PITTSBURGH CORNING GLASS BLOCK PRODUCTS

	Pattern	Nominal Size[1] (Actual size is 1/4" less than nominal; mm shown is actual)	Weight (lb/ft²) installed with mortar	Heat Transmission[2] U Value (Btu/hr ft² °F)	Thermal Resistance[2] R Value (hr ft² °F/Btu)	Visible Light Transmission[3] (%)	Shading Coef.[5]	Sound Transmission S.T.C.	Solar Heat Gain Coefficient[7]
HIGH PERFORMANCE LINE	**Solar Reflective Glass Block**								
	SRT Clear	190 mm x 190mm x 95 mm (metric size)	20	0.58	1.72	30	0.55		.40
	SRT Wavy	190 mm x 190 mm x 95 mm (metric size)	20	0.57	1.75	30	0.55		.34
	THICKSET® Block—Nominal Thickness = 4"; Actual Thickness = 3⅞" (98mm)								
	THICKSET® 60 Block—DECORA® & VUE®	8" x 8" (197mm)	25	0.51	1.96	VUE®=75 DECORA®=49	0.65	48	.66-.68[7]
	THICKSET® 90 Block—DECORA® & VUE®	8" x 8" (197mm)	30	0.51	1.96	VUE®=70 DECORA®=38	0.65	50	.66-.68[7]
	THICKSET® 90 Block—ENDURA™	8" x 8" (197mm)	30	0.51	1.96	38	0.65	50	.66-.68[7]
	Glass Block with "LX" Fibrous Glass Inserts—Nominal Thickness = 4"; Actual Thickness = 3⅞" (98mm)								
	DECORA® "LX" Filter	6" x 6" (146mm)	20	0.48	2.06	50-55[4]	0.45[4]		.56
		8" x 8" (197mm)	20	0.48	2.06	50-55[4]	0.45[4]	40	.56
		12" x 12" (299mm)	20	0.48	2.06	50-55[4]	0.45[4]		.56
	VISTABRIK® Solid Glass Block—See Nominal/Actual Sizes Listed								
	VISTABRIK® Solid Glass Block	8" x 8" x 3" Nominal 7⅞" x 7⅞" x 3" Actual (194mm x 194mm x 76mm)	40	0.87	1.15	80		53 (NRC=0.05)	.75-.78[7]
		3" x 8" x 3" Nominal 3" x 7⅞" x 3" Actual (76mm x 194mm x 76mm)	40	0.87	1.15	80			.75-.78[7]
		(Paver) 8" x 8" x 1½" Nominal 7⅞" x 7⅞" x 1½" Actual (194mm x 194mm x 38mm)	N/A	0.87	1.15	80			.75-.78[7]
		4" x 8" x 3" Nominal 3⅞" x 7⅞" x 3" Actual (92mm x 194mm x 76mm)	40	0.87	1.15	80			.75-.78[7]
	STIPPLE Finish	8" x 8" x 3" Nominal 7⅞" x 7⅞" x 3" Actual (194mm x 194mm x 76mm)	40	0.87	1.15	80		53 (NRC=0.05)	.75-.78[7]
SIGNATURE LINE	**Standard Premiere Series Block—Nominal Thickness = 4"; Actual Thickness = 3⅞" (98mm)**								
	ARGUS®	6" x 6" (146mm)	20	0.51	1.96	75	0.65	37	.66-.68[7]
		8" x 8" (197mm)	20	0.51	1.96	75	0.65	39	.66-.68[7]
		12" x 12" (299mm)	20	0.51	1.96	75	0.65	35	.66-.68[7]
	ARGUS® Parallel Fluted	8" x 8" (197mm)	20	0.51	1.96	75	0.65	39	.66-.68[7]
	Bevel (All Patterns)	8" x 8" (197mm)	20	0.51	1.96	75	0.65	39	.66-.68[7]
	DECORA®	6" x 6" (146mm)	20	0.51	1.96	75	0.65	37	.66-.68[7]
		8" x 8" (197mm)	20	0.51	1.96	75	0.65	39	.66-.68[7]
		12" x 12" (299mm)	20	0.51	1.96	75	0.65	35	.66-.68[7]
		4" x 8" (95 x 197mm)	20	0.51	1.96	75	0.65		.66-.68[7]
		6" x 8" (146 x 197mm)	20	0.51	1.96	75	0.65		.66-.68[7]
	ESSEX® AA	8" x 8" (197mm)	20	0.51	1.96	50[4]	0.45[4]	39	.66-.68[7]
	FOCUS™	8" x 8" (197mm)	20	0.51	1.96	75	0.65	39	.66-.68[7]
	IceScapes®	8" x 8" (197mm)	20	0.51	1.96	75	0.65	39	.66-.68[7]
		4" x 8" (95 x 197mm)	20	0.51	1.96	75	0.65		.66-.68[7]
		6" x 8" (146 x 197mm)	20	0.51	1.96	75	0.65		.66-.68[7]
	SeaScapes™	8" x 8" (197mm)	20	0.51	1.96	75	0.65	39	.66-.68[7]
	SPYRA®	8" x 8" (197mm)	20	0.51	1.96	75	0.65	39	.66-.68[7]
	VUE®	6" x 6" (146mm)	20	0.51	1.96	75	0.65	37	.66-.68[7]
		8" x 8" (197mm)	20	0.51	1.96	75	0.65	39	.66-.68[7]
		12" x 12" (299mm)	20	0.51	1.96	75	0.65	35	.66-.68[7]
		4" x 8" (95 x 197mm)	20	0.51	1.96	75	0.65		.66-.68[7]
		6" x 8" (146 x 197mm)	20	0.51	1.96	75	0.65		.66-.68[7]
	Thinline® Series Block—Nominal Thickness = 3"; Actual Thickness = 3⅛" (79mm)								
	DECORA®	6" x 6" (146mm)	16	0.57	1.75	75	0.65		.66-68[7]
		8" x 8" (197mm)	16	0.57	1.75	75	0.65	31[6]	.66-68[7]
		4" x 8" (95 x 197mm)	16	0.57	1.75	75	0.65		.66-68[7]
		6" x 8" (146 x 197mm)	16	0.57	1.75	75	0.65		.66-68[7]
	IceScapes®	6" x 6" (146mm)	16	0.57	1.75	75	0.65		.66-68[7]
		6" x 8" (146 x 197mm)	16	0.57	1.75	75	0.65		.66-68[7]
		8" x 8" (197mm)	16	0.57	1.75	75	0.65	31[6]	.66-68[7]
	DELPHI®	8" x 8" (197mm)	16	0.57	1.75	75	0.65	31[6]	.66-68[7]
		4" x 8" (95 x 197mm)	16	0.57	1.75	75	0.65		.66-68[7]
		6" x 8" (146 x 197mm)	16	0.57	1.75	75	0.65		.66-68[7]
	SeaScapes™	8" x 8" (197mm)	16	0.57	1.75	75	0.65		.66-68[7]
	⅛" 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: Values ±5%.
4 Light Transmission/Shading Coefficient: Estimated figures based on accumulated data.
5 Shading Coefficient: Based on 8"-sq. units; ratio of heat gain through glass block panels vs. that through a single light of double-strength sheet glass under specific conditions.
6 Sound Transmission: Assembly construction with KWiK'N EZ® Silicone System.
7 SHGC: Default values as interpreted from International Energy Conservation Code.

INSTALLED PANEL WEIGHT

Refer to Table on page 8 for weight of panels installed with mortar. Glass block panels installed with the KWiK'N EZ® Rigid Track Silicone 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 x 10^{-7} /(°F).

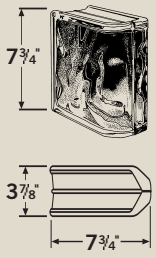
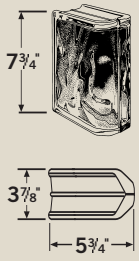
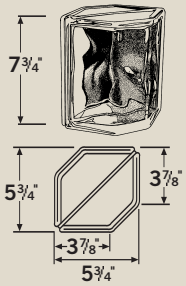
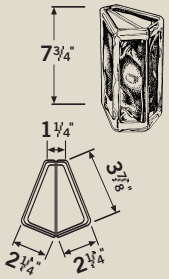
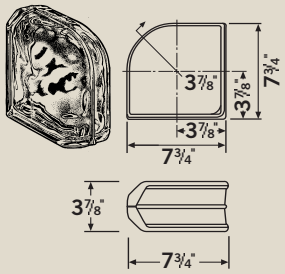
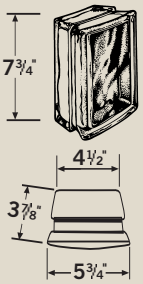
DETAILED DRAWINGS

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 shall not exceed L/600.

