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HILL & SMITH
BARRIERS

THE TOTAL SOLUTION IN BARRIER SYSTEMS



**INNOVATIVE
SOLUTIONS**




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BARRIERS

DRIVING SAFETY FORWARD

Hill & Smith Ltd has a long history in the manufacture of highway vehicle restraint systems. Hill & Smith has attained CE marks and is a recognised supplier, specified on many global highway projects.

The CE mark ensures that the installed product will perform as it was designed and tested, giving engineers and end users confidence when specifying our products.

With these approved products we can offer the complete solution to overcome the problems encountered along the roadside. When used with our tested transitions we ensure that when different products are required we can safely connect them together, whilst redirecting and containing an impacting vehicle safely. We also offer a range of terminals allowing complete end-to-end solutions, ensuring liability is held within one company.

Information for all of our products are available on our technical website - xtratech.

This website provides an easy-to-use graphical user interface which simplifies the management and publishing of Drawings and Technical Documents. These can be viewed, printed and downloaded from this site.

To access the xtratech technical website visit:
xtratech.bristorm.co.uk

xtratech

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**HILL & SMITH BARRIERS
SINCE 1824**

Quality design & manufactured
by a respected and established
British Company.

QUICK REFERENCE GUIDE

Vehicle Restraint Systems

EN1317

Profile	Containment Class	Working Width	No. of Ropes	Line Post Centres	Vehicle Intrusion	Drawing Number
Brifen Wire Rope	N2	W4	4	1.2m	-	PD-CEWRSB150
Brifen Wire Rope	N2	W4	4	3.2m	-	PD-CEWRSB153
Brifen Wire Rope	N2	W5	4	3.2m	-	PD-CEWRSB151
Brifen Wire Rope	N2	W5	3	3.2m	-	PD-CEWRSB154
Brifen Wire Rope	N2	W5	3	6.0m	-	PD-CEWRSB155
Brifen Wire Rope	N2	W6	3	3.2m	-	PD-CEWRSB152
Brifen Wire Rope	N2	W6	3	8.0m	-	PD-CEWRSB156
Brifen Wire Rope	H1	W5	4	3.2m	VI8	PD-CEWRSB250
Brifen Wire Rope	H2	W8	4	3.2m	VI8	PD-CEWRSB350

Profile	Containment Class	Working Width	Line post Centres	ISL	Vehicle Intrusion	Drawing Number
SPR4- Single Sided	N2	W1	2.0m	B	-	PD-CEGRSB111
SPR4- Single Sided	N2	W2	2.5m	B	-	PD-CEGRSB112
SPR4- Single Sided	N2	W3	4.0m	A	-	PD-CEGRSB113
SPR4- Single Sided	N2	W4	5.0m	A	-	PD-CEGRSB114
SPR4- Double Sided	N2	W4	4.0m	A	-	PD-CEGRSB160
Flexbeam- Single Sided	N2	W4	4.0m	A	-	PD-CEGRSB104
Flexbeam- Single Sided	N2	W5	5.0m	A	-	PD-CEGRSB105
Flexbeam- Double Sided	N2	W2	1.6m	A	-	PD-CEGRSB150
Flexbeam- Double Sided	N2	W3	4.0m	A	-	PD-CEGRSB151
Flexbeam- Double Sided	N2	W4	4.8m	A	-	PD-CEGRSB152
Flexbeam PLUS- Single Sided	N2	W1	1.2m	B	-	PD-CEGRSB100
Flexbeam PLUS- Single Sided	N2	W1	1.6m	C	-	PD-CEGRSB101
Flexbeam PLUS- Single Sided	N2	W2	2.0m	B	-	PD-CEGRSB102
Flexbeam PLUS- Single Sided	N2	W3	2.8m	B	-	PD-CEGRSB103
Bri-Flex- Double Sided	H2	W5	1.6m	A	-	PD-CEGRSB350
Hi-Flex- Single Sided	H1	W3	1.6m	B	VI6	PD-CEGRSB201
Hi-Flex- Single Sided	H1	W4	1.6m	B	-	PD-CEGRSB200
Hi-Flex- Single Sided	H1	W4	2.0m	B	-	PD-CEGRSB202
Hi-Flex- Single Sided	H2	W1	2.0m	B	VI2	PD-CEGRSB310-1/2
Hi-Flex- Single Sided	H2	W5	2.0m	B	-	PD-CEGRSB300
Hi-Flex- Double Sided	H2	W5	1.6m	A	-	PD-CEGRSB350
Black Country – Dudley	N2	W4	6.0m	B	-	PD-CEGRSB120
Black Country – Dudley – Double Sided	N2	W4	6.0m	B	-	PD-CEGRSB165
Black Country – Tipton	L1 (N2/H1)	W4 (W3/W4)	4.0m	B	VI7	PD-CEGRSB205
Black Country - Bilston	H2	W2	1.0m	B	VI3	PD-CEGRSB301

