

GRADUS

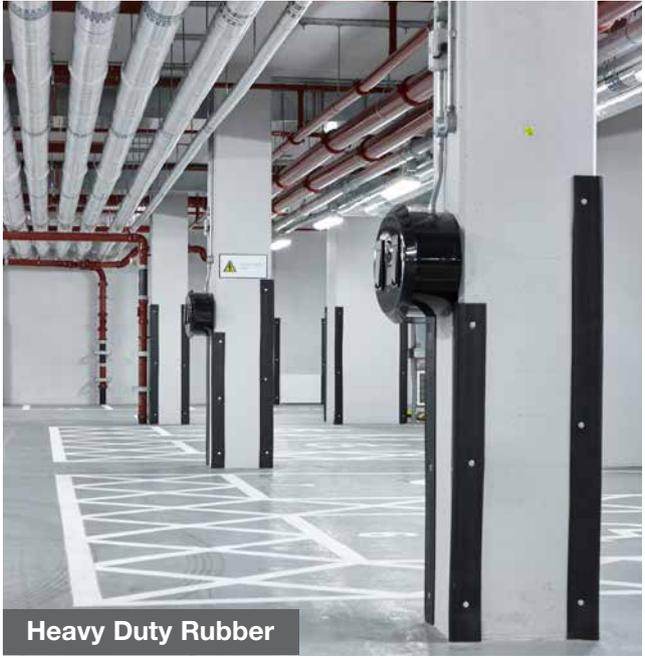


Safety & Protection Systems

Suitable for areas used by both pedestrians and wheeled traffic



Bollards



Heavy Duty Rubber



Safety Barrier



Flexible Posts



Handrail System



Speed Bumps

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Why Gradus



During the late 1990s Gradus introduced wall protection systems to complement its broadening contract interior portfolio.

The business has demonstrated impressive growth and market presence in healthcare, education and commercial office applications throughout the UK and Europe.

This success has allowed Gradus to introduce additional products intended to complement existing wall, corner and door protection. Safety & protection systems are a collection of products designed to provide solutions for back-of-house applications such as service areas, loading bays and car parks, in areas where individuals, equipment and buildings are often exposed to vehicular and other wheeled traffic.

Quality

- ISO 9001 Quality Management accredited company
- ISO 18001 Occupational Health & Safety

Design

- Products designed to conceal and reduce the effects of impact and abrasion
- Products incorporate high-visibility features to avoid impact occurring and create safer environments

Sustainability

- ISO 14001 Environmental Management accredited company
- Our pledge is “To meet our present business needs without compromising our long term future”
- We have a firm set of environmental objectives allowing us to focus on raw material selection, legislation, waste reduction, training and recycling

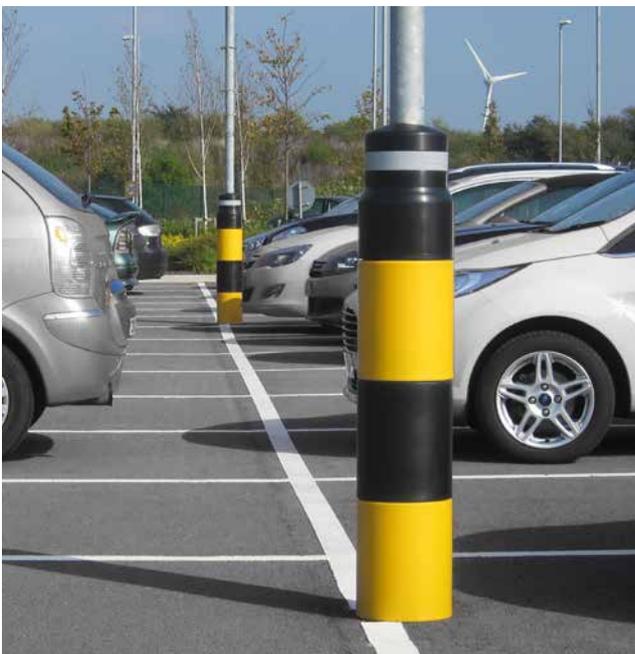
Knowledge

- RIBA CPD Providers Network
- Technical Support
- Member of NBS Plus
- Network of trained specification consultants

The benefits of safety & protection systems



- **Protect buildings from damage**
 - avoid and minimise impact damage
- **Protect vehicles and equipment from damage**
 - provide visual and physical barriers to impact
 - minimise the damage to vehicles if impact occurs
- **Improve pedestrian safety**
 - keep vehicles and pedestrians separate
 - minimise the risk of accidents



Aluminium Chequer Plate

Chequer plate wall, corner and door panels are designed for heavy duty surface protection. Strong and durable, aluminium chequer plate is ideally suited for use in areas subject to frequent, heavy wheeled traffic e.g. service corridors, loading areas and car parks.



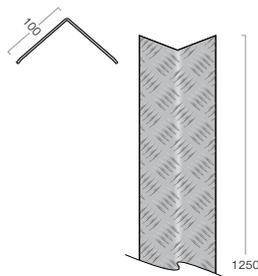
- Aluminium chequer plate sheets and corner guards reduce maintenance costs by eliminating the need to repair and repaint wall surfaces.
- Embossed chequer pattern conceals the effects of any surface damage caused by wheeled traffic.
- Light weight, easy to install and keep clean.
- Suitable for both interior and exterior environments.

- Supplied undrilled.

Additional bespoke options:

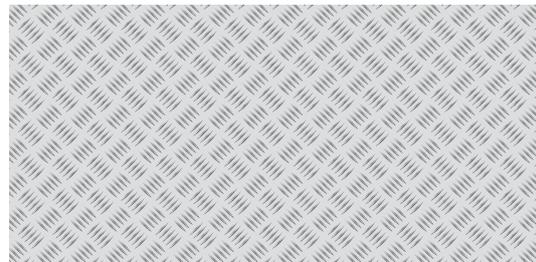
- Cutting, drilling and custom fabrications. Contact Gradus for further information.

