

# PHYSICAL & DESIGN DATA

## PITTSBURGH CORNING GLASS BLOCK PRODUCTS

Pattern	Nominal Size <sup>1</sup> (Actual size is 1/4" less than nominal; mm shown is actual)	Weight (lb/ft <sup>2</sup> ) installed with mortar	Heat Transmission <sup>2</sup> U Value (Btu/hr ft <sup>2</sup> °F)	Thermal Resistance <sup>2</sup> R Value (hr ft <sup>2</sup> °F/Btu)	Visible Light Transmission <sup>3</sup> (%)	Shading Coef. <sup>4</sup>	Sound Transmission S.T.C.	Solar Heat Gain Coefficient <sup>5</sup>	
<b>THICKSET® Block — Nominal Thickness = 4"; Actual Thickness = 3 7/8" (98mm)</b>									
THICKSET® 60 Block— DECORA® & VUE®	8" x 8" (197mm)	25	0.51	1.96	VUE®=75 DECORA®=49	0.65	48	.66-.68 <sup>5</sup>	
THICKSET® 90 Block— DECORA® & VUE®	8" x 8" (197mm)	30	0.51	1.96	VUE®=70 DECORA®=38	0.65	50	.66-.68 <sup>5</sup>	
THICKSET® 90 Block— ENDURA™	8" x 8" (197mm)	30	0.51	1.96	38	0.65	50	.66-.68 <sup>5</sup>	
<b>Glass Block with "LX" Fibrous Glass Inserts — Nominal Thickness = 4"; Actual Thickness = 3 7/8" (98mm)</b>									
DECORA®	6" x 6" (146mm) †	20	0.48	2.06	44	0.45 <sup>4</sup>		.56	
"LX" Filter	8" x 8" (197mm)	20	0.48	2.06	44	0.45 <sup>4</sup>	40	.56	
	12" x 12" (299mm) †	20	0.48	2.06	44	0.45 <sup>4</sup>		.56	
<b>VISTABRIK® Solid Glass Block — See Nominal/Actual Sizes Listed</b>									
VISTABRIK® Solid Glass Block	8" x 8" x 3" Nominal 7 7/8" x 7 7/8" x 3" Actual (194mm x 194mm x 76mm)	40	0.87	1.15	90		53 (NRC=0.05)	.75-.78 <sup>5</sup>	
	6" x 8" x 3" Nominal 5 5/8" x 7 7/8" x 3" Actual (143mm x 194mm x 76mm)	40	0.87	1.15	90			.75-.78 <sup>5</sup>	
	4" x 8" x 3" Nominal 3 5/8" x 7 7/8" x 3" Actual (92mm x 194mm x 76mm)	40	0.87	1.15	90			.75-.78 <sup>5</sup>	
STIPPLE Finish	8" x 8" x 3" Nominal 7 7/8" x 7 7/8" x 3" Actual (194mm x 194mm x 76mm) †	40	0.87	1.15	83		53 (NRC=0.05)	.75-.78 <sup>5</sup>	
<b>Energy Efficient Glass Block — See Nominal/Actual Sizes Listed</b>									
DECORA®, DELPHI®, Ice Scapes®, and VUE®	8" x 8" x 3 1/2" Nominal 7 3/4" x 7 3/4" x 3 1/2" Actual (197mm x 197mm x 89mm)	40	.45	2.22	63 33 50 76			.32	
<b>Standard Premiere Series Block — Nominal Thickness = 4"; Actual Thickness = 3 7/8" (98mm)</b>									
SIGNATURE LINE	ARGUS®	6" x 6" (146mm)	20	0.51	1.96	55	0.65	37	.66-.68 <sup>5</sup>
		8" x 8" (197mm)	20	0.51	1.96	55	0.65	39	.66-.68 <sup>5</sup>
		12" x 12" (299mm)	20	0.51	1.96	55	0.65	35	.66-.68 <sup>5</sup>
	DECORA®	6" x 6" (146mm)	20	0.51	1.96	75	0.65	37	.66-.68 <sup>5</sup>
		8" x 8" (197mm)	20	0.51	1.96	75	0.65	39	.66-.68 <sup>5</sup>
		12" x 12" (299mm)	20	0.51	1.96	75	0.65	35	.66-.68 <sup>5</sup>
		4" x 8" (95 x 197mm)	20	0.51	1.96	75	0.65		.66-.68 <sup>5</sup>
		6" x 8" (146 x 197mm)	20	0.51	1.96	75	0.65		.66-.68 <sup>5</sup>
	ESSEX® AA	8" x 8" (197mm)	20	0.51	1.96	45	0.45	39	.66-.68 <sup>5</sup>
	FOCUS™	8" x 8" (197mm)	20	0.51	1.96	92	0.65	39	.66-.68 <sup>5</sup>
	IceScapes®	8" x 8" (197mm)	20	0.51	1.96	67	0.65	39	.66-.68 <sup>5</sup>
		12" x 12" (299mm)	20	0.51	1.96	67	0.65	35	.66-.68 <sup>5</sup>
		4" x 8" (95 x 197mm)	20	0.51	1.96	67	0.65		.66-.68 <sup>5</sup>
		6" x 8" (146 x 197mm)	20	0.51	1.96	67	0.65		.66-.68 <sup>5</sup>
	Opal Plain	8" x 8" (197mm)	20			19			
	Opal Silk	8" x 8" (197mm)	20			17			
SeaScapes™	8" x 8" (197mm) †	20	0.51	1.96	64	0.65	39	.66-.68 <sup>5</sup>	
VUE®	6" x 6" (146mm)	20	0.51	1.96	91	0.65	37	.66-.68 <sup>5</sup>	
	8" x 8" (197mm)	20	0.51	1.96	91	0.65	39	.66-.68 <sup>5</sup>	
	12" x 12" (299mm)	20	0.51	1.96	91	0.65	35	.66-.68 <sup>5</sup>	
	4" x 8" (95 x 197mm)	20	0.51	1.96	91	0.65		.66-.68 <sup>5</sup>	
	6" x 8" (146 x 197mm)	20	0.51	1.96	91	0.65		.66-.68 <sup>5</sup>	
1/8" FLAT SHEET GLASS COMPARISON (3mm)				1.04	0.96	90	1.00	28	

