



INSITU CONCRETE SECURITY BARRIER

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EXTRUDAKERB

As part of global reaction to increased terrorist threats the UK Government has lead the way in developing improved new standards and new measures to protect otherwise vulnerable infrastructure.

In situ concrete security barrier evolved from the proven technology of in situ concrete highways barrier that is such a prolific sight along the worlds highways; indeed it is the default product specified for use along the UK's motorway central reserve.

Clearly the performance requirements for a perimeter security barrier are a little different to a highway vehicle safety barrier. However the key physical properties inherent with an in situ concrete mass provide major advantages over other systems and include: in reality a maintenance free life, high performance, competitive cost, minimal foundation and acts as a base for complimentary products such as fences, CCTV and lighting.

Extrudakerb has been a major force within the UK's slipform paving and in-situ concrete barrier market for over 30 years and are able to extend this wealth of experience into the security sector.

Today, the company boasts a world leading managerial and site workforce, extensive in house design and fabrication facilities as well as the UK's largest fleet of specialised barrier slipform paving machines and associated formwork and specialist equipment. No other company is better equipped to provide support to infrastructure owners and operators as they look to install and improve perimeter security barriers.

The company remains absolutely focused in the core value established over 50 years ago that success is built upon innovation.

Pioneers in Slipform Construction

First to provide slipformed concrete barrier on a UK highway

First to slipform in situ concrete security barrier

First to provide in situ concrete security barrier at a nuclear facility

First to provide Britpave slipformed concrete step barrier (M62 Junction 37-38)

First to provide in situ concrete security barrier at a cash facility

Your Supply Chain Partner

Extrudakerb's Concrete Paving Division supports customer supply chain with a complete portfolio of services including design, estimating, planning, construction and certification.

Our resources include full Auto-CAD design facilities, indemnified professional designers and technical query response. We also provide full project specific programmes, schematics, drawings, paver set up and formwork configuration as well as audited health and safety, quality and environmental procedures.

Working closely with key major material suppliers, we have developed unique concrete mix designs that maximise quality and productivity without increasing impact on our environment.

Insitu Concrete Security Barrier

Insitu concrete perimeter security barrier provides high performance, low maintenance, cost effective passive infrastructure protection from vehicle borne threats.

The system has been successfully tested to BSI PAS68:2010 and therefore has the ability to thwart a follow on attack by a second vehicle.

The system is surface mounted requiring little if any foundation preparation as side from the minimal embedment required at termination locations or points where the alignment of the barrier changes.



During the typical life cycle of the insitu concrete system the barrier is designed to provide a minimum 50-year maintenance free life; an extremely important consideration for many site operators where the disruption caused by routine maintenance or whole scale system replacement can be highly disruptive, compromise site security and of cause lead to increased operating costs.

Aside from a range of tested and approved fences that can be fixed to the top of the barrier ancillary components are available that compliment the core insitu concrete system including PAS rated access gates and turnstiles as well as CCTV and attack sensing devices.

Integral ducts can be incorporated within the body of the insitu concrete barrier to allow a route for a protected secure maintainable cableway; alternatively cable trays or ducts can be affixed to the non-impact, secure face of the barrier.



Unlike fences the system is completely resilient to failure caused by hand held cutting equipment and when installed in combination with a secondary traditional security fence fixed to the top provides a unique single line defence from both vehicular and person-borne attack.

BsecB System Classification

System Designation	System Description	Test performance rating	Relevant test report
BsecB 40 0.9m high x 0.5m wide at base <i>Additional width required if supporting a fence system.</i>	Surface mounted barrier with anchorages at discreet positions	V/7500[N2]/64/90:0.6/8.6 (centre impact) V/7500[N2]/64/90:0.0/9.8 (end anchorage impact) V/7500[N2]/80/90:15.5/19.4 (end anchorage impact)	B4007 B4042 B4051
BsecB 50 (900) 0.9m high x 0.5m wide at base <i>Additional width usually required if supporting a fence system to accommodate base plate detail.</i>	Barrier system with a continuous anchorage foundation	V/7500[N2]/80/90:15.5/19.4	B4051
BsecB 50 (1200) 1.2m high x 0.6m wide at base <i>Base width generally increased to 700mm for long distance coverage. Additional width may be required if supporting a fence system.</i>	Surface mounted barrier with anchorages at discreet positions	V/7500[N3]/80/90:2.5/25 (centre impact) V/7500[N3]/80/90:0.0/5.6 (adjacent to end anchorage impact) V/7500[N3]/80/90:0.0/12.3 (end anchorage impact)	TRL004 TRL008 TRL017
An explanation of performance rating is as follows: Example: V/7500[N3]/80/90:0.0/5.6 V vehicle	7500 gross vehicle weight of 7500kg [N3] the type of vehicle is an 18 tonne truck without payload giving a net weight of 7500kg 80 speed of impact is 80km/h or 50mph	90 angle of impact is 90 degrees being perpendicular to line of barrier 0.0 penetration beyond original rear face of barrier 5.6 dispersion of debris beyond rear face of barrier	

Concrete Security Barrier



PAS 68 rated predominantly surface mounted insitu concrete vehicle mitigation security solution. Can act as a foundation for lighting, CCTV masts and fences.