(Please note: an exact pattern match cannot be guaranteed)



Aluminium Chequer Plate Corner Guard

100mm x 1250mm x 2mm
(Other sizes and thicknesses available)
code: CPACG10090/1250



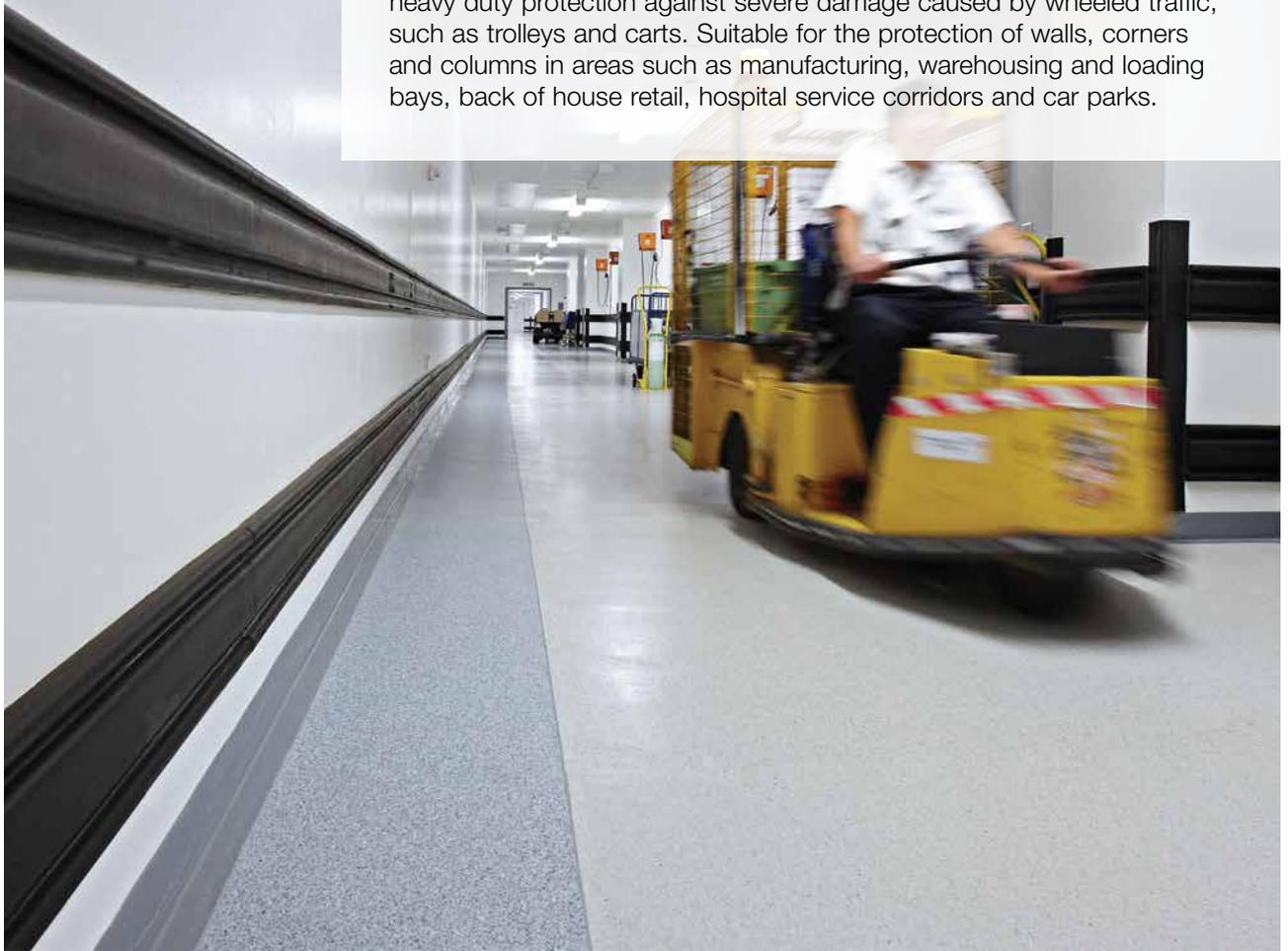
Aluminium Chequer Plate Sheet

2500mm x 1250mm x 2mm
(Other sizes and thicknesses available)
code: CPA2/2500/1250

Illustrations are not full size. Products subject to minor design alterations without notice. Dimensions shown in mm.

Heavy Duty Rubber

Gradus rubber wall and corner profiles have been developed to offer heavy duty protection against severe damage caused by wheeled traffic, such as trolleys and carts. Suitable for the protection of walls, corners and columns in areas such as manufacturing, warehousing and loading bays, back of house retail, hospital service corridors and car parks.



- Black rubber is ideal for back of house applications as it is less likely to show scuffs and marks.
- Designed to absorb impact from wheeled traffic, protecting both the substrate and the vehicle.
- Supplied in 3m lengths.
- Interior and exterior use.
- E-fenders can be curved – contact Gradus for radii information.

<p>E-Fender 150mm height - code: WGR150E 200mm height - code: WGR200E (Excludes fixings)</p>	<p>D-Fender Galvanised steel fixing plate (supplied) 107mm height - code: WGR107D (Excludes fixings)</p>	<p>Corner Guard 100mm x 100mm - code: CGR119 (Excludes fixings)</p>
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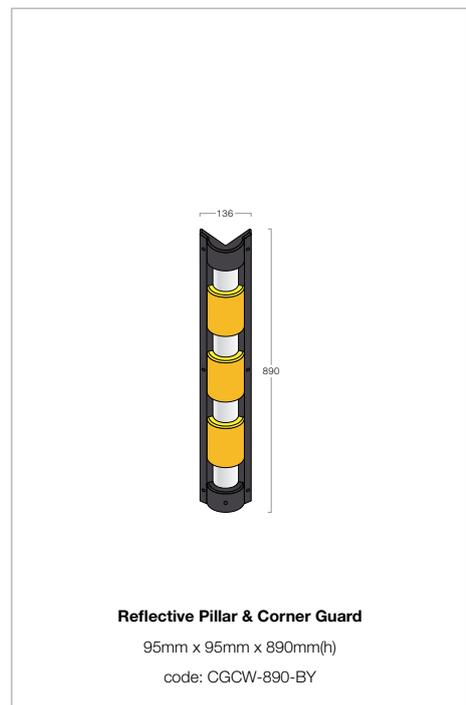
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Reflective Corner Guard