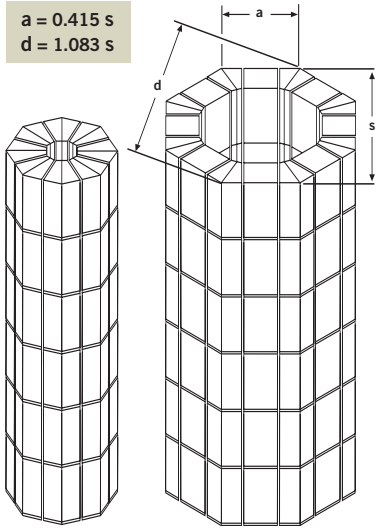
PREMIERE SERIES AND Thinline® SERIES

All glass block illustrated are Premiere Series Glass Block, the 4" nominal thick products. Modify as necessary for Thinline® Series, the 3" nominal thick units or VISTABRIK® Solid Glass Block, 3" actual thickness. Pittsburgh Corning recommends that the use of the Thinline® Series units be limited to light commercial and residential applications.

FINISHING UNITS

PREMIERE SERIES						Thinline® SERIES
EndBlock™ Finishing Units		HEDRON® Corner Unit	TRIDRON 45° Block® Unit	ENCURVE® Finishing Unit	ARQUE® Block Unit	EndBlock™ Finishing 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	DECORA® Pattern 8" High Thinline® Series Only

a = 0.415 s
d = 1.083 s



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	85	10	15	100	10	10
INTERIOR	250	20	25	150	10	15	150	10	15

A = Area H = Height W = Width

* Uniform Building Code (UBC) limits exterior height and width to 15 feet.
** All exterior areas and dimensions are based on 20 psf design windload with 2.7 safety factor.

MORTAR MIX AND ESTIMATING TABLES

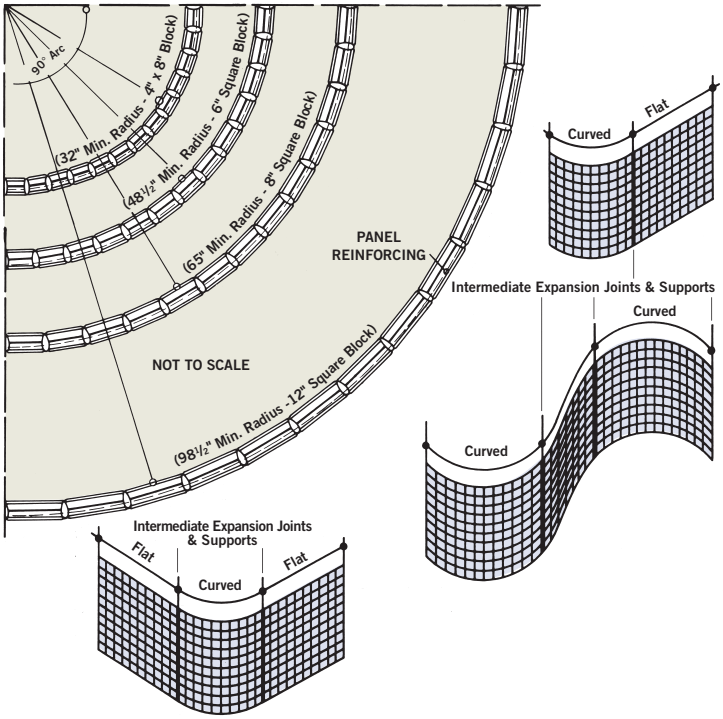
An optimum mortar mix for installing Pittsburgh Corning Glass Block is:

Portland Cement	Lime	Sand
1 Part	½ 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

INSIDE RADIUS MINIMUMS FOR CURVED PANEL CONSTRUCTION

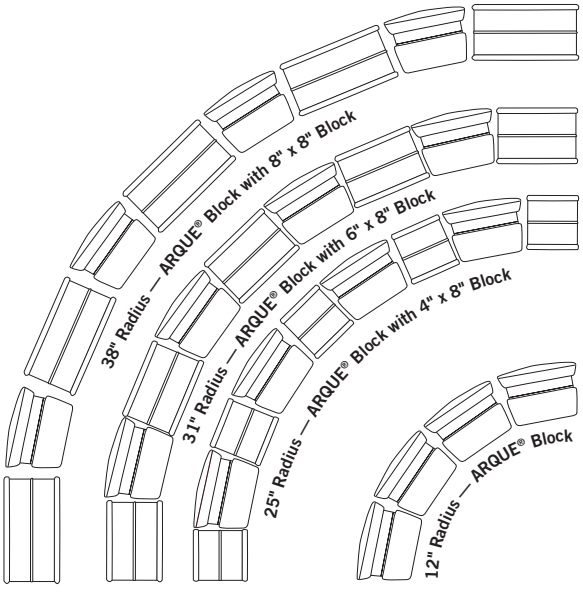


RADIUS MINIMUMS FOR CURVED PANEL CONSTRUCTION

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"	48½	13	1/8	5/8
8" x 8"	65	13	1/8	5/8
12" x 12"	98½	13	1/8	5/8

NOTES:

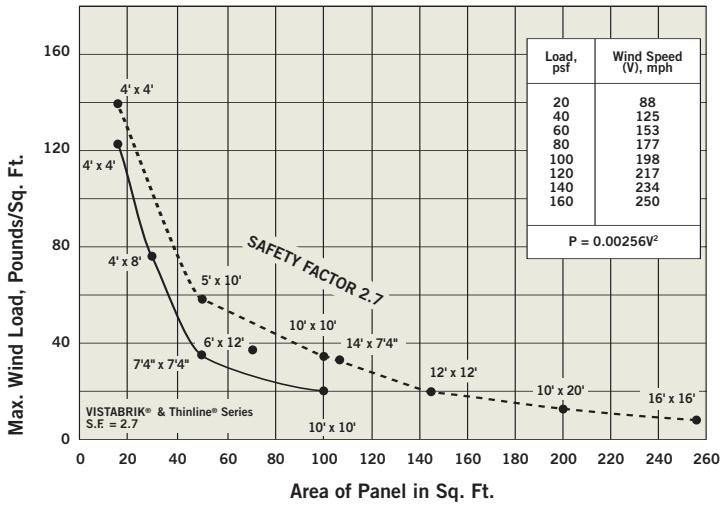
1. It is suggested that curved areas be separated from flat areas by intermediate expansion joints and supports, as indicated in these drawings.
2. When straight, ladder-type reinforcing is used on curved walls, the innermost parallel wire may be cut periodically and/or bent to accommodate the curvature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

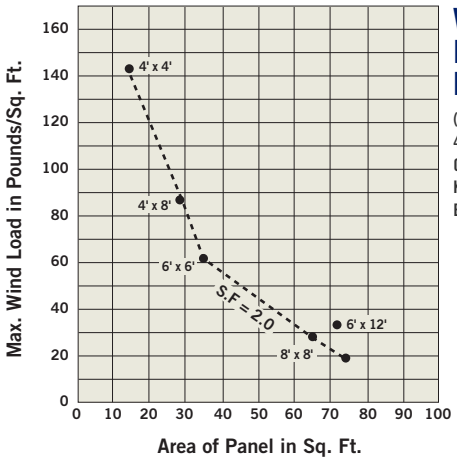


ARQUE® Block used along with other Pittsburgh Corning Block sizes, allows you to form consistent curves of various radii. Radii shown are to inside face of curve.

WIND LOAD RESISTANCE – MORTAR SYSTEM

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

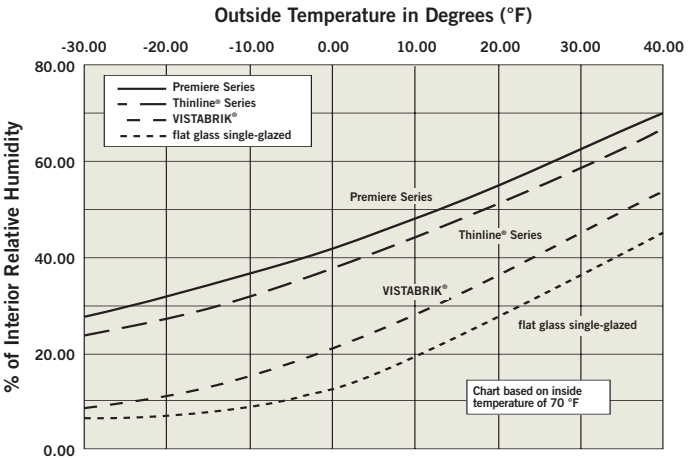




WIND LOAD RESISTANCE – KWiK'N EZ® SYSTEM

(Based on Standard Nominal 4" Thick Premiere Series Glass Block Installed with KWiK'N EZ® 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 ºF will cause condensation on Premiere Series Glass Block or approximately 3 ºF above zero on Thinline® Series block. Under the same conditions, condensation will form on a single-glazed flat glass window at 34 ºF above zero.

