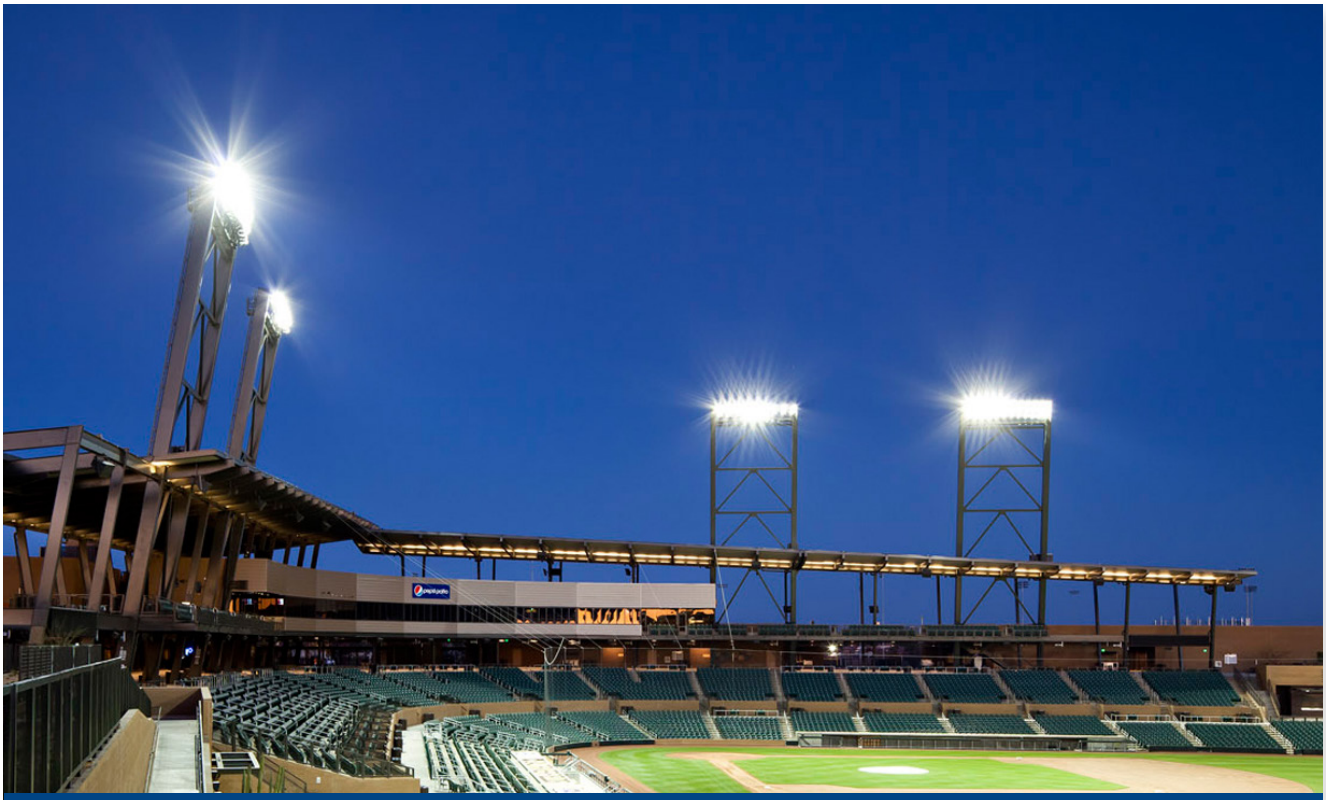
lindapter® USA

APPLICATION PORTFOLIO

e-mail: **inquiries@lindapterusa.com** | Web: **www.lindapterusa.com**

APPLICATION PORTFOLIO



Salt River Fields Spring Training Facility

LOCATION
Scottsdale, AZ, USA

PRODUCT
Type HB (HCF) Hexagonal

APPLICATION
HSS connection for the floodlighting frames

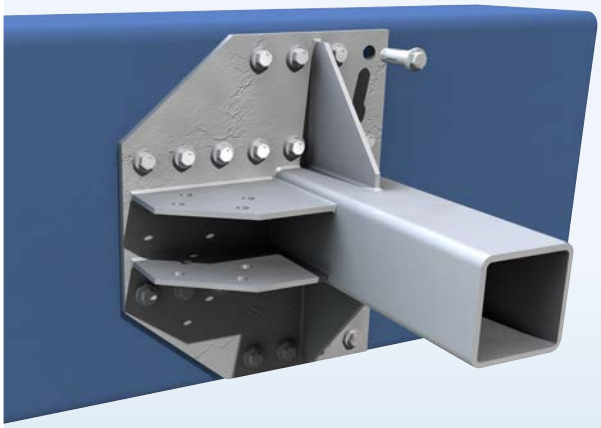


Image: Able Steel

Image courtesy of OAG UK

Thames Exchange

HIGH CLAMPING FORCE

LOCATION
London, UK

PRODUCT
Type HB (HCF)
Countersunk (Bolt Head)

APPLICATION
Structural connections of the elevator glazing frame

APPLICATION PORTFOLIO

Image: Quantum Immobilien AG

Hafen City

LOCATION
Hamburg, Germany

PRODUCT
Hollo-Bolt Flush Fit

APPLICATION
Structural connections of the glazing and roof support frame

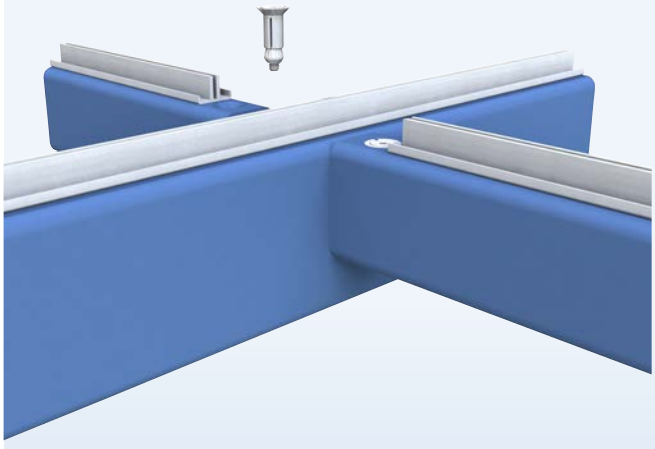


Image: Jeff Goldberg/Esto, courtesy of Kimmel Center

Kimmel Center for Performing Arts

LOCATION
Philadelphia, PA, USA

PRODUCT
Hollo-Bolt (HCF) Hexagonal

APPLICATION
HSS splice connections in the barrel-vault roof

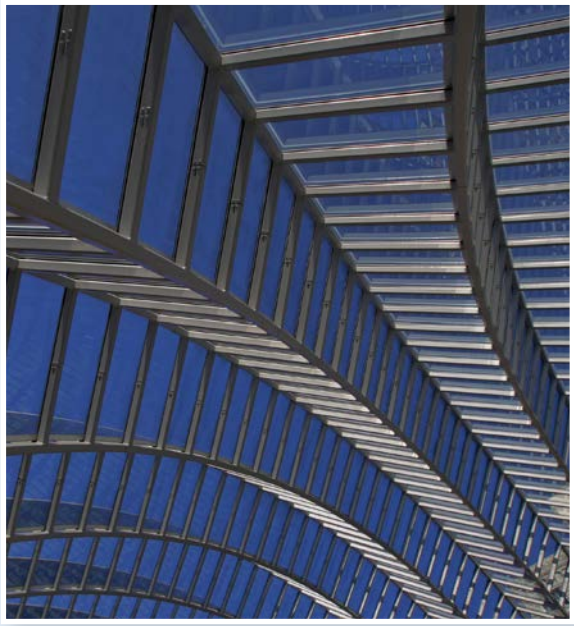


Image: R. Bradley Maule

APPLICATION PORTFOLIO

© Werner Huthmacher

Albertinum Dresden

LOCATION
Dresden, Germany

PRODUCT
Type HB Hexagonal & Type B

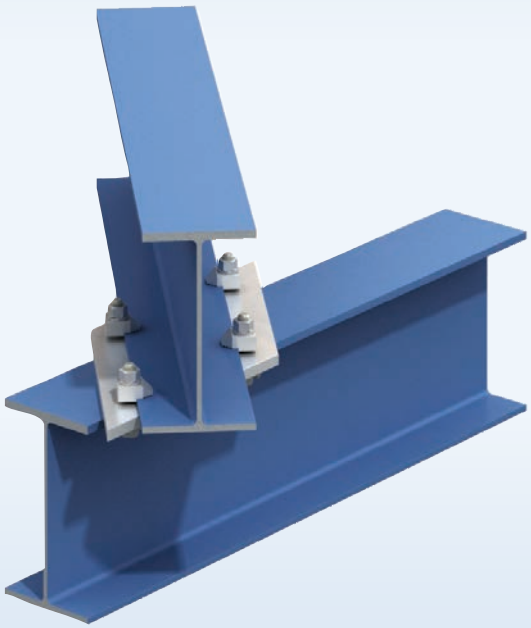
APPLICATION
Securing the new roof frame to the existing structural steel

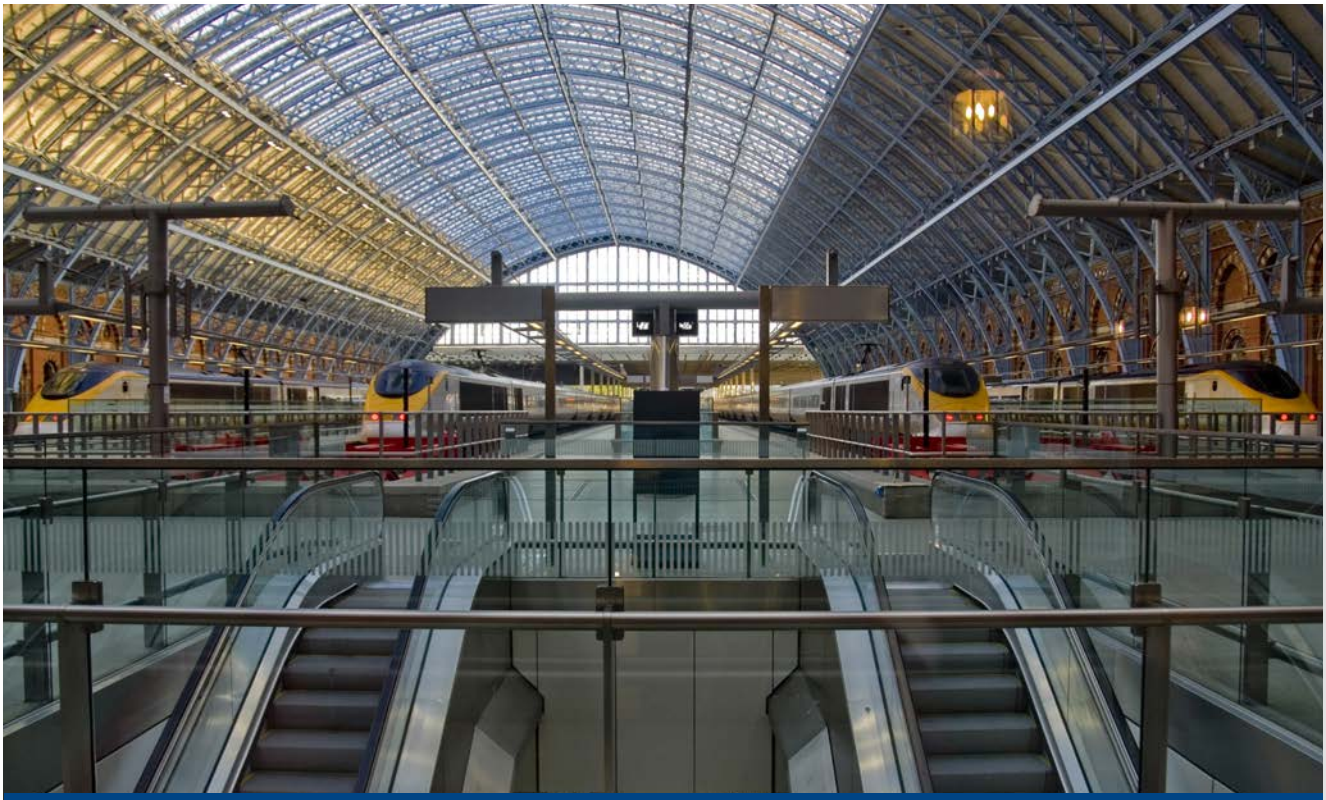
Garmisch Partenkirchen Ski Jump

LOCATION
Bavaria, Germany

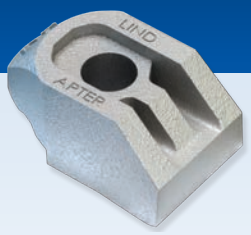
PRODUCT
Type A & B

APPLICATION
Diagonal connections of the ski jump's structural steel frame





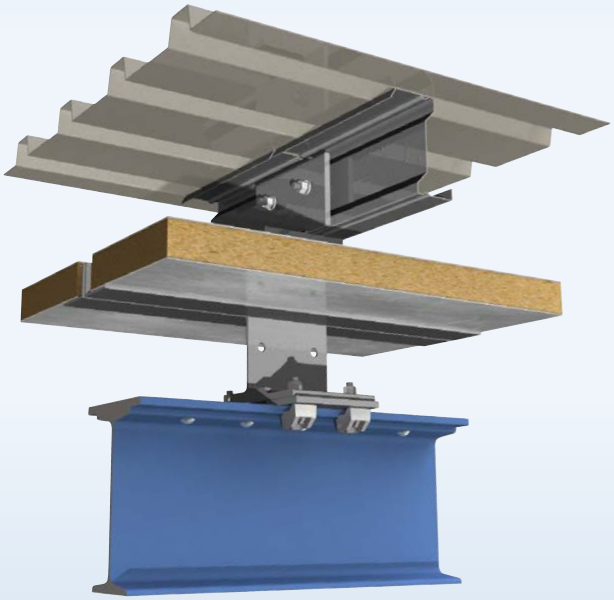
St Pancras Station



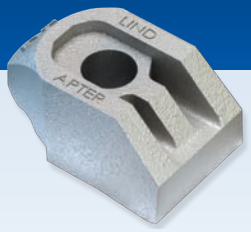
LOCATION
London, UK

PRODUCT
Type AF

APPLICATION
Connecting the steel framed roof to the original Victorian structure



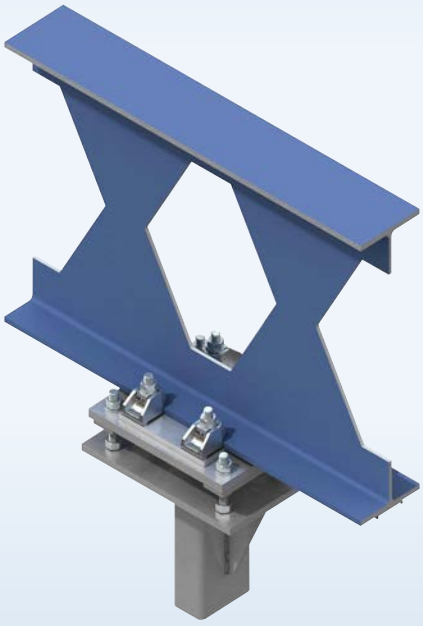
Gatwick Airport



LOCATION
London, UK

PRODUCT
Type AF

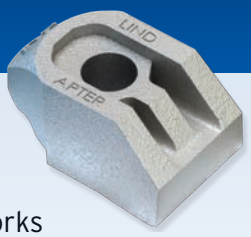
APPLICATION
Custom high capacity baggage handling support assembly



APPLICATION PORTFOLIO

Image: bridgeandtunnelclub.com

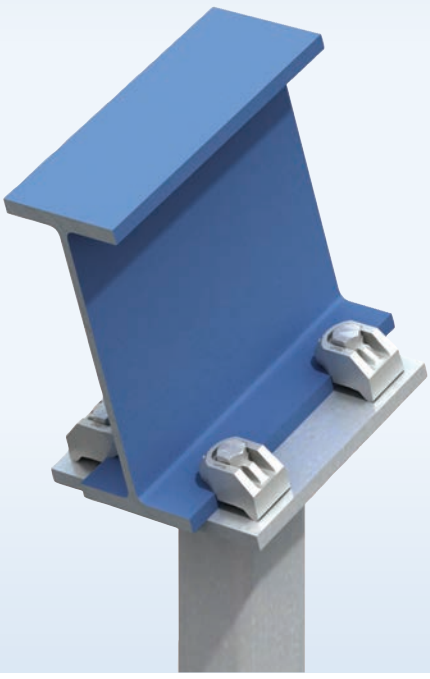
Alexander Hamilton Bridge



LOCATION
New York City, NY, USA

PRODUCT
Type AF

APPLICATION
Temporary structural support connections during renovation works

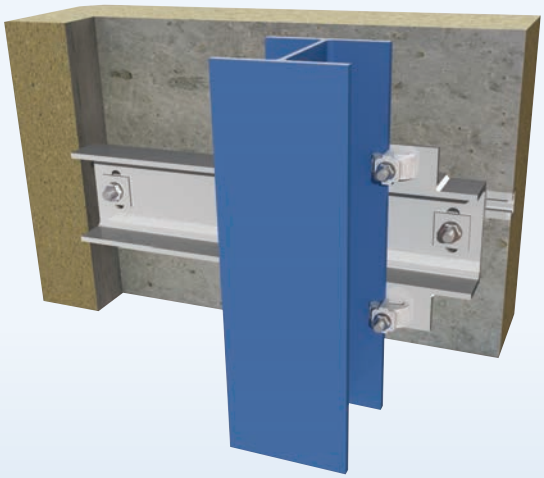


St David's Shopping Centre

LOCATION
Cardiff, UK

PRODUCT
Type LR

APPLICATION
Securing precast concrete panels to structural steel



APPLICATION PORTFOLIO

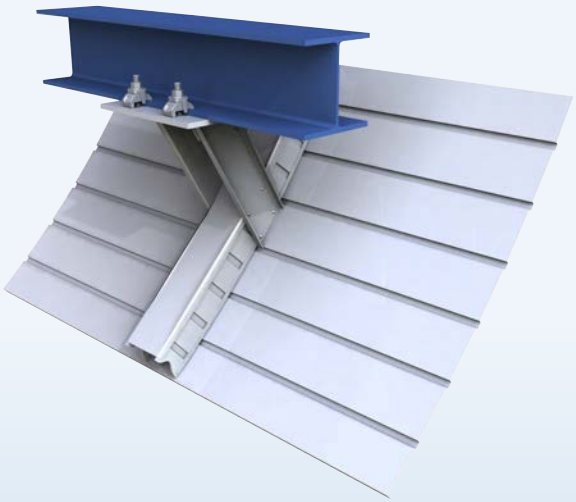
Image: Wayne Kryduba

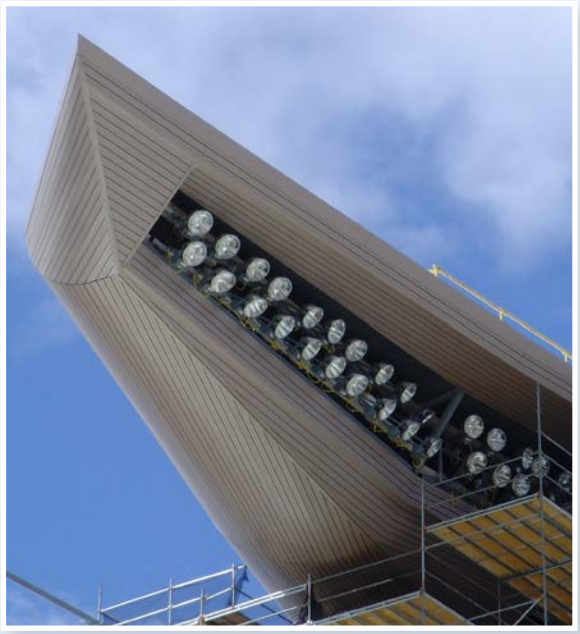
Target Field Ball Park

LOCATION
Minneapolis, MN, USA

PRODUCT
Type LR

APPLICATION
Adjustable connection of the stadium canopy to structural steel



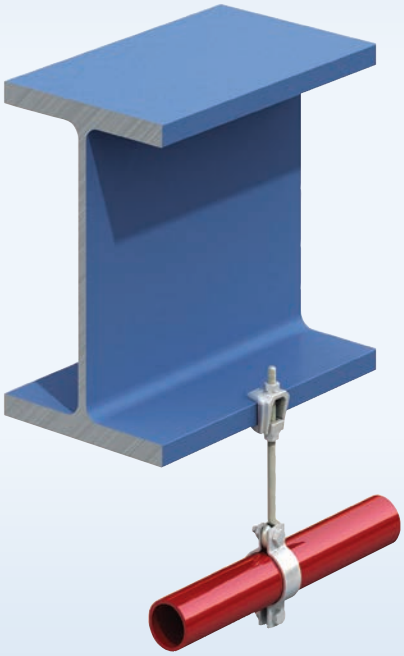


Manhattan Bridge

LOCATION
New York, USA

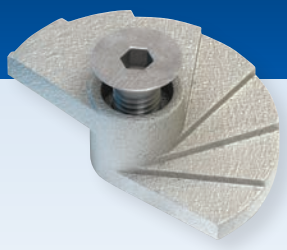
PRODUCT
Type F3

APPLICATION
Pipe supports along bridge deck



APPLICATION PORTFOLIO

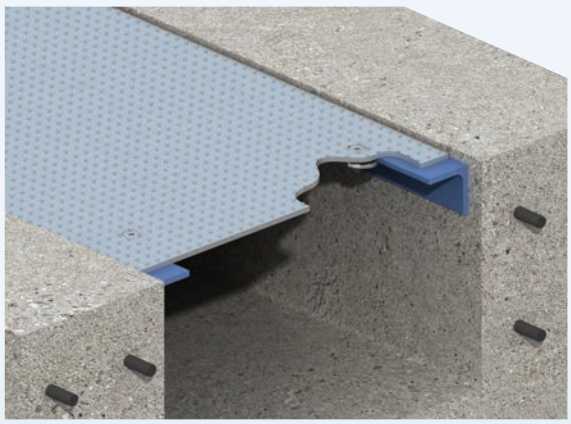
Docklands Light Railway



LOCATION
London, UK

PRODUCT
Type FF - Floorfast®

APPLICATION
Securing galvanized Durbar plate to steel angle

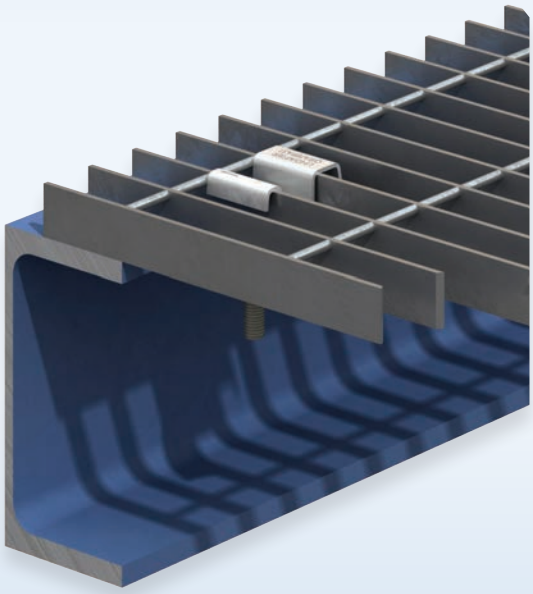


Benjamin Franklin Bridge (Delaware River Port Authority)

LOCATION
Philadelphia, PA, USA

PRODUCT
Type GF – Grate-Fast®

APPLICATION
Securing open bar grating platforms to enable accent lighting installation



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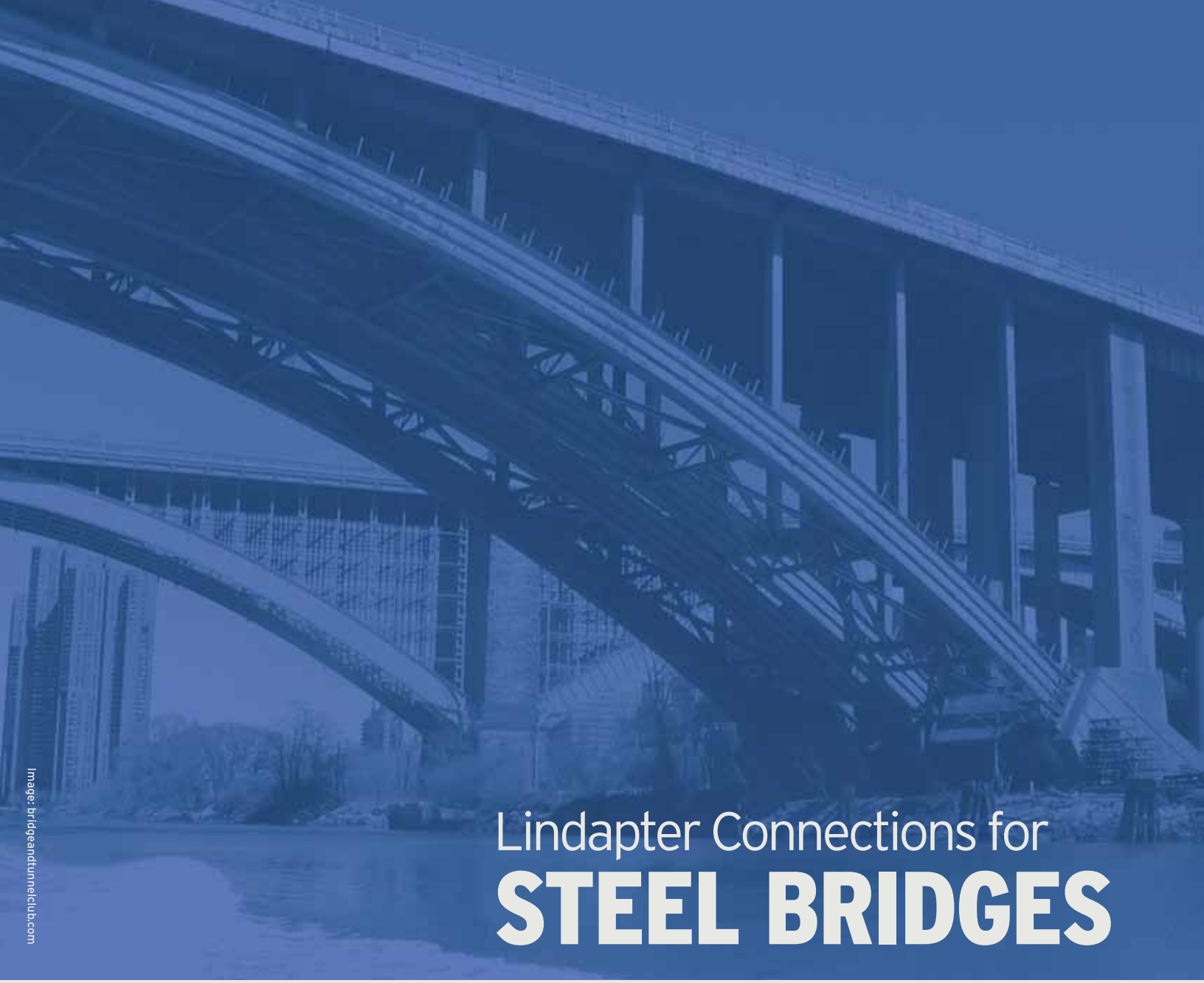


Image: bridgeandtunnelclub.com

Lindapter Connections for STEEL BRIDGES

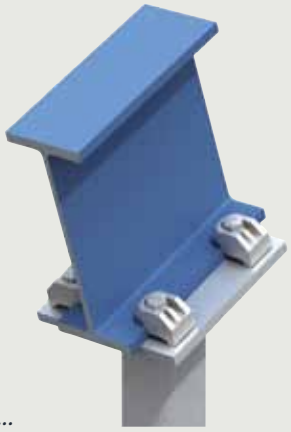
BENEFITS

- ✔ No drilling or welding
- ✔ For permanent & temporary connections
- ✔ No damage to existing steel
- ✔ For parallel & tapered flanges
- ✔ Tensile safe working load of up to 56,000lbs*
- ✔ Frictional safe working load of up to 15,700 lbs*
- ✔ Various corrosion resistance options

TYPICAL APPLICATIONS

- Bridge Strengthening
- Support Connections for Refurbishments
- Securing Maintenance Access
- Piping & Electrical Support
- Securing Panels, Cladding & Signage

See inside for Lindapter project experience...