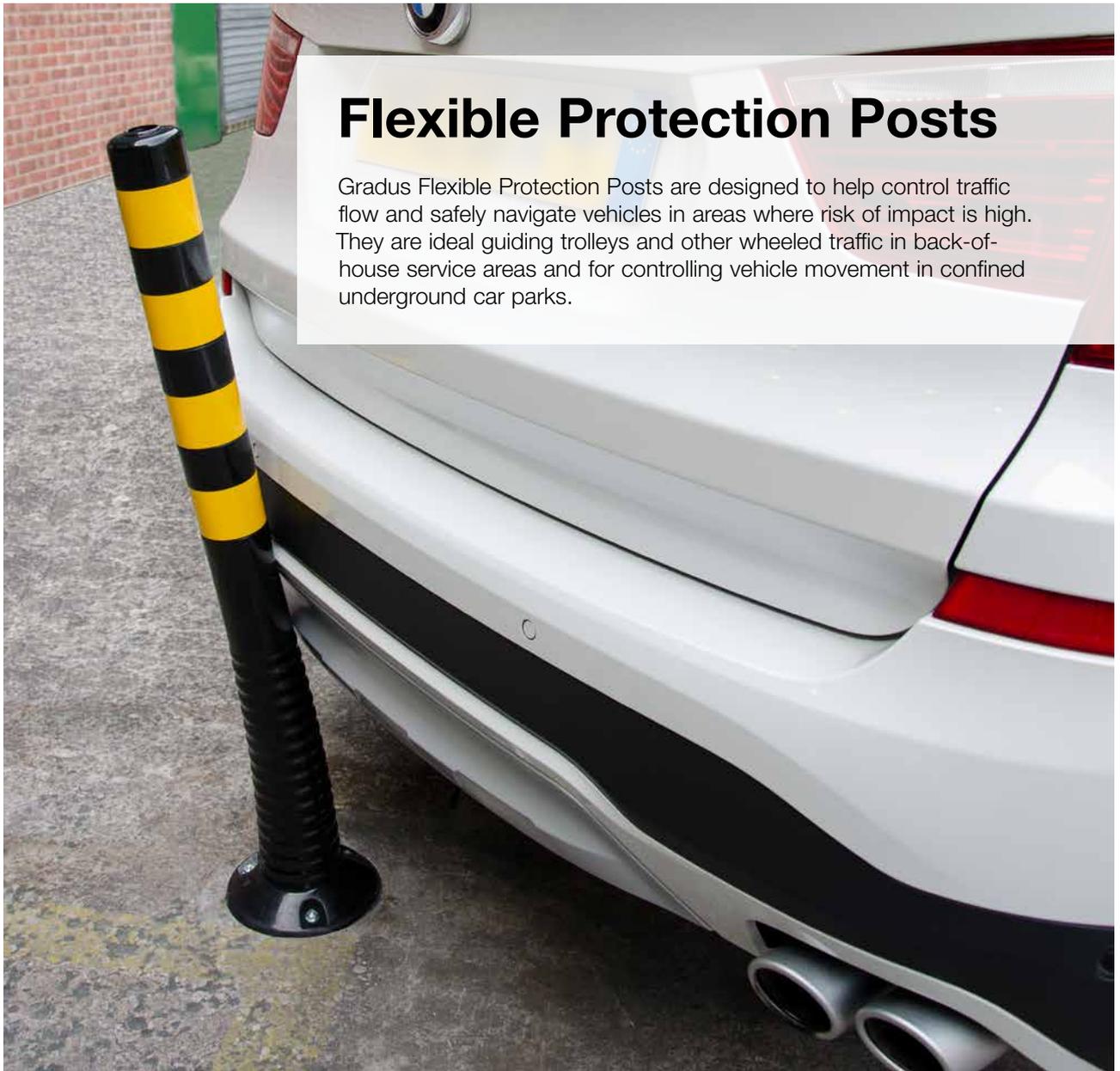
Designed to protect vulnerable corners and columns from damaged caused by vehicles and other wheeled traffic. Heavy duty corner guard are composed of black polyethylene bases, yellow impact absorption pads and diamond grade reflectors for maximum visibility.



- Heavy-duty corner guards are highly visible to alert vehicle users.
- Designed to absorb impact if a collision does occur which reduces damage to the vehicle and offers some protection to the building.
- Ideal for loading bays and basement car parks where vehicles are manoeuvring in tight spaces and often with poor visibility.
- Suitable for corners and pre-cast concrete or clad pillars.



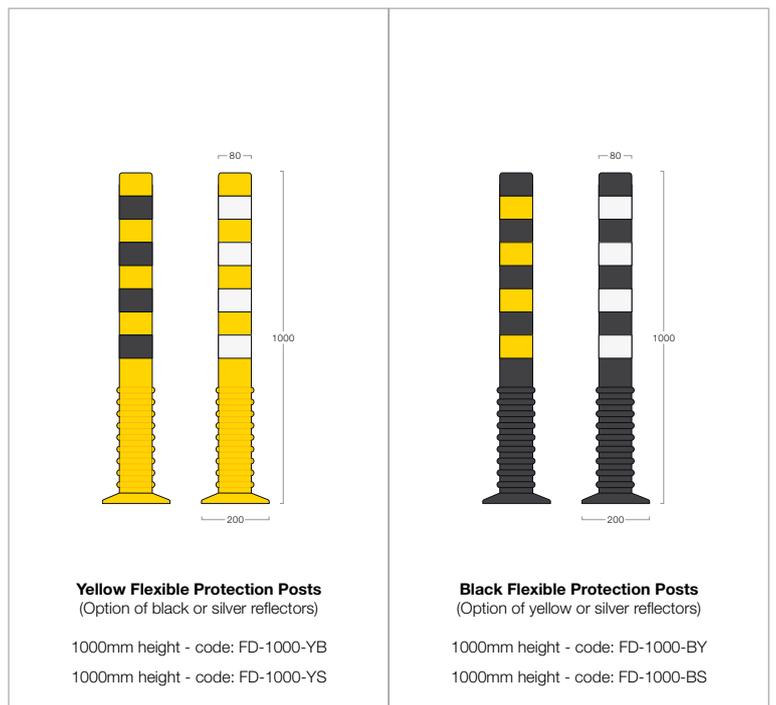
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Flexible Protection Posts

Gradus Flexible Protection Posts are designed to help control traffic flow and safely navigate vehicles in areas where risk of impact is high. They are ideal guiding trolleys and other wheeled traffic in back-of-house service areas and for controlling vehicle movement in confined underground car parks.

