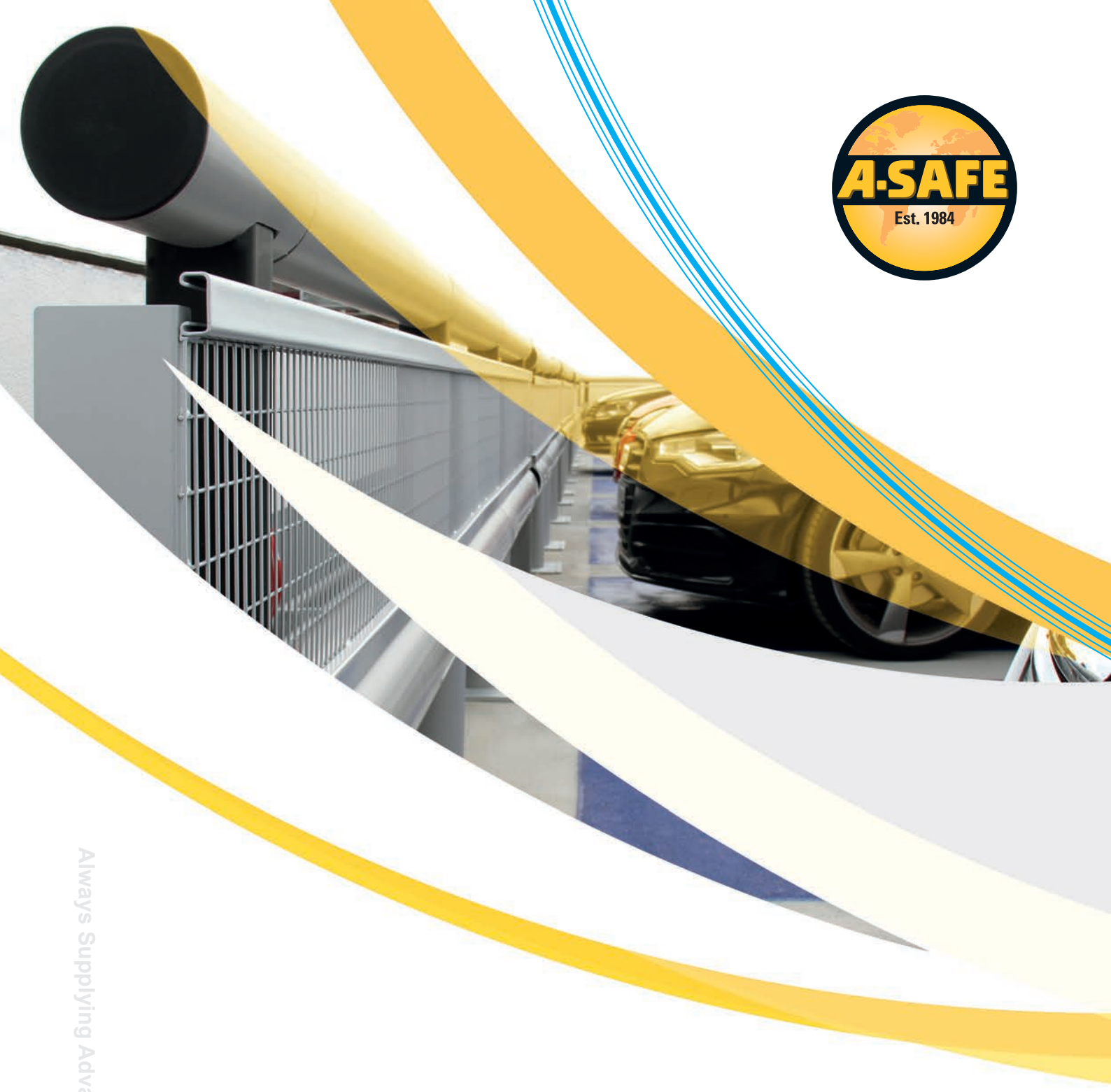


A-SAFE
Est. 1984

Always Supplying Advanced Flexible Excellence

MOVING UP
A GEAR

A-SAFE Car Park Barrier *Anti-Climb.*

MEMBER OF THE
BRITISH PARKING ASSOCIATION

A-SAFE *Car Park Barriers* go above and beyond strict safety regulations and offer great returns in reduced maintenance, manpower and replacement costs.

COMPLIANT SOLUTIONS FOR CAR PARKS

Modern car parks must adhere to a large amount of legal regulations and standards (EN1991, BS6399, BS6180/DETR) in order to be considered 'fit for purpose' and the quality and reliability of their safety barriers is at the heart of these standards.