* When using 1" Type AFs in a four A490 bolt Girder Clamp Configuration

lindapter®

BRIDGE STRENGTHENING

Project: Morton's Leam Bridge
Location: Peterborough, Cambridgeshire, UK
Product: Type AF
Application: Connection of bridge strengthening steel girders

SUPPORT CONNECTIONS FOR REFURBISHMENTS

Project: Alexander Hamilton Bridge Refurbishment
Location: Route 95, New York, USA
Product: Type AF
Application: Temporary support connections

SECURING MAINTENANCE ACCESS

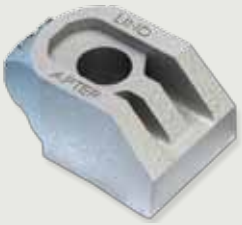
Project: Queen Elizabeth II Bridge
Location: Dartford River Crossing, UK
Product: Type B
Application: Connection of GRP panels to facilitate future maintenance access

SECURING PANELS, CLADDING & SIGNAGE

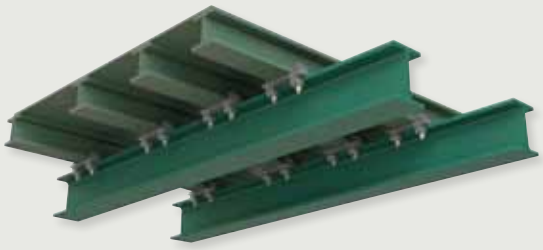
Project: Kennedy Bridge (Kennedybrücke)
Location: Bonn, Germany
Product: Type A
Application: Securing solar panels to the bridge structure

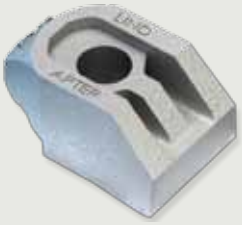
PIPING & ELECTRICAL SUPPORT

Project: Millau Viaduct
Location: Millau, Aveyron, France
Product: Type A
Application: Securing electrical services to inclined steel sections of the bridge deck



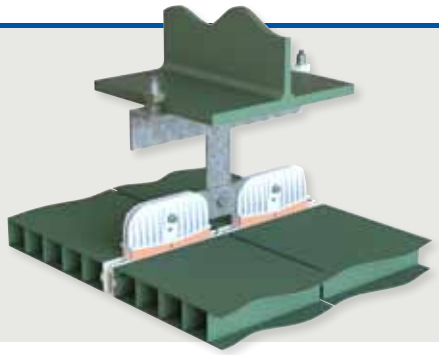
Lindapter Type AF connections, specified in a Girder Clamp configuration, secured strengthening steel girders to the existing steel beams of the bridge. Installation was completed without the need to weld or drill, allowing the bridge to remain open to rail traffic during the development.



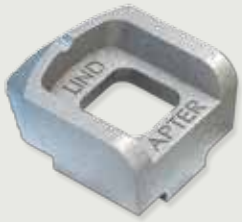


Lindapter Type AF connections were used on the major refurbishment and widening of the Alexander Hamilton Bridge to connect temporary support systems for cantilevered roadways. Type AF clamps were ideal for the varying connection angles of the application due to their high performance in friction and tensile.

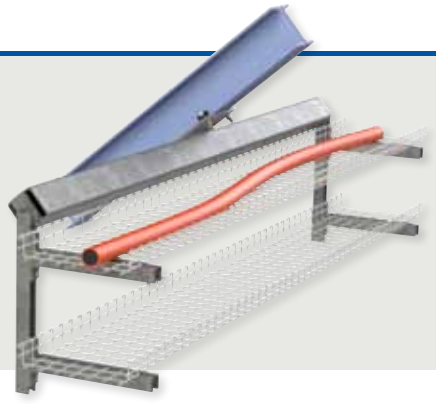
Lindapter designed a special assembly using Type B clamps to connect GRP panels to the QE2 Bridge. The GRP panels were used to create an enclosed maintenance access walkway beneath the bridge deck to allow for essential maintenance without the need to close crucial London transport links.



The entire length of the bridge's south side was fitted with enough solar panels to provide energy to 20 households, making it the world's first solar bridge. Lindapter Type A connections secured the solar panels to the steel sections on the underside of the bridge without the need to weld or drill.



With a deck standing at 885 feet above the River Tarn, this iconic structure is at the forefront of Bridge Engineering. Lindapter Type A connections were used to precisely align and secure electrical services to inclined steel sections within the interior of the aerodynamically designed steel deck.



THE lindapter RANGE

STEEL CONNECTIONS

Lindapter has pioneered a unique & proven concept: innovative clamping systems that eliminate the need to weld or drill, reducing installation time & labor costs. Lindapter's steel connections lend themselves perfectly to the securing of both maintenance access & bridge strengthening systems.

HOLLOW STEEL (HSS) CONNECTIONS

Featuring the legendary Hollo-Bolt® and Lindibolt®, Lindapter's HSS connections provide simple, cost-effective connections for all types of hollow section or where access is only available from one side. The Hollo-Bolt is the ideal solution for the connection of signage and cladding panels.

CONCRETE DECKING CONNECTIONS

Lindapter offers the Toggle Clamp as the ideal service suspension connection for pre-cast hollow core concrete slabs. This versatile connector is also compatible with HSS, steel sheeting & purlins and can be used in the construction of bridges wherever these materials are used.

PIPE / CONDUIT SUPPORTS

Lindapter provides a wide range of connection solutions for suspending services, such as pipe work, electrics and instrumentation from structural or supporting steel. Using Lindapter support connections, utilities can be run along the length of a steel bridge deck without welding or drilling.

STEEL FLOOR CONNECTIONS

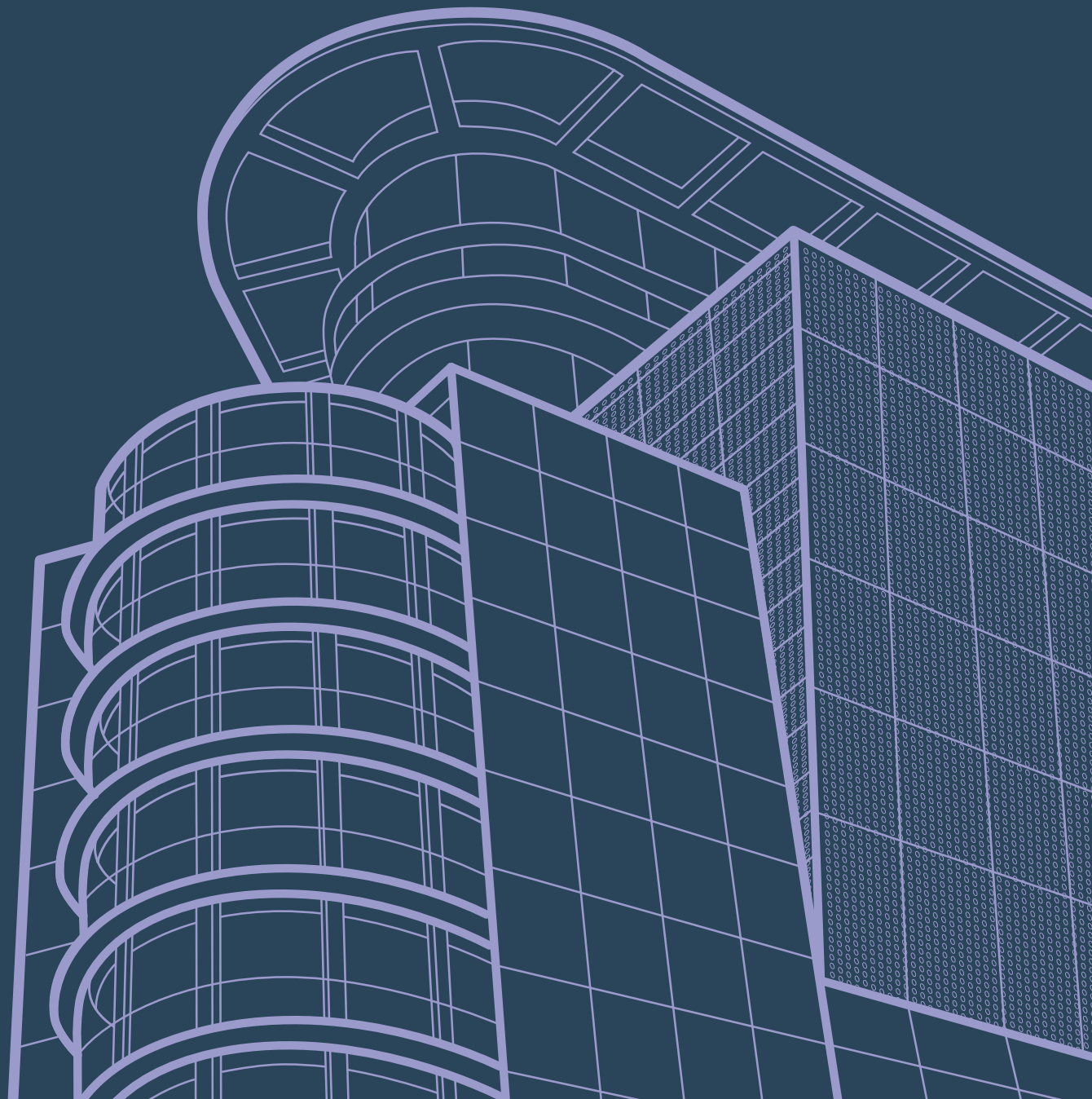
Lindapter's unique no-weld no-drill concept extends to the connection of steel flooring. Open bar grating & checker plate flooring can be installed for bridge maintenance walkways by one person without the need to access the underside of the flooring.

For more information visit **www.lindapterusa.com** or email **inquiries@lindapterusa.com** to request a catalogue.

Façades & Cladding

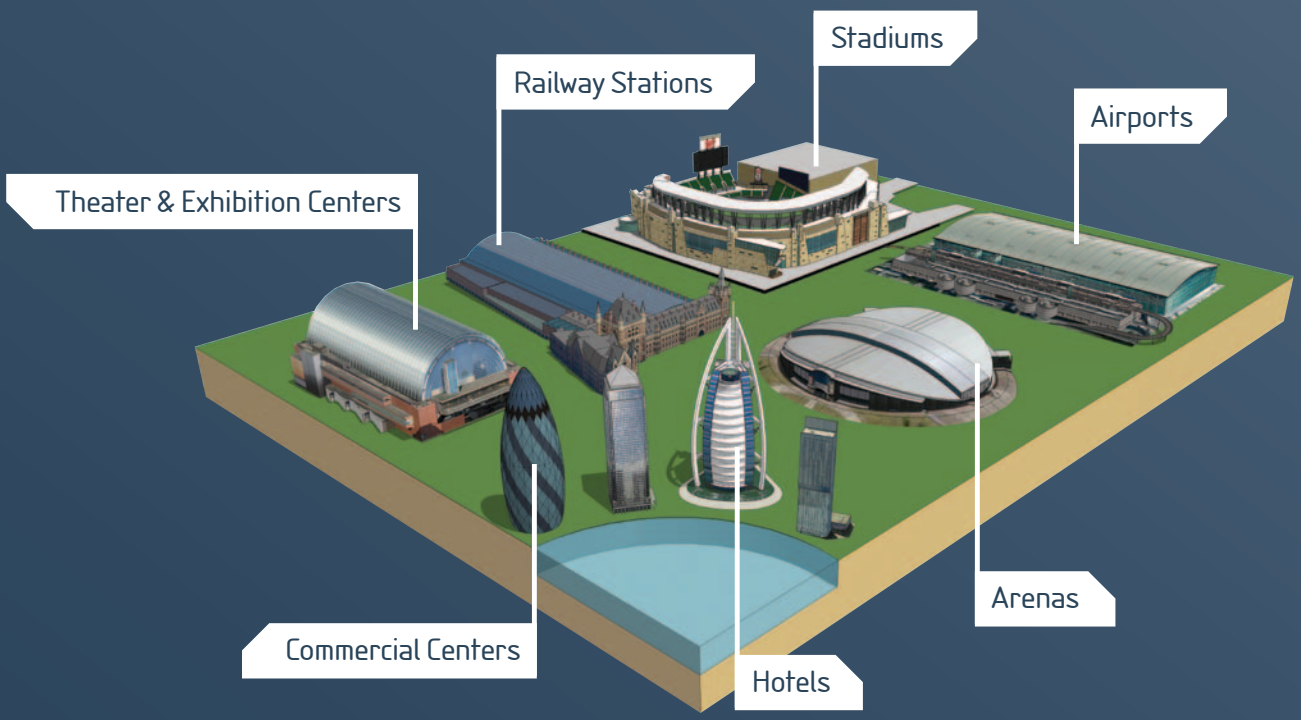
lindapter®

Technical Innovation
in Steel Connections



Safely securing steel for over 75 years

Established in 1934, Lindapter builds upon its proud history of developing innovative steel connections and applies their proven clamping concept to the building envelope. Today, Lindapter products are used around the world to connect a wide range of façade materials to various types of structures including:



10 Reasons to use Lindapter connections

- Faster installation, low labor costs
- Suitable for standard beams or hollow section
- No drilling or welding on-site
- On-site adjustability for accurate positioning
- Compatible with a wide range of brackets
- Can be pre-assembled to minimize installation time
- No damage to steel or panels
- Only standard hand tools required
- Independently approved safe working loads

Whether securing precast concrete panels, glazing frames, GRC cladding or other architectural façades, Lindapter has a proven connection solution.

As the inventor and innovator of steel clamping systems, Lindapter's extensive experience and wide range of products are perfectly suited to fixing elements of a building exterior to the structural steel frame.

The fundamental benefit of a Lindapter connection is the speed and ease of installation, thus reducing the cost of labor and equipment hire. As drilling or welding is not required, potential safety risks are also reduced.

Comprehensive technical support from Lindapter's experienced engineers includes a free connection design service to assist façade engineers through an efficient specification process, and extends to contractors with site visits (upon request) and installation advice.

Contents

The Lindapter design and support service includes:

Free design proposal → 2D / 3D drawings → Quotation → Supply → Installation guidance → Ongoing support

This brochure provides examples of cladding fixing assemblies, designed for permanent applications. Please contact Lindapter to discuss your connection requirement.

Structural Steel Frames

Hot rolled structural sections are manufactured with inevitable variations in exact dimensions, while steel erection techniques will create unavoidable tolerances in straightness along beam length and other dimensions. Accurate adjustability during installation is therefore an essential prerequisite of the cladding support system.

Lindapter facilitates this requirement with convenience, allowing the cladding contractor to simply slide the bracket or other fixing assembly along a vertical or horizontal structural beam with precise alignment, before tightening the Lindapter components with a torque wrench. This method enables the rapid installation of large areas of cladding and significantly reduces the period of crane operation.

The following pages provide examples of connecting façade panels to structural sections. The illustrations highlight the many possibilities of securing panel brackets and threaded bar fixing assemblies. Please feel free to contact Lindapter's Technical Support Department to discuss your specific connection requirement.

Recommended products:


Type A


Type B

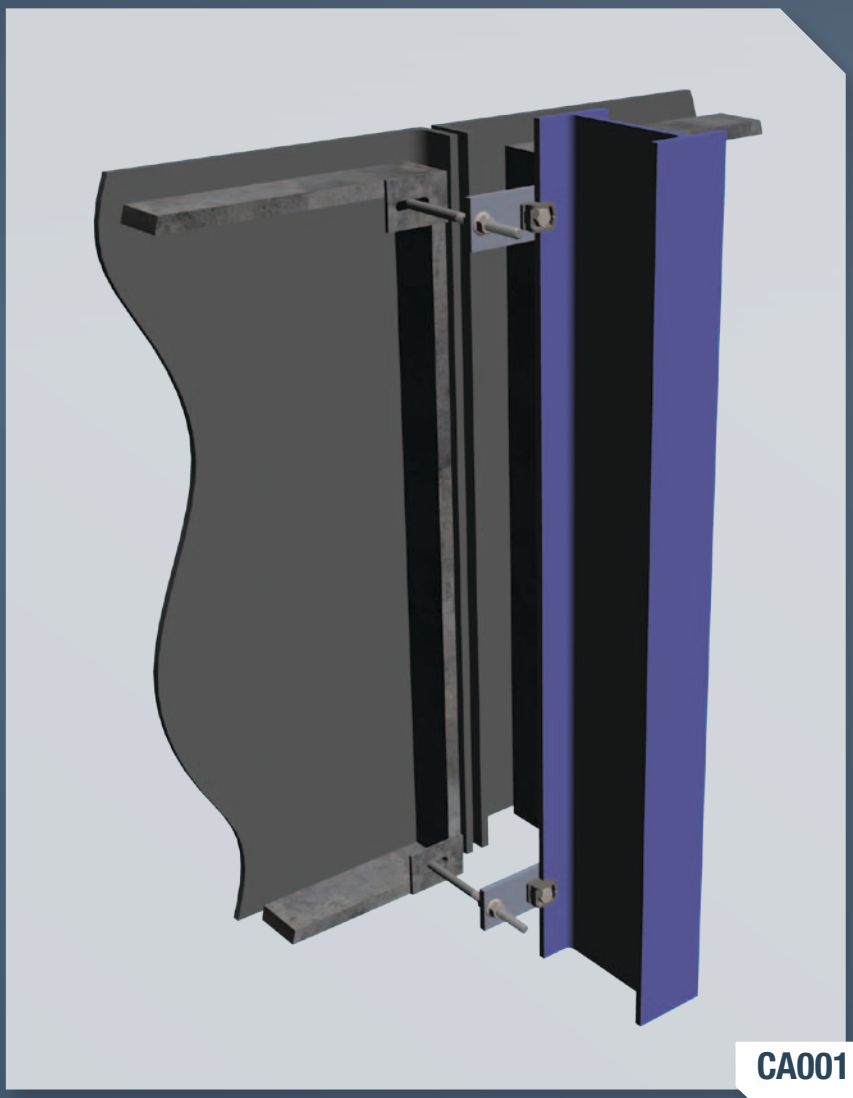

Type LR


Type AF

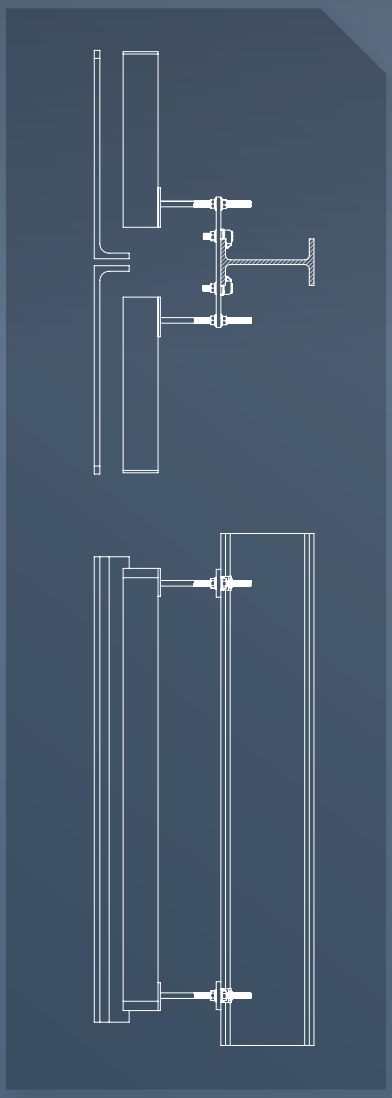

Type CF


Type LS

Please refer to the Lindapter catalog or website for full product data.



CA001

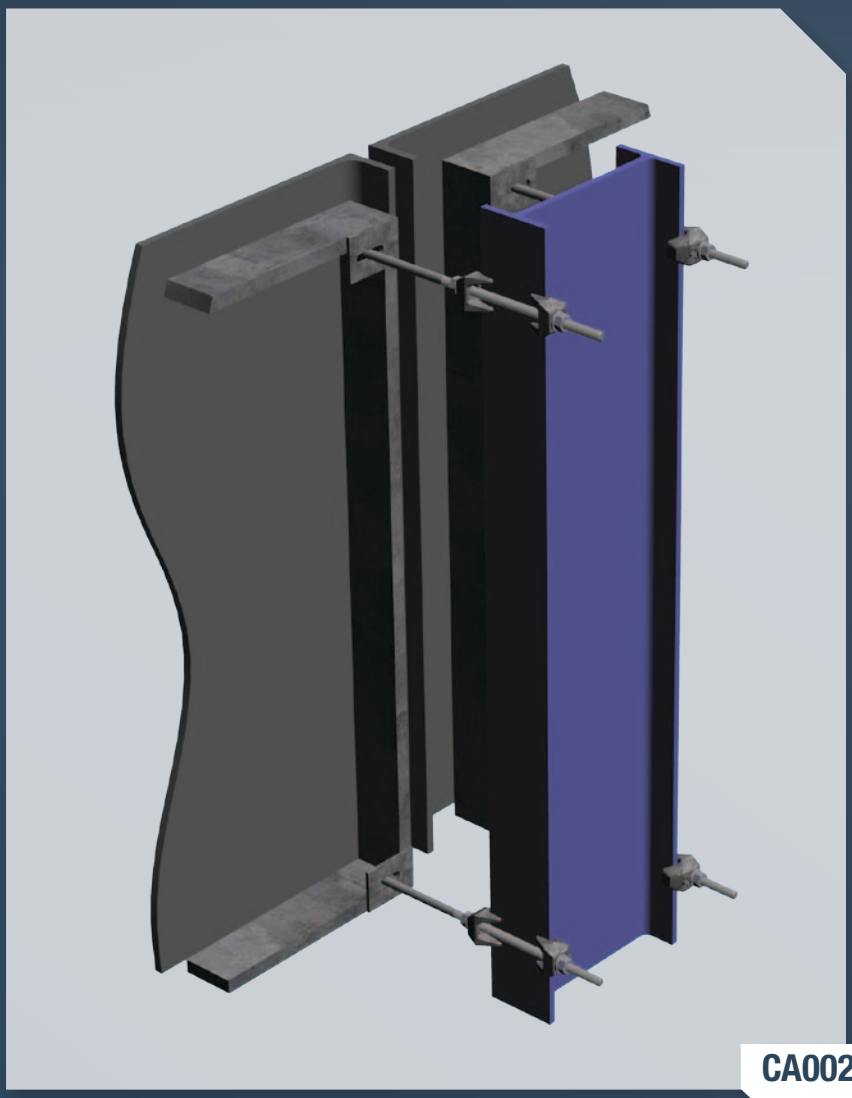


Lindapter Type A clamps connect the stud frame of glass reinforced concrete (GRC) panels to structural steel. The Type A holds the bolt head captive during tightening of the nut for ease of installation. The clamping arrangement allows vertical and horizontal adjustment of the panels on-site.