- Designed to alert and guide vehicle users to safe routes in confined areas.
- If a collision does occur the product will bend under impact, alerting the driver and minimising damage to the vehicle.
- Extremely durable and will return back to shape following most vehicle collisions.



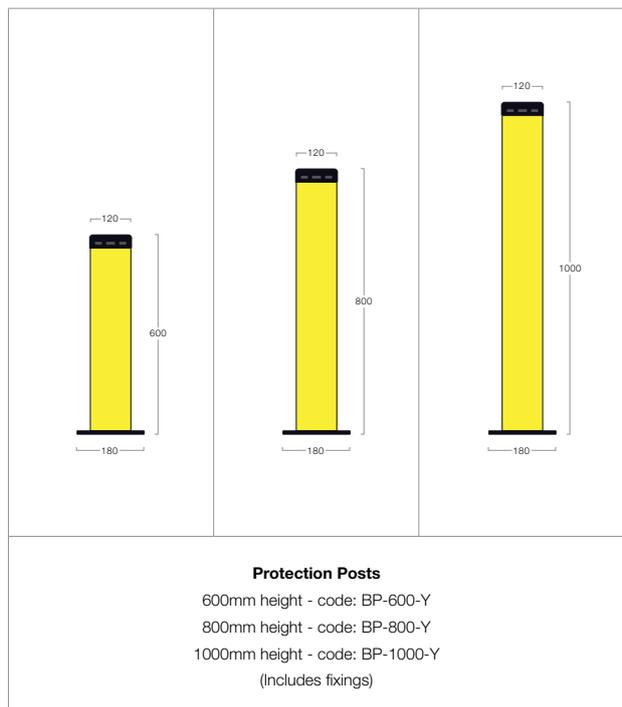
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Steel Core Protection Posts

Steel core protection posts are ideal for protecting pedestrian doors, corners and vulnerable service areas. Protection posts provide a low maintenance solution as they do not require repainting.



- Comprise a galvanised steel core and baseplate, a rotating polyethylene sleeve (Yellow RAL 1003) and rubber top caps incorporating diamond grade reflectors.
- Suitable for all weather temperatures (-40 to +90 degrees).
- Surface mounted, galvanised steel baseplate (Offset 180mm square, 10mm thick).
- Overall post diameter – 120mm (Steel core 114mm diameter).



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Bollard Cores & Cover Kits

A range of heavy duty steel core bollards with high visibility cover kits offering a high performance, low maintenance solution with no repainting required.

- Supplied complete with square offset baseplate, with 4 fixing positions.
- Cover kits are manufactured from medium density polyethylene and are supplied in modular sections that are easy and quick to install for either new installations or instant refurbishment of existing bollards.
- Covers are suitable for all weather temperatures (-40 to +90 degrees) and produced from a 7 year UV stabilised material formula.

<p>Galvanised Steel Cores</p> <p>900mm height code: BCBD-168-900-G</p> <p>1200mm height code: BCBD-168-1200-G</p> <p>1500mm height code: BCBD-168-1500-G</p>	<p>Cover Kit - Black/Yellow</p> <p>960mm height code: BCK-168-960-BY</p> <p>1260mm height code: BCK-168-1260-BY</p> <p>1560mm height code: BCK-168-1560-BY</p>	<p>Cover Kit - Green/White</p> <p>960mm height code: BCK-168-960-GW</p> <p>1260mm height code: BCK-168-1260-GW</p> <p>1560mm height code: BCK-168-1560-GW</p>	<p>Cover Kit - Red/White</p> <p>960mm height code: BCK-168-960-RW</p> <p>1260mm height code: BCK-168-1260-RW</p> <p>1560mm height code: BCK-168-1560-RW</p>	<p>Optional Accessory</p> <p> 50mm</p> <p>Reflective band Silver As shown in photo Can be retro-fitted code: BA-REF-S</p> <hr/> <p>Steel core fixings code: FXG-TB16-150G</p> <p>Cover kit fixings Tamper proof security fixing TEK screw & black plug code: BA-SFK</p> <hr/> <p>Common uses for colours:</p> <ul style="list-style-type: none"> • Black/Yellow – hazard • Green/White – fire escape/exit • Red/White – warning
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Handrail System