For further support, please visit our Xtratech or contact our technical team on: +44 (0)1902 499400 or email barriertechnical@hill-smith.co.uk

Vehicle Restraint Systems

NCHRP 350

Profile	Containment Level	Working Width	No. of Ropes	Line Post Centres	Vehicle Intrusion	Drawing Number
Brifen Wire Rope	TL3	n/a	3	3.2m	n/a	WR3010-12
Brifen Wire Rope	TL3	n/a	4	3.2m	n/a	WR3005
Brifen Wire Rope	TL3	n/a	4	6.4m	n/a	WR3027
Brifen Wire Rope	TL4	n/a	4	3.2m	n/a	WR3025

MASH

Profile	Containment Level	Working Width	No. of Ropes	Line Post Centres	Vehicle Intrusion	Drawing Number
Brifen MASH	TL3	n/a	4	2.1 - 6.4m	n/a	PD-MHWRSB250

End Terminals

EN1317

Profile	Containment Class	No. of Ropes	Length	Impact Severity Level	Drawing Number
Brifen Single Stage Terminal	P1	3	9.7m	A	See Xtratech
Brifen Single Stage Terminal	P4	3	27m	A	PD-ENWRNEAT052
Brifen Terminal	P1	4	7.2 to 9.6m	A	See Xtratech
Brifen Two Stage Terminal	P4	4	11.175m	A	PD-ENWRNEAT053

Profile	Containment Class	Rating	Length	Impact Severity Level	Drawing Number
Single Sided- Flexbeam	P1	D1.1	12.8m	A	PD-ENGRNEAT001
Double Sided- Flexbeam	P1	D1.1	12.8m	A	PD-ENGRNEAT050
ABC- Single Sided	P4	D1.1	12.4m	B	See Xtratech
Trend- Single Sided	P4	D1.1	12.4m	A	615794/95
Trend- Double Sided	P4	D1.1	8.4m	B	618440/41
Trend- Single Sided	P2	D1.1	4.4m	A	615792/93
Trend- Double Sided	P2	D1.1	4.4m	B	618442/43

NCHRP 350

Profile	Containment Class	No. of Ropes	Length	Drawing Number
Brifen Terminal	TL3	3	8.0m	WR3040 (Brifen Lite)
Brifen Terminal	TL3	4	8.0m	WR3045
Brifen Terminal	TL4	4	11.2m	WR3042

MASH

Profile	Containment Level	No. of Ropes	Length	Drawing Number
Brifen MASH	TL3	4	9.730m	PD-MHWRNEAT050-1/2

SPECIALISTS IN TECHNICALLY ADVANCED VEHICLE RESTRAINT SYSTEMS

Hill & Smith Ltd – manufacture and supply specialist vehicle restraint systems throughout the world.

Hill & Smith are driving safety forward with a total solution, be it our Flexbeam VRS family of systems for use on highways, Brifen, the wire rope VRS used in over 30 countries worldwide or our Off Road industrial barriers protecting your property.