**1 Size:** Block are manufactured to a ± 1/16" (2mm) tolerance.

**2 Heat Transmission/Thermal Transmission:** Winter night values. To calculate instantaneous

heat gain through glass panels, see ASHRAE HANDBOOK OF FUNDAMENTALS, 2005, Section 31.3.

**3 Light Transmission:** Based on test results.

**4 Shading Coefficient:** Estimated figures based on accumulated data.

**5 SHGC:** Default values as interpreted from International Energy Conservation Code.

† MTO – Made to Order items subject to minimum order quantities and lead times.

## Installed Panel Weight

Refer to Table on page 8 for weight of panels installed with mortar. Glass block panels installed with the ProVantage® Glass Block Installation System are up to 25% lighter per square foot than panels installed with mortar. Local building codes should be consulted for any limits on panel sizes or installation details.

## Non-load Bearing

Glass block panels are non-load bearing; adequate provisions must be made for support of construction above these

panels. Panels are mortared at the sill, with jamb and head details designed to accommodate for building movement and lintel deflection. The compressive strength (for information purposes only) of all hollow glass block is 400 to 600 psi.; THICKSET® Series Glass Block is 2500 psi.; and VISTABRIK® Series is 80,000 psi.

## Thermal Expansion Coefficient

The thermal expansion coefficient of glass block is  $47 \times 10^{-7} / (^\circ\text{F})$ .