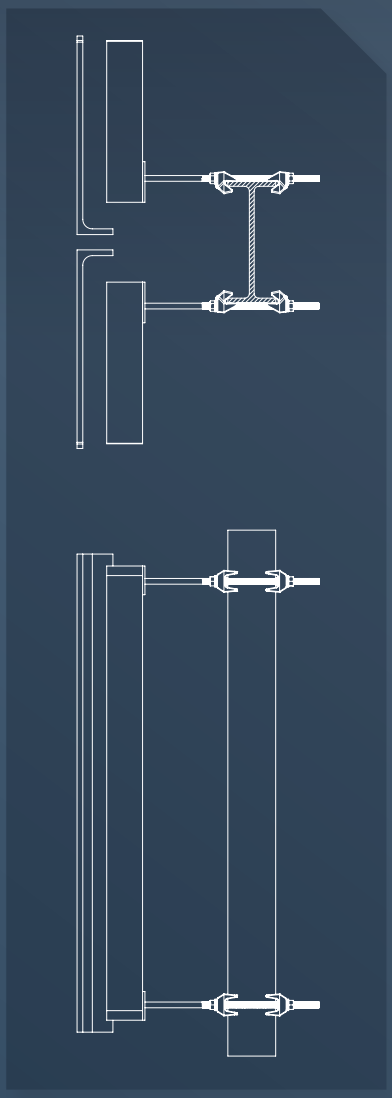
GRCA

The fixing assembly above is reproduced from the 'Practical Design Guide for Glass Reinforced Concrete' published by the the International Glassfibre Reinforced Concrete Association (GRCA). The guide is available from the GRCA website: www.grca.org.uk/publications.

Structural Steel Frames



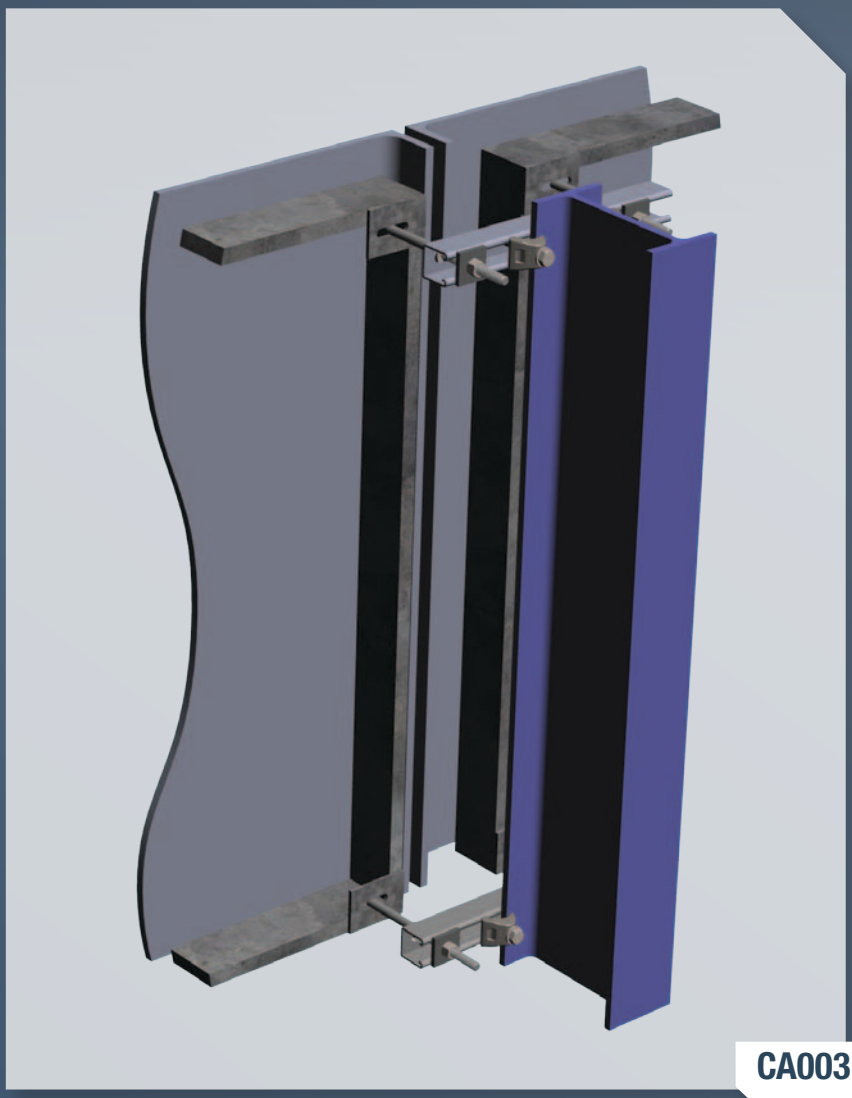
CA002



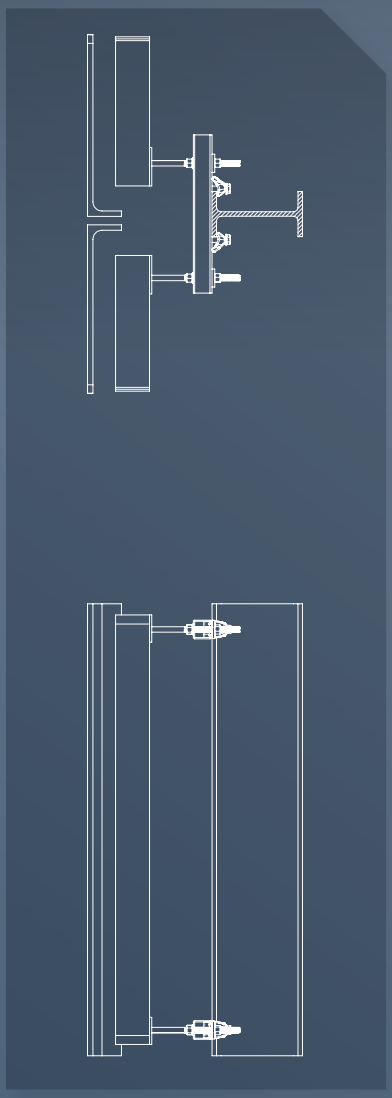
Type CF high friction clamps hook around the flanges of the vertical steel section to secure the stud frame of GRC panels. The fixing assembly allows vertical and horizontal adjustment of the panels on-site.

GRCA

The fixing assembly above is reproduced from the 'Practical Design Guide for Glass Reinforced Concrete' published by the the International Glassfibre Reinforced Concrete Association (GRCA). The guide is available from the GRCA website: www.grca.org.uk/publications.



CA003

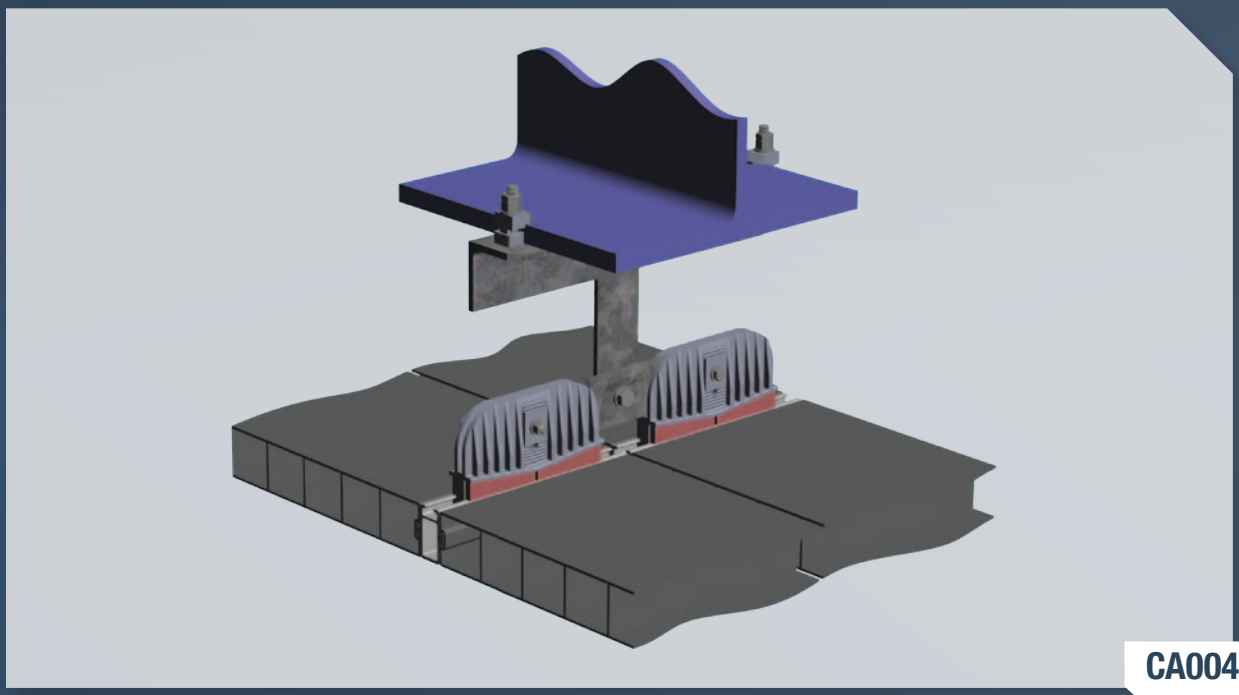


Lindapter's stainless steel Type LS secures a metal framing section in a friction application. The clamp is self-adjustable, allowing a single product to fit various beam thicknesses, with the tail spanning the recess of the strut to maximize the clamping range. The fixing configuration facilitates adjustability on three axes.

GRCA

The fixing assembly above is reproduced from the 'Practical Design Guide for Glass Reinforced Concrete' published by the the International Glassfibre Reinforced Concrete Association (GRCA). The guide is available from the GRCA website: www.grca.org.uk/publications.

Structural Steel Frames



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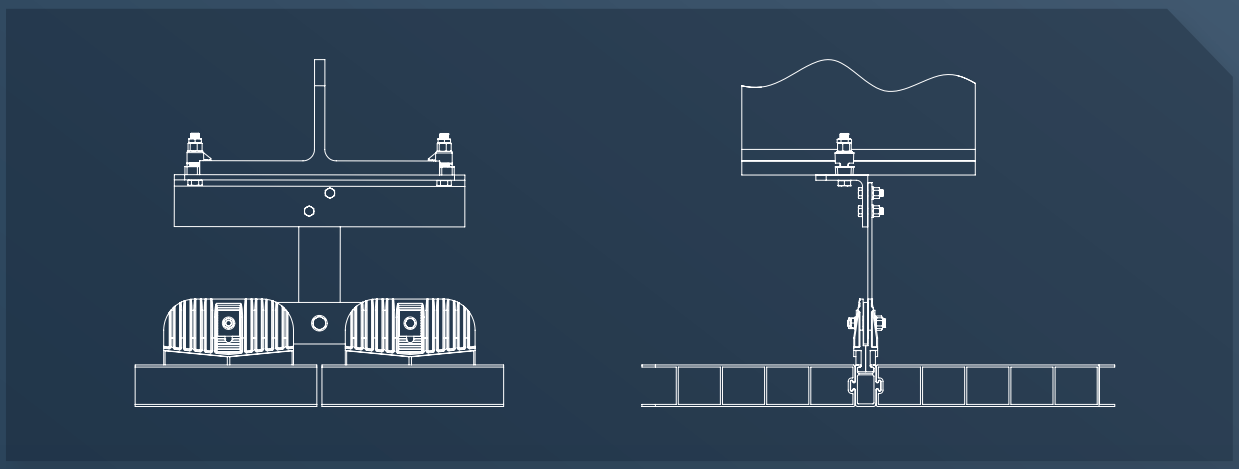
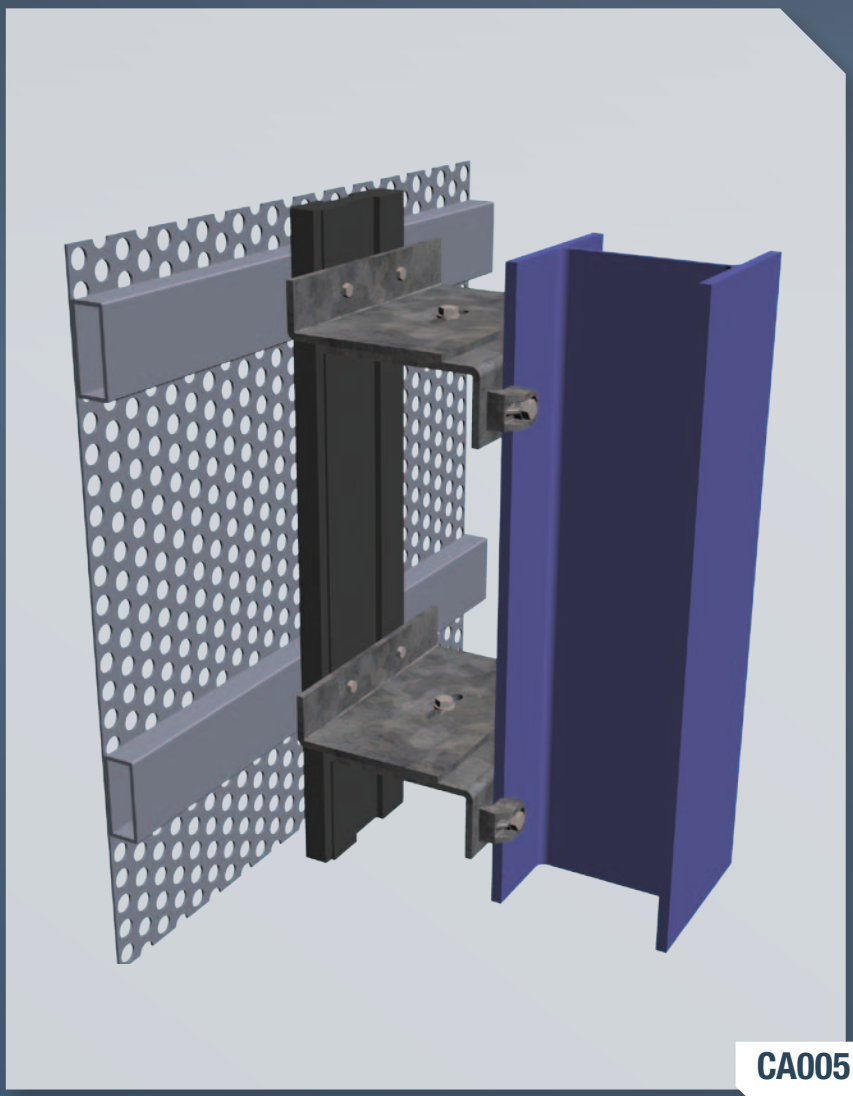
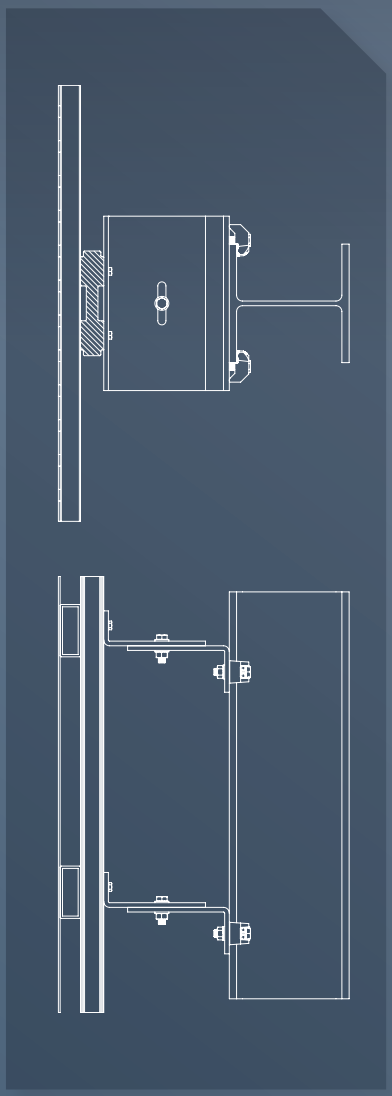


A GRP enclosure system is suspended below a bridge soffit using Type B fixings. The connection simplifies lateral adjustment along the supporting steel.

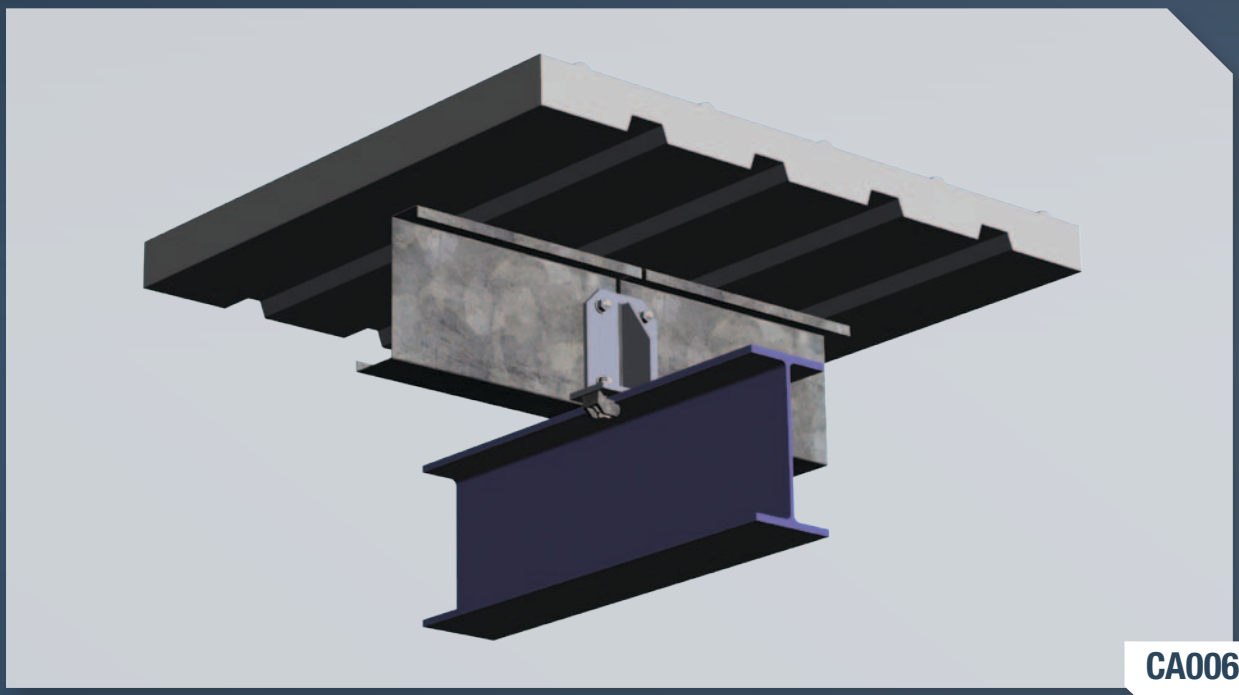


CA005



Lindapter's high performance Type AF connects the framework of perforated steel cladding to vertical columns. The bracket arrangement allows vertical and lateral adjustment. The Type AF performs excellently in friction applications. Please refer to the Lindapter catalogue for product specification data including Safe Working Loads.

Structural Steel Frames



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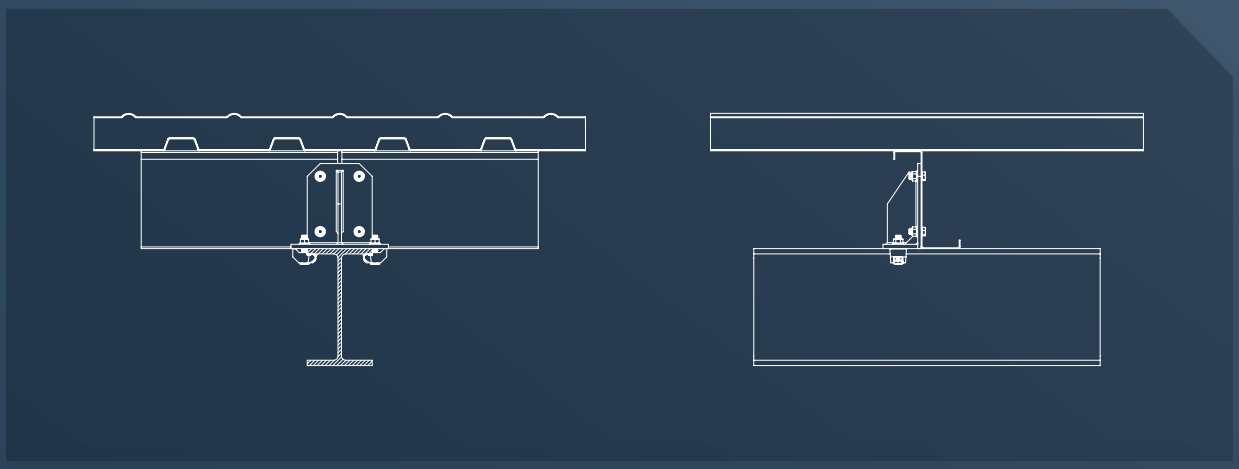
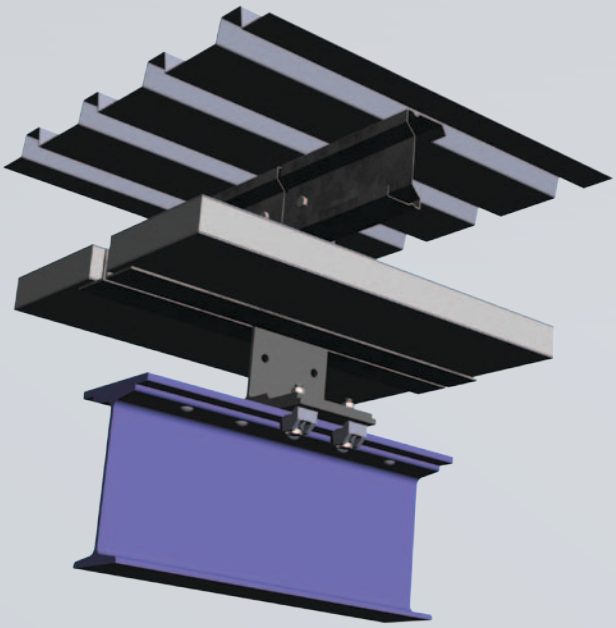


Roofing support cleats connected to a structural steel frame. The adjustable arrangement allows accurate positioning of the purlins.



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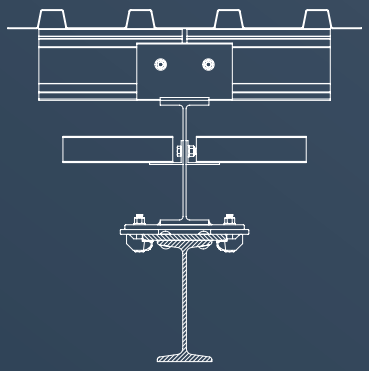
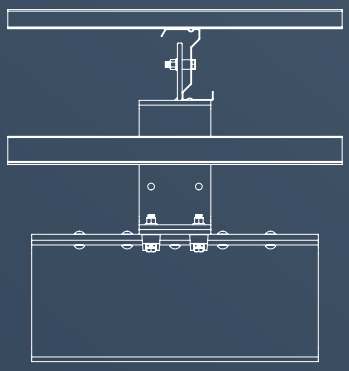
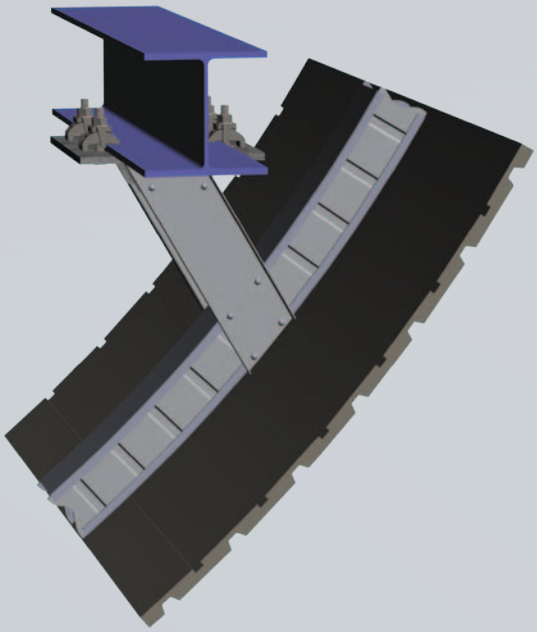




Lindapter's Type AF, as specified to connect roofing supports to an existing structural frame. The fixing system permits lateral adjustment during installation and provides a high frictional safe working load.