Hill & Smith, member of the Hill and Smith Holdings Infrastructure Products Group, has vast experience in manufacturing vehicle restraint systems. With a policy to supply quality of service, with tested and proved products, the company has developed a strong reputation in the field of road safety.

CONTENTS

- SPR4 04
- FLEXBEAM 06
- FLEXBEAM PLUS 08
- HI-FLEX 10
- TRANZFLEX 11
- NON-CONNECTING TRANSITION 12
- END TERMINALS 13
- FLEXGUARD 13
- BRIFEN VRS 14



HILL & SMITH VEHICLE RESTRAINT SYSTEMS:

- 1 Steel Barriers**
For highways, motorways and dual carriageways tested to EN1317, NCHRP 350 and MASH.
- 2 Wire Rope Barriers**
Our Brifen wire rope system are also used on highways and alongside steep inclines. Tested to EN1317, NCHRP350, MASH and specialised Swedish standards.
- 3 Hybrid Impact Protection**
Briflex incorporates steel barriers and wire rope to give the ultimate central reservation protection. Tested to EN1317 with a containment of H2 and a working width of W5.
- 4 Industrial Barriers**
Off Road systems for protecting your assets.

Technical Innovation

A technical innovation in material processing and design engineering. The SPR4 system extends the effective distance between barrier support posts on all our normal containment levels from W1 to W4.



RESISTANCE TO SNOW REMOVAL CLASS 4 SYSTEM

Our SPR4 system extends the effective distance between barrier support posts on all our normal containment levels from W1 to W4.

Specifically designed to offer maximum savings on large scale schemes, our SPR4 system offers an unrivalled installation time due to its common post and beam feature. Containment levels and working widths are traversed with ease by simply altering the post centres and connectivity between existing Flexbeam products and is fully compliant and tested.

With its EN1317 part 5 and CE accreditation, Hill & Smiths SPR4 system will be an added 'tool' in the bag of contractors looking for further commercial savings on larger schemes.

Future stock profiling for clients becomes simple, based on the system's minimal component parts 'one beam – one post' and training is covered under our existing Flexbeam courses.



SPR4

PRODUCT FEATURES

- ✓ Extends the effective distance between barrier support posts
- ✓ Offers maximum savings on large-scale schemes
- ✓ Quick and easy installation
- ✓ Tested to EN1317
- ✓ CE accreditation achieved
- ✓ Minimal component parts- 'one beam-one post'

Single sided

Working width	Drawing No.	Post Spacing	ISL
N2 W1	PD-CEGRSB111	2000mm	B
N2 W2	PD-CEGRSB112	2500mm	B
N2 W3	PD-CEGRSB113	4000mm	A
N2 W4	PD-CEGRSB114	5000mm	A

Double sided

Working width	Drawing No.	Post Spacing	ISL
N2 W4	PD-CEGRSB160	4000mm	A

The Safest Choice

Double sided or single sided, Flexbeam's full suite of products will leave you with no gaps in safety. Driven, surface mounted, concreted in with or without sockets, no matter what the ground conditions, Flexbeam performs.



DRIVING OPTIMAL PERFORMANCE THROUGH DESIGN SIMPLICITY.

At the heart of our Flexbeam family of products lies an untensioned corrugated beam that continually outperforms its humble design origins.

Developed to assist contractors by having minimal variations in components and a 'child's play' approach to transitioning through containment levels/working widths.

Flexbeam has become the industries first choice due to its speed of installation and ease of stocking when considering legacy maintenance contracts.

Flexbeam VRS

Flexbeam utilises the 'W' beam profile mounted on 'Z/S' profile posts and has products to suit N2 W2 / N2 W3 / N2 W4 / N2 W5 single sided and N2 W2 / N2 W3 / N2 W4 double sided.