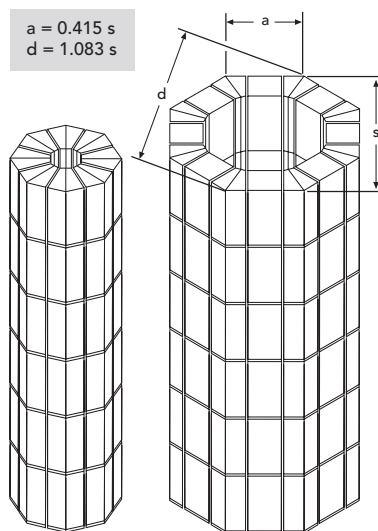
## Detailed Drawings

Structural members illustrated on page 14 and other "detail" pages indicate general principles of construction. Member sizes should be determined by structural analysis to avoid excessive deflections. Maximum deflection for supports shall not exceed  $L/600$ .

## FINISHING UNITS

### PREMIERE SERIES

EndBlock™ Finishing Units		HEDRON® Corner Unit	TRIDRON 45° Block® Unit	ENCURVE® Finishing Unit	ARQUE® Block Unit
DECORA® & IceScapes® Patterns 8" High Premiere Series	DECORA® & IceScapes® Patterns 8" High Premiere Series	DECORA® & IceScapes® Patterns 8" High Premiere Series	DECORA® & IceScapes® Patterns 8" High Premiere Series	DECORA® & IceScapes® Patterns 8" Square Premiere Series	DECORA® & IceScapes® Patterns 8" High Premiere Series



Columns can be All-TRIDRON 45° Block® (left) or interspersed with 4" x 8" or 8" x 8" glass block.

NOTE: All mortar joints are 1/4".

### Glass Block between TRIDRON 45° Block®

	a (in.)	s (in.)	d (in.)
None	4.75	11.45	12.40
1-4" x 8" x 4"	8.75	21.08	22.83
1-6" x 8" x 4"	10.75	25.90	28.05
1-8" x 8" x 4"	12.75	30.72	33.27
1-4" x 8" x 4" + 1-8" x 8" x 4"	16.75	40.36	43.71
2-8" x 8" x 4"	20.75	50.00	54.15
1-4" x 8" x 4" + 2-8" x 8" x 4"	24.75	59.64	64.59
3-8" x 8" x 4"	28.75	69.28	75.03

### Maximum Panel Dimensions

	Premiere Series			Thinline® Series			VISTABRIK®		
	A (Sq.Ft.)	H (Ft.)	W (Ft.)	A (Sq.Ft.)	H (Ft.)	W (Ft.)	A (Sq.Ft.)	H (Ft.)	W (Ft.)
EXTERIOR*	144	20	25	100	10	15	100	10	10
INTERIOR	250	20	25	150	10	15	150	10	15

A = Area H = Height W = Width

\* All exterior areas and dimensions are based on 20 psf design windload with 2.7 safety factor.

### Mortar Mix and Estimating Tables

An optimum mortar mix for installing Pittsburgh Corning Glass Block is:

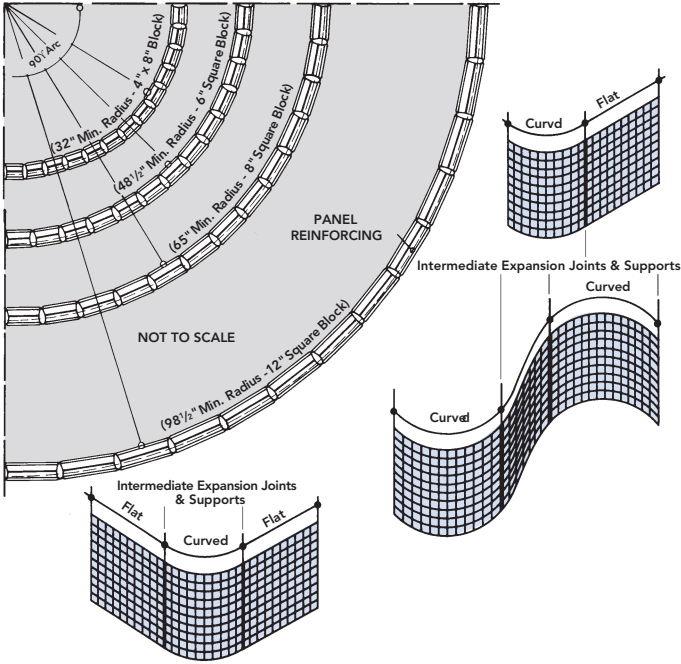
Portland Cement	Lime	Sand
1 Part	1/2 Part	3.4 Parts
1.0 cubic foot	0.5 cubic foot	3.4 cubic feet

