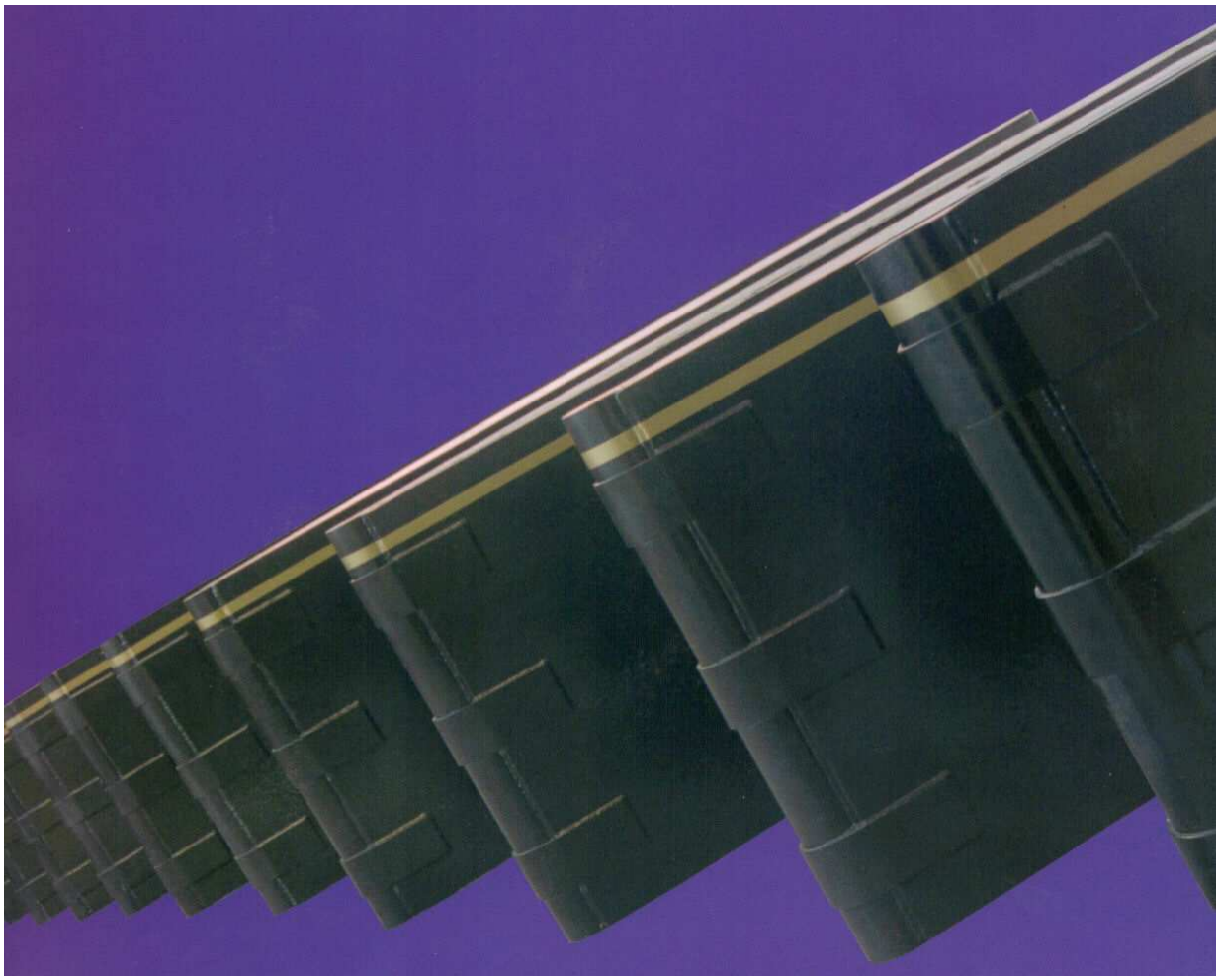
IHT AWARDS 2008

Security in the Public Realm Award



Corus Bi-Steel

Re-deployable anti-attack vehicle barrier system

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Bi-Steel re-deployable anti-attack vehicle barrier system

An innovative and highly effective perimeter and stand-off vehicle barrier system designed to deliver superior levels of protection from vehicle borne explosive attack.