A-SAFE are the inventors and manufacturers of a series of highly durable, impact-absorbing barriers made from a unique exclusive material called '**Memaplex**'. A-SAFE's ***Car Park Barriers*** are compliant with all safety regulations and standards – in fact they go above and beyond them.

Merrion Centre car park, Leeds

Traditional steel barriers simply crumple when impacted, tearing up floors and generating huge maintenance and repair costs, not to mention heavy damage to impacting vehicles.

A-SAFE's ***Car Park Barriers*** flex on impact and absorb collision forces, meaning the floor is protected, the barrier does not need replacing and the damage to the impacting vehicle is significantly reduced.

Neither will scratches or scuffs require costly manpower for repainting, or maintenance, as A-SAFE barriers are coloured throughout – even better, they have UV absorbers and inhibitors to protect the polymer material from sunlight degradation.

Available in traditional grey, high-vis yellow or any customisable colour to suit your car park's design, A-SAFE should be your first stop when choosing or updating your car park barrier system.

A-SAFE Car Park Barrier *Benefits.*

Our impact-absorbing barrier

Minimal damage to floors

4.5 x carbon footprint improvement over steel

Principle decision to change the specification and buy **A-SAFE** *barriers was cost driven, however, the low maintenance and easy repair was also high on the positive list. To date, the performance of the installed* **A-SAFE** *units has been extremely well received and zero maintenance so far has been required. Wherever the opportunity for this system presented itself again I would be keen to use this product. The set-up which* **A-SAFE** *has designed was highly impressive and efficient.*

Sir Robert McAlpine Construction for Millennium Centre Car Park

Stewart Bishop, Project Leader for the Apcoa MSCP

BENEFITS

Cutting edge protection with long-term cost-savings, A-SAFE *Car Park Barriers* have four key benefits:

They exceed all required safety standards (EN1991, BS6399, BS6180/DETR) and requirements for barriers in car parks

Their impact-absorbent and deflective qualities mean there is a greatly reduced need for replacements and minimal damage to floors

They do not need repainting post-impact, meaning they offer huge savings on maintenance costs

Carbon footprints are reduced by 4.5-times when compared with equivalent length steel barriers

But that's not all. A-SAFE Car Park Barriers contain an additive that makes them much more resistant to UV and they are non-corrosive (even acid won't damage them).

Compared to steel, A-SAFE barriers are 4.5-times better for the environment. Over a 5-year period taking in the manufacturing process, wear and tear and replacement barriers, 100m of steel Armco barrier would have a carbon footprint of 11,933kg compared to just 2,530kg of equivalent A-SAFE barrier.

Even more: **Memaplex** has an extremely high ignition point (360°C), it will not flake or rust and is produced entirely and exclusively by A-SAFE in their own factory.

A-SAFE Car Park Barrier *Column Mounted.*

We look after the whole car parking system at Bluewater, so this was an important decision for us. We initially trialled **A-SAFE** *and since then have taken several further orders amounting to over 525 products. They've been a great success, proving themselves tremendously effective.*

Bluewater Shopping & Retail Destination
Paul Birkett, Senior Facilities Manager

COLUMN MOUNTED CAR PARK BARRIER

As an alternative to the more traditional bolt-down floor-mounted barrier systems, A-SAFE can now offer a column-mounted alternative.

This hybrid system combines the impact absorption properties of **Memaplex** polymer profiles mounted on supporting steelwork.

The barrier, which has a maximum width of 10m, offers the following benefits:

- Fully compliant safety standards (EN1991, BS6399, BS6180/DETR)
- **Memaplex** absorption reduces the forces transferred back to the supporting column structure
- The system provides edge protection from the outset of the construction phase. Infill panelling can be completed towards the end of this period if necessary
- Reduced damage to impacting vehicles in comparison to heavy gauge steel systems
- **Memaplex** rails can offer increased visual impact through the colour schemes available.

Steel barriers transfer 90% of any impact force into the floor

Memaplex barriers transfer only 20% of any impact force into the floor

In comparison to other safety barriers, A-SAFE proves to be the most cost-effective way of ensuring a high level of safety on our site. The basement car park in our building can have anywhere up to 500 people in and can be a hazardous place. By choosing A-SAFE we have lowered the risk of any major damage to the cars of clients and our own property.

IBM
Jonathon Williams,
Quantity Surveyor

FEATURES

Specialised and patented innovations that flex and protect.

Key to the impact absorbing properties of **Memaplex** and A-SAFE barriers is the dissipation of impact forces.

A traditional rigid steel barrier would transfer about 90% of any impact force downwards into the floor, tearing up the concrete, ruining the floor and leaving you with a very expensive repair bill (not to mention a barrier to replace and a damaged vehicle to deal with).