### Number of Block for 100 Sq. Ft. Panel

Block Sizes (Nominal)	6"	8"	12"	4" x 8"	6" x 8"
Number of Block	400	225	100	450	300

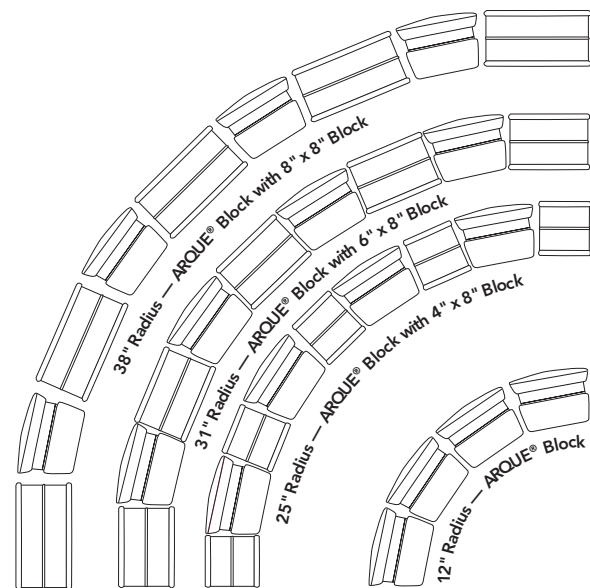
# PHYSICAL & DESIGN DATA

## INSIDE RADIUS MINIMUMS FOR CURVED PANEL CONSTRUCTION



RADIUS MINIMUMS FOR CURVED PANEL CONSTRUCTION				
Block Size	Inside Radius Inches	Number of Blocks in 90° Arc	Vertical Joint Thickness In Inches	
			Inside	Outside
4" x 8"	32	13	1/8	5/8
6" x 6"	48 1/2	13	1/8	5/8
8" x 8"	65	13	1/8	5/8
12" x 12"	98 1/2	13	1/8	5/8

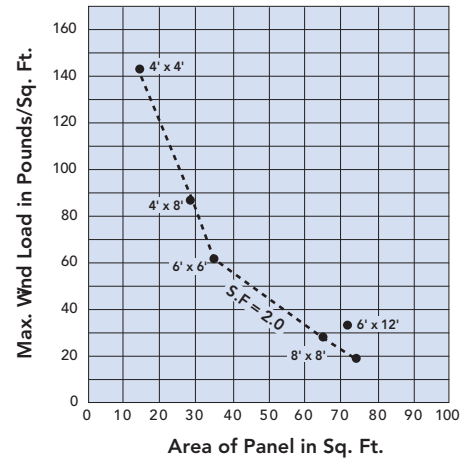
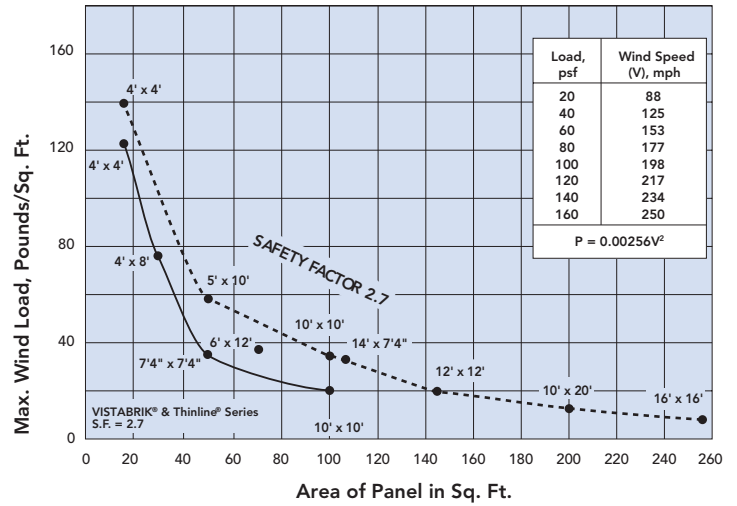
- NOTES:**
1. It is suggested that curved areas be separated from flat areas by intermediate expansion joints and supports, as indicated in these drawings.
  2. When straight, ladder-type reinforcing is used on curved walls, the innermost parallel wire may be cut periodically and/or bent to accommodate the curvature of the wall.



