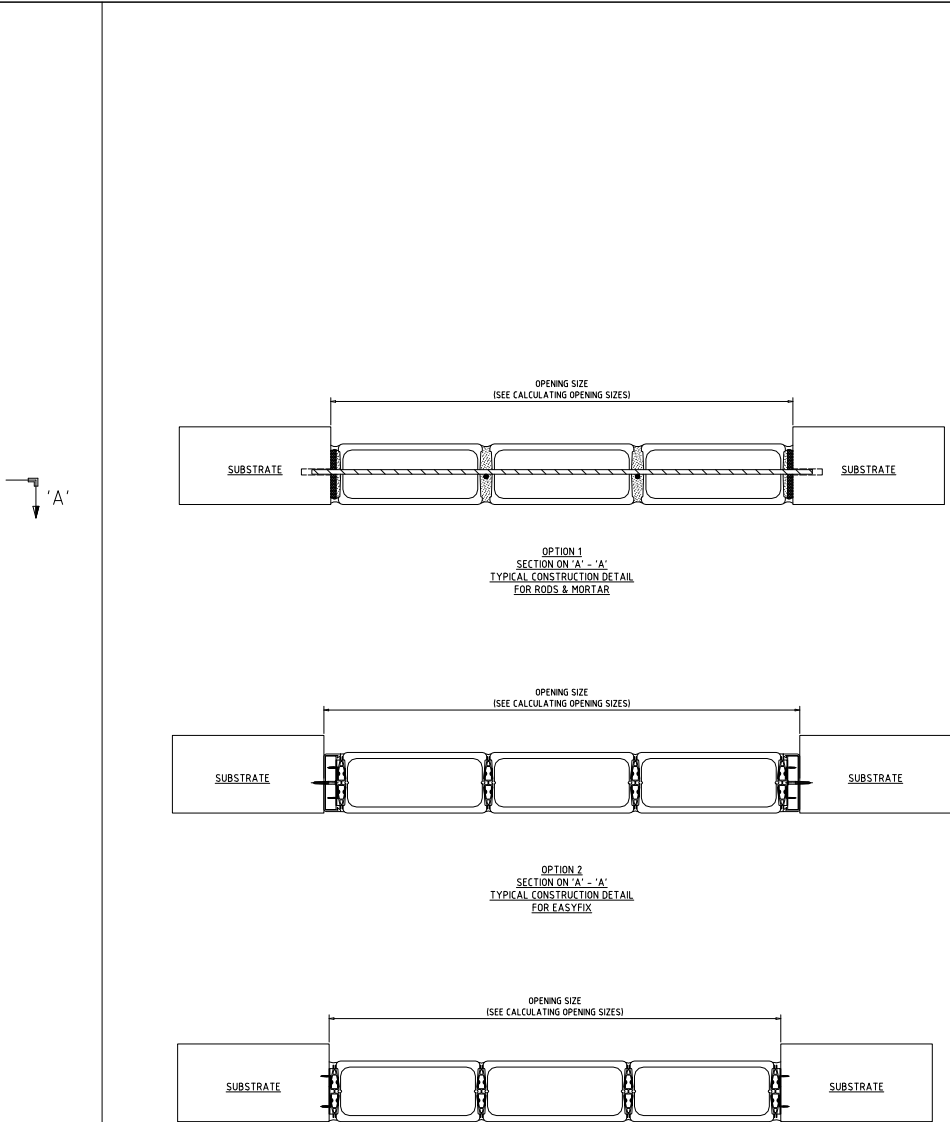


TYPICAL GLASS BLOCK WALL PANEL  
SUPPORTED ON FOUR SIDES



OPTION 3  
SECTION ON 'A' - 'A'  
TYPICAL CONSTRUCTION DETAIL  
FOR EASYFIX

#### Guide to Specifying Glass Blocks - General considerations:

1. Glass block walls are self supporting, but not load bearing. In addition to their own weight, they can withstand wind loads, horizontal live loads and impact loads. A lintel provides the head for the panel to be anchored into whilst ensuring no downward pressure is placed on the glass blocks.

2. Openings must be square and perpendicular and the opening dimensions must be designed to suit glass block modules. Glass blocks cannot be cut like masonry bricks or tiles. To calculate the minimum opening size based on using 190 x 190 x 19mm blocks with 10mm joints, multiply the number of blocks by 200mm (190 block + 10mm joint) then add 10mm for the other mortar joint. This is the minimum opening requirement. 10mm mortar joints are the most commonly used. 6mm spacers can also be used for thinner joints, if openings have been prepared incorrectly or if re-installing glass blocks, or to create a tighter radii, when building a curved glass block panel.

3. Glass block walls are connected to the surround by reinforcement bars being inserted into pre-drilled holes for panel anchoring. For best integral strength, panels should be installed into a four sided pre-prepared opening. The opening can be timber, brick, steel, concrete or block-work.

4. Between the opening and glass blocks it is essential to incorporate expansion joints to allow the panel to expand and contract freely with temperature change. The foam must not be bridged by mortar (render/plaster etc.) and caulked with Rods & Mortar expansion joint sealer (fire-retardant in fire-rated applications).

