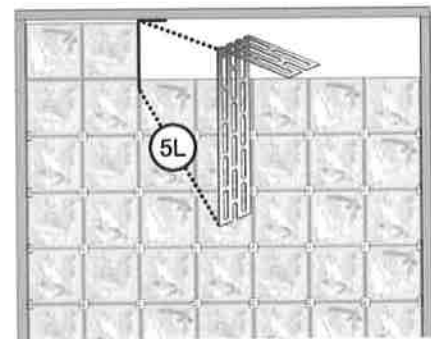
M. Screw the short leg of the anchor to the top of the opening.



N. Continue this two block procedure across the final row. After installing the final block, be sure to press back into the joints any mortar that has been forced out.

O. Install the expansion strip across the head.

*Note: Because the top course meets the expansion strip at the head, no mortar is placed at the top edge of these blocks.*
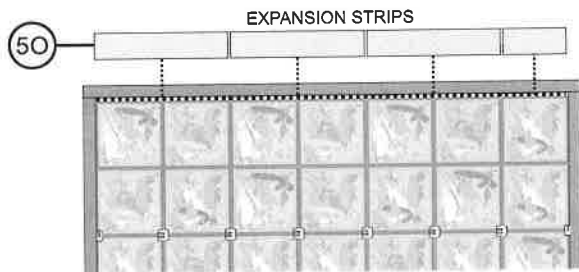


## 6. Finishing

*Note: Allow the mortar to set up for about one hour before proceeding.*

*Note: To prevent scratching of the glass DO NOT use abrasive materials for this cleanup.*

A. Twist off the spacer tabs on both sides of the panel.

B. With moderate pressure, run the striking tool over all the joints. It is best to strike all the horizontal joints first, then the vertical joints so that the pattern is uniform. Fill any voids with mortar.

*Note: Striking removes excess mortar and compacts it to create a smooth, concave, moisture-proof seal.*
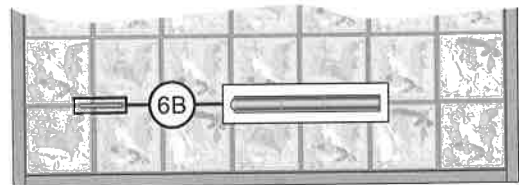


C. After striking, use a damp sponge to remove the excess mortar from the block face, rinsing the sponge frequently. Do not be concerned about the dry film that remains on the blocks, it will be cleaned off later.

*Note: Allow the mortar to dry for about two to three hours before proceeding.*

D. Use a soft, dry cloth to remove the excess film. A common household plastic scouring pad can also be used.

E. Apply sealant around the perimeter of the panel on both sides.

*Note: Where curb was used, you'll want to cover it with trim molding. You may also use moldings at the jambs and head.*
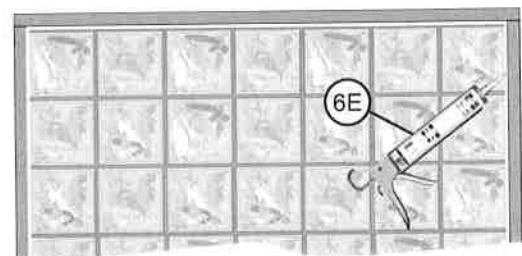


F. If your glass block panel will function as a shower wall, after about a week, coat the mortar joints on both sides of the panel with tile grout sealer for mold and mildew protection.

## Maintenance

An important part of the functional beauty of Pittsburgh Corning Glass Block products is that they are virtually maintenance free! There's nothing to rot, rust, peel or paint. All that is needed is an occasional wiping with a damp, soft cloth on interior panels or a hosing on exterior panels, With minimal attention, your Pittsburgh Corning Glass Block will remain sparkling and beautiful for years!

## If you need assistance

We hope these instructions are clear and answer your questions about the installation of Pittsburgh Corning Premiere Series Glass Blocks and Finishing Units with the ProVantage® Glass Block Installation System. For additional information on Pittsburgh Corning Glass Block visit our website at **pittsburghcorning.com** or call **1-800-624-2120.**

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