ARQUE® Block used along with other Pittsburgh Corning Block sizes, allows you to form consistent curves of various radii. Radii shown are to inside face of curve.

## WIND LOAD RESISTANCE – MORTAR SYSTEM

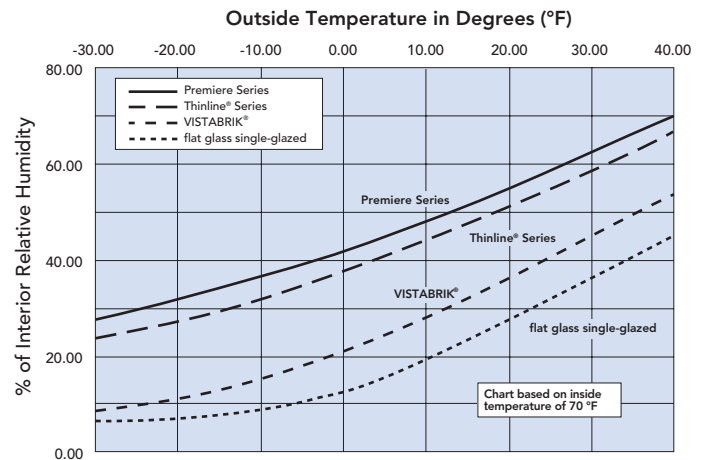
(Based on Standard Nominal 4" Thick Premiere Series Glass Block. Installed with mortar. Based on 2.7 Safety Factor)



## WIND LOAD RESISTANCE – PROVANTAGE® SYSTEM

(Based on Standard Nominal 4" Thick Premiere Series Glass Block Installed with ProVantage® Silicone System). Based on 2.0 Safety Factor.

## RESISTANCE TO SURFACE CONDENSATION



**Example:** At a relative humidity of 40%, an outside temperature of approximately -3 °F will cause condensation on Premiere Series Glass Block or approximately 3 °F above zero on Thinline® Series block. Under the same conditions, condensation will form on a single-glazed flat glass window at 34 °F above zero.

# FIRE RATINGS & CODE INFORMATION

All sizes (exceptions listed below) of Premiere Series and Thinline® Series glass blocks have at least a 45 minute fire rating when used as a window assembly within a one hour fire-rated wall assembly. All THICKSET® 90 (thick-faced) and solid glass blocks have fire ratings of up to 90 minutes, and the THICKSET® 60 and ESSEX® AA Pattern glass blocks have fire ratings of up to 60 minutes, when used as window assemblies and where permitted by code.

## Pittsburgh Corning Glass Block units that are not fire-rated:

- All 12" x 12" sizes
- All DELPHI®, pattern block
- All HEDRON® Corner block, TRIDRON 45° Block® units, EndBlock®, ENCURVE® and ARQUE® finishing units
- All paver units
- VISTABRIK® Corner Block

## PANEL SIZES AND DIMENSION LIMITATIONS

Pittsburgh Corning Glass Block listed above have been tested and classified by Underwriters Laboratories® (UL®) for use as fire-rated window assemblies to panel sizes and dimension limitations listed below:

- With the exception of all 12" x 12" sizes, finishing blocks, corner blocks and the DELPHI® pattern block, all Premiere Series and Thinline® Series glass blocks in panels up to 120 square feet in masonry walls or 94 square feet in non-masonry walls are classified by Underwriters Laboratories, for use as 45-minute rated window assemblies.
- These panels are usually acceptable as window assemblies for use in fire separation walls that are rated one hour or less.
- THICKSET® 60 Block are listed for use as 45- or 60-minute fire rated window assemblies in panels up to 100 square feet.