Minor bumps and scrapes will not need maintenance

Memaplex dissipates collision forces through the unique material, transferring only 20% of the impact downwards, leaving you with undamaged floors. Also, due to the flexible properties of **Memaplex** the barrier will reform to its original position after impact and will not need replacing.

Additionally, minor bumps and scrapes will not need maintenance as our barriers are coloured throughout their interiors. Any marks left following impacts can generally be removed with a mildly abrasive liquid cleaner.

The barriers' **modular** design, with an innovative interlocking system, ensures installation is fast, simple, clean and parts are easy to change.

A-SAFE Car Park Barrier *Static load testing.*

Ensure your existing car park barriers adhere to loading requirements: **A-SAFE** have the technical prowess to assess your barriers' suitability costs.

TESTING & CERTIFICATION

Rigorous Research & Development, Finite Element Analysis (FEA), TÜV approved.

In a car park it can be assumed that barrier impacts will be head-on and occur around 16km/h (10mph). But traditional steel barriers exposed to this sort of impact will still crumple and floors will still sustain damage.

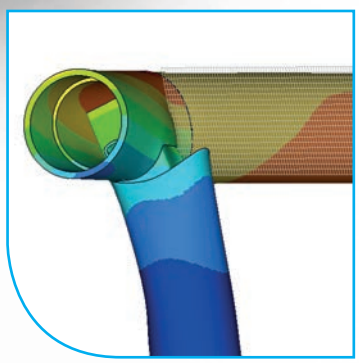
A-SAFE barriers are rigorously tested to ensure they withstand vehicle impacts at this velocity, at this head-on angle and still remain fit for purpose.

There are detailed conformance requirements for barriers in car parks and A-SAFE's Car Park Barriers exceed the specified load stipulations of 150 kN.

A-SAFE's in-house R&D team use multiple formulas to rigorously test each product before using FEA to hone the barriers to perfection. Finally, TÜV assessors are invited to independently verify and certify the products.

If you are unsure about the suitability of your barriers, A-SAFE can also provide a safety survey on your barrier network, which includes controlled load tests on existing barriers to establish if they are fit for purpose.

A-SAFE barriers are independently tested and verified



FEA Research

A-SAFE Car Park Barrier *Pull out testing.*

Typical testing equipment comprises a hydraulic cylinder which, via a connecting nut, applies an uplift force to an anchorage threaded stud. The uplift force is recorded via the calibrated dial reading, confirming if the concrete substrate is suitable for the required anchor bolt loads before any concrete failure is incurred.

PULL OUT TESTING

Although A-SAFE's Memaplex barrier systems are fully tested to conform to the vehicle impact barrier requirements outlined in EN1991, the most important part of any system is ensuring the anchorage and the substrate they are being fixed into is suitable to restrain the required pull out load being applied.

Through barrier testing, A-SAFE verify the typical load values being applied to the anchorage by use of load cell measurement.