FIRE RATINGS AND 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.
- The Uniform Building Code (U.B.C.) limits the area of 45-minute rated window assemblies to 84 square feet, with no dimension exceeding 12 feet. 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.

- U.L. Classification: R2556 (For Glass Block)
- Underwriters Laboratories of Canada Guide Number 230I7 (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
- State of Florida Approvals
  FL 1363
  FL 1366
  FL 5357
  FL 8039
- Texas Department of Insurance WIN #s 62, 63, 64, and 540

BUILDING CODE AND NATIONAL STANDARDS REFERENCES:

- The BOCA National Building Code (N.B.C.)
- The Standard Building Code (SBCCI)
- The Uniform Building Code (U.B.C.)
- International Building Code (IBC)
- Canadian Standards Association (CSA) A371-94 "Masonry Construction for Buildings"
- Canadian Standards Association (CSA) S304.1-94 "Masonry Design for Buildings."
- ACI 530/ASCE 5/TMS 402 "Building Code Requirements for Masonry Structures"
- ISO 9001:2000 Certification: Manufacture test and distribution of Pittsburgh Corning Glass Block products.

FIRE RATINGS — GLASS BLOCK ASSEMBLIES

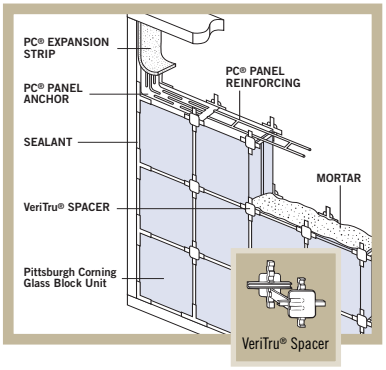
Premiere Series Glass Blocks, THICKSET® 60 Blocks, THICKSET® 90 Blocks and 3" thick VISTABRIK® Solid Glass Block units have been tested and classified by Underwriters Laboratories (UL®) for use in fire-rated window assemblies to panel sizes and dimension limitations as listed.

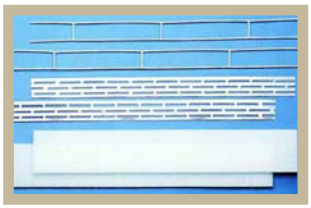
	Masonry Wall Construction					Non-Masonry Wall Construction			
	Panel Limitations		Fire Rating			Panel Limitations		Fire Rating	
Product	Max. Area/Panel	Max Ht. or Width	45 Min.	60 Min.	90 Min.	Max. Area/Panel	Max Ht. or Width	45 Min.	60 Min.
Thinline® Series	120	12	X			94	10.75	X	
Premiere Series	120	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.

PANEL CONSTRUCTION USING VeriTru® SPACERS

The one-piece, all plastic VeriTru® 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 jambs. The strips replace mortar at these locations to cushion the glass block and allow the panel to expand and contract freely.

OTHER ACCESSORIES

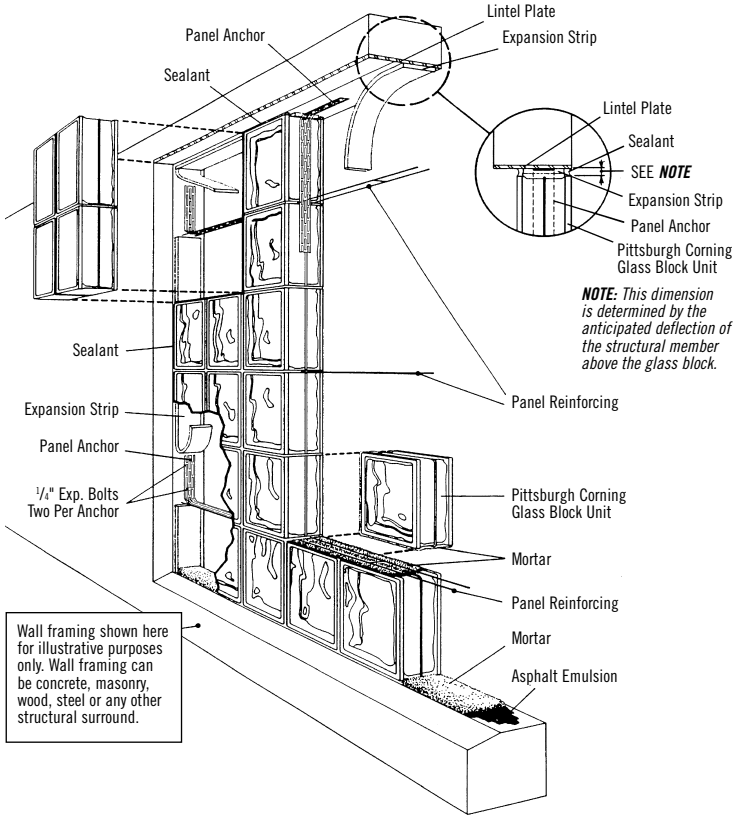
Additional materials — such as mortar, channels or framing, packing, sealants and asphalt emulsion are available from other manufacturers.

NEW!

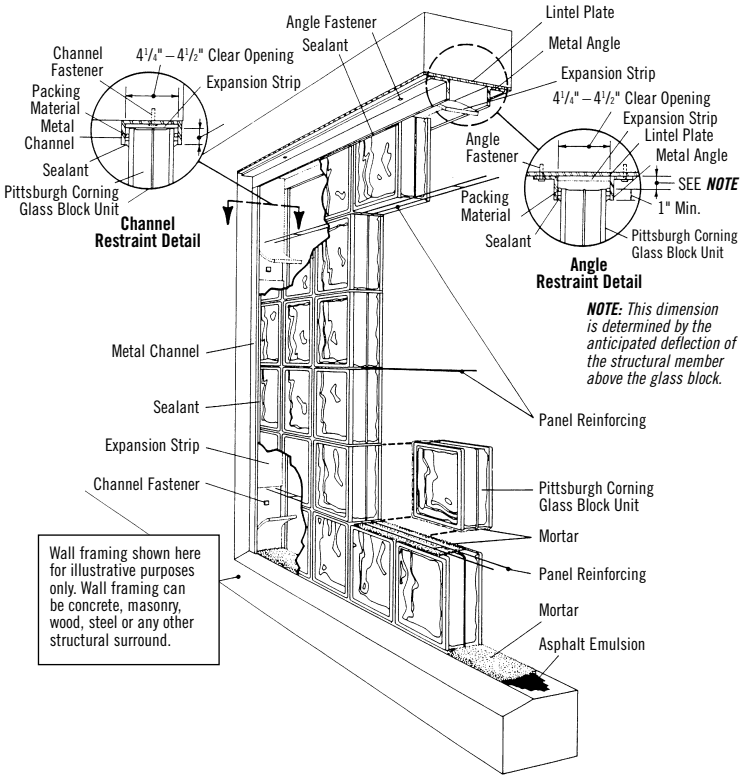
ProVantage® INSTALLATION SYSTEM

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.

PANEL ANCHOR CONSTRUCTION



CHANNEL-TYPE RESTRAINT CONSTRUCTION



GLOSSARY OF TERMS (Detail Drawings pages 12-18)

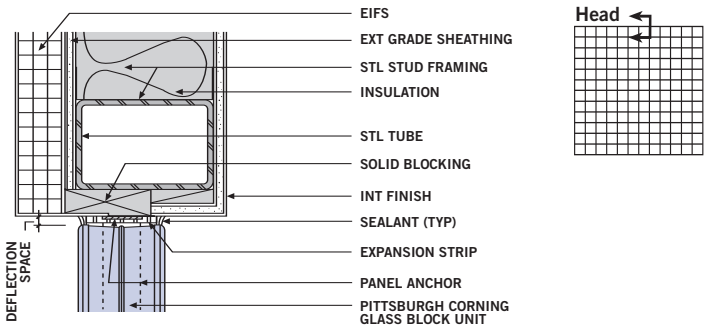
BLDG – Building
CMU – Concrete Masonry Unit (concrete block)
CONT STL – Continuous Steel (used to reinforce wall)
ELEV – Elevation (side view of building)
GYP BD – Gypsum Board
HM – Hollow Metal (door frame)
INT – Interior
MAX HT – Maximum Height (for Pittsburgh Corning Glass Block panel 20ft./6m)
SILL – Bottom of Panel
TYP – Typical (detail)
CLG – Ceiling
CONC – Concrete
EIFS – Exterior Insulation Finishing System
EXT – Exterior
HEAD – Top of Panel
HORIZ – Horizontal
JAMB – Side of Panel
PLAN – View of Building from above, typically the floor
STL – Steel
WD – Wood

Materials shown other than glass block are for illustration purposes only as examples of typical construction details.