Pedestrian Access Gates



Both concrete security barrier and any fence affixed to the top can integrate with pedestrian access gates and turnstiles providing complete perimeter protection.

Corner



Infinitely variable corner details can be provided to suit all required changes of barrier alignment. Fences affixed to the top can also reflect a similar arrangement.

Fences



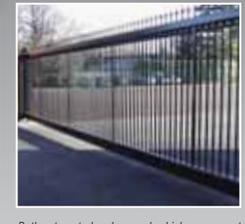
A wide range of steel fences can be affixed to the top of concrete security barrier including mesh and maximum security palisade providing a single defensive line.

Radius Corners

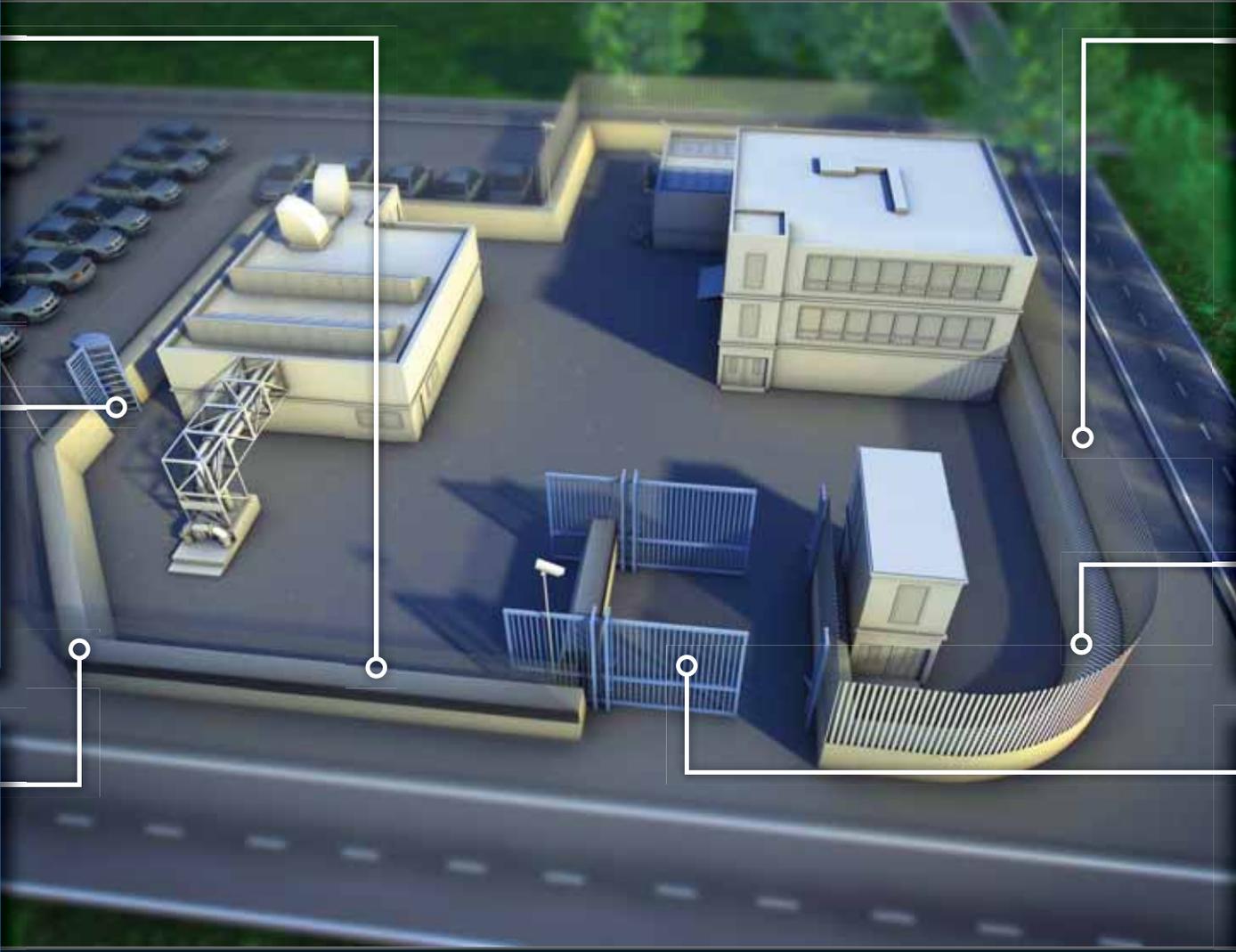


By creating a curved corner detail embedded anchors can be avoided. Minimum radii are around 4.5m. Fences fixed to the top of radius barrier can also reflect a similar curve.