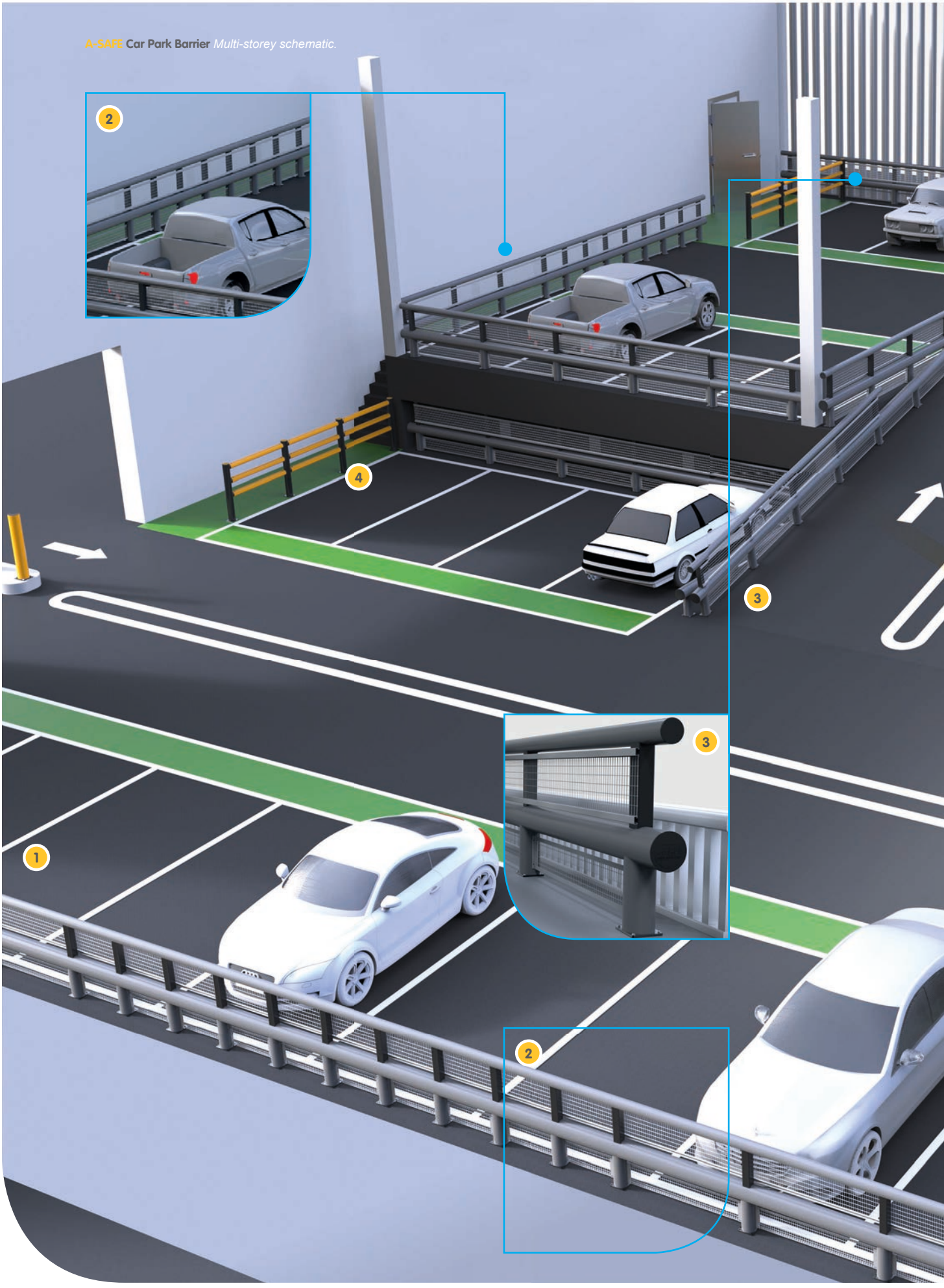
By carrying out a pull out test in your concrete slab or foundation, we can ensure that the substrate is suitable for the barrier system to be installed using standard anchorage arrangements, or if special adaption will be required.

Whether it's newly laid concrete, or part of a refurbishment programme on existing aged slabs, A-SAFE can ensure you are anchor bolt safe.

Testing substrate for compliance is essential

Threaded studs are used for anchorage tests

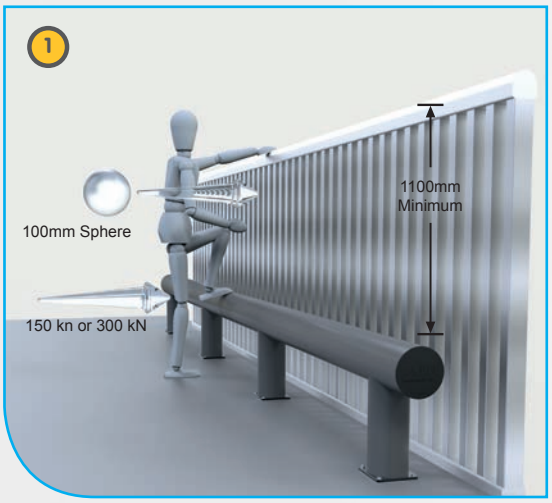
It is vital to establish substrate anchorage ability before installation

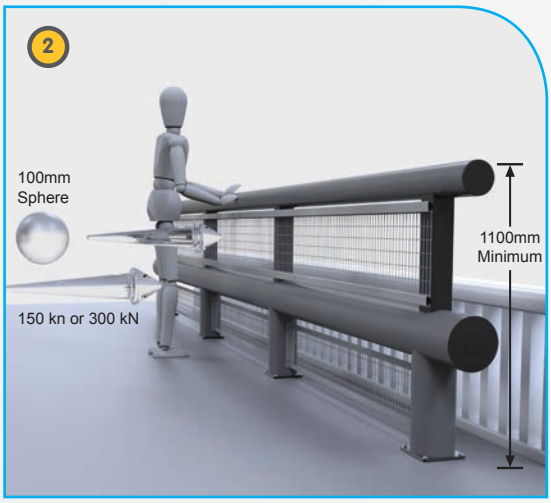

A-SAFE Car Park Barrier Multi-storey schematic.
2
4
3
3
1
2

1 to 4

See pages 15 & 16

TYPICAL BARRIER CONDITIONS





TYPICAL PERIMETER BARRIER CONDITIONS

1 Perimeter / Edge Protection (Barrier Only)

- BS6180/EN1991/DETR Edge protection.
- Existing structure is required to be a minimum 1100mm above perimeter barrier (e.g. wall, balustrading, cladding)
- 550mm or under step up condition.
- 100mm sphere should not pass through any part of the perimeter structure.