The systems can be installed on driven posts, surface mounted posts, in socketed posts or posts cast directly into concrete.



FLEXBEAM

PRODUCT FEATURES

- ✓ Heart of our Flexbeam family tested to EN1317
- ✓ Minimal variations in components and 'child's play' approach to transitioning
- ✓ Quick and easy installation
- ✓ Easy of stocking large quantities
- ✓ Posts can be installed on driven, socketed, surface mounted or concrete-in posts

Single sided

Working width	Drawing No.	Post Spacing	ISL
N2 W4	PD-CEGRSB104	4000mm	A
N2 W5	PD-CEGRSB105	5000mm	A

Double Sided

Working width	Drawing No.	Post Spacing	ISL
N2 W2	PD-CEGRSB150	1600mm	A
N2 W3	PD-CEGRSB151	4000mm	A
N2 W4	PD-CEGRSB152	4800mm	A

FLEXBEAM PLUS

Cost effective systems

Cost effective systems even at low working widths. By strengthening our posts we can increase the support centres and still achieve low working widths.



TIGHT ON SPACE
SHOULDN'T MEAN
TIGHT ON BUDGET!

The Flexbeam ethos of simplicity continues throughout our Flexbeam Plus range of systems. Using the same 'W' beam for continuity and a stronger 'Z/S' post we are able to achieve smaller working widths without increasing post spacing thus making the system commercially viable.

With a system that can connect directly into Flexbeam without the need for costly transitions, can be driven, surface mounted, socketed or cast directly into concrete, it really is the 'go-to' product when trying to adhere to target costings.

With the inclusion of the Tranzflex transition the Flexbeam Plus system becomes compliant and connectable to a wide range of Varley & Gulliver Parapet products – providing an end-to-end design solution.



FLEXBEAM PLUS

PRODUCT FEATURES

- ✓ 'W' beam for continuity and stronger 'Z/S' posts
- ✓ Achieving smaller working widths without increasing post spacing
- ✓ Can connect directly into Flexbeam without costly transitions
- ✓ Posts can be installed on driven, socketed, surface mounted or concrete-in posts
- ✓ Compliant and connectable with Varley and Gulliver parapets

Single sided

Working width	Drawing No.	Post Spacing	ISL
N2 W1	PD-CEGRSB100	1200mm	B
N2 W1	PD-CEGRSB101	1600mm	C
N2 W2	PD-CEGRSB102	2000mm	B
N2 W3	PD-CEGRSB103	2800mm	B



SAVING LIVES AND
SECURING ASSETS –
HI-FLEX THE TOTAL
PROTECTOR.

We are all too aware of the increasing number of structures, assets and obstacles the designers of today take into consideration when looking at VRS implementation.

Our Hi-Flex range offers both single sided and double sided high containment protection from 10,000kg & 13,000Kg vehicles. Offering these systems in either driven (H2W1 excluding), surface mounted, socketed or cast post variants allows the designer & contractor every available installation solution.

Couple this with EN1317 approved & tested transitions into our Flexbeam & Flexbeam Plus systems, we now offer seamless phasing through containment and working widths from start to finish.



HI-FLEX

PRODUCT FEATURES

- ✓ Single sided and double sided high containment protection
- ✓ Variable posts for easy and quick installation
- ✓ Seamless phasing through containment and working widths

Single sided

Working width	Drawing No.	Post Spacing	ISL
H1W3	PD-CEGRSB201	1600mm	B
H1W4	PD-CEGRSB200	1600mm	B
H1W4	PD-CEGRSB202	2000mm	B
H2W1	PD-CEGRSB310	2000mm	B
H2W5	PD-CEGRSB300	2000mm	B

Double sided

Working width	Drawing No.	Post Spacing	ISL
H2W5	PD-CEGRSB350	1600mm	A



OUR 'FLEX'ABLE
BACKBONE
OF SUCCESS.