Vehicle Access Gates

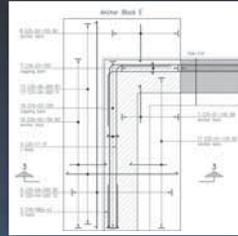


Both automated and manual vehicle access gates can integrate with concrete security barrier and any fence affixed to the top. Twin gates with two lengths of perpendicular parallel concrete security barrier provides a secure airlock arrangement.



Design, Construction & Installation

Although primarily an off the shelf design an element of bespoke modification to the core system may be required to ensure compliant installation on some occasions. Extrudakerb are able to identify at an early stage if any special attention is required to allow integration of a site specific feature within overall design.



Where required site surveys, project specific design and project specific construction drawings are provided.

Extrudakerb provide a complete in-house team that undertakes design, estimating, planning, construction, ancillary product integration and completed product certification.

All works are undertaken within the scope of Extrudakerb's rigorous health, safety and environmental systems in order to ensure the companies ISO 9001, 14001 and 18001 standards are strictly adhered to and Client aspirations are met.

Extrudakerb's experienced management team ensures seamless integration with Client operational demands: a core principle is held that success is built upon open and clear communications; this principle is maintained throughout the company and the construction process.



Slipform construction is a now a relatively commonplace construction process and is most commonly used to construct motorway safety barrier. It is a high output process and particularly suitable for perimeter barrier construction.

Slipform construction can realise production rates as high as 40 linear metres per hour, although typically outputs of 120 to 170 linear metres per shift should be expected.

Extrudakerb operates one of Europe's largest fleets of slipform paving machines and has over 30 years experience of this process operating across Europe.

Fixed form construction is undertaken in house using bespoke modular steel shutters. Extrudakerb carries an extensive stock of formwork including various radius and

corner profiles. In the event that a scheme requires bespoke formwork arrangement then shutters are designed and fabricated in house.

Experienced in house construction teams, modular steel formwork and specialised in house transport and lifting equipment ensure quality construction at unusually high outputs: typically a single gang will produce around 20 to 30 metres of completed barrier per shift.



With extensive and class leading resources available planning is a key element within overall group and individual project execution. Planning extends to and incorporates our carefully selected supply chain; it is vital that these key products and services are delivered on time and on budget.

On site construction is undertaken under the control of a dedicated Site Supervisor. This key role provides vital links between our head office management team, our experienced and directly employed workforce, our on site supply chain partners and our Clients appointed Project Manager.

Training and certification of our workforce is an ongoing process to ensure competency, safe working practices and staff evolution.



Construction of the insitu concrete barrier is undertaken using one of two distinct processes: where space and length of product permit machine lay or where this mechanised process is impractical conventional fixed formwork.

Client Portfolio and Reference

Within a relatively short period Extrudakerb have already built up an enviable portfolio of satisfied high profile Clients within this new and specialised sector.

The skills developed and experiences enjoyed within the highway sector lend themselves to construction of a similar base product within the different environment of infrastructure perimeter security.

Having been a part of the design and construction of the samples provided for destructive testing Extrudakerb understand the details that must be maintained to ensure that product constructed meet as a minimum the performance levels to which they are certified.

Being able to innovate and react to changing Client or project requirement is a vital part of our success story; such levels of flexibility can only be provided by a strong team with a wealth of experience and access to the latest equipment and techniques. The value of our supply chain partners is fully appreciated and constructive interaction is encouraged at all levels.

As with our highway safety barrier business Extrudakerb have moved quickly towards a unique one stop shop for its new and expanding portfolio of Clients offering not only provision of the core insitu concrete security barrier but also a range of accessory products including fences, gates, pedestrian access, bollards, blockers, CCTV integration and lighting.

Our portfolio includes Clients within the nuclear, power generation, commerce and aerospace industries.

Our carefully selected site workforce is security cleared and familiar with working inside sensitive and controlled environments.

A Client involved with the power generation industry says:

"The installation has exceeded all customer expectations, and the methodology of the deliverance was excellent."

A Client involved with the nuclear industry says:

"Extrudakerb have provided a highly professional service meeting all deadlines"

A Client involved with the banking industry says:

"I have enjoyed working with your people and appreciated the amount of graft that has gone in and the professional manner in which it has been handled."

A Client involved with the armaments industry says:

"with about 8 weeks to go before the end of our project we had to design procure and install an anti terrorist barrier at an armoury factory in north west England, it was clear we needed help; I would recommend Extrudakerb for their design, knowledge, delivery and proactive approach in helping us meet our tight deadlines all this was done particularly on site, with a real positive safety culture."

A Client involved with the banking industry says

"I would like to say what a pleasure it has been to have Extrudakerb working for us. I can honestly say that Extrudakerb are one of the best subcontractors that I have had the pleasure to work with."

Full Client references are available upon request.