2 Combined Vehicle Impact Barrier & Pedestrian Anti-Climb System

- BS6180/EN1991/DETR Edge protection.
- 1100mm minimum height.
- For open edges or low existing edge details.
- 100mm sphere should not pass through any part of barrier system.

Loading Standards

AREA	APPLICATION	DESIGN LOAD	BS6399 EN1991	BS6180	ISE ICE
1	Perimeter / Edge Protection - Standard Car travel distance over 20m Bottom of a down ramp	150 kN 300 kN 300 kN	✓	✓	✓
2	Perimeter / Edge Protection - Standard Car travel distance over 20m Bottom of a down ramp Handrail loadings	150 kN 300 kN 300 kN 1.5 kN	✓	✓	✓
3	Ramp Barrier - Half Force Handrail loadings	75 kN 1.5 kN	✓	✓	✓
4	Split Level Barrier Handrail loadings	150 kN 1.5 kN	✓	✓	✓

TYPICAL RAMP BARRIER CONDITION

3 Combined Vehicle Impact Barrier & Pedestrian Anti-climb System (For drops above 550mm)

- BS6180/EN1991/DETR Edge protection.
- 1100mm minimum height.
- Barrier only if edges are enclosed/solid.
- 100mm sphere should not pass through any part of barrier system.

TYPICAL SPLIT LEVEL BARRIER CONDITION

4 Combined Vehicle Impact Barrier & Pedestrian Infill System

- BS6180/EN1991/DETR Edge protection.
- Manufactured to suit the height of split level opening.
- 100mm sphere should not pass through any part of barrier system.

BS6399-1-1996 Loadings for Buildings
Section 11 - Vehicle barriers for car parks.
Section 12 - Accidental load on key or protected elements - see table 4 type F/G.

BSEN-1991-1-1:2002 EUROCODE 1: Actions on structures
Annex B - Vehicle barriers and parapets for car parks BS EN 1991-1-1:2002 UK National Annex to Eurocode 1: Actions on Structures.

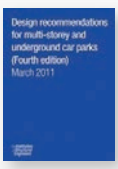


TABLE NA.8 - Category F&G Institute of Structural Engineers
Design Recommendations for multi-storey and underground car parks.

Institution of Civil Engineers
Recommendations for the inspection, maintenance and management of car parks.

Bollards - End of Ramp

Bollards - Stair Core Areas

Pedestrian - General Pedestrian

Pedestrian - Segregation

Lighting Column Protecta

Speed Ramps

Column Protection

Atlas Plus - Stair Core Exit Areas

Handrail - Trolley Bay

Entrance Barrier Protecta

Height Restrictor Barriers

A-SAFE Car Park Barrier *Gallery.*






















Product Colour Choices

End Post

Galv	A-01-02-0289	A-01-02-0169
Std	A-01-02-0241	A-01-02-0121
SS	A-01-02-0265	A-01-02-0145

Mid Post

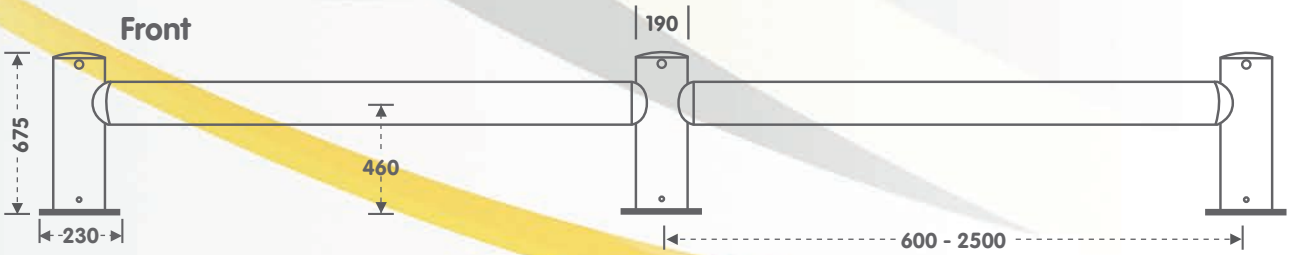
Galv	A-01-02-0294	A-01-02-0174
Std	A-01-02-0246	A-01-02-0126
SS	A-01-02-0270	A-01-02-0150