Executive summary

Increasing terrorist activity created demand for a new generation of vehicle security barriers. Traditional concrete barriers were no longer ideal for various reasons, including performance, appearance and maintenance requirements. Corus commenced work with the UK Government security service to design a better vehicle barrier system using its high performance steel/concrete composite material, Bi-Steel. The innovative product range that resulted is regarded as industry-leading and has proved to be highly effective.

The Bi-Steel anti-attack vehicle barrier system consists of moveable and interchangeable barriers and gates used to control vehicle access, and to protect against Vehicle Borne Improvised Explosive Device (VBIED) attack. See Appendix 1 for system description.

Bi-Steel is now specified by HM Government to protect the Houses of Parliament and has been used to protect other key buildings in Whitehall. The Police deploy the barriers at high profile events such as party political conferences, demonstrations and major sports fixtures. Bi-Steel is also positioned around the premises of financial institutions, UK airports and military bases. See Appendix 2 for further project details.

There has been increasing interest in Bi-Steel following PM Gordon Brown's recent announcement of a new National Security Strategy. This emphasises the need for robust physical barriers to protect our critical national infrastructure and safeguard the public in crowded places such as shopping centres, sports arenas and other landmark locations.

Originality and innovation*

Bi-Steel is a unique Corus-patented material that consists of two steel plates connected by friction-welded bars to form panels. This friction welding process is used when high quality welds that will be severely loaded are required. Once the void between the panels is filled with concrete, the product offers unrivalled performance against explosive blast.

The anti-attack vehicle barrier system, made from Bi-Steel panels, has a number of innovative characteristics, which result in exceptional performance:

- The containment and confinement of the concrete within the barrier unit prevents concrete spalling under vehicle impact and blast, thus minimising consequential damage.
- The rigid connection system ensures that all the barrier units are mobilised in stopping a threat. This maximises the effective mass of the barrier system.
- Impact energy is absorbed by the threat vehicle and by the barrier system sliding against resistance from the road surface. This eliminates any requirement for ground fixings, preventing damage to the road surface and minimising installation time.
- A newly developed paint system has made the barriers more sympathetic with the local architectural environment.
- The barriers are designed to be deployed rapidly and can be transported to site by any truck fitted with an extendable hydraulic arm, thus eliminating the requirement for special installation equipment.

Contribution to pre-defined security objectives*

The Bi-Steel barrier system was developed in conjunction with Government, the security services, the Police and other key organisations to meet the following objectives:

- To provide perimeter protection to safeguard key sites from VBIED attack. The system provides a barrier to vehicles, maintaining stand-off in the event of an explosion. The system also offers protection against secondary vehicle attack.
- To be configurable into a variety of arrangements to cover all access control situations.
- To be easily transportable by truck, rapidly deployable, easy to re-configure on site as the need arises and quick to remove when no longer required.

Exhaustive testing has included:

- **Blast testing** - Bi-Steel has been proven for use by the UK and US Governments for protective buildings work. The product has been tested against in-contact charges and very large near-field explosive blasts. The barrier system has also been blast tested.
- **Impact testing** - The barrier system has been tested against impact from a number of different vehicles and vehicle speeds at approved Government test sites.

Potential for wider applications*

Projects include (see Appendix 2 for further details):

- Political conferences, including G8 Summit at Gleneagles, Scotland.
- National Barrier Asset - owned by HM Government and administered by Sussex Police, this stock of barriers is available to any UK Police Force for temporary deployments (see letter of support from Sussex Police for details).
- Houses of Parliament - Bi-Steel barriers and gates are currently in position.
- Stansted Airport - temporary deployment to help protect the main terminal building, whilst awaiting design and implementation of a permanent solution.
- Protection for crowded places - ideal for temporary to permanent protection for shopping centres, sports stadia and other crowded places.