The weakest point of any product is the barrier connection. With this in mind our Tranzflex range of approved & tested transitions allows us not only to be confident in our products performance but also to guarantee that vehicles are contained and redirected safely when containment and working widths are changing.

Having been rigorously tested and approved along side Varley & Gulliver's parapet systems, we are one of the few manufacturers who are able to offer designers the confidence of compliant system design from normal to high containment and then into parapet applications.

Again all our Tranzflex products use standard components ensuring ease of installation and stock availability for legacy maintenance purposes.

PRODUCT FEATURES

- ✓ Approved and tested transitions
- ✓ Vehicles are contained and redirected safely
- ✓ Tested along side Varley & Gulliver's parapet systems
- ✓ Quick and easy installation



TRANZFLEX

N2 Single Sided FlexBeam Transition for VRS

System	Drawing No.	Product ref.
N2 S/S FlexBeam to Varley & Gulliver Parapet VRS Transition	PD-ENGRTR100	TRN2-01
N2 S/S FlexBeam to H1/H2 S/S FlexBeam Plus VRS Transition	PD-ENGRTR101	TRN2-02
N2 S/S FlexBeam to N2 D/S FlexBeam VRS Transition	FBGA020	FBGA020

N2 Double Sided Bri-Flex Transition for VRS

System	Drawing No.	Product ref.
N2 D/S FlexBeam to H2 W5 D/S Bri-Flex VRS Transition	PD-ENGRTR150	TRN2-03

N2 Single/Double Sided Brifen Wire Rope Transition for VRS

System	Drawing No.	Product ref.
N2 Brifen 4 Rope to H1 W7 Brifen 4 Rope Transition	PD-ENWRTR150	TRN2-50
N2 Brifen 4 Rope to N2 S/S OBB Bri-Trans Transition	PD-ENWRTR151	TRN2-51

NON-CONNECTING TRANSITION

CONTAINMENT ACHIEVED WITHOUT DISRUPTING UK INFRASTRUCTURE.

The latest innovation by Hill & Smith is a viable highway solution when nothing else suits!

The Non-Connecting transition is tested to EN1317 and its primary function is to replace the use of full height anchors allowing a barrier to be anchored or ended next to infrastructure that cannot have any load transferred to them. Acting as a stand-alone anchor, the non-connecting transition works in conjunction with the Hill & Smith Flexbeam family of products alongside, masonry parapets, stone bridges, approaching substandard parapets and even ancient monuments.



NON-CONNECTING TRANSITION

PRODUCT FEATURES

- ✓ Acting as a stand alone anchor
- ✓ EN1317 Tested and CE Marked
- ✓ Only solution when nothing else suits
- ✓ Compatible with Flexbeam and Flexbeam PLUS
- ✓ Suitable when none a loadbearing structure is present

Single sided

Working width	Drawing No.	ISL
N2W1	PD-ENGRTR103-1/2	C

END TERMINALS

COMPLIANT MEANS FROM START TO FINISH.

Complementing our Flexbeam VRS system we offer P4 and P1 fully tested end terminal solutions.

In addition to this we offer TCB & OBB end terminals all classed as P1.



P1 Terminals

For use on roads with a speed limit of less than 50mph, or departure ends on roads above 50mph (see TD19/06 for guidance). There are two terminals in the Flexbeam range, one single sided and one double sided, both with a class code of D1.1.

P4 Terminals

For use on roads with a speed limit of 50mph and greater (see TD19/06 for guidance).

- We offer two S/S P4 terminals:
- > Trend with a class code of D1.1
 - > ABC with a class code of D1.1
 - > On Double Sided Trend D/S D1.1

FLEXGUARD

SINGLE SIDED RETRO FITTED BARRIER SYSTEM.

Flexguard is a barrier which hangs beneath all other Flexbeam products, preventing motorcyclists from impacting the posts.

When the barrier is impacted by a vehicle, it is designed to fall to the floor. This does not affect the performance of the barrier and allows it to perform as designed.