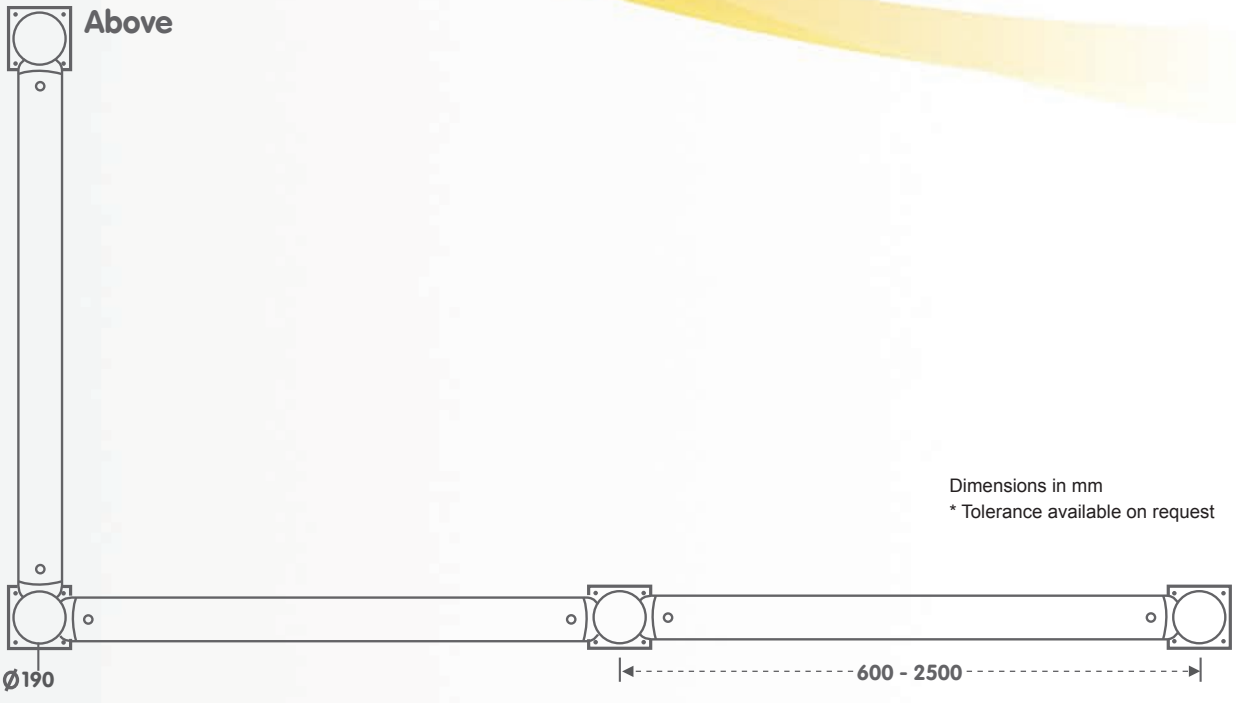
Corner Post

Galv	A-01-02-0290	A-01-02-0170
Std	A-01-02-0242	A-01-02-0122
SS	A-01-02-0266	A-01-02-0146

Rails - (Post Centre Dimension) 190 OD

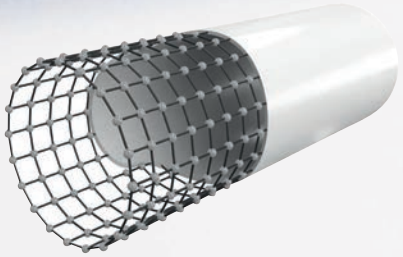
Length			Length		
600mm	P-01-01-0102	P-01-01-0027	1600mm	P-01-01-0112	P-01-01-0037
700mm	P-01-01-0103	P-01-01-0028	1700mm	P-01-01-0113	P-01-01-0038
800mm	P-01-01-0104	P-01-01-0029	1800mm	P-01-01-0114	P-01-01-0039
900mm	P-01-01-0105	P-01-01-0030	1900mm	P-01-01-0115	P-01-01-0040
1000mm	P-01-01-0106	P-01-01-0031	2000mm	P-01-01-0116	P-01-01-0041
1100mm	P-01-01-0107	P-01-01-0032	2100mm	P-01-01-0117	P-01-01-0042
1200mm	P-01-01-0108	P-01-01-0033	2200mm	P-01-01-0118	P-01-01-0043
1300mm	P-01-01-0109	P-01-01-0034	2300mm	P-01-01-0119	P-01-01-0044
1400mm	P-01-01-0110	P-01-01-0035	2400mm	P-01-01-0120	P-01-01-0045
1500mm	P-01-01-0111	P-01-01-0036	2500mm	P-01-01-0121	P-01-01-0046