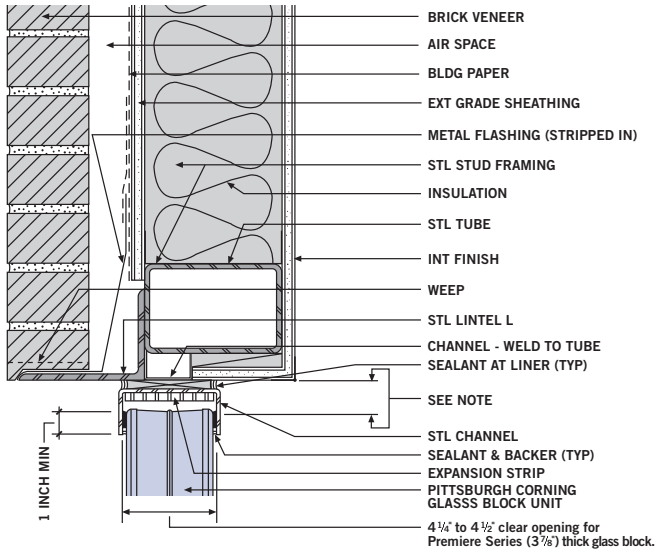
DETAILS CAN BE DOWNLOADED AS .DWG OR .DXF FILES FROM OUR WEBSITE

www.pittsburghcorning.com/architects/specdetails.asp

TYPICAL HEAD DETAILS (Exterior Openings)



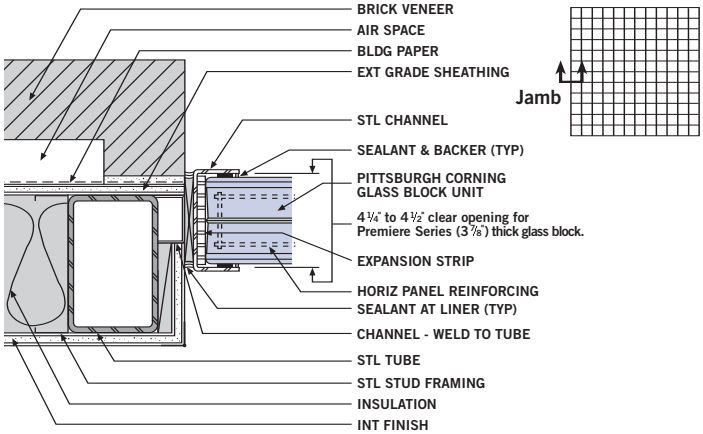
(PCD 031) Head – Glass Block in Steel Stud Wall with Synthetic Plaster Finish



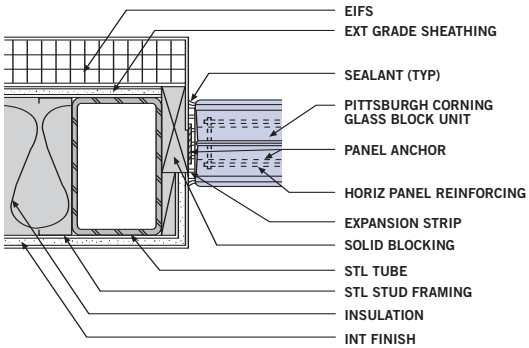
NOTE: This dimension is determined by the anticipated deflection of the structural member above the glass block.

(PCD 061) Head – Glass Block in Steel Stud Wall with Brick Veneer

TYPICAL JAMB DETAILS (Exterior Openings)

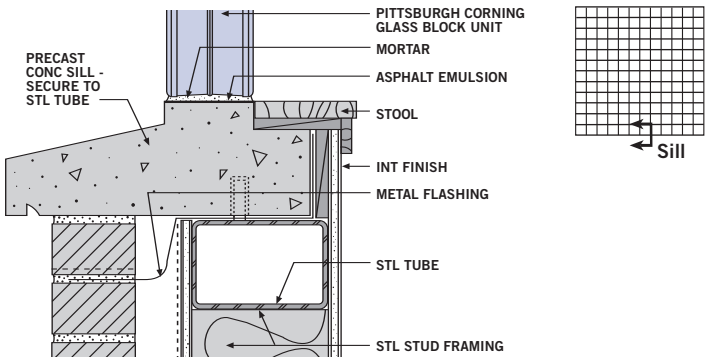


(PCD 062) Jamb – Glass Block in Steel Stud Wall with Brick Veneer

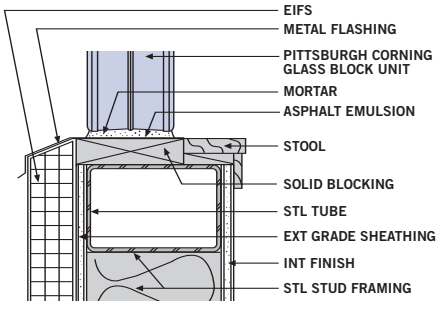


(PCD 032) Jamb – Glass Block in Steel Stud Wall with Synthetic Plaster Finish

TYPICAL SILL DETAILS (Exterior Openings)

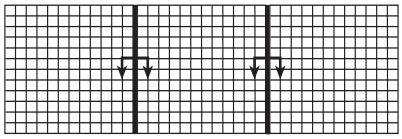


(PCD 063) Sill – Glass Block in Steel Stud Wall with Brick Veneer

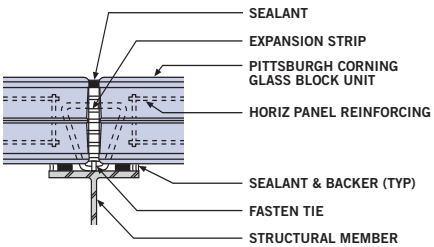


(PCD 033) Sill – Glass Block in Steel Stud Wall with Synthetic Plaster Finish

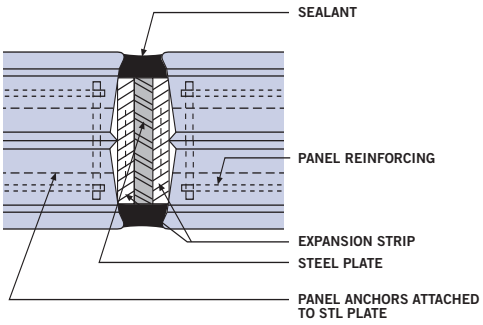
TYPICAL STIFFENER DETAILS
Continuous Panels ≤ 144 Sq. Ft. Each

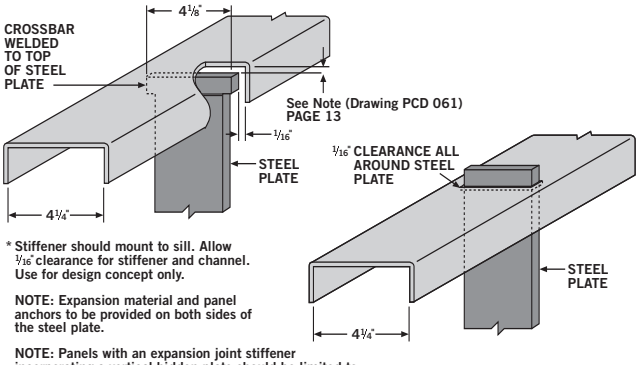


Vertical Stiffener



(PCD 132A) Intermediate Vertical Support in Multiple Horizontal Panels



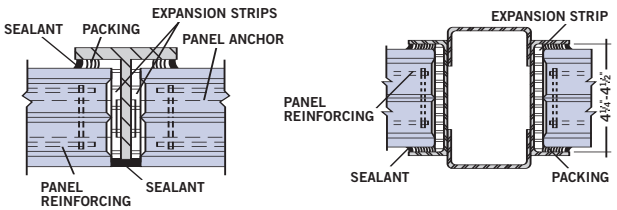


* Stiffener should mount to sill. Allow 1/16" clearance for stiffener and channel. Use for design concept only.

NOTE: Expansion material and panel anchors to be provided on both sides of the steel plate.

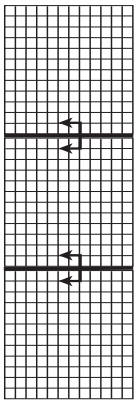
NOTE: Panels with an expansion joint stiffener incorporating a vertical hidden plate should be limited to a maximum 10' in height.