Structural Steel Frames



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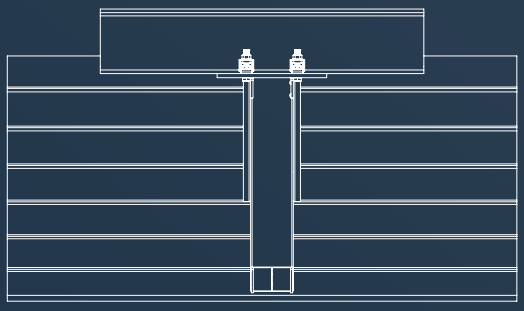
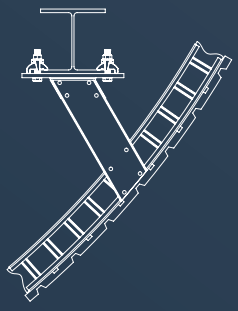
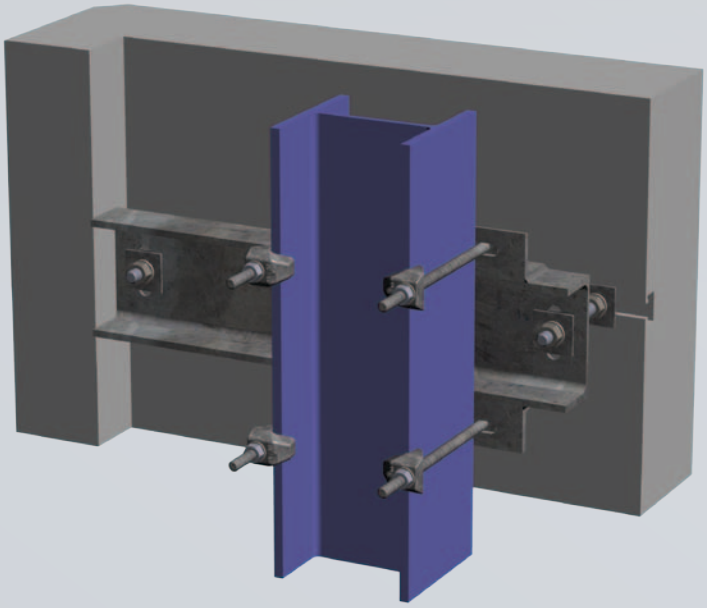




A roof canopy frame of a sports stadium is secured to primary structural steel with self-adjustable Type LR clamps. The fixings are compatible with a range of flange thicknesses and the use of slotted location plates allows easy alignment of the soffit panels.



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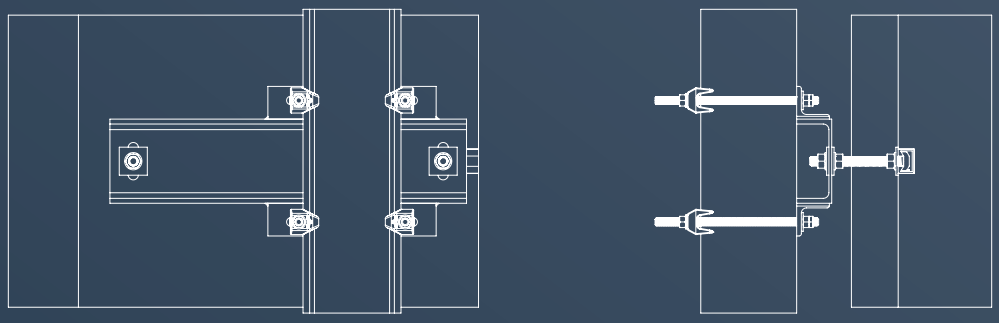


Sandstone faced precast concrete panels are connected to the structural steel of a new retail park development. The fixing assembly uses Lindapter Type CF high friction clamps, permitting simple vertical adjustment during the installation process.

Hollow Section (HSS) Connections

Square/rectangle Hollow Section Steel (HSS) is a popular material amongst architects, with many contemporary designs featuring the exposed smooth profiles of the structural steel to enhance the aesthetics of a building.

Responding to industry demand for a faster alternative to welding or through-bolting, Lindapter invented the Hollo-Bolt®, a structural expansion bolt specifically designed for primary or secondary connections of HSS. The Hollo-Bolt is particularly well suited to external or internal glazing support frames due to its discreet profile. Installation is carried out quickly and safely by inserting the product into pre-drilled holes then tightening to the recommended torque using only hand tools.

CE The entire Hollo-Bolt range has been awarded CE certification, independently verifying product performance in safety critical applications. Hexagonal, Flush Fit, Countersunk and Button/Security head variants in lengths 1, 2 and 3 are covered by ETA-10/0416. For more information visit: www.lindapter.com/about/ce

This section of the brochure provides examples of cost efficient methods of connecting façade panels and curtain walls to HSS. The Hollo-Bolt can be used in a wide range of primary or secondary connections, including specialist applications such as blast resistance cladding. Please contact Lindapter's Technical Support Department to discuss your specific connection requirement.

Recommended products:


Hollo-Bolt Hex

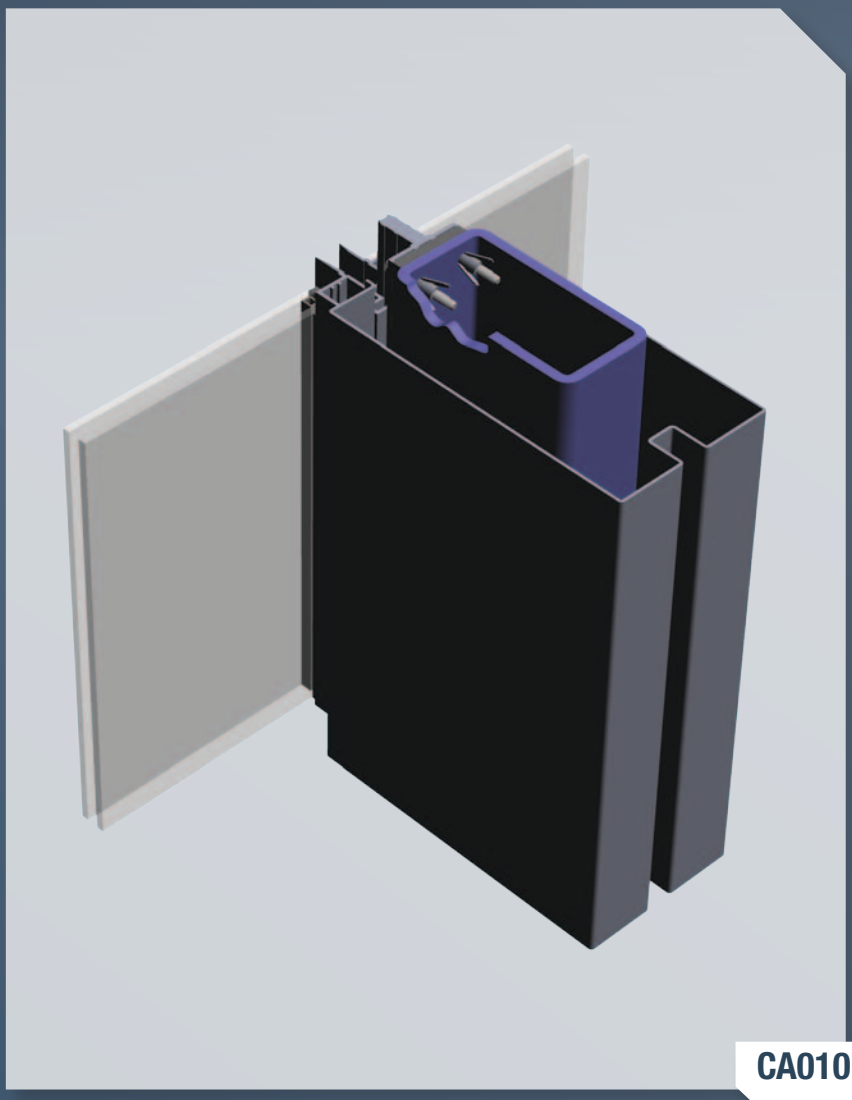

Hollo-Bolt HCF


Hollo-Bolt CSK (Head)


Hollo-Bolt Flush Fit


Type LB2 Lindibolt 2

Please refer to the Lindapter catalog or website for full product data.



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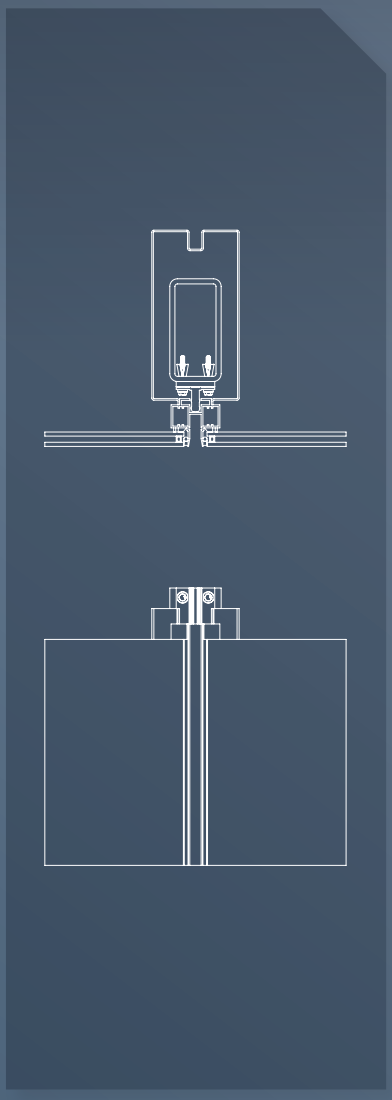
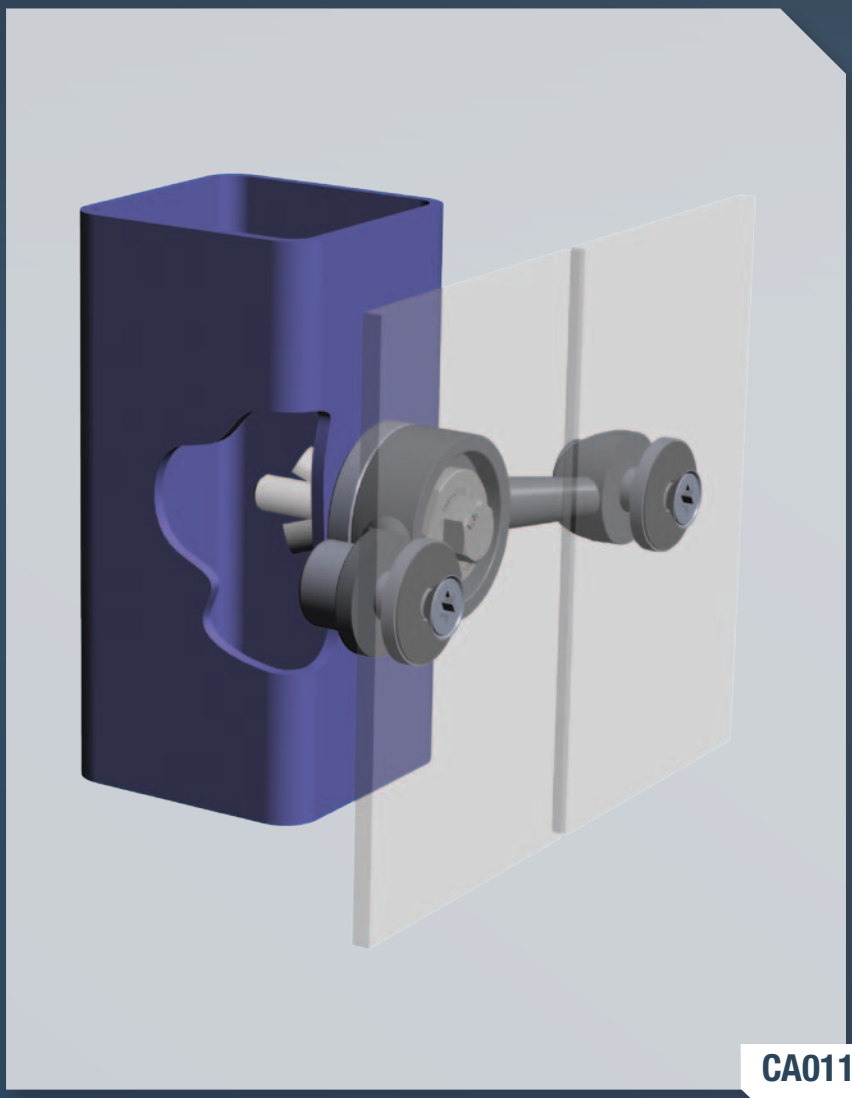


The Hollo-Bolt, Lindapter's flagship expansion bolt, is designed to connect to HSS. In this application, a glazing system is attached to vertical HSS columns.

Hollow Section (HSS) Connections



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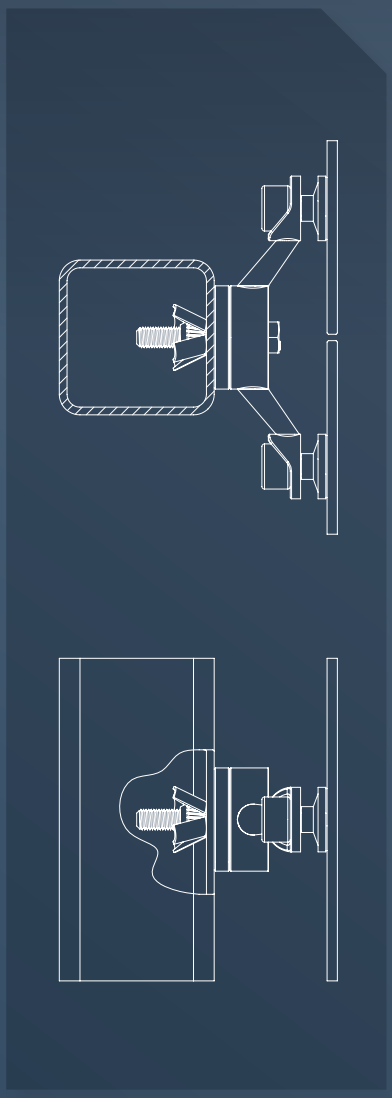
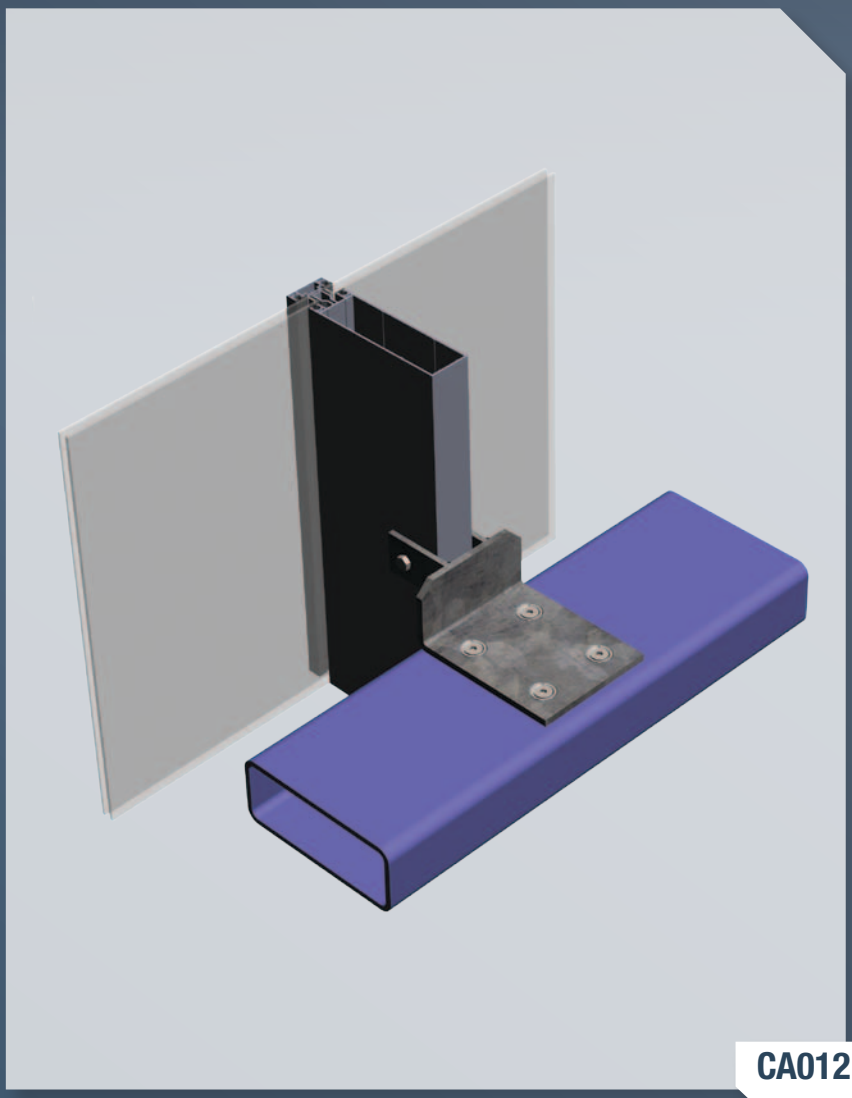


A two arm spider bracket is connected to HSS, allowing a frameless glazed atrium to be presented with style.



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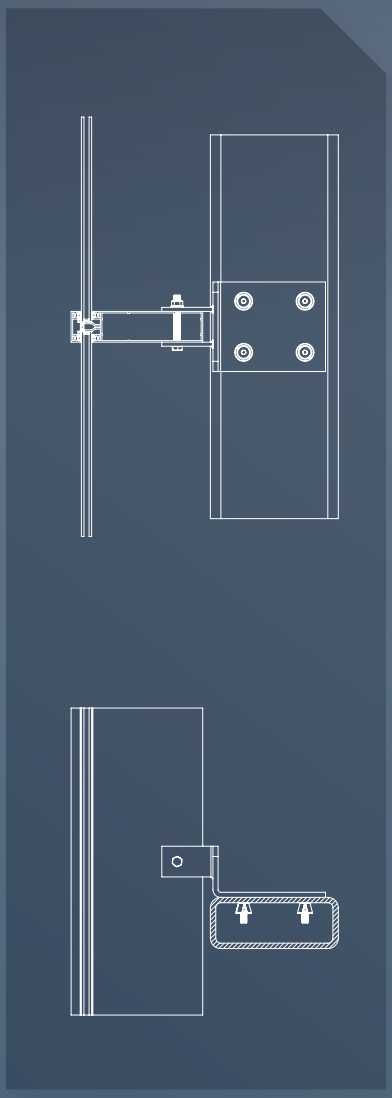
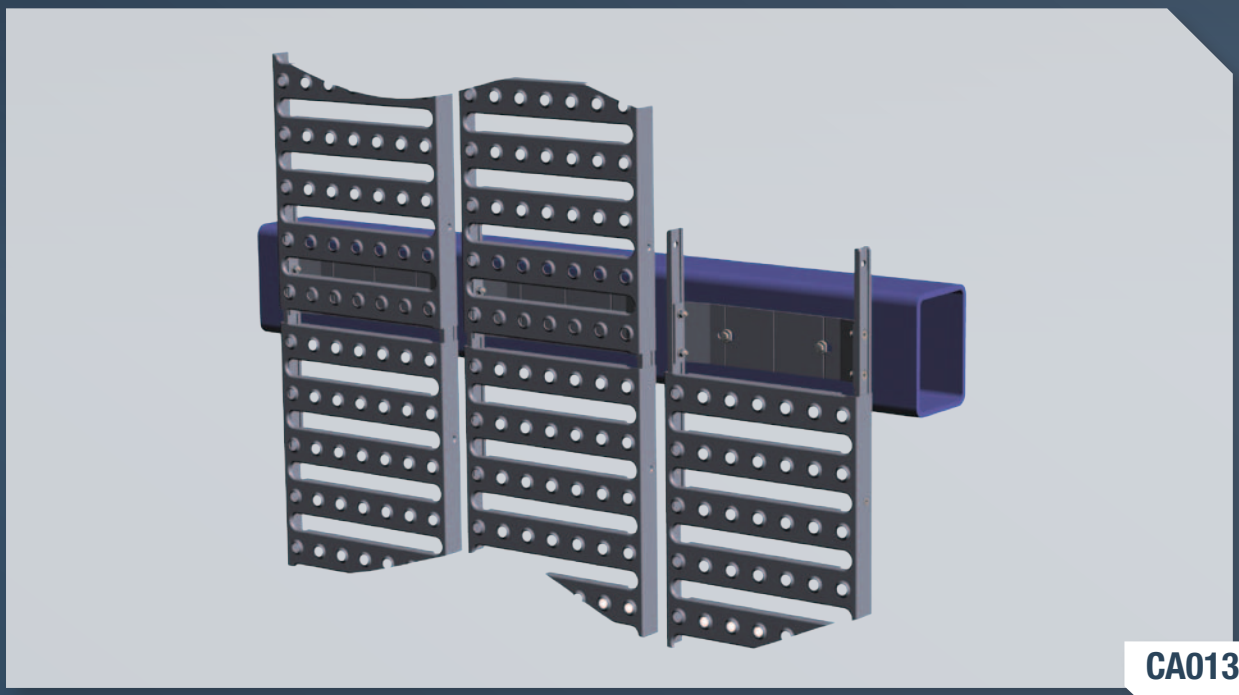


A curtain wall system is secured to horizontal HSS with the Hollo-Bolt Flush Fit. The discreet expansion bolt is concealed within the bracket and supporting steel for an aesthetically pleasing finish.

Hollow Section (HSS) Connections



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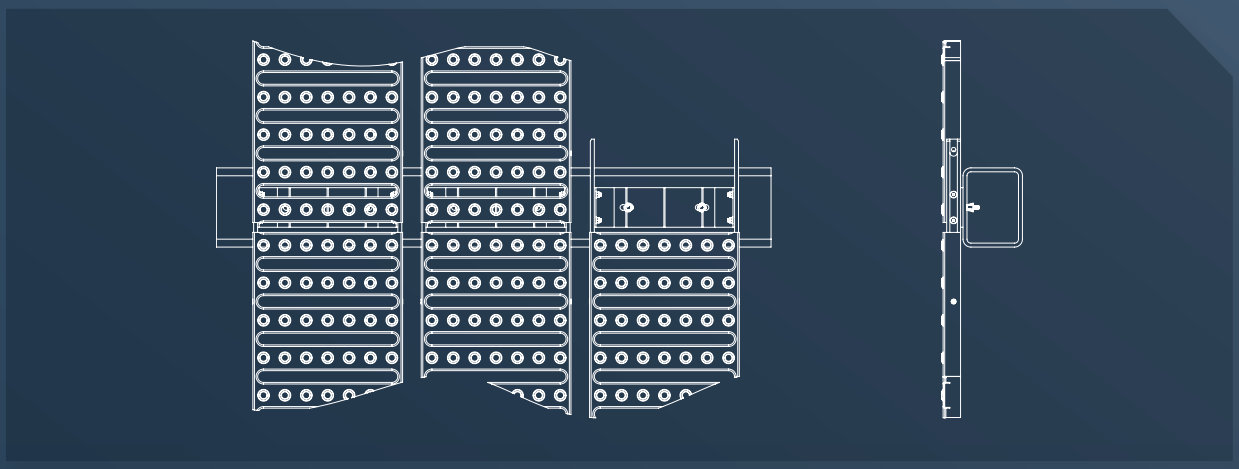
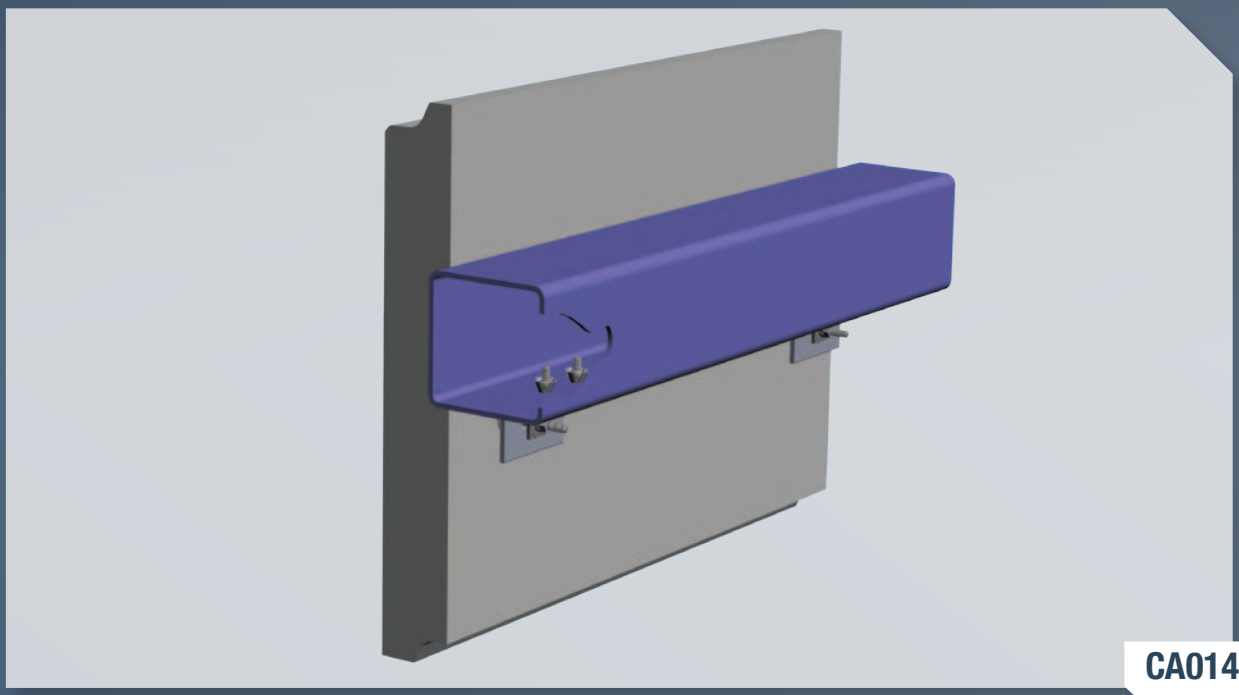


Lindapter's Hollo-Bolt connects perforated steel cladding to horizontal HSS. This arrangement allows simple vertical and lateral adjustment for precise alignment of the panels.