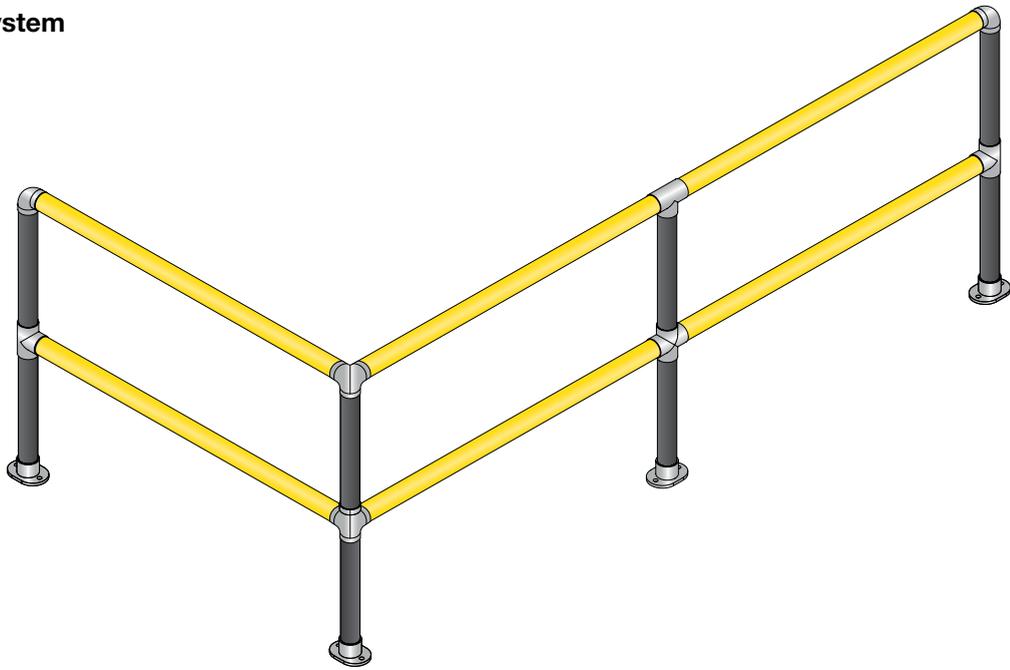
A modular handrail system consisting of galvanised steel rails and cast steel accessories. It is ideal for use in environments where pedestrian areas and walkways are adjacent to vehicle routes for example, car parks, service areas and loading bays.



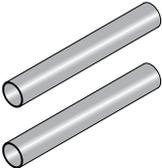
- The handrail system offers pedestrian guidance and support whilst protecting pedestrian areas and providing a barrier to vehicles. It can be used to define walkways and channel pedestrian traffic away from vehicle routes.
- The system comprises top rails, mid rails and upright posts and can be supplied as galvanised steel with a 42mm diameter or can be specified with black polymer sleeved upright posts and yellow polymer sleeved rails (increases both the handrail and post diameter to 50mm).
- Utilising yellow rail sleeves provides greater visual contrast for both pedestrian and vehicle traffic. The sleeves also help to provide a handrail that can be gripped easily, is comfortable to the touch and provides a smooth hand transition in line with the guidelines in Approved Documents K & M of the Building Regulations 2010 and BS8300:2009+A1:2010.
- It is recommended that handrail systems are fixed by an experienced installer.



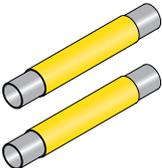
Handrail System



42mm galvanised steel handrail and uprights

 <p>Rail sets</p> <ul style="list-style-type: none"> 2 x 1000mm code: KS-42-RS-1000 2 x 1600mm code: KS-42-RS-1600 2 x 3200mm code: KS-42-RS-3200 Custom size 2 x 400-1599mm code: KS-42-RS-SHORT 2 x 1600-3200mm code: KS-42-RS-LONG 	 <p>Pre-assembled upright End post</p> <p>1100mm high code: KS-42-EP</p>	 <p>Pre-assembled upright Middle post</p> <p>1100mm high code: KS-42-MP</p>	 <p>Pre-assembled upright Corner post</p> <p>1100mm high code: KS-42-CP</p>
Fixings (Substrate) - code: FXG-TB-12-100G			

50mm sleeved handrail and uprights

 <p>Rail sets sleeved Yellow</p> <ul style="list-style-type: none"> 2 x 1000mm code: KS-50-RS-1000Y 2 x 1600mm code: KS-50-RS-1600Y 2 x 3200mm code: KS-50-RS-3200Y Custom size sleeved Yellow 2 x 400-1599mm code: KS-50-RS-SHORTY 2 x 1600-3200mm code: KS-50-RS-LONGY 	 <p>Pre-assembled upright End post sleeved Black</p> <p>1100mm high code: KS-50-EPB</p>	 <p>Pre-assembled upright Middle post sleeved Black</p> <p>1100mm high code: KS-50-MPB</p>	 <p>Pre-assembled upright Corner post sleeved Black</p> <p>1100mm high code: KS-50-CPB</p>
Fixings (Substrate) - code: FXG-TB-12-100G			

Safety Barrier

Corrugated steel barrier rail for protection of buildings, equipment and pedestrians in areas used by vehicles e.g. car parks, service bays, delivery areas, etc. The range features a selection of polymer accessories that incorporate diamond grade reflectors for high visibility providing visual contrast for both drivers and pedestrians.



Rails

Corrugated steel – hot dip galvanised to BSEN ISO 1461
2 standard lengths (custom lengths also available):

- 3500mm
- 1750mm

Available curved 6m to 50m radius.

A fork stopper containment angle is available as an optional extra. This sits below the low level rail for a flush finish to the floor and is designed to prevent penetration of forks from pallet trucks and forklifts.

Posts

Posts can be installed at varying centres depending on low or high impact areas (guidelines are 3.2m centres for low impact to 1.6m centres for high impact).

Posts are galvanised steel.

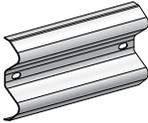
Accessories

- Flexible and highly visible.
- Can replace existing steel ends – upgrade/retrofit.
- Feature a reduced number of fixings (compared with traditional steel ends).
- Low cost.
- Lightweight.

It is recommended that safety barriers are fixed by an experienced installer.

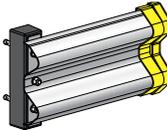


Rails



Corrugated Rail (3mm)
 1750mm length - code: AR3-1750
 3500mm length - code: AR3-3500
Custom rails (cut to length and holed)
 0-1749mm length - code: AR3-CC-SHORT
 1750-3500mm length - code: AR3-CC-LONG
*Custom rails (*curved 6m-50m radius)*
 3500 length - code: AR3-3500-R*
 Fixings (Lap joins) - code: FXG-BS16-35G

Wall Mounted Posts



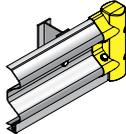
Wall Mounted Posts
 Includes rubber buffer, steel plate and 2 x wall anchor
 50mm deep - code: AWP-50
 75mm deep - code: AWP-75



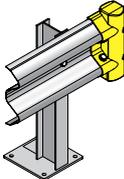
Stand-Off Bracket (optional)
 200mm x 330mm x 50mm - code: AWP-SB-200
 Fixings - code: FXG-TB16-50G