(PCD 132B) Intermediate Support in Multiple Horizontal Panels

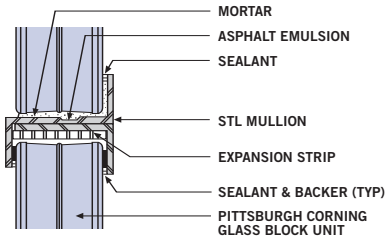


(PCD 132C & D) Intermediate Support in Multiple Horizontal Panels

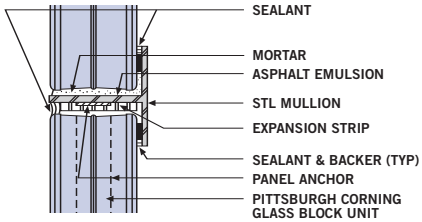
TYPICAL SHELF ANGLE DETAILS
Continuous Panels ≤ 144 Sq. Ft. Each



Horizontal Stiffener

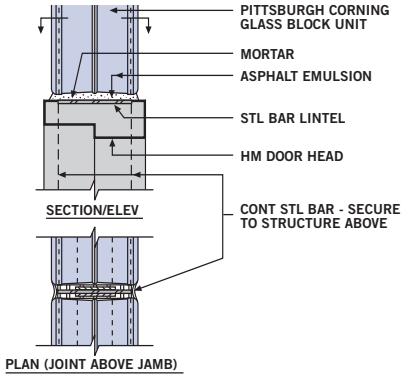


(PCD 128) Intermediate Horizontal Support in Multiple Vertical Panels

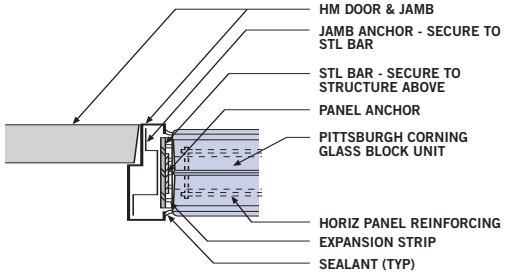


(PCD 129) Intermediate Horizontal Support in Multiple Vertical Panels

HOLLOW METAL DOOR FRAME DETAILS

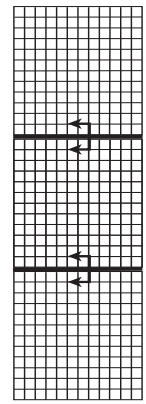


(PCD 153) Head – Hollow Metal Door Frame at Glass Block

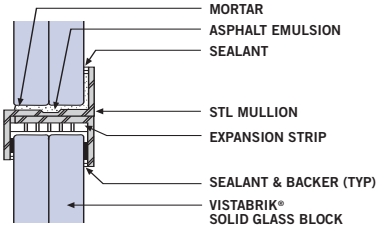


(PCD 154) Jamb – Hollow Metal Door Frame at Glass Block

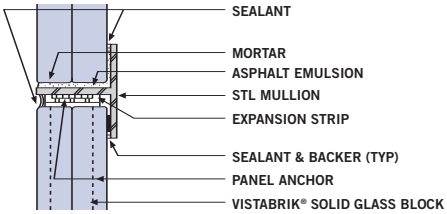
TYPICAL SHELF ANGLE DETAILS – FOR VISTABRIK® PANELS
Continuous Panels ≤ 100 Sq. Ft. Each



Horizontal Stiffener

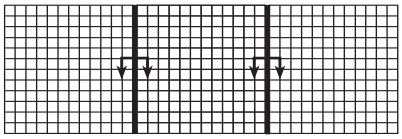


(PCD 130) Intermediate Horizontal Support in Multiple Vertical Panels

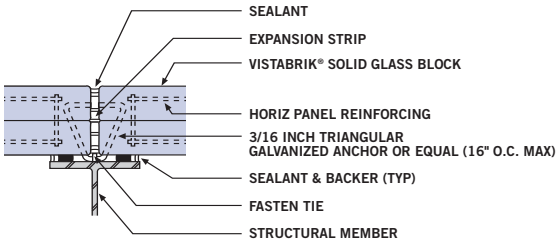


(PCD 131) Intermediate Horizontal Support in Multiple Vertical Panels

TYPICAL STIFFENER DETAILS – FOR VISTABRIK® PANELS
Continuous Panels ≤ 100 Sq. Ft. Each

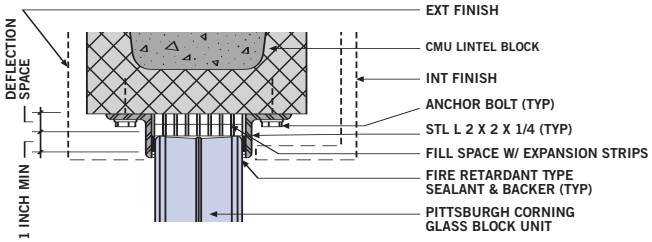


Vertical Stiffener

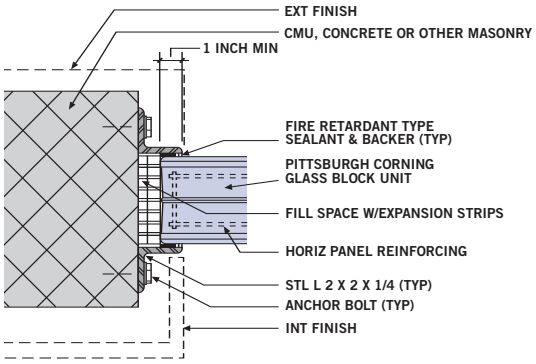


(PCD 133) Intermediate Vertical Support in Multiple Horizontal Panels

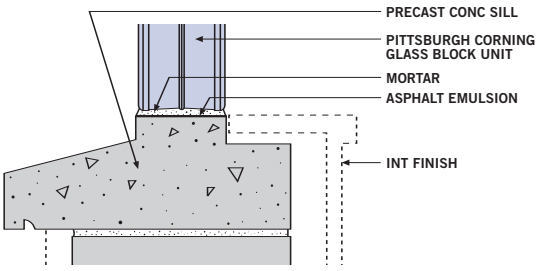
DETAILS FOR FIRE RATED CONSTRUCTION



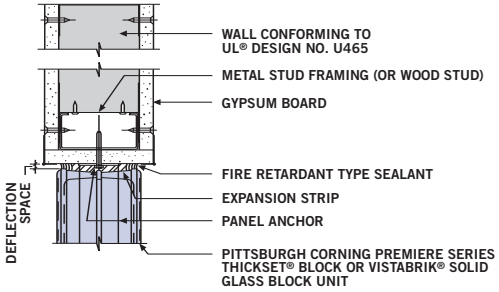
(PCD 004) Head – 90 Minute Fire Rated Glass Block in CMU Wall



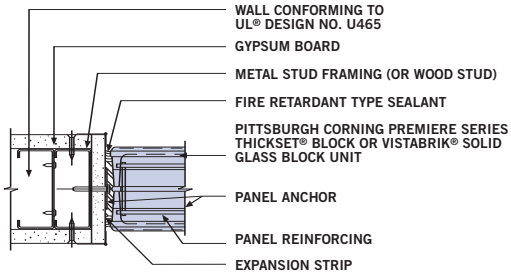
(PCD 005) Jamb – 90 Minute Fire Rated Glass Block in CMU Wall



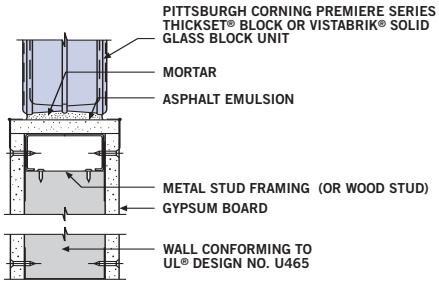
(PCD 006) Sill – 90 Minute Fire Rated Glass Block in CMU Wall



(PCD 159) Head – 45 & 60 Minute Fire Rated Glass Block Panel

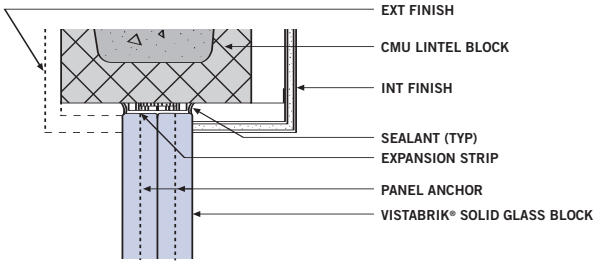


(PCD 160) Jamb – 45 & 60 Minute Fire Rated Glass Block Panel

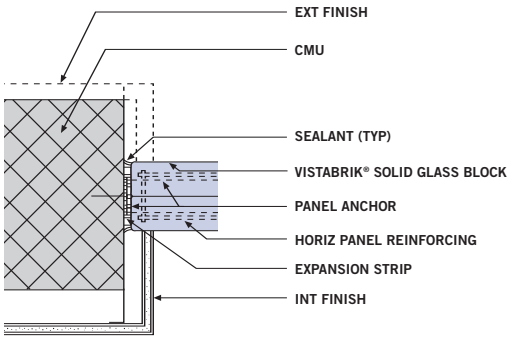


(PCD 161) Sill – 45 & 60 Minute Fire Rated Glass Block Panel

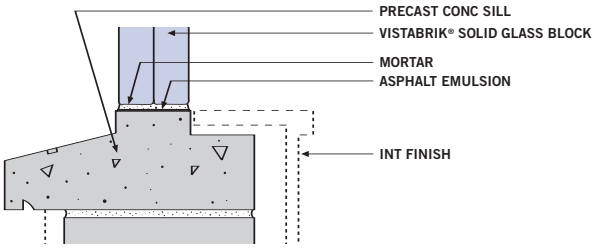
VISTABRIK® SOLID GLASS BLOCK DETAILS



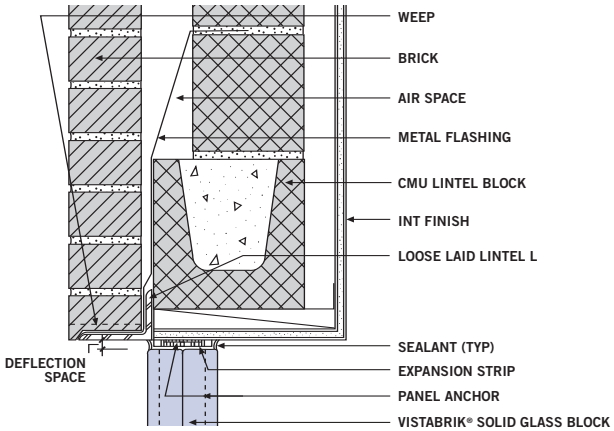
(PCD 037) Head – Solid Glass Block in CMU Wall