- THICKSET® 90 Block and VISTABRIK® Solid Glass Block are all listed for use as 45-, 60- or 90-minute fire rated window assemblies in panels up to 100 square feet.
- Where permitted by building codes, glass block fire-rated window assemblies having a fire resistance rating of not less than 45 minutes may be used as "opening protectives". These assemblies shall not exceed 25% of the wall areas separating a tenancy from a corridor or a corridor from an enclosed vertical opening or one fire-rated area from another fire-rated area.
- **Exception:** Although glass block masonry systems have been tested as window assemblies (not wall assemblies), they may be used as one hour fire partitions as required for corridors in the enclosure of atriums only when sprinkler protection is provided on occupied sides.

## 45- AND 60-MINUTE RATED CONSTRUCTION

- All 45- and 60-minute rated Pittsburgh Corning Glass Block may be used in both masonry and non-masonry (steel or wood stud framing with gypsum board) walls.
- These rated glass block windows may be framed and anchored with either PC® Panel Anchor construction or channel-type restraints.
- The use of a fire retardant type sealant for head and jamb locations is required.
- Specifications and construction details for such panels are as per Pittsburgh Corning Corporation recommendations.
- Non-masonry, fire-rated steel stud with gypsum board wall assemblies must conform to UL® listed wall assembly #U465.

- Framing and support of the rated glass block window assembly shall be provided with double-studding at the jamb locations with height of supporting wall limited to no more than 3 feet.

## 90-MINUTE RATED CONSTRUCTION

- Where permitted by building codes, all 90-minute rated Pittsburgh Corning Glass Block may be used in masonry walls only.
- 90-minute rated glass block window assemblies must be framed and anchored with 1/4" thick steel (not aluminum) channel-type restraints or masonry chases. The use of panel anchor construction is not permitted.
- The use of a fire retardant type sealant for head and jamb locations is required.
- Specifications and construction details of such panels are as per Pittsburgh Corning Corporation recommendations.
- Twice the typical thickness (3/4" total) of expansion material is required at head and jamb locations.

## 45-MINUTE RATED CURVED CONSTRUCTION

- The glass blocks noted under 90-minute rating and those 8" x 8" x 4" sized glass block noted under 45-minute rating are classified for use in masonry walls as curved window assemblies, provided that the radius of the assembly is at least twice the opening width (i.e. chord length).

## CODE COMPLIANCE

All of our fire-rated glass block products are listed in the Underwriters Laboratories current issue of the Fire Resistance Directory – Volume 3. A listing of our products can also be viewed on the Underwriters Laboratories Website at [www.ul.com](http://www.ul.com).

- U.L. Classification: R2556 (For Glass Block)
- U.L. Classification: R18572 (For Plastic Spacers)
- In accordance with NFPA 80, Chapter 14

## CITY CODE APPROVALS

- New York City Materials and Equipment Acceptance MEA 406- 90-M. Vol.IV
- Los Angeles Research Report RR-24486
- Dade County Acceptance 07-0626.10  
04-0301.01  
04-0824.01  
05-1107.02  
08-0731.08
- State of Florida Approvals  
FL 1363  
FL 1366  
FL 5357  
FL 8039  
FL 11669
- Texas Department of Insurance WIN #s 62, 63, 64, and 540

## BUILDING CODE AND NATIONAL STANDARDS REFERENCES:

- International Building Code (IBC)
- International Residential Code (IRC)
- Canadian Standards Association (CSA) A371-94 "Masonry Construction for Buildings"
- Canadian Standards Association (CSA) S304.1-94 "Masonry Design for Buildings"
- TMS 402/ACI 530/ASCE 5 "Building Code Requirements and Specification for Masonry Structures"

## Fire Ratings — Glass Block Assemblies

Premiere Series Glass Blocks, THICKSET® 60 Blocks, THICKSET® 90 Blocks and 3" thick VISTABRIK® Solid Glass Block units have been tested and classified by Underwriters Laboratories (UL®) for use in fire-rated window assemblies to panel sizes and dimension limitations as listed.