Floor Mounted End Posts

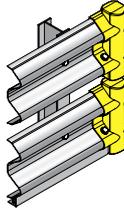
(Rail and accessories shown for illustration purposes only)



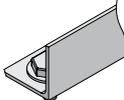
I Beam Post Bolt Down
 for low level
 360mm high - code: API-360
 Fixings - code: FXG-TB16-150G



I Beam Post Bolt Down
 for single rail
 560mm high - code: API-560
 610mm high - code: API-610
 760mm high - code: API-760
 Fixings - code: FXG-TB16-150G



I Beam Post Bolt Down
 for double rail
 760mm high - code: API-760D
 1100mm high - code: API-1100D
 Fixings - code: FXG-TB16-150G

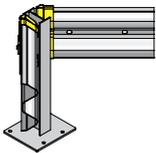


Fork Stopper Containment Angle
 50mm x 50mm x 3000mm - code: ACA-3000G
 Fixings - code: FXG-B12-100G

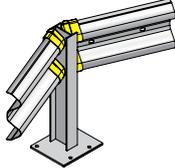
Fixings (Rail) - code: FXG-BS16-50G Fixings (Substrate) - code: FXG-TB16-150G

Floor Mounted Corner Posts

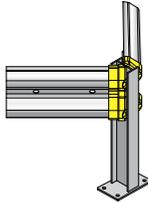
(Rail and accessories shown for illustration purposes only)



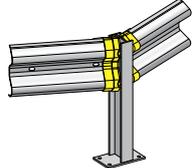
Internal Corner Post
 90 degree
 Includes 2 x Safety Ends - Yellow
 560mm high - code: AICP-90-560
 610mm high - code: AICP-90-610
 760mm high - code: AICP-90-760



Internal Corner Post
 135 degree
 Includes 2 x Safety Ends - Yellow
 560mm high - code: AICP-135-560
 610mm high - code: AICP-135-610
 760mm high - code: AICP-135-760



External Corner Post
 90 degree
 Includes 2 x Safety Ends - Yellow
 560mm high - code: AECPP-90-560
 610mm high - code: AECPP-90-610
 760mm high - code: AECPP-90-760

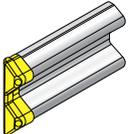


External Corner Post
 135 degree
 Includes 2 x Safety Ends - Yellow
 560mm high - code: AECPP-135-560
 610mm high - code: AECPP-135-610
 760mm high - code: AECPP-135-760

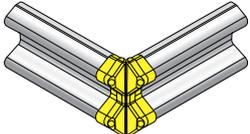
Fixings (Rail) - code: FXG-BS16-50G Fixings (Substrate) - code: FXG-TB16-150G

Accessories

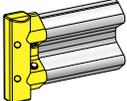
(Rail shown for illustration purposes only)



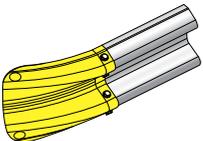
Safety End
 (Includes fixings)
 Yellow / Yellow Reflector - code: ASE-Y
 Black / Yellow Reflector - code: ASE-B



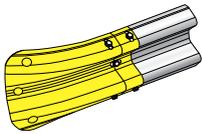
Safety Corner
 (Includes fixings)
 Yellow / Yellow Reflector - code: ASC-Y
 Black / Yellow Reflector - code: ASC-B



Pedestrian Safety End
 (Excludes fixings)
 Yellow / Yellow Reflector - code: PSE-Y
 Black / Yellow Reflector - code: PSE-B
 Fixings - code: FXG-BS16-35G



Fishtail Safety End
 (Excludes fixings)
 Yellow / Yellow Reflector - code: FSE-Y
 Black / Yellow Reflector - code: FSE-B
 Fixings - code: FXG-BS16-35G



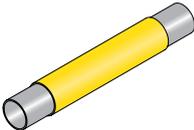
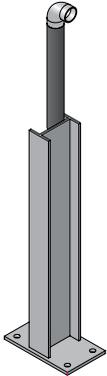
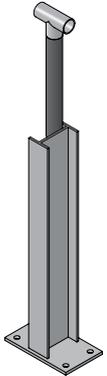
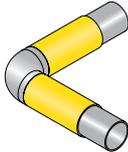
Long Fishtail Safety End
 (Excludes fixings)
 Yellow / Yellow Reflector - code: FSE-LY
 Black / Yellow Reflector - code: FSE-LB
 Fixings - code: FXG-BS16-35G

Safety Barrier Handrail Additions

Handrail additions are ideal for segregating vehicle and pedestrian traffic in areas where the risk of impact is high. The handrail provides pedestrian guidance and support whilst the rail offers protection in the event of a vehicle striking the barrier.



- High visibility sleeve on rail provides additional warning for vehicle users to avoid potential collisions.
- Creates a clear route for pedestrians.
- It is recommended that handrail systems are fixed by an experienced installer.

 <p>Handrail Set (Yellow)</p> <p>1600mm length - code: AHR-1600Y 3200mm length - code: AHR-3200Y</p>	 <p>I Beam End Post (With handrail extension, black sleeve & elbow)</p> <p>760mm high - code: API-760HR-END Fixings - code: FXG-TB16-150G</p>	 <p>I Beam Mid Post (With handrail extension, black sleeve & tee)</p> <p>760mm high - code: API-760HR-MID Fixings - code: FXG-TB16-150G</p>	 <p>Handrail Corner Extension Kit (With 2 handrail extensions in yellow plus 2-way elbow)</p> <p>code: AP-HR-CNR-KIT</p>
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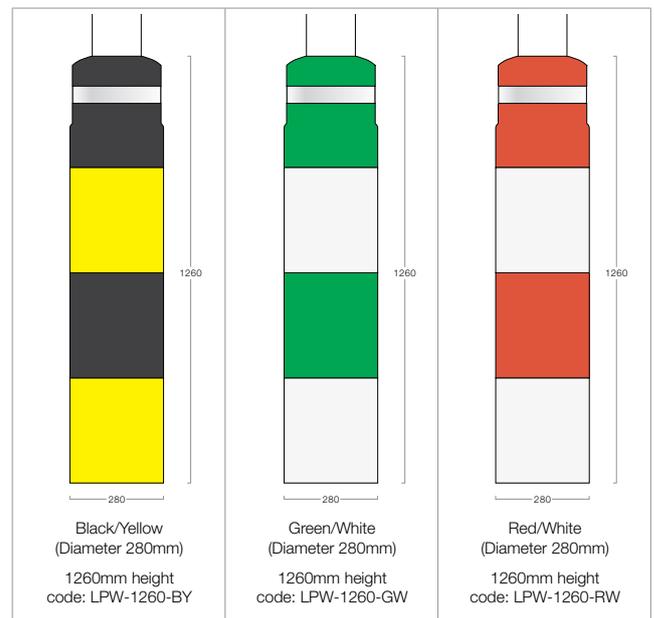
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Lamp Post Protector Kits