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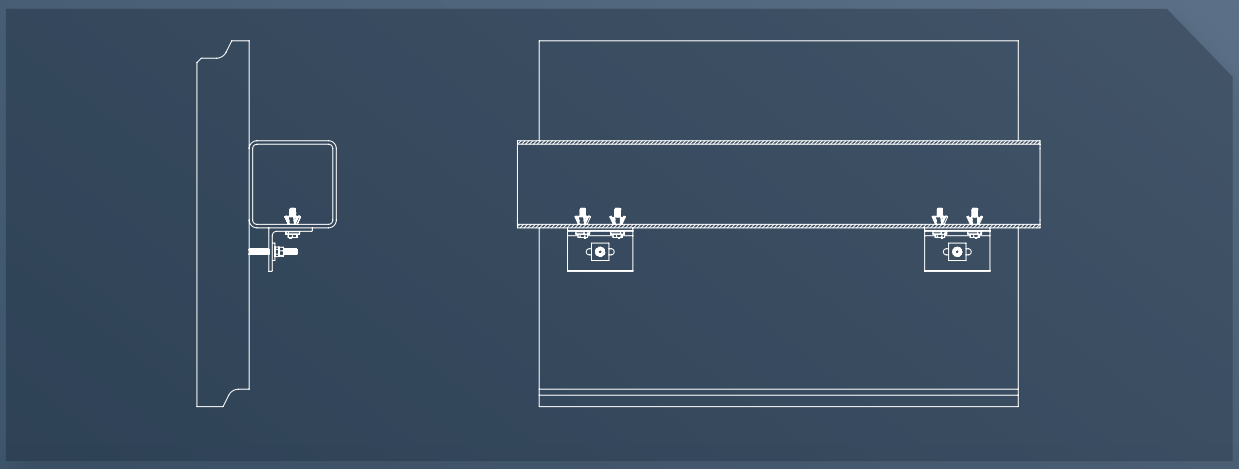


Insulated wall panels attached to HSS using a simple angle bracket and Lindapter Hollo-Bolts.

Steel Connections

Behind a structure's façade, there is often secondary steel framework. Lindapter Girder Clamps provide a faster alternative to traditional connection methods, compatible with almost any shape and size of section, in a wide variety of applications.

The Girder Clamp symbolizes Lindapter's philosophy perfectly; boldly challenging the need to drill or weld, when a safe, high strength connection can be quickly accomplished by clamping two steel sections together.

Although the concept is simple, Lindapter products undergo complex design and testing as the experienced Research & Development team constantly refine, improve and invent to achieve greater product performance, verified by independent product approvals.

The following pages show typical applications. Please refer to the Lindapter catalogue / website for further examples, or contact Lindapter's Technical Support department to discuss your connection requirement.

Recommended products:


Girder Clamp


Type A


Type B

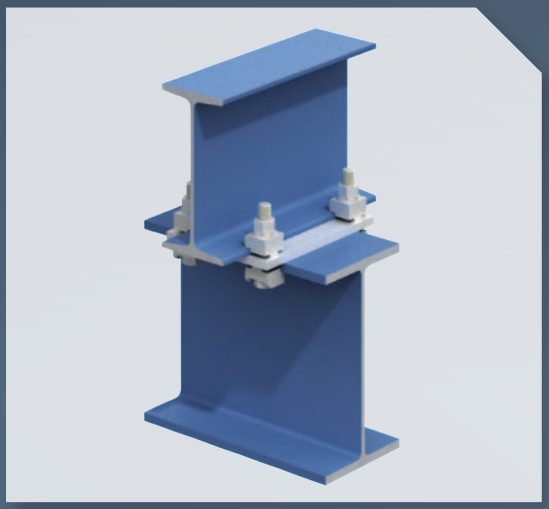

Type LR

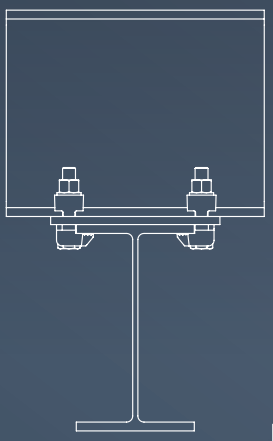

Type AF


Type CF

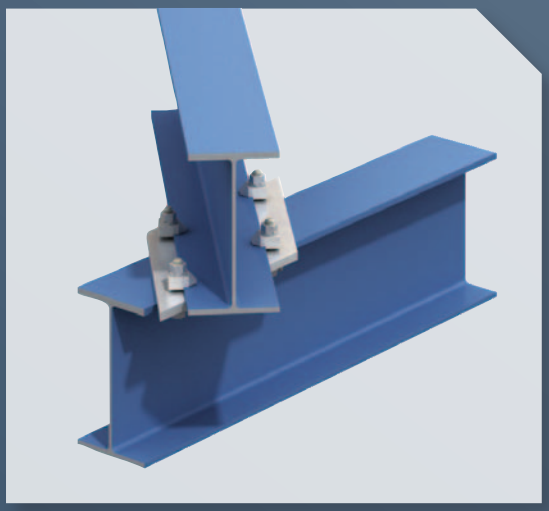

Type LS

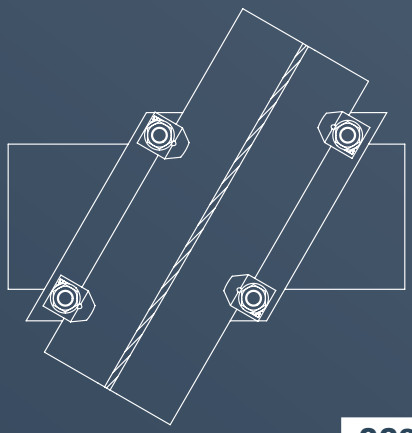
Please refer to the Lindapter catalog or website for full product data.



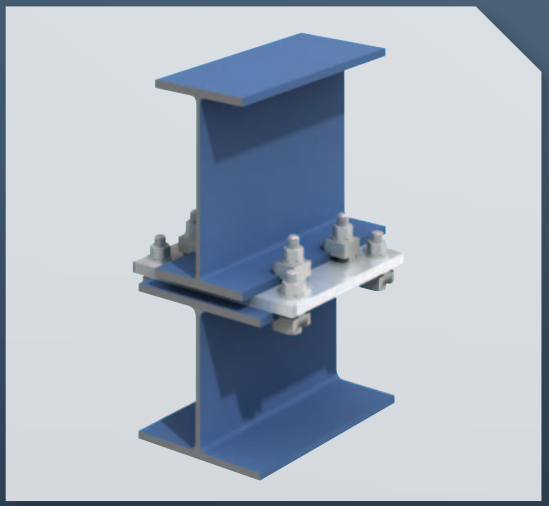


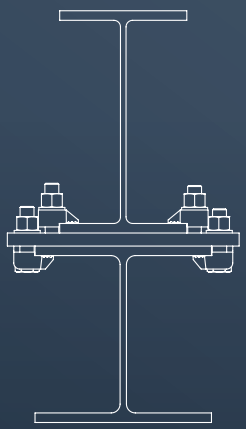
GC001-1





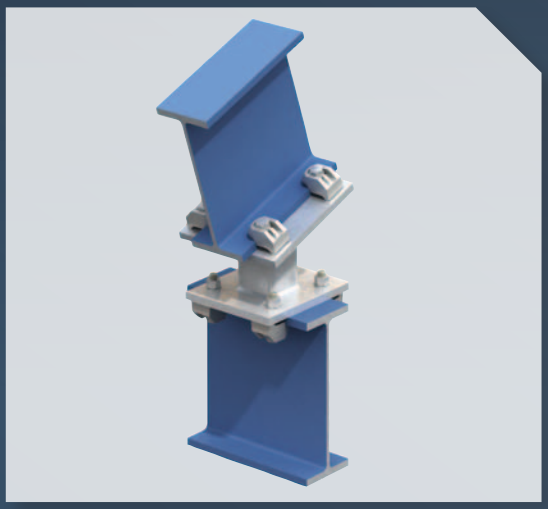
GC001-4

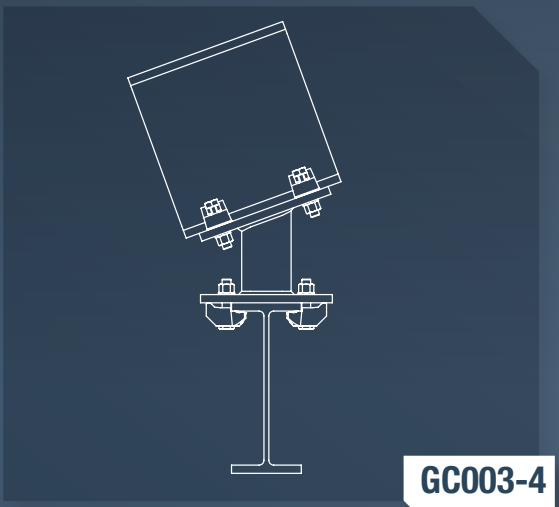




GC002-3

Steel Connections





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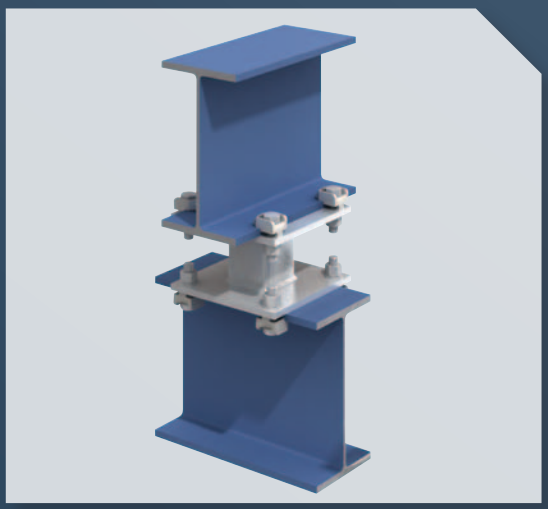

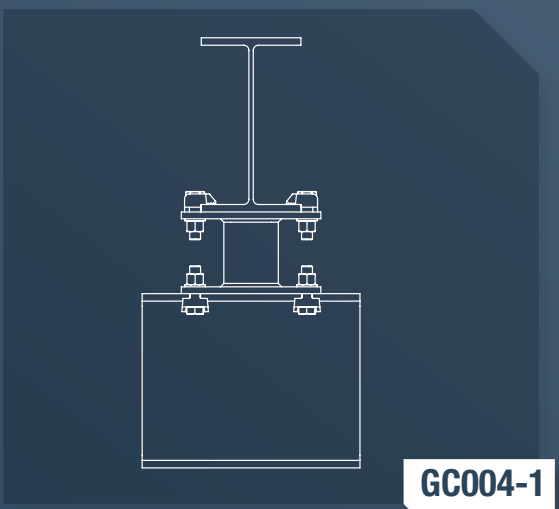

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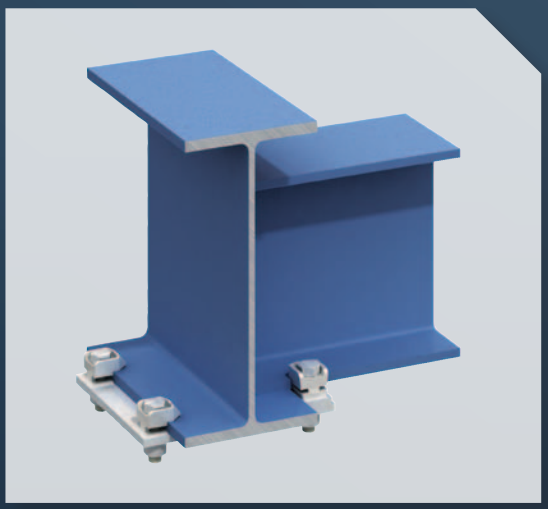

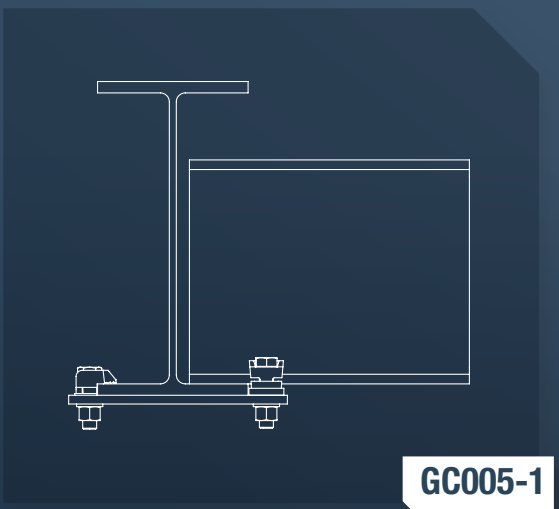

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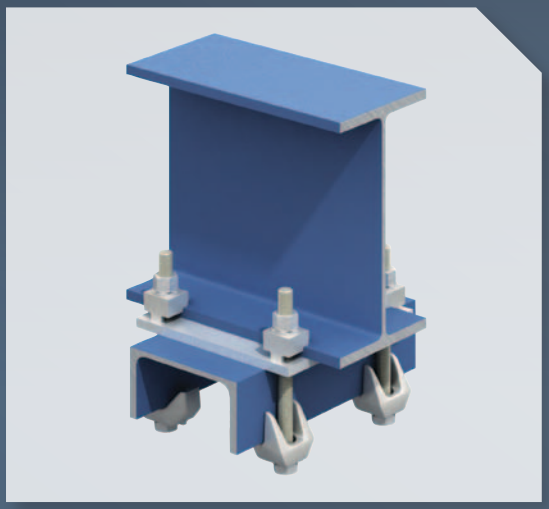

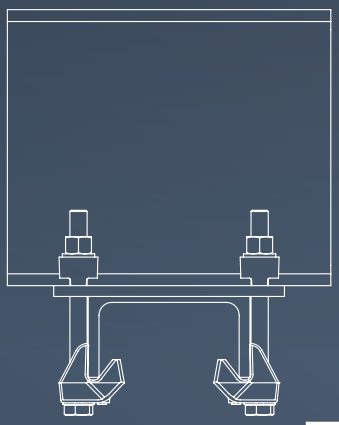

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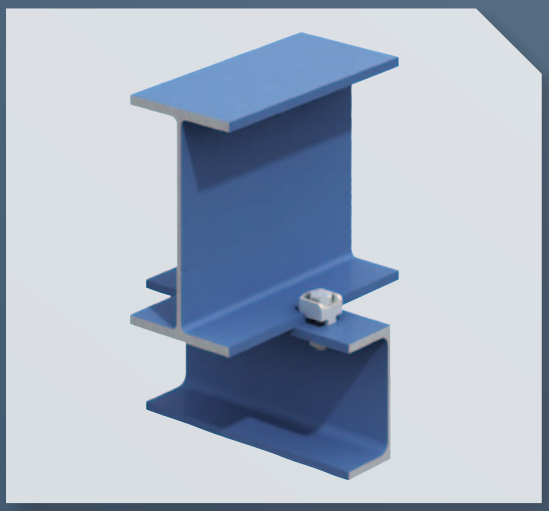

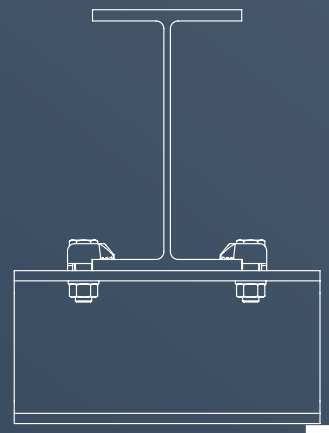

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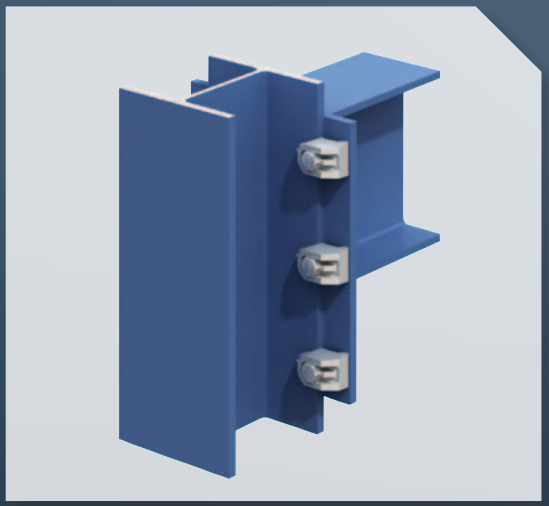

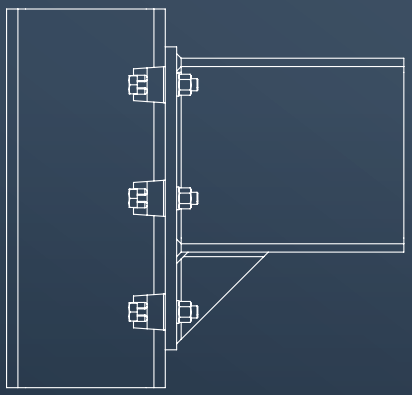

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Experience

Location	Project	Application	Product
Australia	Eureka Tower, Melbourne	Exterior Sculptures	HB
Canada	The Bow, Calgary	Façade	HB
France	Société Générale Salle des Marchés, Paris	Glazing	HB
Germany	Esprit Arena, Düsseldorf	Roof	HB
Germany	Evonik Park, Herne	Façade	AF
Germany	Federal of Ministry Transport, Berlin	Glass Façade	A & B
Germany	Furniture Store, Uelzen	Glass Façade	HB
Germany	Garmisch Partenkirchen Ski Jump, Bavaria	Façade	A & B
Germany	Gas Station, Münster	Roof Façade	HB
Germany	HafenCity, Hamburg	Glazing	HBFF
Germany	Military Historical Museum, Dresden	Glass Façade	HB
Germany	Police Helipad, Frankfurt	Façade	HW / HC
Germany	Porsche, Leipzig	Façade	HB
Germany	Seminar Centre, Duisburg	Glass Façade	A & B
Germany	Shopping Centre, Heilbronn	Façade	A & B
Germany	Sparkasse Heilbronn	Exterior Sculptures	HB
Germany	Train Station, Dresden	Roof Façade	HB
Germany	Train Station, Wiesbaden	Roof Façade	HB
Holland	Train Station, Leiden	Roof	A
Ireland	Dublin Airport Terminal 2, Dublin	Aluminum Curtain Walling	HB
Ireland	Rugby Stadium, Dublin	Roof Façade	HB
Italy	Armani Hotel, Milan	Cladding	A
Italy	Progetto Portello, Comparto U3, Milan	Façade	A
Luxembourg	Swimming Pool, Luxembourg	Façade	HB
Qatar	NDIA Aircraft Maintenance Hangar, Doha	Aluminum Curtain Walling	HB
Singapore	Marq Project, Singapore	Curtain Walling	HB
Switzerland	Learning Center, Lausanne	Glass Façade	A & B
UAE	Financial Centre, Abu Dhabi	Glass floor	LS
UAE	World Trade Centre, Dubai	Roof	A
UK	Cabot Circus, Bristol	Glazing	HB
UK	Crown Square Courts, Manchester	Glazing	HB
UK	Inland Revenue, Cumbernauld	Cladding	LB2
UK	Piccadilly Station, Manchester	Roof	A & B
UK	Sainsbury's, Newcastle under Lyme	Glazing	HB
UK	St David's Shopping Centre, Cardiff	Façade	LR
UK	St Pancras Station, London	Glazing	A & B
USA	Minnesota Twins Ball Park, Minneapolis	Canopy Soffit	LR

Case Studies

St David's Shopping Center **Cladding**

Location: Cardiff, UK

Lindapter Type LR clamps were used to attach the precast concrete cladding panels to primary steelwork as part of the $1bn expansion of St David's Shopping Center in Cardiff.

The consulting engineers invited Lindapter to design a bespoke adjustable fixing system to facilitate the accurate positioning of precast concrete cladding panels on this major retail construction project. Lindapter proposed a solution comprising of a steel bracket with slotted holes that could be clamped to the structural members with Type LR fixings. The cladding panels could then be lifted into place and connected back to the same steel bracket, with the fixing system providing convenient adjustability on three axes.

The design was promptly approved and Lindapter supplied 534 pre-assembled connection systems, fitted with size 5/8" Type LR clamps, to secure the entire sandstone faced façade. The highly adjustable system not only simplified the positioning of the panels, but the self-adjusting capability of the Lindapter Type LR allowed this specification to be standardized to accommodate dimensional variations of the structural steel.

Stephen Maddalena, Chairman and Joint M.D. of the Marble Mosaic Company, who designed, manufactured and installed the precast cladding panels, highlights the benefits of specifying Lindapter:

"Given the project's construction and programme constraints, the use of Lindapter's connectors provided an eminently practical means of attaching the precast cladding panels to its structural steel frame and the helpful support of Lindapter's team proved to be especially valuable in developing this solution"

St David's opened on schedule to become home to 88 new stores. The clean and contemporary appearance of this landmark British Shopping Center has made a bold contribution to the rejuvenation of the Welsh capital.

Approvals

Quality

Accredited to ISO 9001 since 1986, Lindapter strictly enforces a quality management system that includes vigorous product testing to ensure consistently high manufacturing standards.

Q 05143

Environment

Lindapter operates an ISO 14001 certified environmental management system and constantly monitors and improves aspects of the business that may have an impact on the environment, including the use of natural resources, the handling and treatment of waste, and energy consumption.

EMS 546660

Approvals

Lindapter has manufactured to the highest standard for over three quarters of a century, earning a multitude of independent approvals and a reputation synonymous with safety and reliability. Current accreditations include:

CE Marking
For Lindapter products in compliance with the provisions of the EC Construction Product Directive 89/106/EEC, please refer to the website: www.lindapter.com/about/ce

Deutsches Institut für Bautechnik is a body that approves construction products for use in structural and civil engineering industries in Germany.

Lloyd's Register Type Approved products have been subjected to tensile, frictional, shear, vibration and shock tests, witnessed and verified by Lloyd's Register.

TÜV NORD is the certifying authority for safety, quality and environmental protection in Germany.

Det Norske Veritas has approved the use of Lindapter products in lifting applications. This includes their use on both mobile and fixed offshore installations.

Factory Mutual, the American insurance organisation, offers an approval which is recognized by the fire protection industry world-wide.

Verband der Schadenversicherer e.V. is one of Germany's leading independent testing institutions for products used in fire protection applications.

Lindapter is a member of the following organizations:

American Institute of Steel Construction

British Constructional Steelwork Association

The Steel Construction Institute

Technical Support

Experienced engineers offer an unrivalled support service, including free design and custom new product development. Lindapter's philosophy is to deliver the highest quality at every stage of the service, from initial connection design to installation guidance.