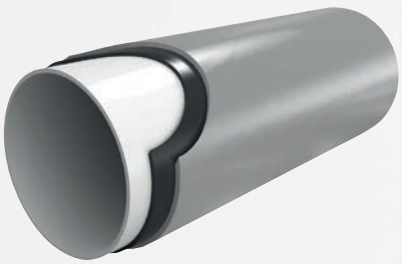




Dimensions in mm
* Tolerance available on request

Material	MEMAPLEX™	MEMAPLEX™ FR
Temperature Use	-10°C to 50°C	-40°C to 30°C
Ignition Temperature	370°C to 390°C	370°C to 390°C
Flash Point	350°C to 370°C	350°C to 370°C
Toxicity	Not Hazardous	Not Hazardous
Chemical resistance	Excellent - ISO/TR 10358	Excellent - ISO/TR 10358
Weathering Stability (Grey scale)	5/5*	5/5*
Light Stability (Blue Wool Scale)	7/8**	7/8**
Static Rating (Surface Resistivity)	1015 - 1016 Ω	1015 - 1016 Ω
Carbon Footprint (CO2/metre)	22.47	22.47





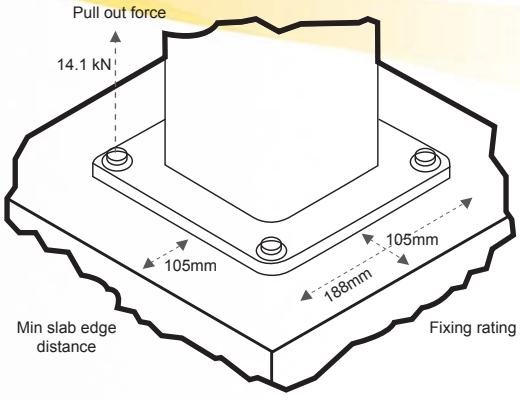
* Grey scale 1 is very poor and 5 is excellent
** Blue wool scale 1 is very poor and 8 is excellent

A-SAFE offered a cost effective, sustainable and visually pleasing solution. We wanted barriers that would be strong enough to absorb the impact of a vehicle while ensuring as little damage as possible, if any at all, was caused to a customer's car. To ensure customer distribution was kept to a minimum, CitiPark committed to no more than 30% of the car park to be out of action at one time over the 9 month refurbishment period. A-SAFE's flexible approach with installation helped to ensure that this was adhered to.

Our Merrion Centre car park is now one of the most technologically advanced, user friendly and sustainable facilities of its kind anywhere in the UK. The 50 year building is a beacon of sustainability and we are extremely proud of the end result!

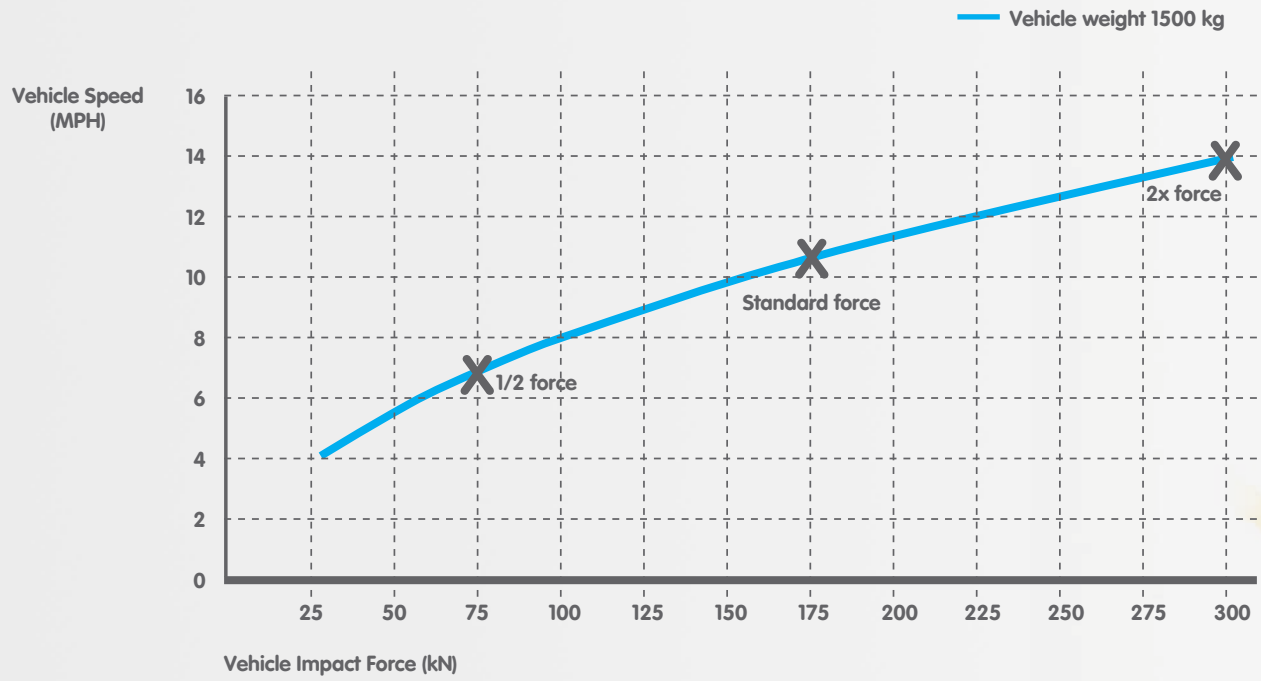
Mr Ben Ziff, Managing Director of CitiPark