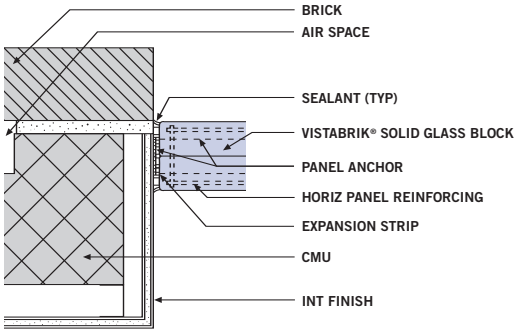
(PCD 038) Jamb – Solid Glass Block in CMU Wall



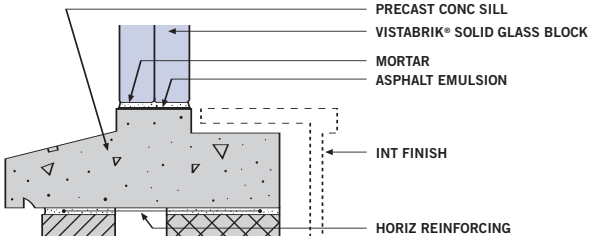
(PCD 039) Sill – Solid Glass Block in CMU Wall



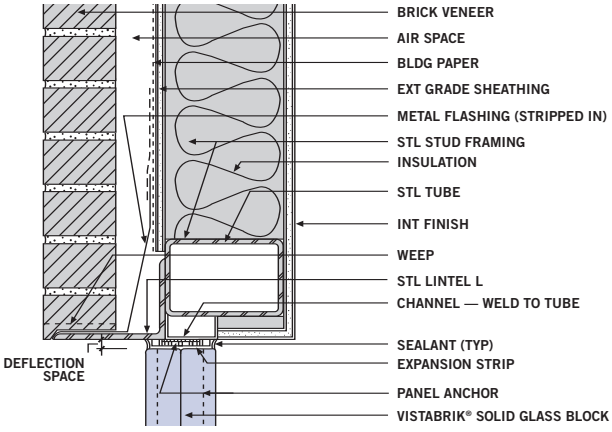
(PCD 040) Head – Solid Glass Block in Brick Masonry Cavity Wall



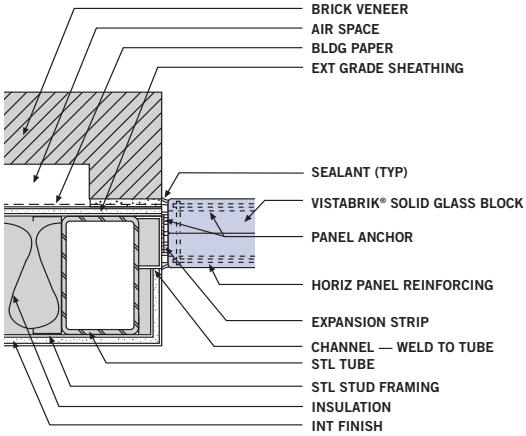
(PCD 041) Jamb – Solid Glass Block in Brick Masonry Cavity Wall



(PCD 042) Sill – Solid Glass Block in Brick Masonry Cavity Wall

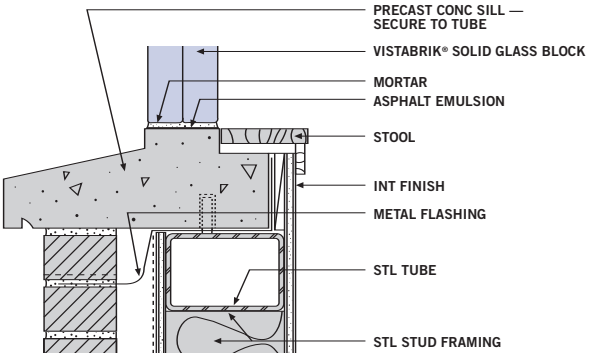


(PCD 043) Head – Solid Glass Block in Steel Stud Wall with Brick Veneer

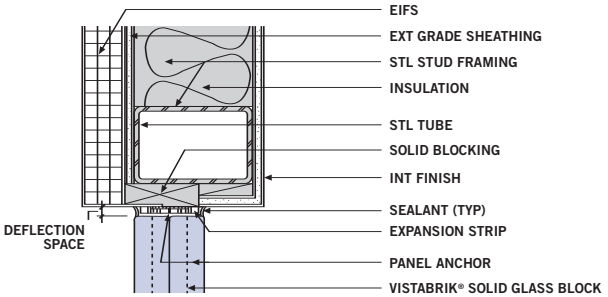


(PCD 044) Jamb – Solid Glass Block in Steel Stud Wall with Brick Veneer

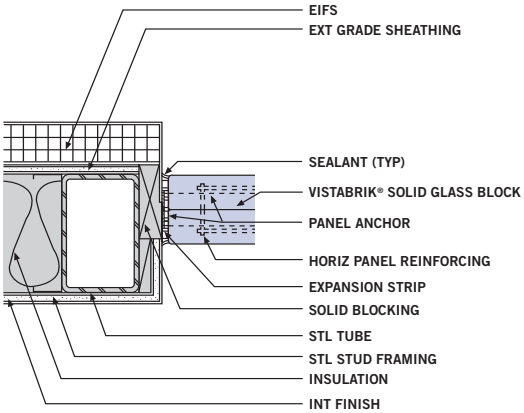
VISTABRIK® SOLID GLASS BLOCK DETAILS (continued)



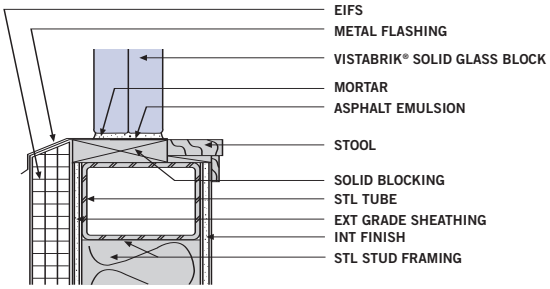
(PCD 045) Sill – Solid Glass Block in Steel Stud Wall with Brick Veneer



(PCD 049) Head – Solid Glass Block in Steel Stud Wall with Synthetic Plaster Finish

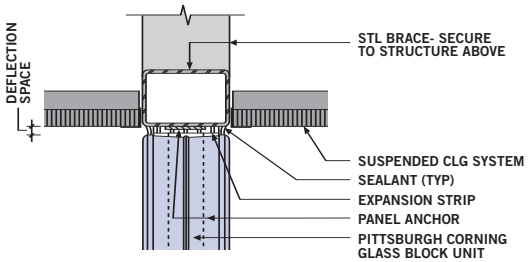


(PCD 050) Jamb – Solid Glass Block in Steel Stud Wall with Synthetic Plaster Finish

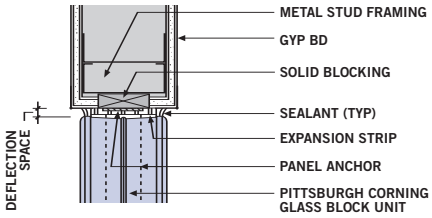


(PCD 051) Sill – Solid Glass Block in Steel Stud Wall with Synthetic Plaster Finish

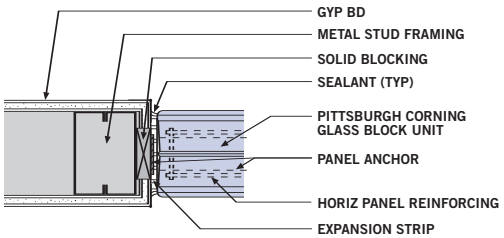
MISCELLANEOUS INTERIOR DETAILS



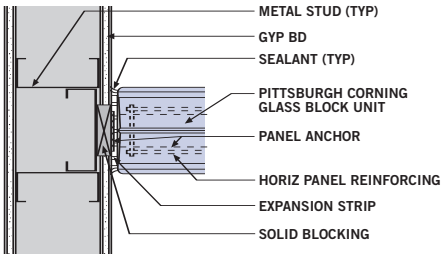
(PCD 148) Head – Glass Block in Suspended Ceiling