- Specialist advice from experienced engineers
- Free connection design based upon your requirements
- Custom drawings delivered in 2D and interactive 3D formats
- CAD files available to import into all major software applications
- Contractor training and on-site visits (where required)

Engineered Solutions

- Design and development of custom products, manufactured to Lindapter's exacting standards
- Thoroughly tested with detailed reports

(Above) *One of two 224,800lbs testing machines in Lindapter's Research & Development Facility*

(Left) *An example of Lindapter's custom interactive 3D drawings, just one part of the connection design service on offer*

Ask Lindapter to design a solution to your connection requirements:

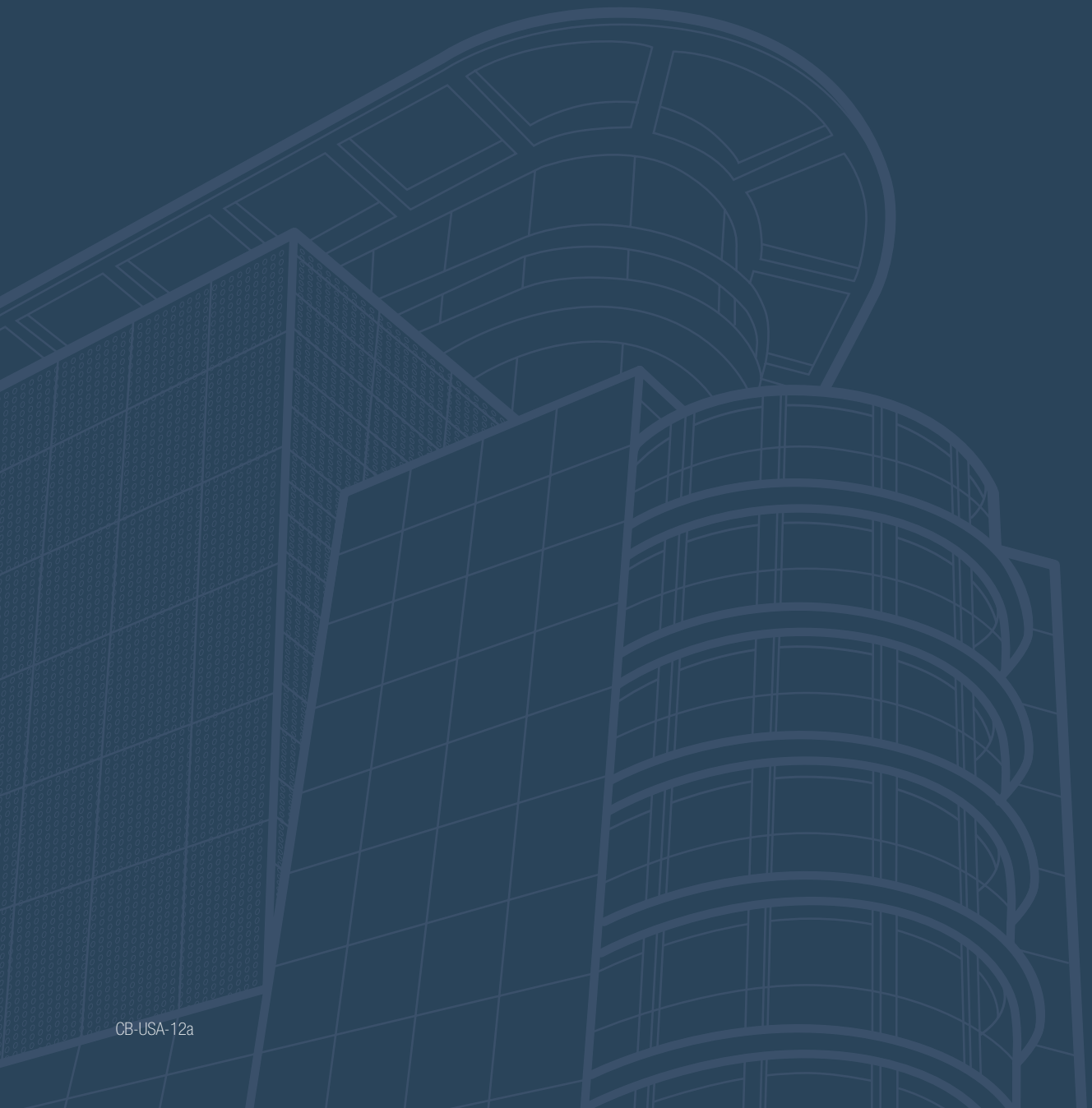
Technical Support: support@lindapterusa.com
General Enquiries: inquiries@lindapterusa.com

lindapter®

Ask Lindapter to design a solution to your connection requirements:

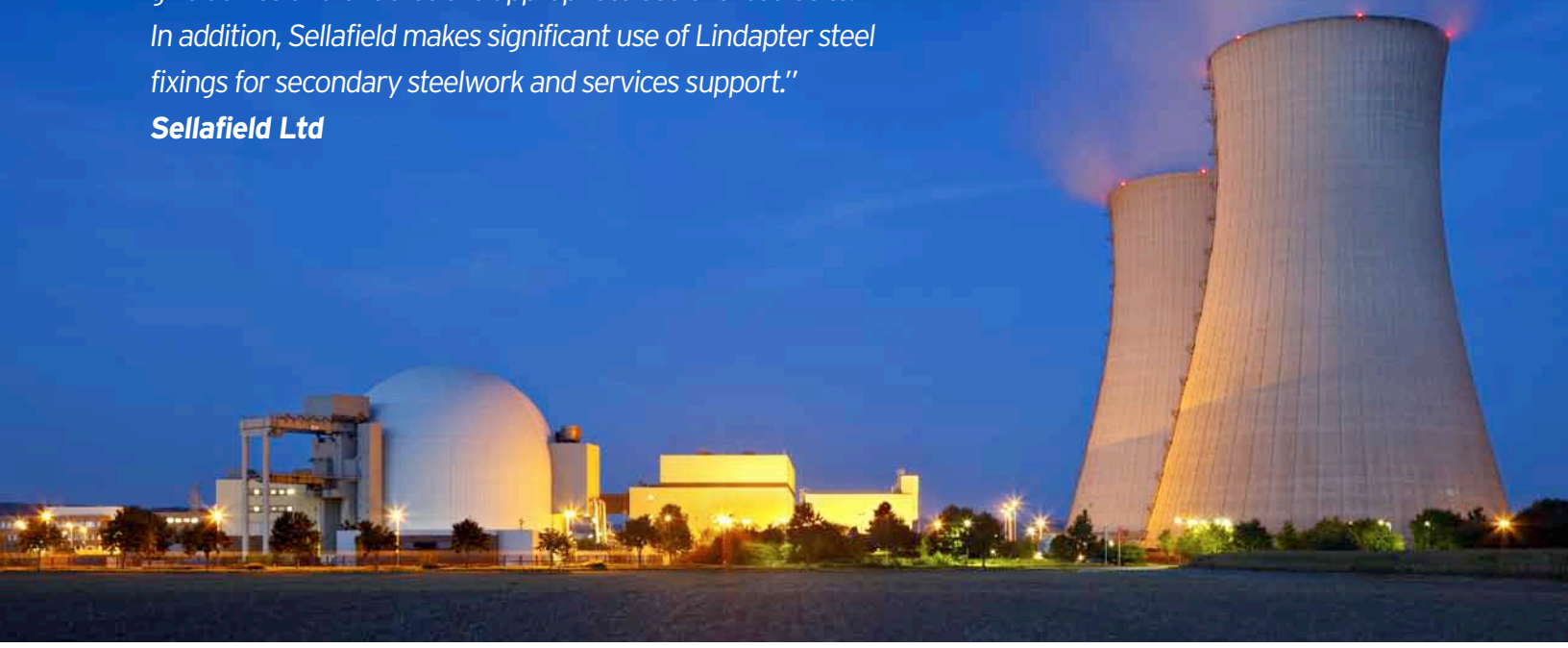
Technical Support: **support@lindapterusa.com**
General Enquiries: **inquiries@lindapterusa.com**

www.lindapterusa.com



Lindapter Connections for
NUCLEAR SITES

"Sellafield Ltd have utilized Lindapter Hollo-Bolts in a number of facilities particularly within RHS connections. A Good Practice Note (Ref: CS&A GPN 005) has been issued by Sellafield Ltd to give advice and endorse the appropriate use of these bolts. In addition, Sellafield makes significant use of Lindapter steel fixings for secondary steelwork and services support."
Sellafield Ltd



BENEFITS

- ✔ No on-site drilling or welding
- ✔ On site adjustability
- ✔ Hot Work Permits not required
- ✔ Installation requires hand tools only
- ✔ Reduced installation time and cost
- ✔ Independently approved safe working loads

TYPICAL APPLICATIONS

- › Pipe Supports
- › Electrical & Instrumentation
- › Structural Steel
- › Steel Floor Connections
- › Façade Applications

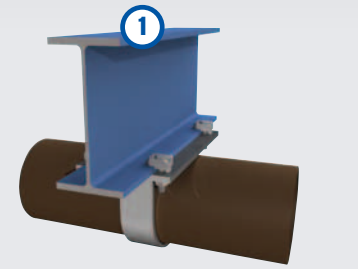
See inside for more information...

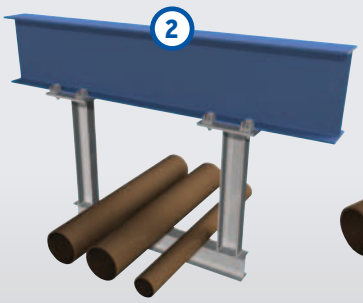
lindapter®

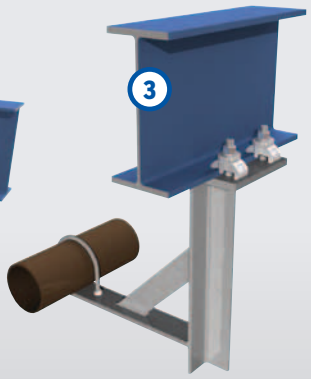
PIPE SUPPORTS

Lindapter support assemblies allow piping to be simply clamped to structural or secondary steel sections, for fast, safe installation. Piping can be installed without drilling or welding and with no interference to plant productivity. The ability to adjust Lindapter assemblies on-site is particularly beneficial as pipes can be easily positioned for speed and convenience.

TYPICAL APPLICATIONS & LINDAPTER CONNECTIONS TO SUIT...



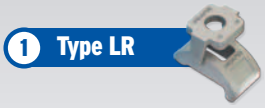


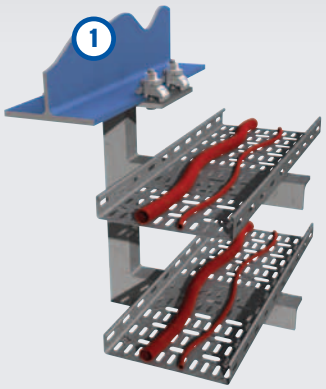


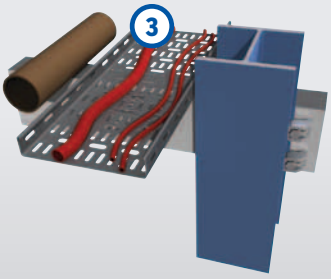
ELECTRICAL & INSTRUMENTATION

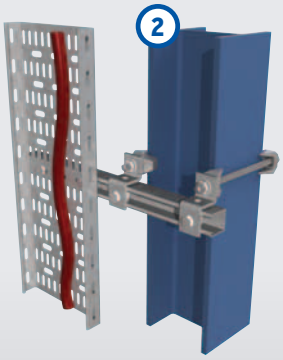
Lindapter provides assemblies for supporting cable trays, pipe work, fire protection/sprinkler systems and electrical equipment from primary or secondary beams. Cable trays or equipment can be secured in simple tensile arrangements, or in vertical column applications withstanding frictional loads. Fast adjustability allows multiple cable tray / ladder systems to be easily set up to intersect one another.

TYPICAL APPLICATIONS & LINDAPTER CONNECTIONS TO SUIT...









STRUCTURAL STEEL

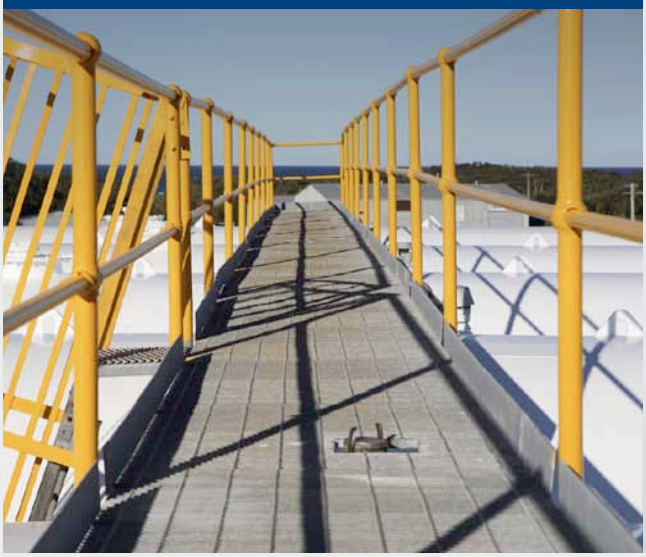
Remove the need for hot-working permits with Lindapter weld-free steel connection systems. Connecting safety with efficiency since 1934. Standard and custom assemblies are specified on nuclear projects around the world, connecting secondary steel, whatever shape and size in a wide variety of applications in both new construction and refurbishment of existing structures.

TYPICAL APPLICATIONS & LINDAPTER CONNECTIONS TO SUIT...

1. Type AF
2. Type HB (HCF)
3. Type A & B

WALKWAY CONNECTIONS

Innovative connections to connect maintenance steel flooring, handrails and barriers to supporting steel without on-site drilling or welding. Installation requires access to only one side, eliminating the need for costly scaffolding or elevated floors, and can be carried out by just one person.



TYPICAL APPLICATIONS & LINDAPTER CONNECTIONS TO SUIT...

1. Type FF
2. Type GF
3. Type HB

LINDAPTER CONNECTION STATS

MAXIMUM LOADS FOR STEEL CONNECTIONS

56,000lbs for a standard four bolt assembly (Based on 1" Type AF, grade A490 bolts)

HIGH CLAMPING FORCE FOR HSS CONNECTIONS

Up to 3 times higher clamping force for HSS Connections with the Hollo-Bolt® (HCF) when compared to a standard 3-part product of the same size.

VIBRATION RESISTANCE

Assemblies featuring the Lindapter Type A, B or LR fixings are approved by the Lloyd's Register, following tests of tensile, frictional, shear, vibration & shock performance.

CORROSION PROTECTION OPTIONS

Bright zinc plated, Hot dip galvanized, Mechanical galvanized, Sheradized, Plastic coated, Stainless Steel

PROJECT EXPERIENCE

STRUCTURAL STEEL

TRAWSFYNYDD NUCLEAR POWER STATION, UK

Lindapter Girder Clamps were used to connect the temporary structural steel during the decommissioning of the Nuclear Plant.

PIPE SUPPORTS

SELLAFIELD, UK

Sellafield Ltd has made significant use of Lindapter connection across a range of projects & applications. Lindapter steel connections were recently specified for piping support applications on SAV & EVAP-D projects on the Sellafield site.

Image supplied courtesy of Sellafield Ltd

For more information visit www.lindapterusa.com

Oil & Gas

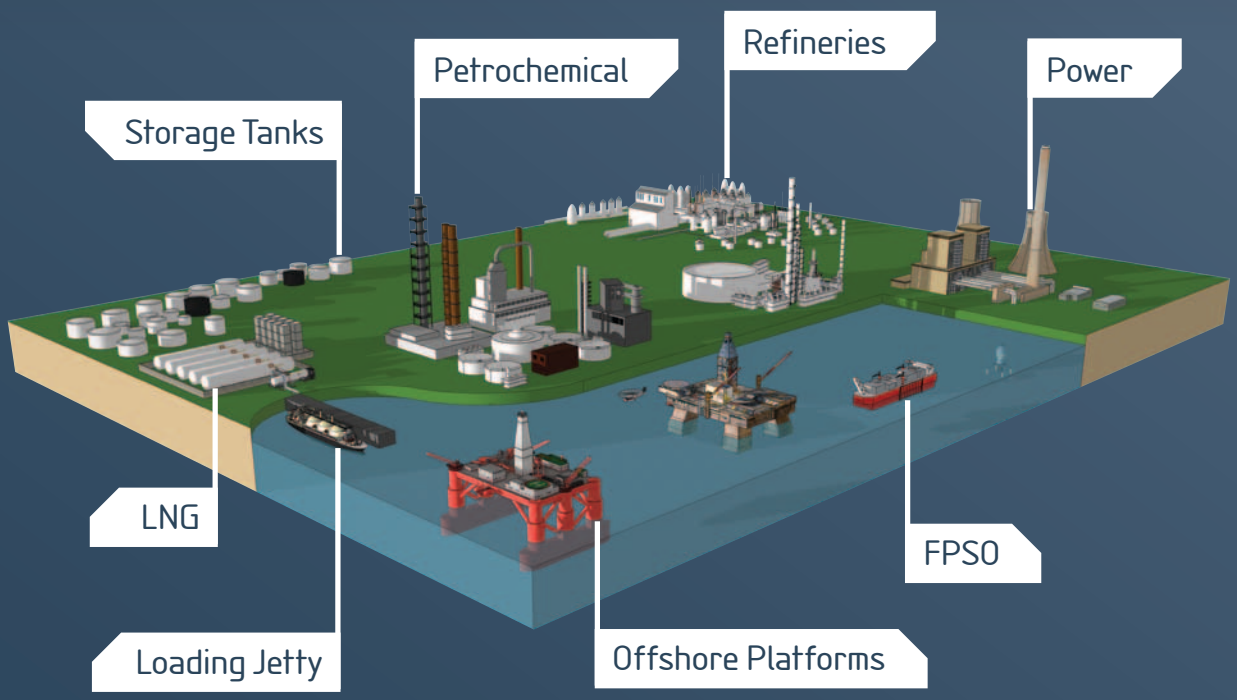
lindapter®

Technical Innovation
in Steel Connections

Lindapter®

Safely securing steel for over 75 years

Lindapter products are used extensively across the globe in onshore and offshore applications, on new build and refurbishment projects including:



10 Reasons to use Lindapter connections

- No on-site drilling or welding
- Reduced installation time and cost (less man hours)
- On-site adjustability (no need for tack welding & grinding)
- No damage to steel & coatings
- Hot work permits not required (suitable in hazardous areas)
- Only hand tools needed, power not required
- Sustainable construction (can dismantle for reconstruction or multicycling)
- Technical support includes free connection design
- Independently approved safe working loads
- Product approvals and project experience with major oil & gas companies

Whether securing structural steel sections, heavy duty pipes, electrical instrumentation or flooring, Lindapter has a proven, accredited connection solution.

Established in 1934, Lindapter International is the world's innovator of steel clamping systems, eliminating the requirement to drill or weld steel. In comparison to traditional methods, hot work permits are not needed. This allows a safer, faster installation in hazardous environments, whilst significantly reducing costs.

Comprehensive technical support from Lindapter's experienced engineers, ensures an efficient specification process with a free design service and even custom product development, passionately referred to as 'Engineered Solutions'.

Contents

The Lindapter design and support service includes:

Free design proposal → 2D / 3D drawings → Quotation → Supply → Installation guidance → Ongoing support

This brochure provides examples of secondary steel assemblies, designed for permanent applications. Please ask Lindapter to design the solution to your connection requirement.

Pipe Supports

Lindapter support assemblies allow piping to be simply clamped onto structural or secondary steel sections, for a safe, fast installation.

Piping can be installed without drilling or welding and with no interference to plant productivity. The ability to adjust Lindapter assemblies on-site is particularly beneficial as pipes can be easily positioned for speed and convenience.

Maximum Loads

- 56,200lbs for a standard 4 bolt assembly.
  (Based on 1" Type AF, grade A498 bolts)

Working Temperatures

(dependent on clamp material & bolt grade)

- Minimum -22°F
- Maximum +662°F

Vibration Resistance

Assemblies featuring the Lindapter Type A, B, or LR clamps are approved by the Lloyd's Register, following tests of tensile, frictional, vibration and shock performance.

Corrosion Protection Options

- Bright zinc plated
- Hot dip galvanized
- Stainless steel
- Plastic coated
- Sherardized

Recommended components for piping applications:


Girder Clamp


Type A


Type B

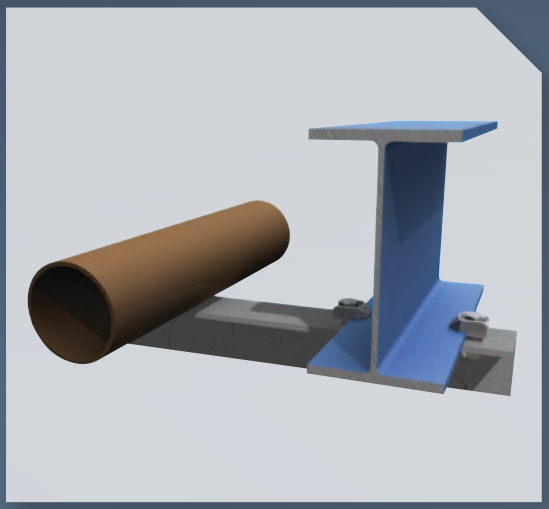

Type LR

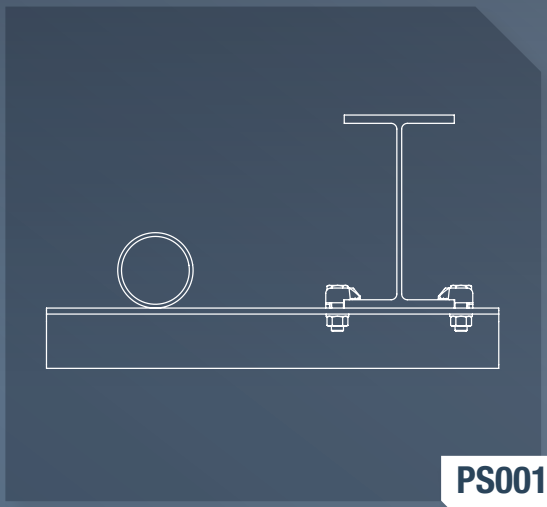

Type AF


Type CF


Type LS

Please refer to the Lindapter catalog or website for full product data.