PRODUCT FEATURES

- ✓ Can be fitted to existing barrier systems
- ✓ Cost effective solution
- ✓ Low cost installation for both new and existing barriers
- ✓ Quick and easy installation



Class Leading Wire Rope System

As a 2,3 or 4 rope barrier system it allows sand & debris to pass directly through it and not collect into dangerous 'drifts' which then encroach the highway traffic lanes. This improves safety and minimizes maintenance.



THE WIRE ROPE SAFETY SYSTEM WEAVING ITSELF AROUND THE GLOBE.

With Brifen's visually striking 'weave' configuration it is easy to see why an increasing number of countries around the world are taking advantage of its performance, speed of installation, lower maintenance lifecycle costs and in certain environments, its ecologically adaptive design.

Developed to EN1317 (including CE certification) and NCHRP350 Brifen has found itself installed in over 30 countries worldwide such as UK, USA, Australia, Scandinavia, South America and the Middle East.

To allow connection to other barrier systems we have developed a transition (Britranz) which is fully tested to EN1317 and ensures it contains and safely redirects impacting vehicles.

There is also a simple arrangement to allow a transition between N2 and H1 systems. We also offer terminals tested to P1 and P4 under EN1317 - these are available for both the 3 rope and 4 rope systems.

Brifen End Terminals

To complete our range we have a variation of Brifen Terminals fully tested and rated to P1 and P4.

PRODUCT FEATURES

- ✓ 2, 3 or 4 weaved ropes to absorb energy on impact
- ✓ Quick and easy installation
- ✓ After impact, fence line stays in an upright position
- ✓ Brifen remains 'in tension' even with the huge local temperature variance between day & night, due to the interwoven design
- ✓ Designed and manufactured in accordance with ISO9001, ISO1400
- ✓ European CE Marked for unquestionable quality



BRIFEN

EN1317 tested and rated

Working width	Drawing No.	Post Spacing	No. of ropes
N2 W4	PD-CEWRSB150	1200mm	4
N2 W4	PD-CEWRSB153	3200mm	4
N2 W5	PD-CEWRSB154	3200mm	3
N2 W5	PD-CEWRSB151	3200mm	4
N2 W5	PD-CEWRSB155	6000mm	3
N2 W6	PD-CEWRSB152	3200mm	3
N2 W6	PD-CEWRSB156	8000mm	3
H1 W5	PD-CEWRSB250	3200mm	4
H2 W8	PD-CEWRSB350	3200mm	4



**THE WIRE ROPE
SAFETY SYSTEM
WEAVING ITSELF
AROUND THE GLOBE.**

NCHRP350 systems

Brifen is available in several designs, all approved by the Federal Highway Administration (FHWA) fully complying with NCHRP350 TL-3 & TL-4 crash testing requirements. There are several types of end treatments FHWA compliant allowing you to choose the system that best meets your specific needs.

Mash Systems

Fully compliant to the AASHTO standard for the testing of permanent cable safety barriers, MASH. The latest revision of MASH focuses on the new matrix for testing on slopes allowing for the accurate installation and application of Brifen VRS.

Brifen End Terminals

To support the tested Brifen wire rope systems above, Brifen terminals also achieve TL3 ratings making them suitable to all global applications.



BRIFEN

NCHRP 350 tested and rated

Test Level	Drawing No.	Post Spacing	No. of ropes
TL3	WR3010-12	3200mm	3
TL3	WR3005	3200mm	4
TL3	WR3027	6400mm	4
TL4	WR3025	3200mm	4

MASH tested and rated

Profile	Containment Level	Working Width	No. of ropes	Line Post Centres	Vehicle Intrusion	Drawing No.
Brifen MASH	TL3	n/a	4	2.1 - 6.4m	n/a	PD-MH WRSB250

REGISTER

xtratech

Simple access to our system drawings
and installation guidance:

xtratech.hill-smith.co.uk

VIEW

LOG-IN