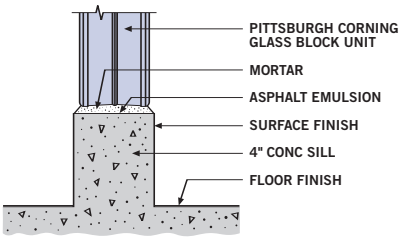
(PCD 149) Head – Glass Block in Partition



(PCD 150) Jamb – Glass Block in Partition

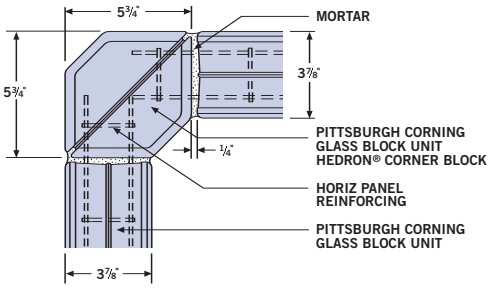


(PCD 151) Jamb – Glass Block Perpendicular to Partition

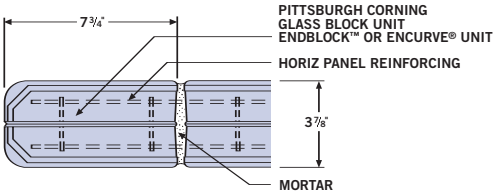


(PCD 241) Sill – Interior Concrete Floor Slab

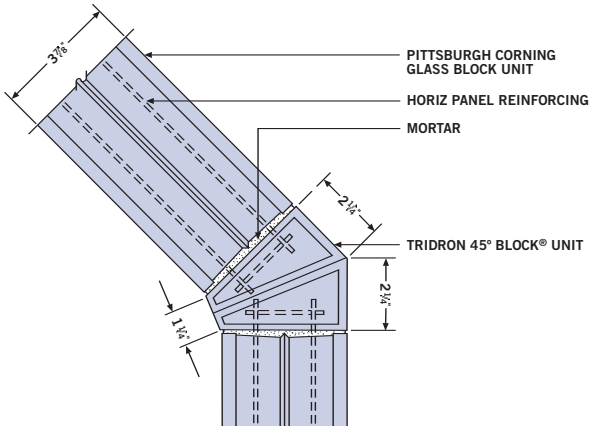
PREMIERE SERIES FINISHING UNITS DETAILS



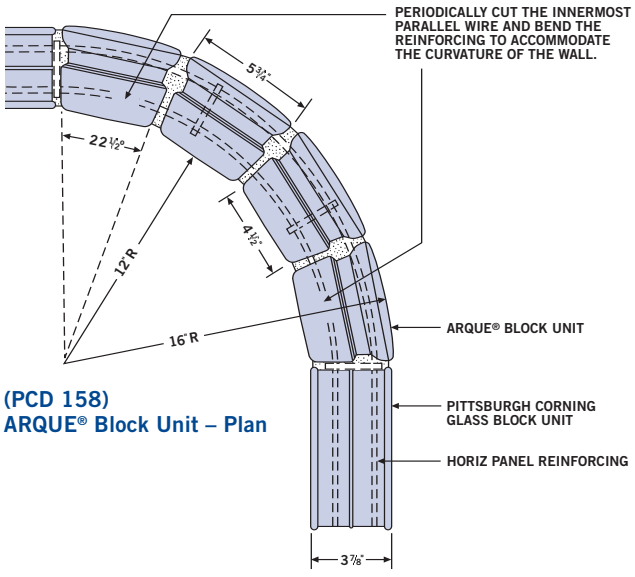
(PCD 155) Glass Block at Corner – Plan



(PCD 156) EndBlock™ or
ENCURVE® Finishing Block – Plan



(PCD 157) TRIDRON 45° Block® Unit – Plan



(PCD 158)
ARQUE® Block Unit – Plan

DIVISION 4 – MASONRY, SECTION 04270 GLASS UNIT MASONRY

PART 1 – GENERAL

1.01 Summary
This specification has been prepared by Pittsburgh Corning Corporation using generally accepted and appropriate technical information but is not intended to be solely relied upon for the specification design or technical applications. Having no control over the elements of design, installation, workmanship or site conditions, Pittsburgh Corning assumes that the actual design choices and installation will be made by persons trained and qualified in the appropriate disciplines. Therefore, Pittsburgh Corning disclaims all liability potentially arising from the use or misuse of this specification.

1.02 Section Includes
A. Glass Block Units, hollow or solid
B. Integral Joint Reinforcement
C. Mortar

1.03 Related Sections
A. Steel Channels
B. Sills, lintels, jambs
C. Sealant (caulk)
D. Packing Material

1.04 References
A. ASTM A82—Spec. for Cold Drawn Steel Wire
B. ASTM A153—Class B-2, Spec. Zinc Coating (Hot dip) on Iron and Steel Hardware (Canada same)
C. ASTM A167, Spec. for Stainless and Heat-Resisting Chromium-Nickel Steel Plate, Sheet and Strip
D. ASTM A580, Spec. for Stainless Steel Wire
E. ASTM C144, Spec. for Aggregate for Masonry (Canada – A179-94)
F. ASTM C150, Spec. for Portland Cement (Canada – CAN/CSA-A5-93)
G. ASTM E2010 and NFPA 257, Fire Test of Window Assemblies (equivalent to UL® 9 and CAN 4-S106-M80)
H. ASTM C207, Spec. for Hydrated Lime for Masonry Purposes (Canada same)
I. ASTM C270, Spec. for Mortar for Unit Masonry (Canada – A179-94)
J. ASTM D1187, Type II—Spec. for Asphalt-Base Emulsions (For Metal Surfaces)
K. ASTM D1227, Type III—Spec. for Emulsified Asphalt (For Porous Surfaces)

1.05 System Description
Knowledge of the following basic information is essential for proper installation of Pittsburgh Corning Glass Block units:
1. Glass block panels shall not be designed to support structural loads.
2. Maximum deflection of structural members supporting glass block panels shall not exceed L/600
3. Sills of all panels must be painted with a heavy coat of asphalt emulsion and must cure for two hours before first mortar bed is placed.
4. Provision for expansion and movement must be made at jambs and heads of all panels. Mortar must not bridge expansion spaces.
5. Mortar should be mixed and applied in accordance with the recommendations of Pittsburgh Corning Corporation. See Mortar Materials.
6. Design and installation of glass block projects should be done by whole units since cutting glass block is not recommended.

1.06 Submittals
A. Product Data
Submit two (2) copies of manufacturer's literature and two (2) copies of manufacturer's installation instructions.
B. Samples
1. Submit two (2) glass block units of each type specified, showing size, design and pattern of faces.
2. Submit representative samples of (panel reinforcing), (panel anchors), (expansion strips), and (sealant).
C Test Reports —
Fire Tests
Submit documents verifying glass block units are classified for a ¾, 1 or 1½-hour fire exposure according to ASTM 2010, Underwriters Laboratories of Canada CAN 4-S106-M80, UL® 9, or NFPA 257 "Fire Tests of Window Assemblies." All such glass block unit cartons shall carry appropriate UL® labels.

1.07 Storage and Protection
A. Store unopened cartons of glass block in a clean, cool, dry area.
B. Protect opened cartons of glass block against windblown rain or water run-off with tarpaulins or plastic covering.

1.08 Project/Site Conditions
A. Do not install glass block units when temperature is 40°F (4°C) and falling. Maintain the temperature of glass unit masonry above 40°F (4°C) for the first 48 hours after construction.

1.09 Warranty
A. Pittsburgh Corning Corporation offers a limited 5-year warranty on Pittsburgh Corning Glass Block units.

PART 2 – PRODUCTS

2.01 Acceptable Manufacturers
A. The drawings and specifications are based on catalog data, specifications and products of Pittsburgh Corning Corporation and designate the type and quality of work intended under this section.
1. Products of other manufactures proposed as equivalent quality must be submitted through the bidding contractors for written approval of the architect ten days prior to the bid date.
2. Supporting technical data, samples, published specifications and the like must be submitted for comparison.

3. Contractor shall warrant that proposed substitutions, if accepted, will provide performance equivalent to the materials specified herein.
4. These specifications have been developed by Pittsburgh Corning Corporation based on extensive tests of panels composed of Pittsburgh Corning Premiere Series Glass Block masonry units as manufactured by Pittsburgh Corning Corporation. These specifications do not apply to panels made from glass block masonry units produced by any other manufacturer.