Lamp post protector kits are specifically designed to protect lamp posts from impact whilst minimising damage to vehicles. They are ideal for car parks where space is at a premium but there is a high risk of vehicle impact.



- The colour options and the incorporation of a silver reflective band are designed to offer high-visibility with the aim of avoiding impact wherever possible.
- The protectors feature a foam core for impact absorption and are quick and easy to install.
- Suitable for lamp posts up to and including 219mm diameter.
- Security bolts included.



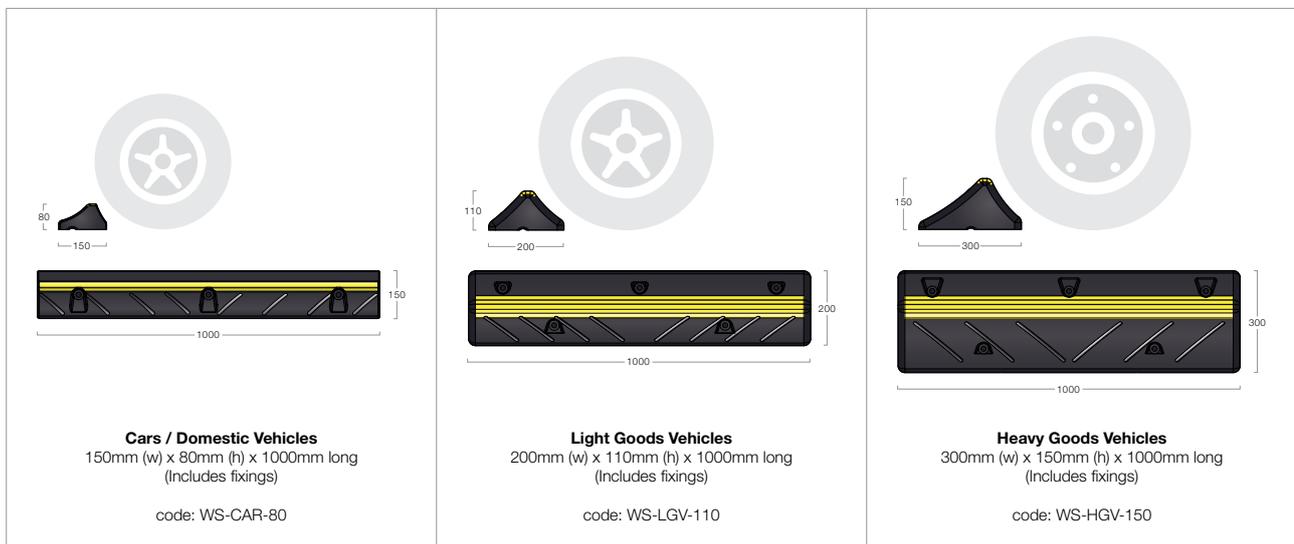
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Wheelstops

Wheelstops are an effective way of protecting walkways, buildings, equipment and fencing in addition to protecting vehicles from damage caused by impact. They provide a robust solution for a variety of vehicles from cars through to HGVs, LGVs and coaches.



- Wheelstops provide a physical warning in addition to incorporating yellow reflective strip for visual contrast and high visibility.
- The units are of a solid moulded construction and are produced from 100% recycled rubber. They do not corrode or need repainting. In addition they do not bend or split.
- 2 x 1m sections recommended per parking bay.
- Suitable for fixing to either concrete or tarmac.
- Fixed in either 3 (CAR) or 5 (LGV, HGV) positions using galvanised steel anchors.



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Speed Bumps

Speed bumps are designed to reduce speed whilst minimising the jolt to vehicles, freight and passengers. They help calm traffic speeds and are ideal for car parks where pedestrians and vehicular traffic share the same space.

- Speed bumps are manufactured from solid moulded polymer and include 50% post-industrial recycled material.
- Reflectors incorporated to improve visibility of speed bump in poor lighting and avoid potential damage to vehicle.
- Suitable for fixing to either concrete or tarmac.
- Supplied in kits. Additional end and mid sections are available to order separately or if an alternative configuration is required. For individual sections fixings must be ordered separately.

Domestic Vehicle Options
(Height 50mm - includes fixings)

3000mm length - code: SBK-3000-50BY
 4000mm length - code: SBK-4000-50BY
 5000mm length - code: SBK-5000-50BY
 6000mm length - code: SBK-6000-50BY

Commercial Vehicle Options
(Height 75mm - includes fixings)

5000mm length - code: SBK-5000-75BY
 6000mm length - code: SBK-6000-75BY

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Specification Guidelines

Construction Guidelines for specifying the appropriate Gradus product

Mat (Material)

05 Designing for durability and resilience

No. of credits available: 1

Minimum standards: No

Aim

To recognise and encourage adequate protection of exposed elements of the building and landscape, therefore minimising the frequency of replacement and maximising materials optimisation.

