

Bi-Steel Security & Defence

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## **Bi-Steel Protective Structures**

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**Unrivalled blast protection and containment  
for security-sensitive environments**





## Protecting life Protecting assets

**Bi-Steel - superior blast protection and  
containment from a unique high-performance  
steel/concrete composite material**



**Left and right:** All aspects of today's society face a range of security threats



**Above:** Effective security measures are required to protect people, assets and infrastructure

**We live in uncertain times**

In a world where protecting people, assets and infrastructure is increasingly difficult, improved measures are required to safeguard our society.

All aspects of today's environment face a range of threats. Protection against blast has therefore become a requirement for many existing and new structures. Enhanced building stand-off protection to help prevent attacks being delivered is also increasingly specified for many vulnerable site perimeters.

Current high performance 'design and build' doctrine is based upon conventional construction techniques and materials. However, new technologies now available can offer superior protection and are more efficient to construct.

Bi-Steel is one such technology. This Corus-patented construction material was developed specifically for applications where superior protection from explosive blast is required. A unique steel/concrete composite, Bi-Steel has been fully tested and meets the requirements of the UK and US Governments for protective buildings.

Bi-Steel structures are created using Bi-Steel panels, which are fabricated off-site, installed quickly and accurately and then filled with structural grade concrete - to deliver an exceptionally high integrity structure.

**Bi-Steel is ideal for:**

- Blast protective structures
- Blast walls
- Blast containment chambers





## Protection by design

### What is Bi-Steel?

Bi-Steel was developed to provide structural solutions with inherent blast resistance.

A Bi-Steel panel comprises two steel plates that are connected together by an array of friction welded transverse bars. This process is typically used when components are severely loaded and it provides high quality, reliable welds.

Bi-Steel panels can be produced to different sizes and shapes giving designers the flexibility they need to work within a wide range of parameters.



Left: A Bi-Steel panel

## Bi-Steel - a unique protective construction technology

Depending on the project, panels are usually fabricated into modules in the Corus plant, transported to the site and assembled. They are then filled with ready-mixed concrete. This creates the unique Bi-Steel high performance construction – the steel plates provide resistance to in-plane and bending forces whilst the concrete provides resistance to compressive and shear forces.

Bi-Steel panels are very ductile – an essential requirement for blast protective materials. The two continuous plates provide double protection against breach and, unlike reinforced concrete, the material will not create dangerous secondary projectiles by fragmenting under explosive attack. Bi-Steel panels are slender in form, fast to erect and the high levels of accuracy which can be achieved during manufacture facilitate ease of installation on site.

### Unrivalled blast protection – tested and proven

Over 100 full-scale tests have been conducted in association with recognised government agencies on Bi-Steel counter-terrorist blast walls and structures.

These have involved bare explosive charges, shells, mortars, rocket-propelled grenades and car and truck bombs. As a result of these tests the material meets the requirements of the UK and US Governments for protective buildings.

Bi-Steel also provides:

- Excellent fire containment properties
- Protection against electro-magnetic pulse
- Containment of and protection against bio-hazards
- A shield against radiation

### ‘Surefast’ – the unique ‘Slot and Lock’ connection system

The unique ‘Surefast’ connection system facilitates the rapid assembly of Bi-Steel structures on site, often in a matter of just a few hours.

**Bi-Steel is ideal for use in sensitive commercial, government and military structures:**

- **Blast protective structures** - secure areas, financial/data centres, high value commodity storage facilities, control and command centres.
- **Blast walls** - to provide blast protection at communications sites, water supply facilities, roads/bridges, airports, ports and freight terminals, major event centres and sports arenas. Also to provide blast containment at key power generation sites and oil/gas storage facilities.
- **Blast containment chambers** - postal sorting areas, search areas, munitions storage etc.

**Right:** Surface damage to reinforced concrete (right) and to Bi-Steel (far right) after a close-in explosion



# Profit from our expertise

## Bi-Steel - a total protective construction security solution

In today's challenging security environment, where the world is facing a new range of threats from terrorists and criminals, the need to fully protect people and assets is vital. Bi-Steel can assist in achieving this goal by providing safer and more secure structures and perimeters that will help protect lives, preserve assets and assure our critical infrastructure.

### Safety by design

The integration of Bi-Steel within a security strategy reduces consequential loss to a level that is As Low As Reasonably Practical (ALARP).

In designing a security solution to meet each individual client's protection requirements, Bi-Steel will:

- Develop a protection strategy
- Assess blast interaction
- Quantify loading on structural components
- Specify and design the Bi-Steel security solution

### Experienced engineering team

Bi-Steel has a highly experienced and passionate technical team, including experts in blast engineering, structural and civil engineering, and security matters, who will provide a full schedule of specifications with drawings. Bi-Steel can also act as a sub-contractor for installation.



**Left and right:** Bi-Steel's technical, design and delivery teams provide total security solutions

**Right:** Corus manufacturing facilities operate to world-class standards



### **Quality and integrity**

Corus is one of the UK's leading companies. With world-class manufacturing facilities, we use the latest technology to ensure our product offerings are state-of-the-art.

Our proposition to the security and defence industries brings together quality products, systems, services and people who are committed to just one thing - our clients' success.

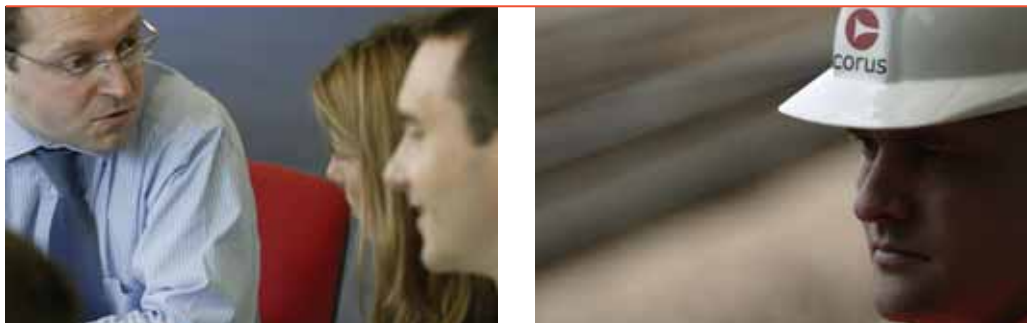
### **Value added solutions**

At every stage of the project we work in close collaboration with our clients, providing technical advice and consultancy that delivers successful results.

Backed by an unrivalled reputation in steel, Corus is in a unique position to provide added value to our clients by delivering solutions that make construction projects safer, faster, more flexible and cost effective.

### **Contact us**

For the latest information on Bi-Steel in security and defence applications call us on +44 (0) 1344 751670.



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**www.corussecurity.com**

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