2.02 Glass Block Units

A. Glass block units, nominally _____ inch x _____ inch x _____ inch thick shall be partially evacuated hollow units made of clear, colorless glass with a polyvinyl butyral edge coating.
Pattern type:
_____.

B. Solid glass units, nominally _____ inch x _____ inch x _____ thick made of clear colorless glass with a polyvinyl butyral edge coating. Pattern type: VISTABRIK® Solid Glass Block.

NOTE: Pittsburgh Corning Corporation offers a polyvinyl butyral edge coating for better bonding and to provide for an expansion/contraction mechanism for each block.

2.03 Accessories

A. Panel Reinforcing: two parallel 9 gauge wires either 1 5/8 inch or 2 inch on center with electrically butt-welded crosswires spaced at regular intervals, hot dipped galvanized after welding or Type 304 stainless steel, by Pittsburgh Corning Corporation.

B. Panel Anchors: 20 gauge perforated steel strips 24 inches long by 1 3/4 inches wide, hot dipped galvanized after perforation or 22 gauge by 16 inches long by 1 3/4 inches wide of Type 304 stainless steel, by Pittsburgh Corning Corporation.

C. Expansion Strips: made of polyethylene foam with a thickness of 3/8 inch, by Pittsburgh Corning Corporation.

D. Asphalt Emulsion: a water-based asphalt emulsion, by Karnak Chemical Corp. (Karnak 100, 1-800-526-4236), or equal.

E. Sealant (caulk): non-staining, waterproof mastic, (silicone), (urethane), (_____) type.
Below is a list of the toll-free telephone numbers of the Technical Departments of the following sealant manufacturers:
- Dow Corning Corporation, 1-800-248-2481 in Midland, MI
- General Electric, 1-800-255-8886, in Waterford, NY
- Sonneborn Building Products, 1-800-243-6739 in Minn., MN
- Tremco Incorporated, 1-800-321-7906 in Beachwood, OH Below is information on the fire retardant sealant used on glass block fire tests:
- Fyre-Sil Silicone Sealant (for fire-rated construction), by Tremco, Inc. (1-800-321-7906)

F. Packing (Backer Rods): polyethylene foam, neoprene, fibrous glass or equal as approved by sealant manufacturer.

G. Channels (Aluminum): Available from Julius Blum & Company, Inc., 1-800-526-6293 in Carlstadt, NJ.
- Premiere Series (4" Glass Block) Use: 4 1/2" x 2" x 1/8" size.
- VISTABRIK® and Thinline® Series (3" Glass Block) Use: 4" x 1 1/2" x 1/8" size.

2.04 Mortar Materials

Mortar: Type S in accordance with ASTM C270. Mortar shall be 1 part Portland Cement, 1/2 part lime, and sand equal to 2 1/4 to 3 times the amount of cementitious material (cement plus lime), all measured by volume. (For exterior glass block panels, an integral type waterproofer should be added to the mortar mix.) **No antifreeze compounds or accelerators allowed.**

NOTE: All model building codes also accept the use of Type N mortar.

1. Portland Cement: Type I in accordance with ASTM C150. If a waterproof Portland Cement is used, the integral type waterproofer shall be omitted. (Masonry Cement is not recommended.)
Color:_____
2. Lime: Type S, in accordance with ASTM C207. Shall be a pressure-hydrated dolomitic lime, provided that not less than 92% of all the active ingredients are completely hydrated.
3. Sand: A clean, white quartzite or silica type, essentially free of iron compounds, in accordance with ASTM C144, not less than 100% passing a No. 8 sieve.
4. Integral Type Water-repellent: Stearate type by Sonneborn Building Products (Hydrocide Powder, 1-800-243-6739), or approved equal. Note: Add hydrocide powder to dry mortar mix. Do not add powder to wet mortar mix.
5. External Type Water proofer: Water based silane sealer type by Sonneborn Building Products (HYDROZO ENVIROSEAL™ 20, 1-800-243-6739). Note: Remove excess sealer from glass surfaces soon after application.

PART 3 – EXECUTION

3.01 Preparation

A. Verify that (channels), (panel anchors) have been provided at head and jambs for the purpose of providing panel support within the opening.

B. Mix all mortar components to a consistency that is drier than mortar for ordinary masonry. Retempering the mortar after it has taken its initial set shall not be permitted. **Do not use antifreeze compounds or accelerators.**

C. ***Freshly mixed mortar may create skin irritation. Avoid direct contact where possible and wash exposed skin areas promptly with water. If any mortar gets into the eyes, rinse immediately with water and get prompt medical attention.***

3.02 Installation

A. Cover sill area with a heavy coat of asphalt emulsion. Allow emulsion to cure at least 2 hours before placing mortar.

B. Where panel anchors are used at jambs and heads in lieu of channel or chase surrounds, install panel anchors in the same joints (16 inches o.c. maximum starting after first course) where panel reinforcing will be laid. Panel anchors are to be embedded a minimum of 12 inches into the mortar joints.

C. Place or adhere expansion strips to jambs and head. Make certain expansion strip extends to sill and covers leg of panel anchor that is attached to jambs and head.

D. Set a full mortar bed joint, applied to sill.

E. Set lower course of block. Maintain a uniform joint width of 1/4 to 3/8 inch plus or minus 1/8 inch. All mortar joints must be full and not furrowed. Steel tools must not be used to tap blocks into position. (Place a rubber crutch tip on end of trowel to tap block into position.) Do not realign, tap or otherwise move block after initial placement. For VISTABRIK® Solid Glass Block units, typical mortar joint is 3/8 inch. Special VISTABRIK® spacers that provide a 3/8 inch thick mortar joint are available.

F. Install panel reinforcing every 16 inches o.c. maximum (starting after the first course) in the horizontal mortar joints and in joints immediately above and below all openings within panels. Run reinforcing continuously from end to end of panels. Lap reinforcing not less than 6 inches whenever it is necessary to use more than one length. NOTE: In corrosive atmospheres (i.e. saline air, chlorine air, etc.), the use of stainless steel channels, reinforcing and panel anchors should be considered. Consult local building codes in costal areas. For VISTABRIK® Solid Glass Block, use 1 5/8 inch wide reinforcing (same as Thinline® Series glass block). Do not bridge expansion joints with reinforcing. Install reinforcing as follows:
- **Place lower half of mortar in bed joint. Do not furrow.**
- **Press panel reinforcing into place.**
- **Cover panel reinforcing with upper half of mortar bed and trowel smooth. Do not furrow.**

G. Place full mortar bed for joints not requiring panel reinforcing – do not furrow. Maintain uniform joint width.

H. Set succeeding courses of block. Spaces at head of panel and jambs must remain free of mortar for caulking with sealant.

I. Use only wooden or rubber tipped tools when tapping glass blocks into place.

J. Strike joints smooth while mortar is still plastic and before final set. Remove surplus mortar from faces of glass blocks and wipe dry. (See Section 3.03). Tool joints smooth and concave before mortar takes final set. At this time, remove and clean out all excess mortar from jambs, head and other locations.

K. After final mortar set (approximately 24 hours), install packing tightly between glass block panel and jamb and head locations. Leave space for sealant.

L. Apply sealant evenly to the full depth of recesses as indicated on the drawings and in accordance with the manufacturers' published application manual and instructions.

M. *All exterior glass block panels shall be well sealed to prevent water entry.*

3.03 Cleaning

A. Remove surplus mortar from the faces of the glass block at the time joints are struck or tooled. **Mortar should be removed while it is still plastic** using a clean, wet sponge or an ordinary household scrub brush with stiff bristles.

B. **Do not use harsh cleaners, acids (of any strength), abrasives or alkaline materials while cleaning glass block. Never use a wire brush to remove mortar from glass block surfaces.**

C. Final mortar removal is accomplished with a clean, wet sponge or cloth. Rinse sponge or cloth frequently in clean water to remove abrasive particles **that could scratch glass surfaces**. Allow any remaining film on the block to dry to a powder.

D. After all sealants, caulking, etc., have been applied, remove excess caulking materials with commercial solvents such as xylene, toluene, mineral spirits or naptha and follow with normal wash and rinse. Be careful not to damage caulking by overgenerous application of strong solvents. Comply with solvent manufacturers' printed directions on label for toxicity and flammability warnings.

E. Final cleaning of glass block panels is accomplished after they are completely installed. Wait until panels are not exposed to direct sunlight. Start at the top of the panel and wash with generous amounts of clean water. Dry all water from the glass block surface. Change cloth frequently to eliminate dried mortar particles or aggregate **that could scratch the glass surface**. To remove the dry powder from the glass surfaces, use a clean, dry, soft cloth. For stubborn or hard to remove powder or stains, the use of an "extra fine" steel wool (grades 000 or 0000) is suggested. Try this first in an unobtrusive area.

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