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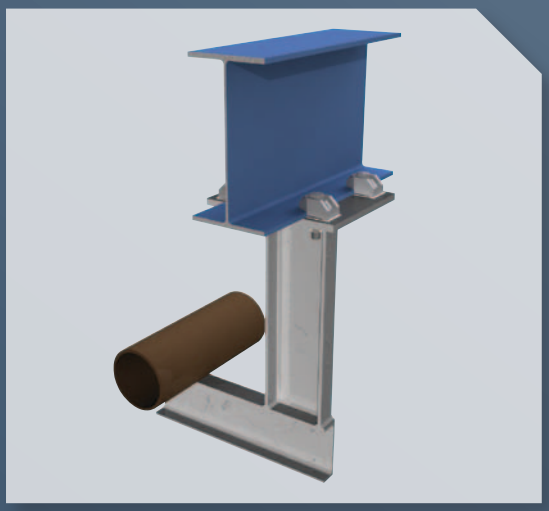

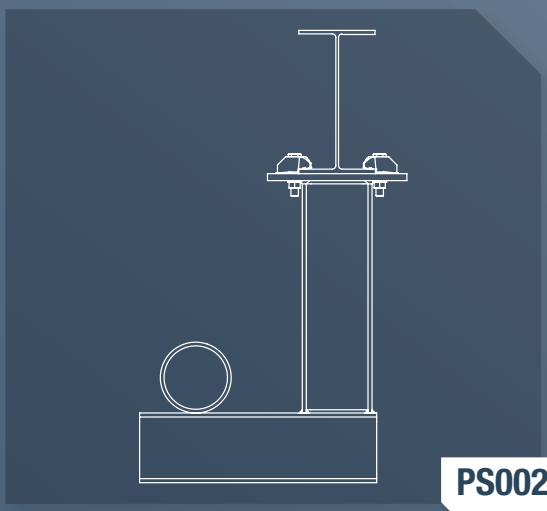

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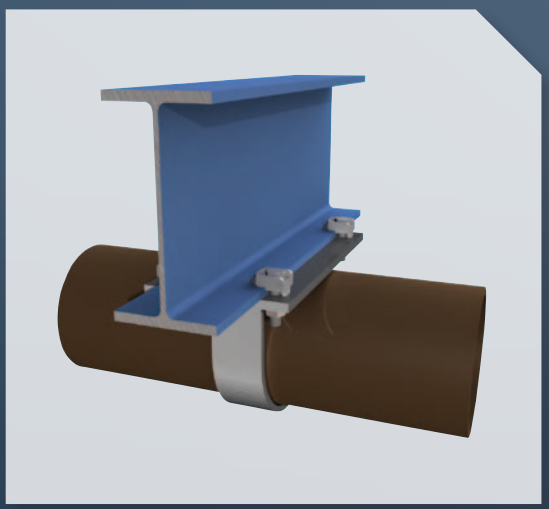
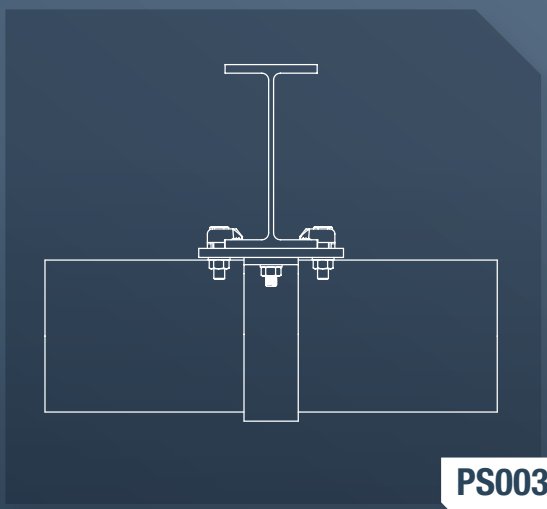
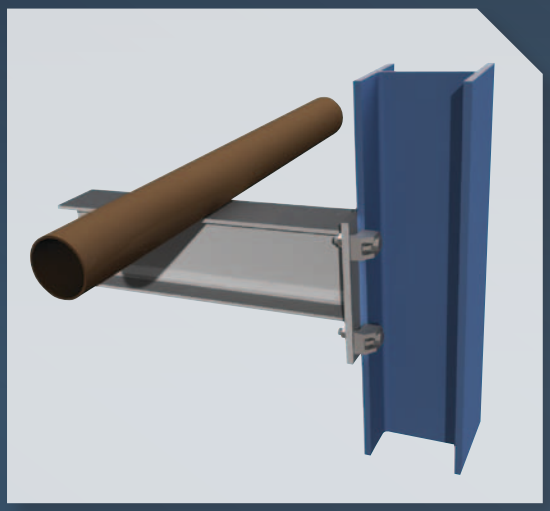
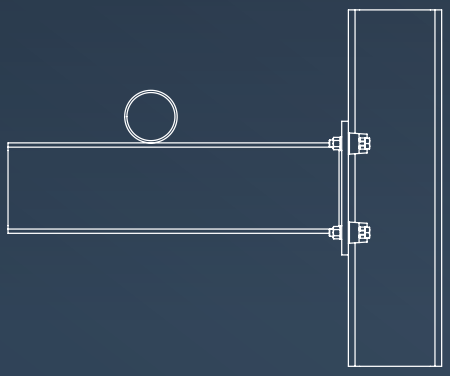




PS003

Pipe Supports





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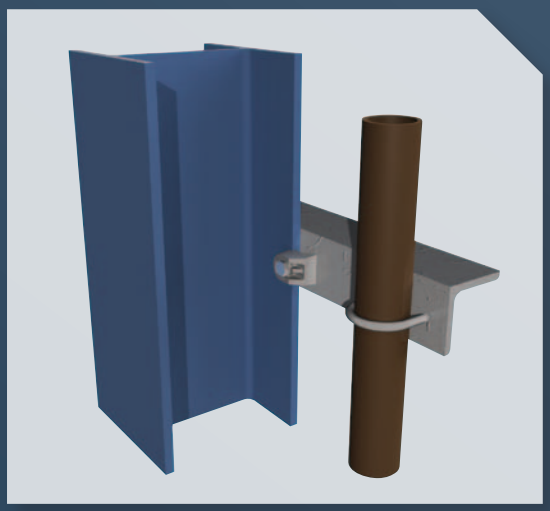

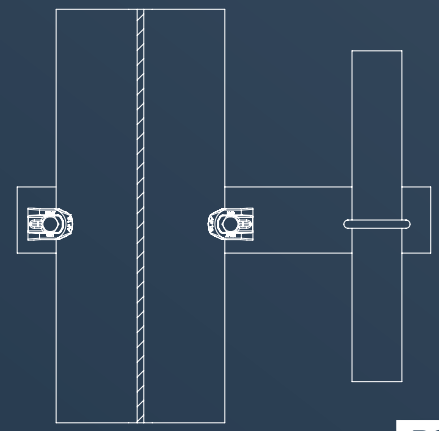

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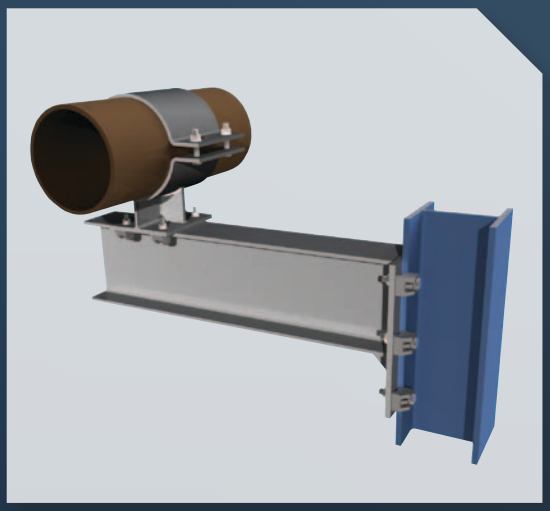

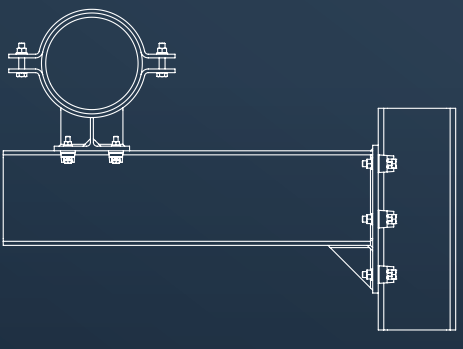

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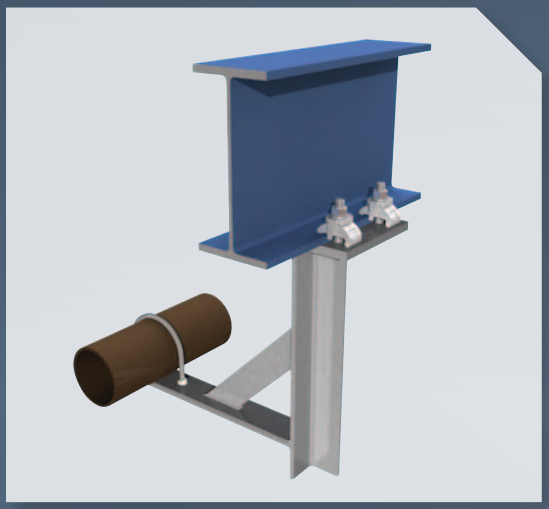

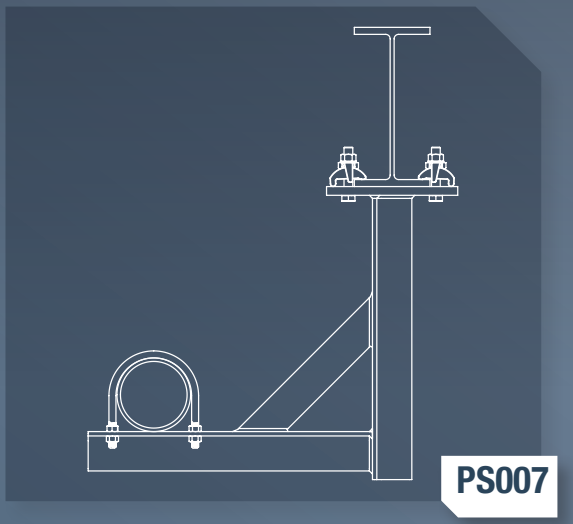

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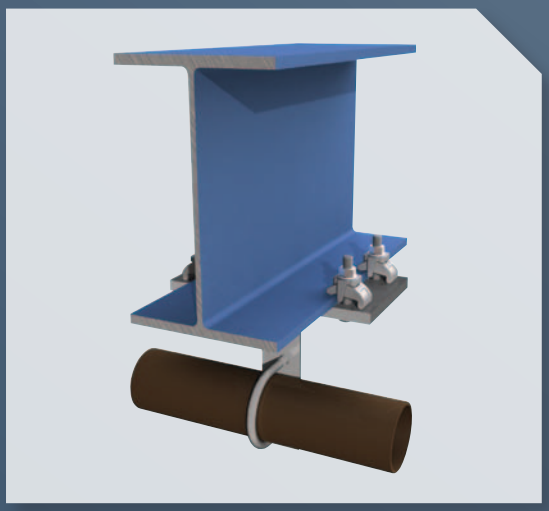

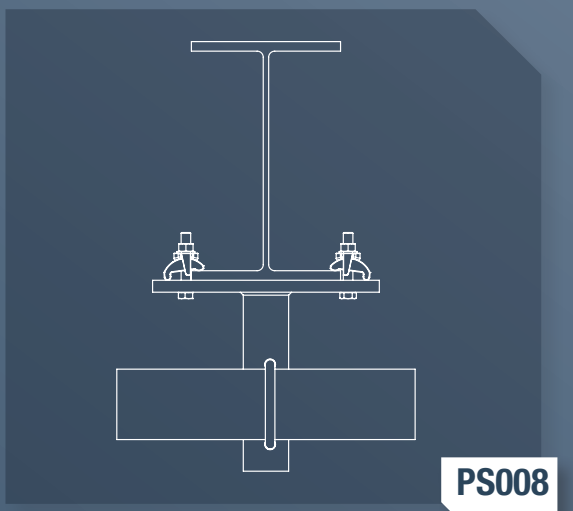

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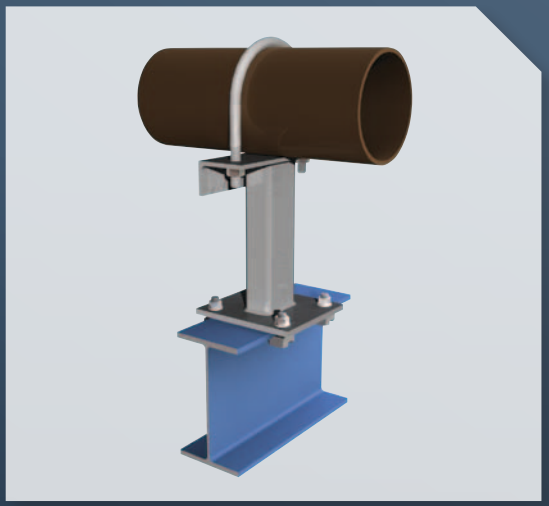
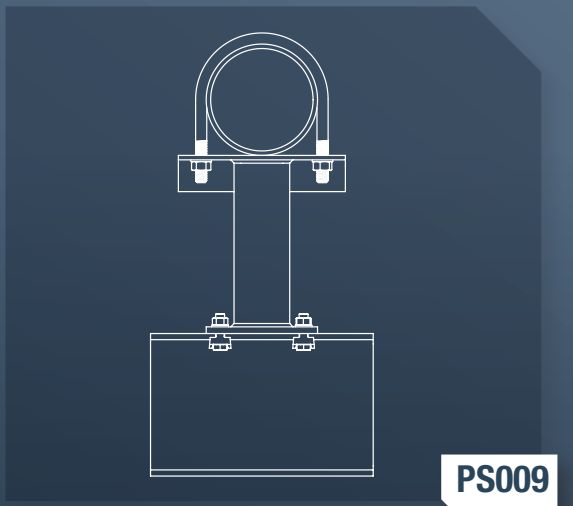
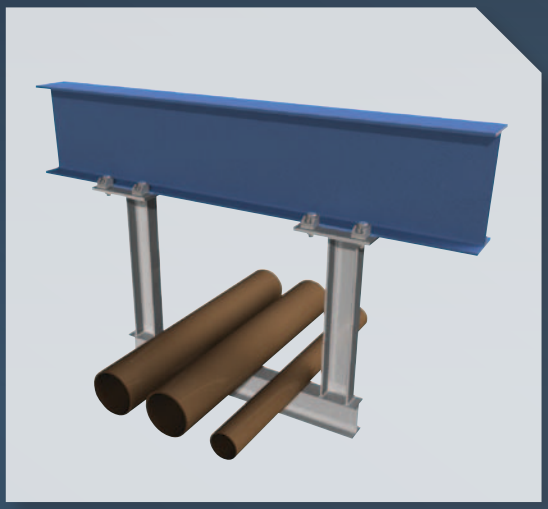
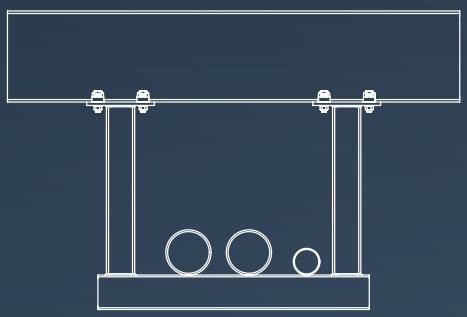




PS009

Pipe Supports





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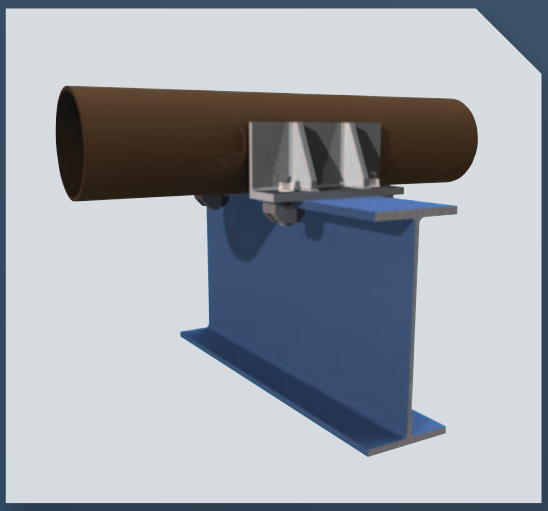

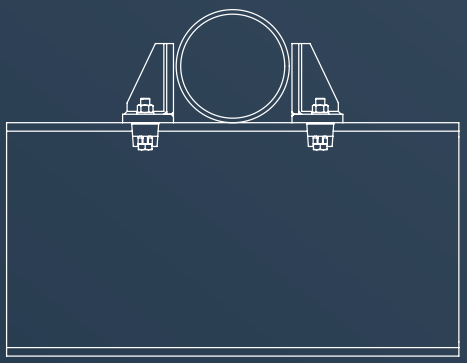

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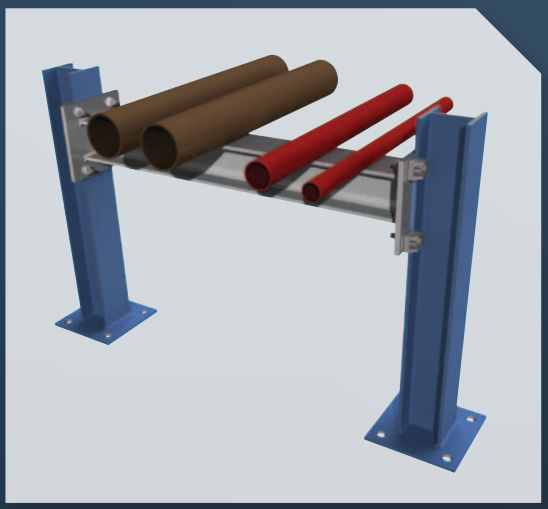

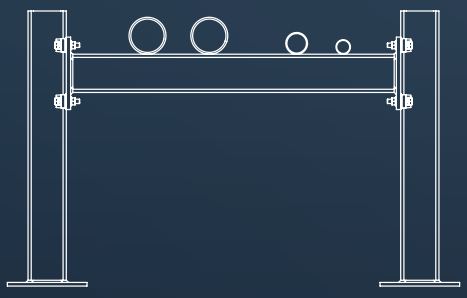

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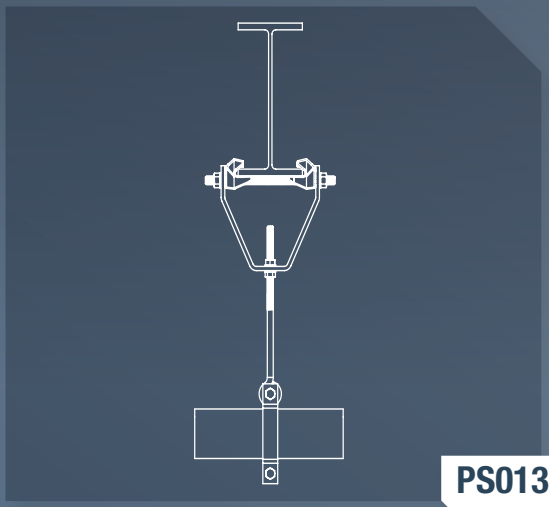

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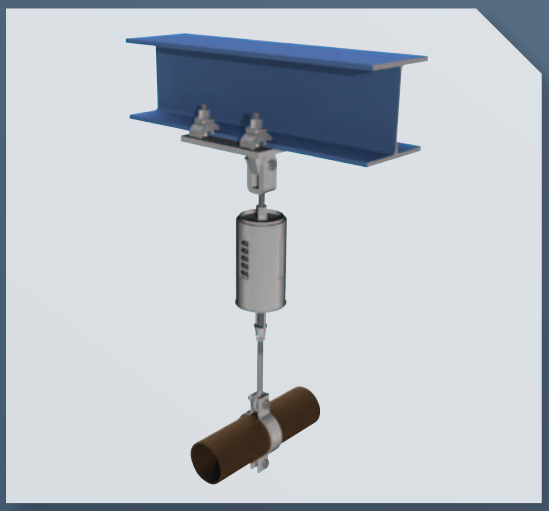

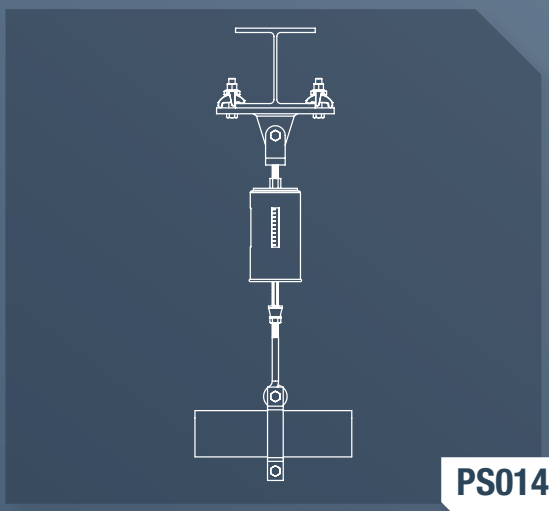

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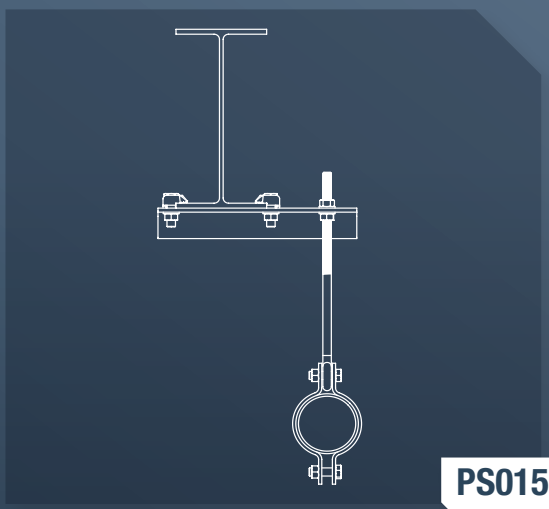


PS015

Electrical & Instrumentation

Lindapter provides assemblies for supporting cable trays, cable ladders and electrical equipment from primary or secondary beams.

Cable trays or equipment can be secured in simple tensile arrangements, or in vertical column applications withstanding frictional loads. Fast adjustability allows multiple cable tray / ladder systems to be easily setup to intersect with each other.

Applications include:

- Cable trays and ladders
- Piping and conduit supports
- Instrumentation and associated cabling
- Junction boxes and cabling

Fast, time saving installation

Lindapter connections reduce the installation time on EPC contracts, subsequently increasing site safety as projects require less man-hours.

Recommended components for electrical & instrumentation applications:


Type A


Type B


Type LR

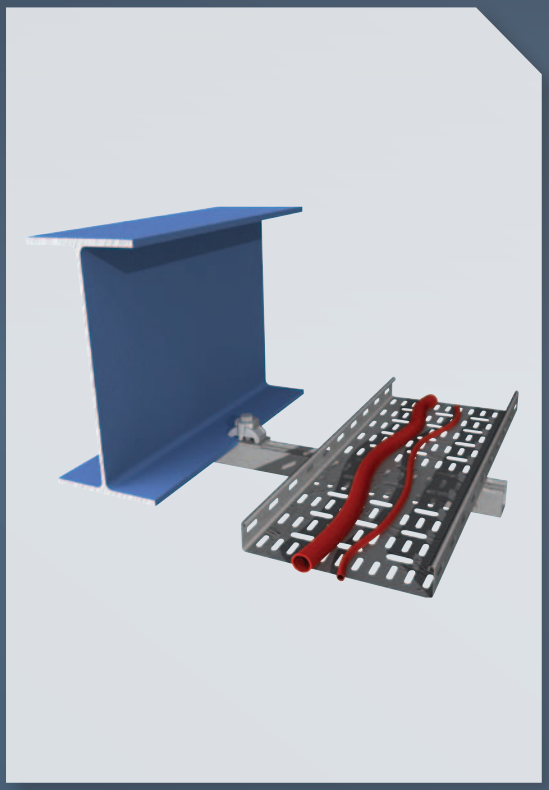

Type AF

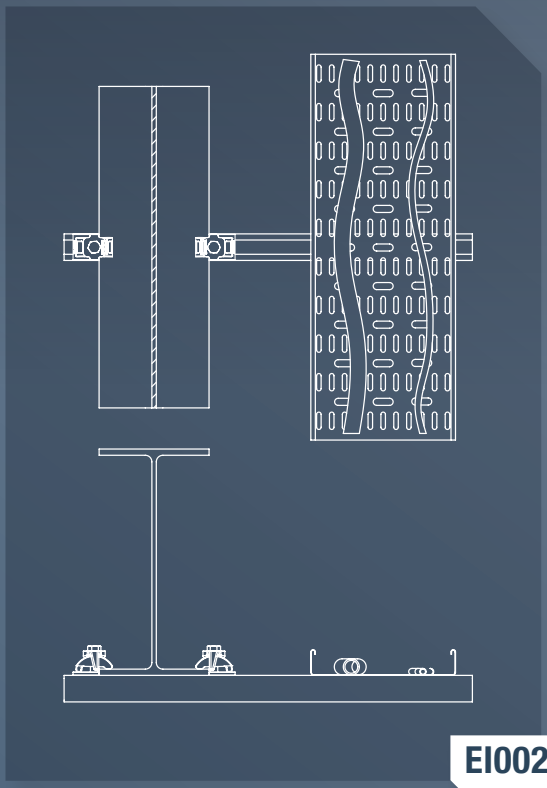

Type F3


Type CF


Type LS

Please refer to the Lindapter catalog or website for full product data.





