

Floor glass blocks and precast panels.

Specifying glass block flooring.

At concept or feasibility stage there are a number of items to review before the specification or detailing process can begin. Initial questions to ask are:

- Will the elements be subject only to pedestrian traffic or vehicular loads?
- What loading requirements should the panels achieve?
- Is the precast and glass required to have a fire rating?
What fire integrity and thermal isolation rating is required?
- What is the opening size and have you incorporated expansion joints?
- What type of bearing, perimeter frame and intermediate support do you need?
Most building regulations will require glass block flooring to achieve a minimum of 5 Kn per square meter. Precast strength is achieved based on various factors:
- Block type, joint, border width and thickness
- Quantity and gauge of steel reinforcement used
- Panel size
- How many sides the panel is supported on
- Length of any unsupported span. The panel should be designed around the perimeter opening dimensions. Once panels are poured they cannot be altered, added to or cut, so planning the opening size and preparing the bearing is critical.

Loading Strength

Investigating what performance criteria is required of precast flooring at feasibility stage will offer advantages regarding what type of panels can be used. The size and type of support structure/pier would be most suitable, for example: steel, brick or concrete. These decisions can ease knock-on effects later. Even though glass block flooring is treated as a finishing trade, the planning is best considered as the building superstructure is being designed.

Loading calculations for panels are worked out based upon the type of block, width of joint, border, gauge, quantity of reinforcement, depth and length of the panel and the number of sides supported. If the bearing supports the panel on only two or three sides the loading strength of the panel(s) will be reduced calculable on the unsupported span.

The quantity and gauge of steel reinforcement is based upon the panel size and loading requirements or fire rating specification. A minimum of two reinforcement bars are used within the joints and generally more within the perimeter border. The diameter will be determined by the performance and is between $\phi 6$, $\phi 8$, $\phi 10$ or $\phi 12$ mm.

Fire-rated glass block flooring

Fire-resistance classification for floor panels works identically to glass block walling; two ratings have to be considered. G category is fire integrity and F category relates to the fire thermal isolation value.

Integrity is the length of time a structure will remain stable in the event of a fire. Thermal isolation relates to the period of time it takes for heat to transfer from the side of the fire through the glass blocks, for the purpose of an escape corridor. This plays a major role in heat coming into contact with people evacuating a building.

Fire-rated glass block flooring panels can only be precast under licence by the glass block manufacturer and are therefore produced in exact accordance with test certification. Glass Block Technology exclusively represents factories for UK and Eire.

G60, fire integrity is achieved by the majority of glass floor blocks. For thermal isolation certified blocks are available which achieve F-categorisation (15 minutes, 30 minutes and 60 minutes).

When carrying out fire tests the results for both integrity and thermal isolation are measured in 15-minute increments. Certification is available for 15, 30 and 60 minutes. If a test fails at 28 minutes, this is classified as passing at 15 minutes, not upgraded to 30 minutes.