5. Glass blocks should not be installed when the surrounding temperature is 5°C and falling or 35°C and rising.

6. Using standard glass blocks the maximum panel size without intermediate support or slig joints is 2500mm with no dimension exceeding in any other direction. For TFSB and TFSB Fire blocks, the maximum panel size permissible is 1600mm with no dimension exceeding in any other direction.

Connection details are purely representative to demonstrate the principle how glass blocks can be constructed with channels, or box sections, either for structural and practical purposes, i.e. interface of glass blocks and render or masonry work.

The channel, PFC and box section dimensions are illustrative only and not necessarily to scale.

Connection detail principles, should be designed and be specific to each project requirement and calculations checked and qualified by independent structural engineers.

**Accessories - Perimeter expansion joints.**

Glass blocks will expand and contract by 0.25mm per 25°C temperature change. Self expansion joints must be incorporated into the perimeter between the substrate opening and blocks, being caulked with a white silicone for fire-free mass. The fill visually look similar to a standard mortar joint. For the head and joints at an opening, 10mm thick foam is used. This is a white expansion foam. The horizontal expansion joint between the first row of glass blocks and the base of the opening is formed using high-density silicone or neoprene material to support the weight of the panel. Alternatively two coats of bitume emulsion can be applied as the barrier between the bottom course mortar joint and base of opening.

**Joint sizes and spacer spigs.**

10mm is the most common joint size for specifying and building glass blocks. A 190 x 190 block plus 10mm spacer modules to 200mm. Spacer spigs serve multiple functions. They prevent mortar seepage, increase the number of courses that can be constructed in a day. They prevent stainless steel reinforcement bars coming into direct contact with the glass blocks as well as glass have different expansion and contraction properties. When a spacer spig is fitted and the wall is finished, the tabs at the end twist off and can then be grouted over.

Other spacers are available for the 80mm-thick blocks-6mm x 6mm x 10mm and also for 100mm-thick blocks - 10mm x 10mm.

**Panel reinforcement and tying back to the perimeter openings.**

Stainless steel ribbed reinforcement bars are used for tie to the opening. The rods penetrate the expansion material and anchor the panel in place by connecting to the perimeter frame. This can be located by drilling an over sized hole a minimum depth of 25. 10mm an should be filled with silicone to cushion any movement of the re-bar. Rods are 100mm long and when the panel is larger than the reinforcement bar, rods are overlapped by a minimum of 100mm and are correctly joined using tie wire/cable tie.

One reinforcement bar should be used in each horizontal and vertical joint as a minimum. More rods may be required if using glass blocks of a TFSB or TFSB.

For situations where connecting the rods to the opening may prove difficult, bolt anchors can be used (similar to the brick tie principle secured by either screw or bolt fixing or mechanically shot fixed).

**Glass blocks specific mortar - Colonel Ventres.**

Colonel Ventres is a specially designed and formulated premix mortar for glass block construction (ensuring accuracy and consistency) of performance. It can be used internally, externally, straight, curved and fire-rated glass block walling. Ventres has a fine texture, low slump and the whitest mortar available. It is used in bedding and pointing etc. Therefore there are no bedding issues between bedding and grouting. Mixing instructions are on the reverse of each bag and should be strictly adhered to. 10 slugs will add approximately 10mm to 190 x 190 blocks. The surrounding temperature should not be 5°C and falling or 35°C and rising and the joint width should not exceed 22mm.

**Expansion joint sealer/sealer.**

After construction, the perimeter joint should be cleared of any residue mortar and caulked with Rods & Mortar expansion sealer for fire stop mastic. Bridging the joint would restrict flexibility and any movement and negate the expansion force and can cause glass blocks or joints to crack.

**How a mortar joint works.**

Glass Block Technology mortar is a specially formulated premix bedding and finishing compound, available in one bag to be mixed with water. It is manufactured under factory controlled conditions so all additives are accurately blended and designed for maximum performance of strength, flexibility, water resistance and a clean mortar joint with cure in reaction to air, just like mortar mortars, so it is important that the joint size is not too wide. This guarantees total curing and maximum strength. Mortar joints become solid within hours of construction. Total curing is achieved after 28 days.

Glass is impervious unlike brick and concrete, therefore mortar is not absorbed into a glass block. The strength and support of a joint is created by the shape of the mortar profile local. The edge or collar of a block is covered so when two are laid next to each other an even joint is created. This even joint enables the glass blocks to resist impact or applied loads resulting in the panel being stable and self-supporting, but not tied back together. Various steel reinforcement bars are used to tie reinforcement bars to the surrounding structure, whilst also giving the panel integral support and a wind-loading value.

The minimum recommended joint is 10mm and the most common used is 10mm. However, this is only the distance on show, the centre of the oval joint is always deeper from colour to colour. This area houses the stainless reinforcement bars, which should never be in direct contact with the glass surface.



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The data sheet connection detail & construction principles, should be designed and be specific to each project requirement or environment & calculations checked and qualified by independent structural engineers.

All information is accurate to the best of our knowledge at time of data sheet production, however Glass Block Technology Ltd. cannot be held liable in any way regarding the usage of glass blocks and the manner in which they are installed. Glass Block Technology Ltd. reserve the right to amend or correct changes at any time.

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GBT112 Rev.

Scale 1:7.5 & 1:2