

## Surefast - Architectural finishes

**Surefast can be fitted out with a range of architectural finishes to provide a functional and aesthetically attractive structure or building.**

### Windows and doors

Openings can be cut in Bi-Steel panels during off-site fabrication and lined with closure plates to provide apertures to accommodate window or door frames. Frames for doors and windows can be fitted to the panels before delivery to site.



The tight dimensional control associated with steelwork fabrication enables rapid installation of glazing and doors into the frames provided.

There are two options for fixing frames to Bi-Steel panels:

- self-drilling, self-tapping screws can be used if the frames are installed before concrete filling
- anchor bolts can be used if the frames are installed after concrete filling.

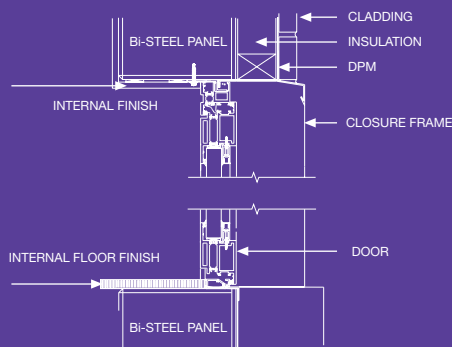
A damp proof membrane and drip flashing are incorporated around the window and door frames to prevent moisture penetrating into the building around the frames. Doors, windows and associated frames are designed to provide insulation to comply with the Building Regulations. (A typical door installation detail is illustrated below left, courtesy of Penser Security).

### Protective glazing & doors

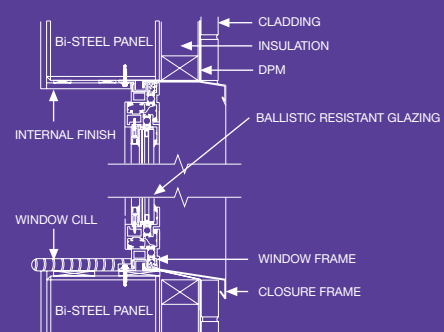
For applications where blast or ballistic resistant glazing is required, it is sensible to provide glazing that matches the resistance of the Bi-Steel panels. Clearly, under-matched glazing provides a weakness and over-matched glazing is not cost-effective. For very severe blast or ballistic threats it is normal practice to eliminate all windows. For certain locations false windows may be required to improve the appearance of the structure. (A typical blast and ballistic resistant glazing installation detail is illustrated below right, courtesy of Penser Security).

For very severe blast or ballistic threats it is normal practice to provide a door, which is able to match the resistance of the Bi-Steel panels. There are various proprietary blast or ballistic resistant doors available from specialist suppliers. However, it is most efficient to use a Bi-Steel blast door with a similar construction to the Bi-Steel panels.

Door installation detail



Glazing installation detail



## Other openings

In a similar manner to windows and doors, openings can be provided in Bi-Steel panels for mechanical and electrical services. It is most cost-effective to identify the size and location of penetrations before Bi-Steel panel manufacture begins. These openings are normally lined with steel plate to ensure that the shear and flexural capacity of the panels is not compromised.

## External cladding & insulation

Unclad Surefast structures and buildings can be painted or, to soften the appearance of these structures, it is recommended that proprietary cladding systems are used. It is most economical to use a cladding system that provides weatherproofing and insulation to the Bi-Steel panels. There is a vast range of cladding systems available and the generic types are listed.

Standard builders details are used to ensure the interfaces between windows or doors and the cladding are weatherproof and do not cause cold bridges.

## Masonry

Brickwork, blockwork or stonework can be built on the outside of the Surefast structure, incorporating a cavity between the masonry and the Bi-Steel panels. Wall ties and plates are welded or shot-fired to the outer steel face plate to tie the masonry back to the panels. The cavity can be filled with insulation. There is a wide range of sizes, colours and textures of masonry units available.

## Insulated profiled metal cladding

Many industrial and commercial buildings use profiled metal cladding as an economic means of weatherproofing and insulating a building. This system can be used on Surefast buildings. Cladding rails can be attached to the outer steel faceplates by shot-firing, welding or self-drill, self-tapping screws. There are various suppliers of these systems, which supply a range of profiles and colours.

## Pre-assembled brick cladding

In keeping with the Surefast concept a pre-assembled brick cladding system, such as Corium, is suitable for Surefast. Steel profiles are attached to the Surefast panels using self-drilling screws. Brick tiles are then clipped into the profiles and the joints between mortared. (The final appearance is of a well-laid brick wall as illustrated below, picture courtesy of Baggeridge Brick plc).

## Internal Surfaces

For structures that are uninhabited, an internal steel surface is simple to maintain because it is easy to inspect and clean. For inhabited buildings however, the finish needs to be softened to reduce noise reflection and provide an attractive interior. There are two common types of internal finish; a dry finish (plasterboard, fibre board, hardboard, timber boards or plywood) or a wet finish (plaster or rendering). Dry liners are attached to the internal steel faceplate using an adhesive. Wet liners are normally applied over a metal mesh, spot-welded to the internal steel faceplate. For structures at risk from explosive threats, the finish would need to be firmly attached to the wall to prevent creation of a possible secondary fragment hazard.

## Corrosion protection below ground

Cladding systems provide insulation and weatherproofing to the outside of the structure above ground. Methods for corrosion protection of the Surefast panels below ground level are based on the Highways Agency 'Design Manual for Road and Bridges'.

## Additional benefits of Surefast

Surefast is ideal where security of communications is important because the two steel faceplates provide a tempest break and shields electrical equipment from external surveillance.

Surefast buildings do not require a separate lightning protection system providing the steel plates are earth bonded.



## Contact details

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