Assessment Criteria

The following is required to demonstrate compliance:

One credit

Protecting vulnerable parts of the building from damage

1. The building incorporates suitable durability and protection measures or designed features/solutions to prevent damage to vulnerable parts of the internal and external building and landscaping elements. This must include, but is not necessarily limited to:
 - a. Protection from the effects of high pedestrian traffic in main entrances, public areas and thoroughfares (corridors, lifts, stairs, doors etc.).
 - b. Protection against any internal vehicular/trolley movement within 1m of the internal building fabric in storage, delivery, corridor and kitchen areas.
 - c. Protection against, or prevention from, any potential vehicular collision where vehicular parking and manoeuvring occurs within 1m of the external building façade for all car parking areas and within 2m for all delivery areas.

Compliance notes: General

CN3. Suitable Durability Measures (see criterion 1)

Suitable durability and protection measures to vulnerable parts of the building can include:

1. Bollards/barriers/raised kerbs to delivery and vehicle drop-off areas
2. Robust external wall construction, up to 2m high
3. Corridor walls specified to Severe Duty (SD) as per BS5234-2¹ and, for Healthcare buildings, Health Technical Memorandum 56 - Partitions².
4. Protection rails to walls of corridors
5. Kick plates/impact protection (from trolleys etc.) on doors
6. Hard-wearing and easily washable floor finishes in heavily used circulation areas (i.e. main entrance, corridors, public areas etc.)
7. Designing out the risk without the need for additional materials specification to protect vulnerable areas

CN3.1 Vehicle Impact Protection (see criterion 1.c)

Any vehicle impact protection measures specified must be positioned at an adequate distance from the building to protect the fabric from impact from any vehicle with a measurable overhang of the body from the wheel track, in particular for any goods delivery areas. In vehicle movement areas only; where the specification of external robust wall construction is specified to comply with the credit, additional protection must be provided to ensure against potential damage to the robust façade from vehicle movement, i.e. specifying bollards or protection rails.

CN3.2 Preventing Excessive Material Use

The specification or design measures chosen should reflect the need to balance the additional specification of materials with the need to protect building elements to minimise their replacement, insuring against excessive material use and promoting materials optimisation.

CN3.3 Public/Common Areas

Consideration should be given to materials specification in public/common areas (especially public waiting areas and toilet areas) to provide protection against potential malicious or physical abuse, as far as possible.

Evidence

One or more of the appropriate evidence types listed in The BREEM evidential requirements section can be used to demonstrate compliance with these criteria. For guidance on The BREEM evidential requirements see p.27-33 of The New Construction Non Domestic Buildings Technical Manual SD5076: 3.0 – 2014.

Gradus advice and recommendations are [shown in blue text](#).

[Gradus offers a comprehensive service for all aspects of protection systems ranging from advice on specification for supply only projects, through to a complete project management service for the supply and installation of Gradus Protection Systems.](#)

[Gradus considers factors that would influence the specification in line with 'Mat 05 Designing for durability and resilience' and facilitates this with extended service levels including on-site surveys, measuring and face-to-face advice from trained specification consultants.](#)

[Gradus can help with the assessment of a building in order to establish the types of protection required and appropriate locations/levels where it should be installed, ensuring products selected meet the requirements of the building.](#)

Source: *BREEM New Construction Non Domestic Buildings Technical Manual - SD5076: 5.0 - 2014*

1. BS5234-2: Partitions (including matching linings) – Specification for performance criteria for strength and robustness including methods of test, BS11992.

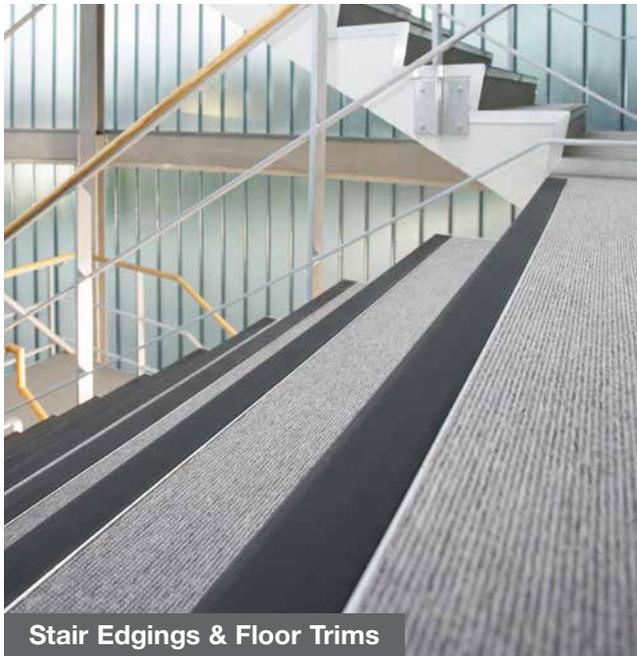
2. HTM56 Partitions, 3rd Edition, Department of Health, 2005.

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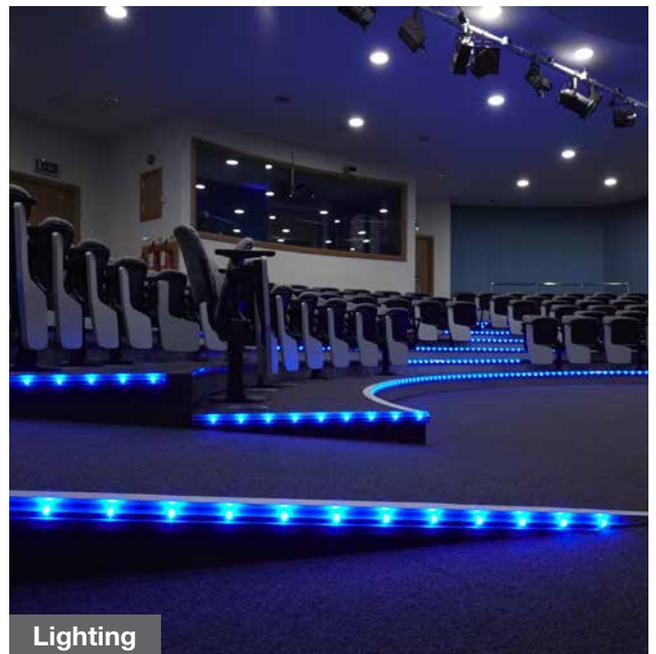
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