The original range of re-deployable Bi-Steel barriers has been extended to meet an increasing market demand for solutions that are more suitable for medium to long-term use. Bi-Steel fixed walls and an innovative, shallow foundation security bollard system have been developed, and are now protecting key Government buildings in Westminster.

Effective planning and design

- Bi-Steel works with key partners to design a protective solution suitable for each client's specific needs.
- In-house design and engineering teams advise on different threat scenarios, assess blast interaction and recommend the most effective Bi-Steel solution.
- On-site project managers provide expert advice to ensure a successful implementation.

Partnership working*

- The Bi-Steel barrier system was developed through a close working partnership with the Government and security services, which involved devising the ideal solution, preparing appropriate specifications, building and testing prototypes and finally introducing the re-deployable system.
- For any project, Bi-Steel works closely with relevant partners, including architects, engineers, specialist contractors and end users to develop and implement the most appropriate solution.
- G8 Summit, Gleneagles - protecting leaders of the major industrial nations required the highest levels of planning and co-operation with the Police, the installation sub-contractor and other involved parties (see Appendix 2).
- National Barrier Asset - (see letter of support from Sussex Police).

Commensurate and proportionate

- Bi-Steel products are designed to meet market needs based on the testing criteria requirements laid down by Government.
- The barrier system has been designed to be practical, commensurate with past, current and envisaged future threats, and reduces consequential damage to as low as reasonably practical.

Aesthetically and operationally sympathetic

- Barrier aesthetics has been a subject of much debate, addressing the conflicting issues between creating a “stark visual deterrent” and that of providing stealth security by blending into the architectural landscape. Bi-Steel barriers are offered in a variety of forms and finishes to meet both these criteria. Aesthetic barriers continue to be a priority for Bi-Steel with the next generation of visual finishes being deployed at major transport hubs in the near future.
- Bi-Steel barriers require no ground fixings, thus minimising installation times, reducing disruption and preventing damage to infrastructure.
- Vehicle security barriers regrettably also provide barriers to pedestrian access. Working closely with end users, Bi-Steel will shortly be offering an enhancement to its re-deployable barrier portfolio that will stop VBIEDs but will offer significant improvements for pedestrian access – ideal for the protection of crowded places.

Cost effective, practical and sustainable

- Solutions are designed to meet clients' requirements to operate to tight budgets within a competitive marketplace where projects are monitored to ensure best value is obtained.
- Bi-Steel barriers have proven their practicality and dependability in use across a wide range of applications detailed above.
- A sustainable choice, Bi-Steel barriers are highly durable, robust, re-usable, require minimal maintenance, can be easily refurbished to bring them back into 'as new' condition, and can be recycled at the end of their design lives.

Establishing or following best practice*

- Bi-Steel has made major contributions in pioneering best practice, whilst pushing the frontiers of barrier design to new levels. Bi-Steel has a policy of engaging stakeholders and end users to ensure best practice is embraced.
- Labour Party Conference, Manchester – this first implementation established best practice for future projects (see Appendix 2).
- Bi-Steel follows industry best practice in terms of design, engineering, manufacture and installation. Corus is ISO 9001:2000 certified.

Effective communication and awareness to practitioners

- Full range of literature available, including extensive selection of project photographs.
- Website contains product information, case studies and downloadable literature.
- Customer newsletters issued on a regular basis.
- Inclusion in the NaCTSO Hostile Vehicle Mitigation Guide (winner of the 2007 IHT award for Security in the Public Realm).

Please see enclosed .pdf document containing the following supporting materials:

Appendix 1 – System description

Appendix 2 – Project descriptions

Appendix 3 – Project photographs

Appendix 4 – Datasheets