Product	Masonry Wall Construction					Non-Masonry Wall Construction			
	Panel Limitations		Fire Rating			Panel Limitations		Fire Rating	
	Max. Area/Panel	Max Ht. or Width	45 Min.	60 Min.	90 Min.	Max. Area/Panel	Max Ht. or Width	45 Min.	60 Min.
Thinline® Series**	120	12	X			94	10.75	X	
Premiere Series**	120	12	X			94	10.75	X	
THICKSET® 60 and ESSEX® AA Pattern**	100	10	X	X		94	10.75	X	X
THICKSET® 90	100	10	X	X	X*	94	10.75	X	X
VISTABRIK®	100	10	X	X	X*	94	10.75	X	X

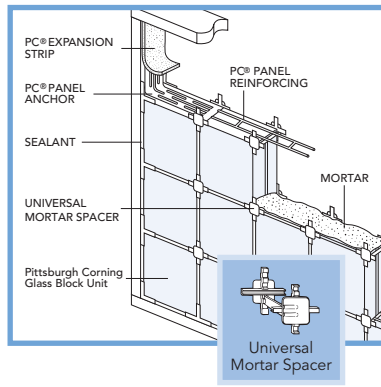
\* 1/4" steel channel. 3/4" thick expansion material at head and jambs, and fire retardant sealant are required.

\*\* Includes "LX" option.

# ACCESSORIES

## PANEL CONSTRUCTION USING UNIVERSAL MORTAR SPACERS

The all plastic Universal Mortar Spacer speeds construction, assures uniform placement and helps keep panel flush. Can now be used in fire-rated panels. Special spacers are available for the VISTABRIK® and ARQUE® Block.



## PC® PANEL REINFORCING, PANEL ANCHORS & EXPANSION STRIPS

PC® Panel Reinforcing (top) — in panels — is embedded horizontally in the mortar joints between every other course.

PC® Panel Anchors (middle) are used to tie Pittsburgh Corning Glass Block panels into the surrounding framework when channels are not used. PC® Expansion Strips (bottom), made of white polyethylene, are inserted at the head and jams. The strips replace mortar at these locations to cushion the glass block and allow the panel to expand and contract freely.

## OTHER ACCESSORIES

Additional materials — such as mortar, channels or framing, packing, sealants and asphalt emulsion are available from other manufacturers.