Fixing	15mm
Pull Out Capacity	14.1 kN***
Shear Load Capacity	28.2kN
No. Per Post	4
Minimum Slab Depth	140mm
Minimum Slab Edge Distance	105mm
Installation Torque	40 Nm
Bolt Spacing	188mm
Upgrades Available	Stainless Steel, Chemical
Foot Material / coating	Steel - Galvanised (EN ISO 1461:2009)
***Safety Factor	1.4

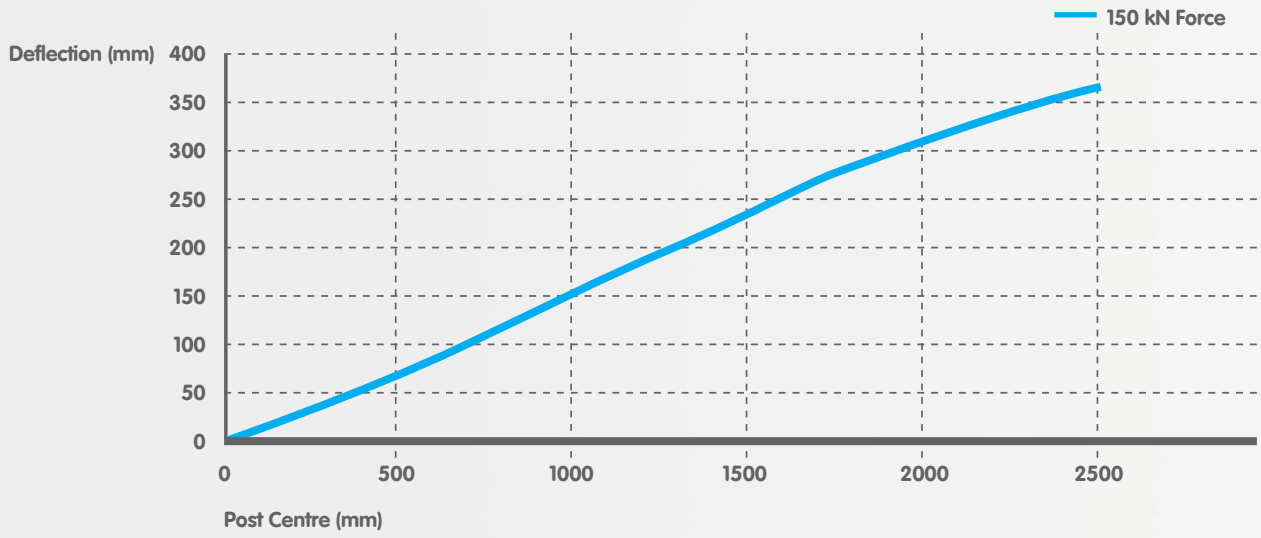


Certification	Organisation	Test Method	Test Rating
BS6399 Part 1 :1996 (EN 1991-1-1)	Test Consult	Static	Pass
BS6180	Test Consult	Static	Pass

Vehicle weight vs speed



Barrier Deflection



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A-Safe GmbH	Germany, Austria, Switzerland
A-Safe SAS	France, Suisse Romande, Belgique (Wallonie)
A-Safe, Inc.	United States of America
A-Safe APS	Scandinavian Region; Denmark, Sweden, Norway
A-Safe BV	Benelux Region; Belgium, Netherlands, Luxembourg
A-Safe Italia srl	Italy

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