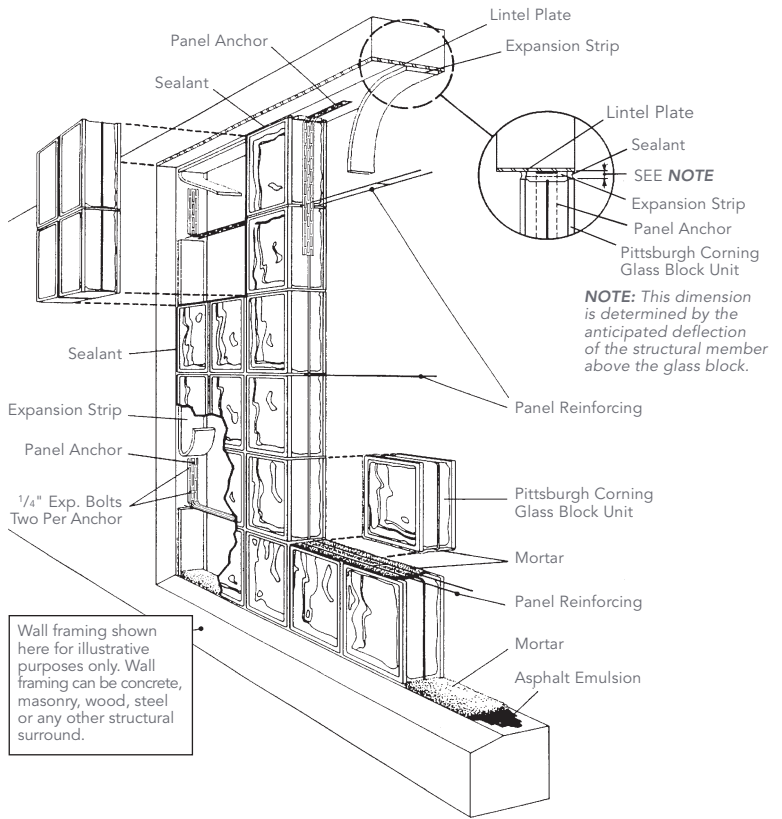
## PROVANTAGE® INSTALLATION SYSTEM

Unlike previous systems using sealant and spacers, the new ProVantage® Installation System for use with Premiere Series glass blocks, can turn corners, make radius walls, build showers and is suitable for interior or exterior applications. The system utilizes spacers to align and hold the blocks in place for easy assembly. Sealant is used to bond the spacer and blocks together. The consistent, even-spaced joints are then finished with a special tile grout resulting in a clean, smooth professional look. For smaller straight wall panels, with 3-side support, sealant can be used in the joints to provide an all-glass look.



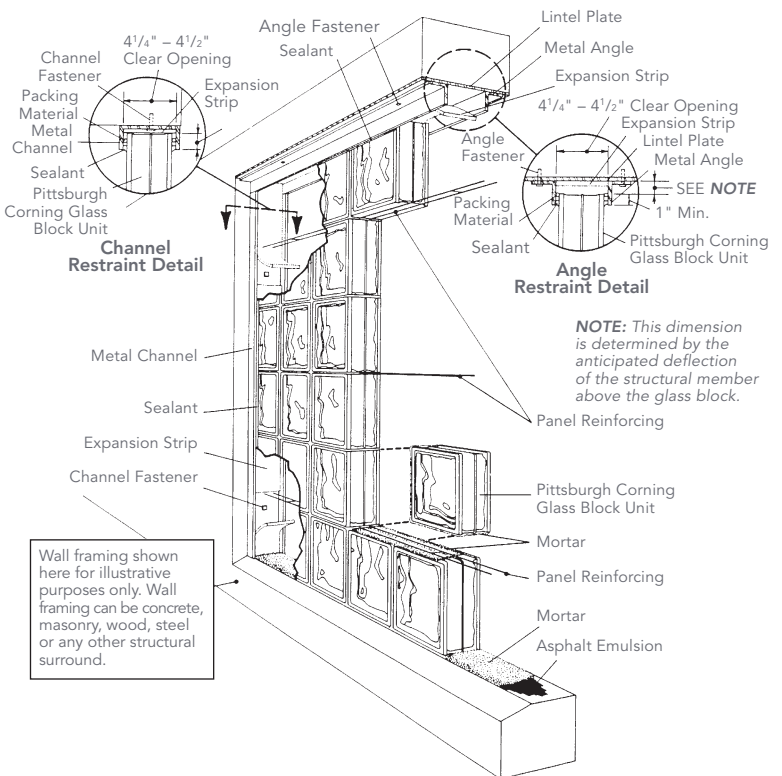
# TYPICAL CONSTRUCTION DETAILS

## PANEL ANCHOR CONSTRUCTION



**NOTE:** This dimension is determined by the anticipated deflection of the structural member above the glass block.

## CHANNEL-TYPE RESTRAINT CONSTRUCTION



**NOTE:** This dimension is determined by the anticipated deflection of the structural member above the glass block.