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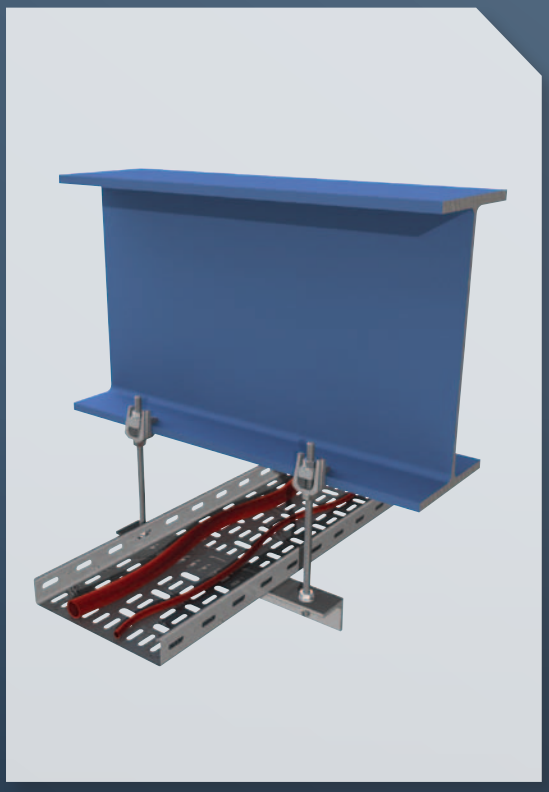
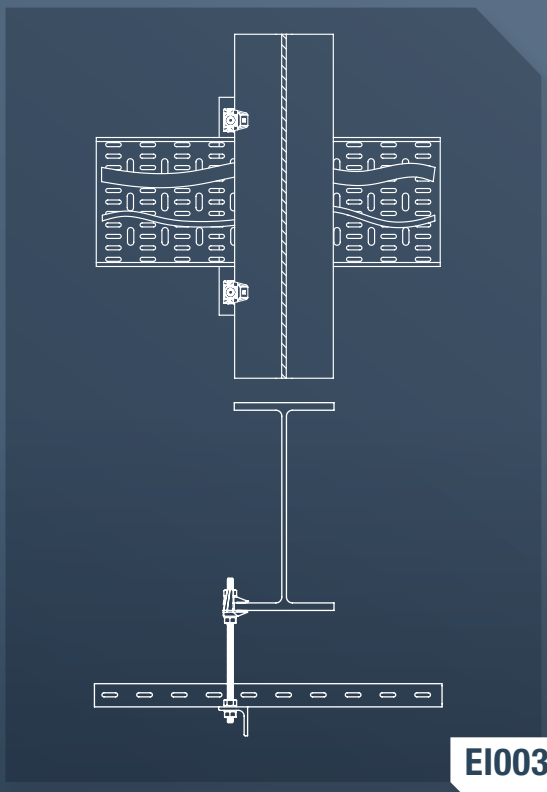
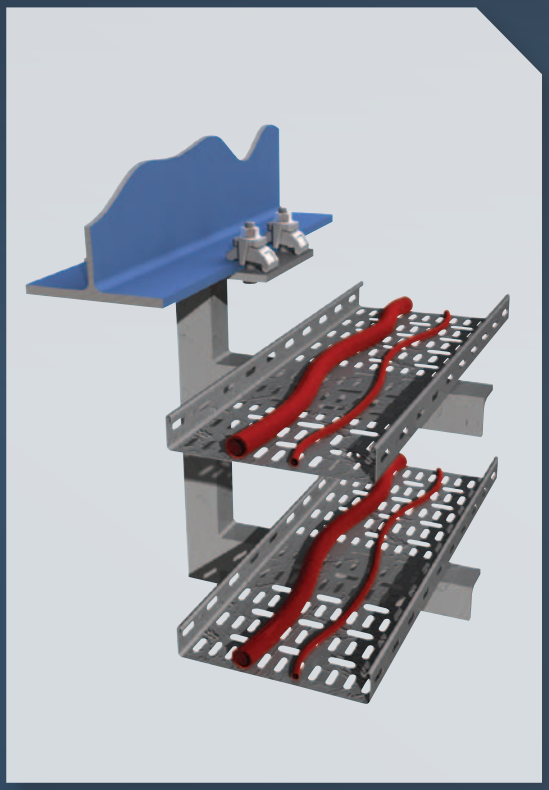
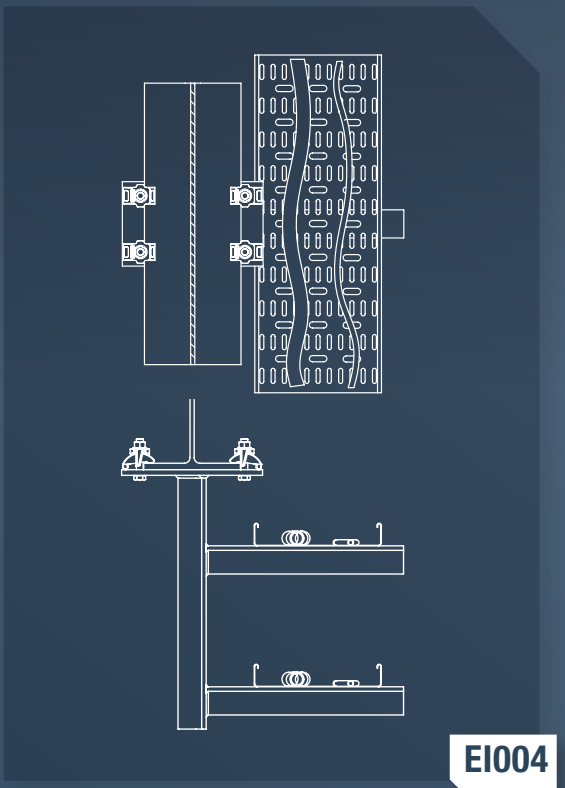




EI003

Electrical & Instrumentation





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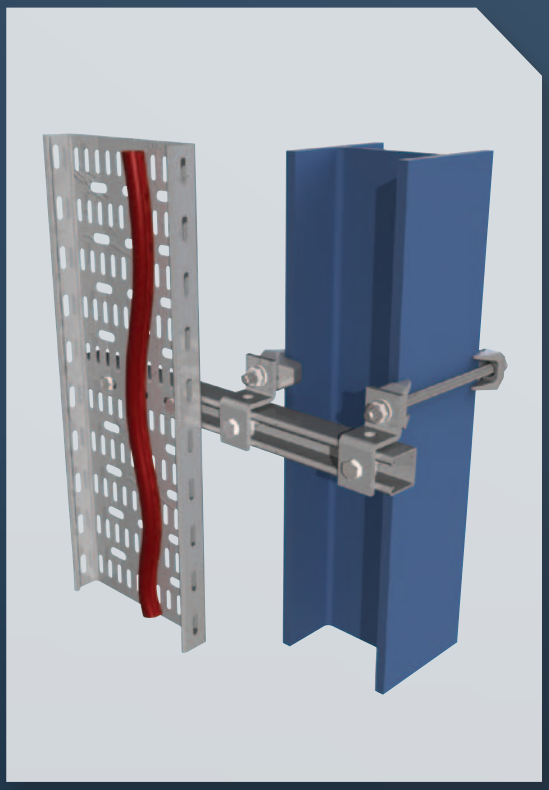

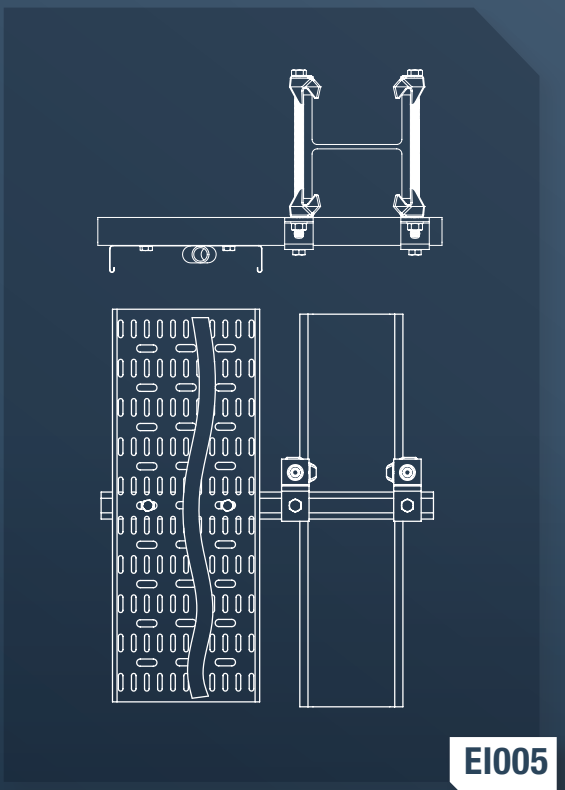

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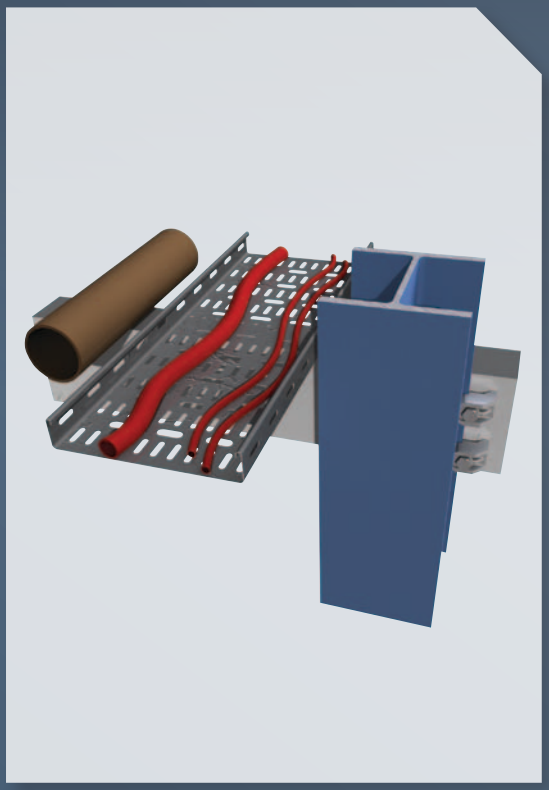

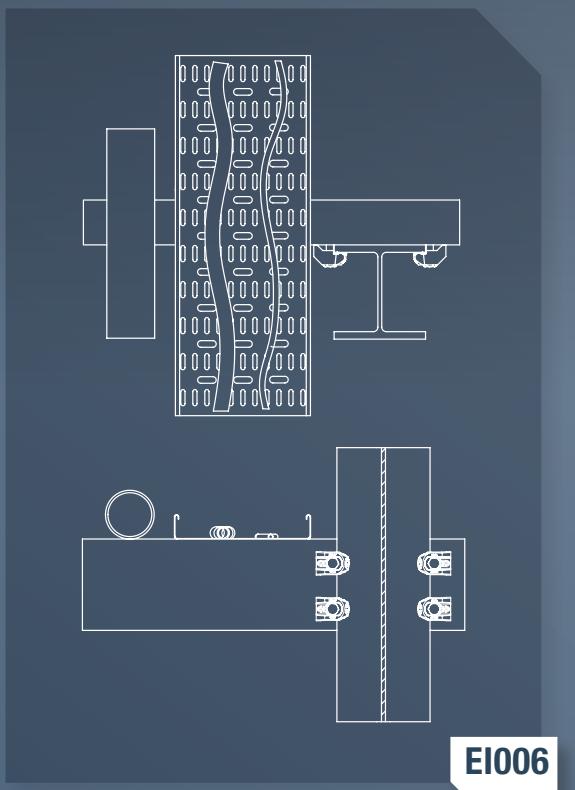

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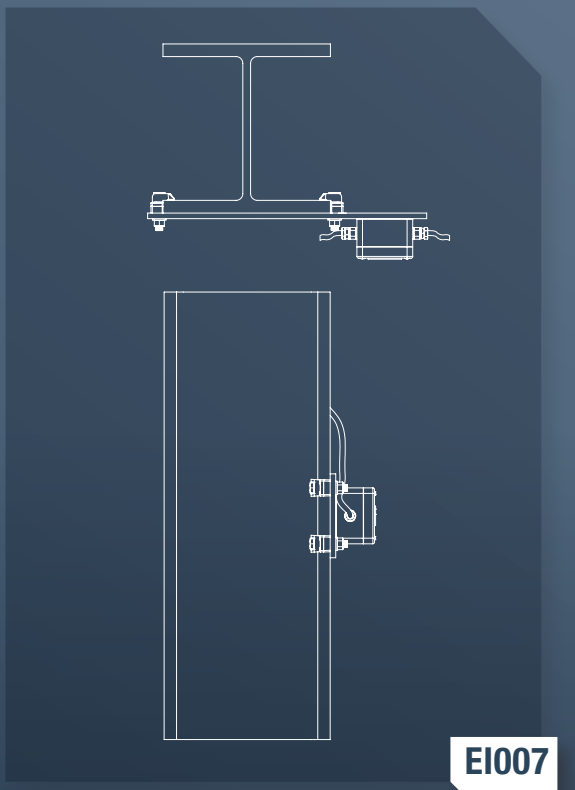


EI007

Steel Connections

Remove the need for hot work permits with Lindapter steel connections. Connecting safety with efficiency since 1934.

The Girder Clamp symbolizes the Lindapter philosophy perfectly; boldly challenging the need to drill or weld, when a safe, high strength connection can be quickly accomplished by clamping two steel sections together.

Although the concept is simple, Lindapter products undergo complex design and testing as the experienced Research & Development team constantly refine, improve and invent to achieve greater product performance and gain more international safety approvals.

Standard and custom assemblies are specified on oil & gas projects around the world, connecting secondary steel sections, whatever shape and size and in a wide variety of applications. Global project success (see page 22–25) demonstrates that Lindapter steelwork connections are ideally suited to new construction and refurbishment of existing structures.

The following pages show typical applications (please refer to the Lindapter catalog / website for further examples).

Recommended components for steel applications:


Girder Clamp


Type A


Type B

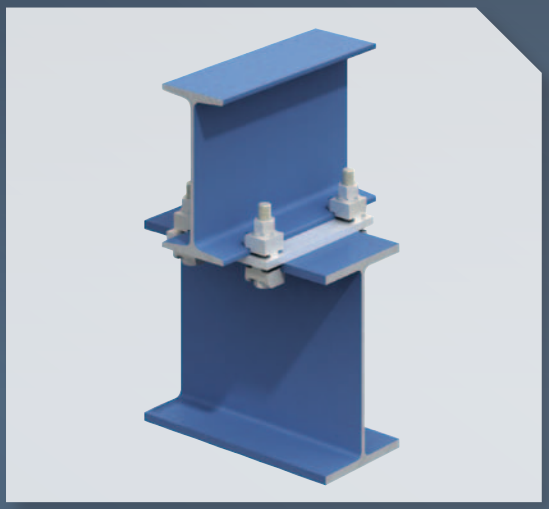

Type LR

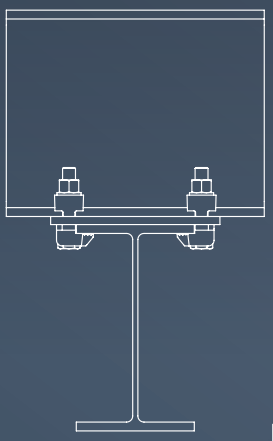

Type AF


Type CF

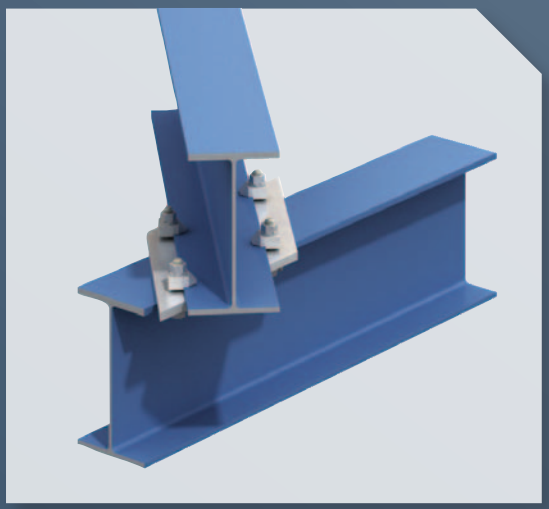

Type LS

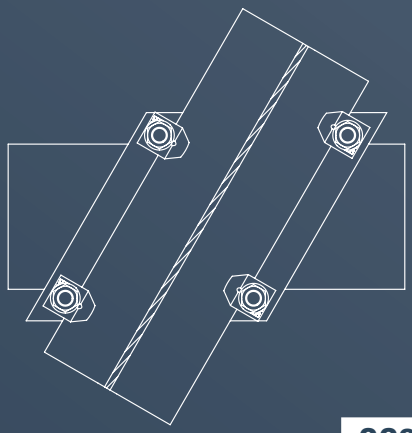
Please refer to the Lindapter catalog or website for full product data.





GC001-1





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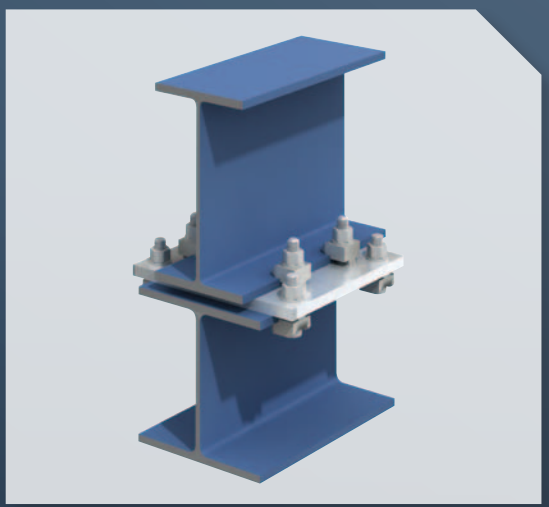
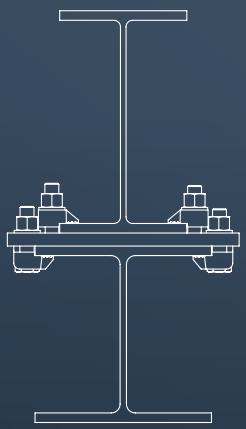
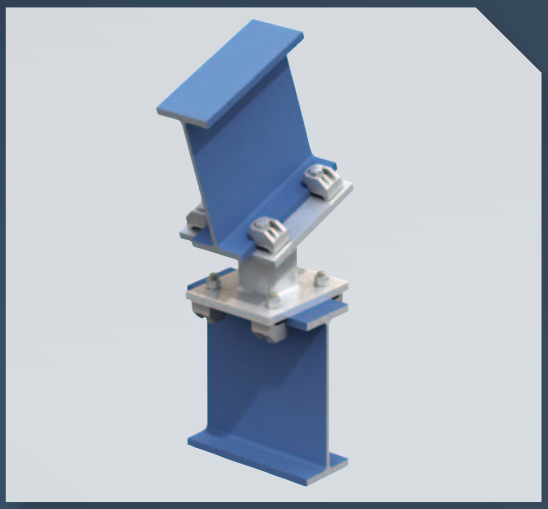
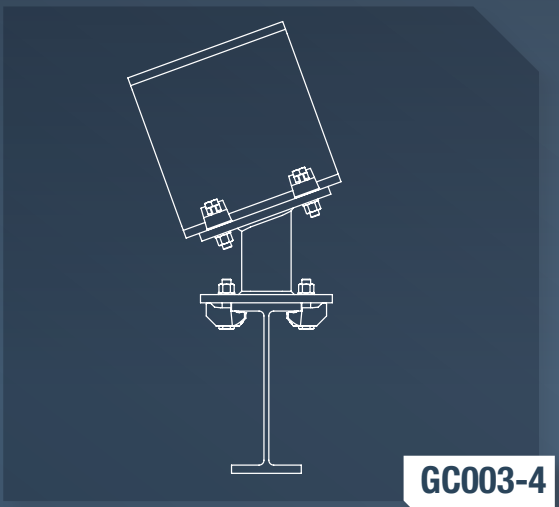




GC002-3

Steel Connections





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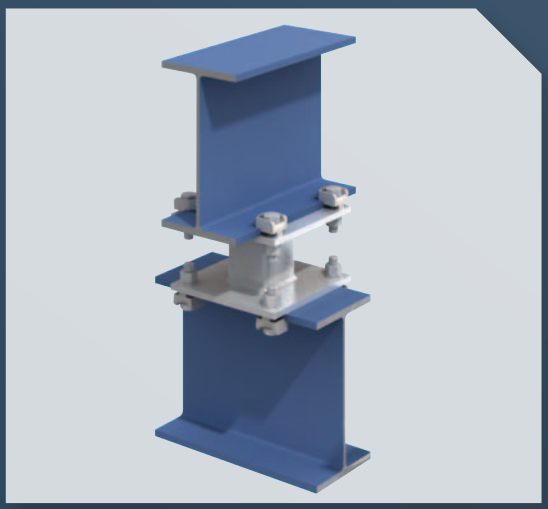

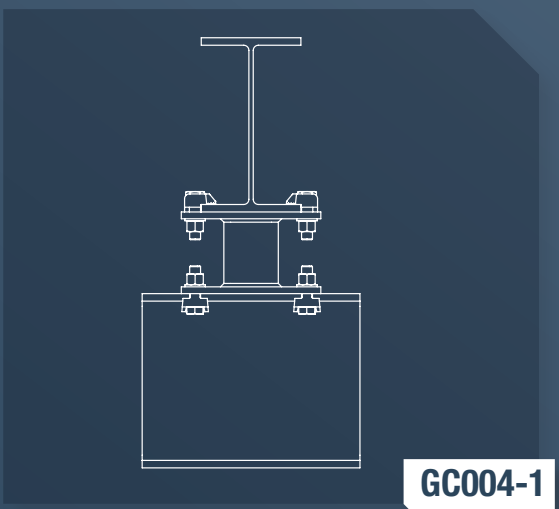

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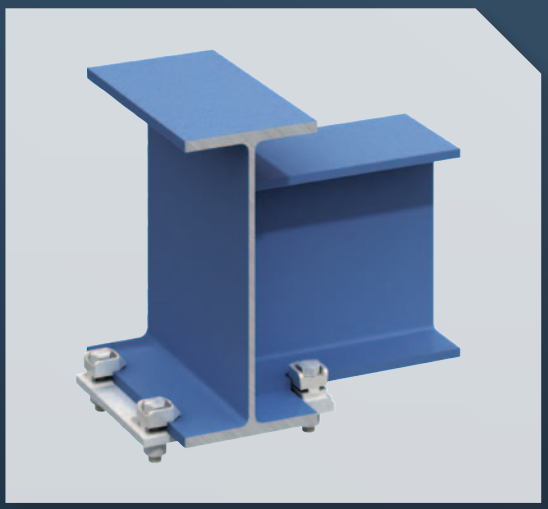

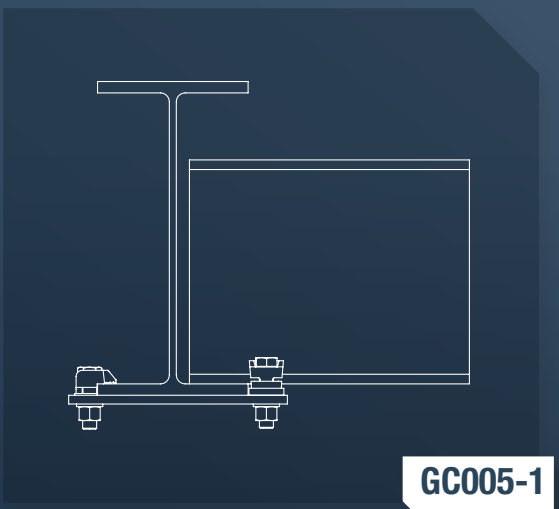

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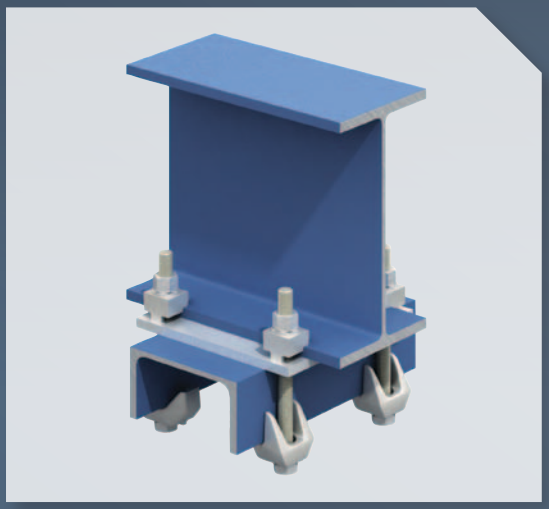
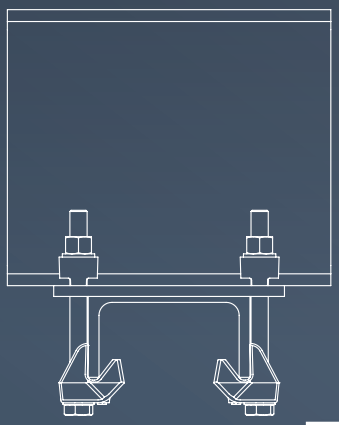
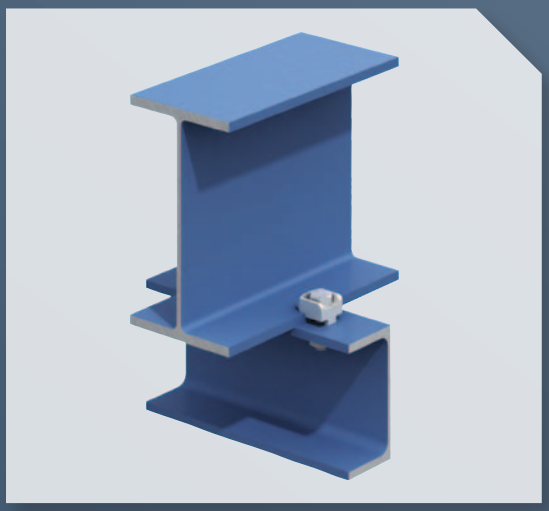
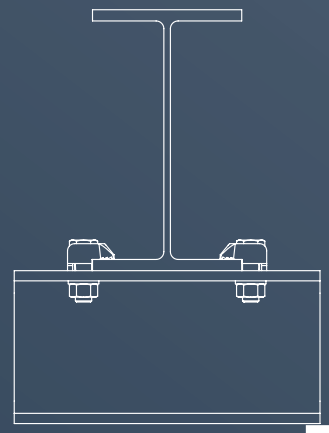


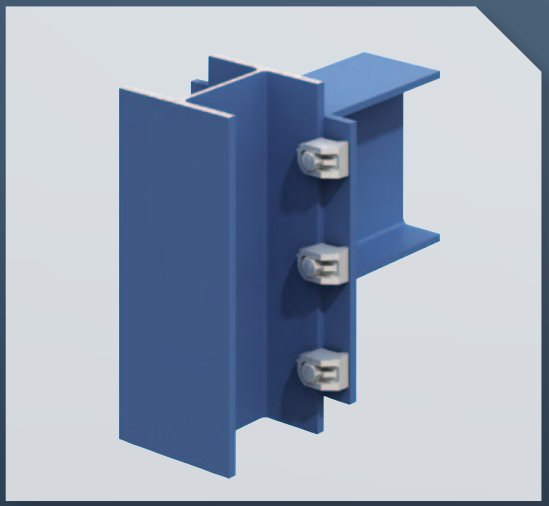


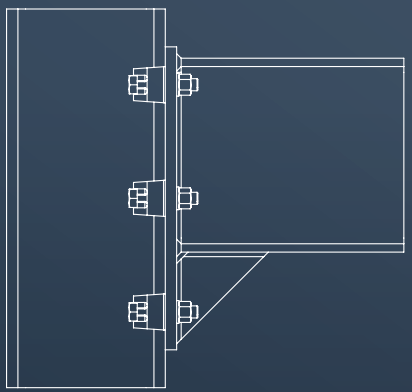
GC006-1





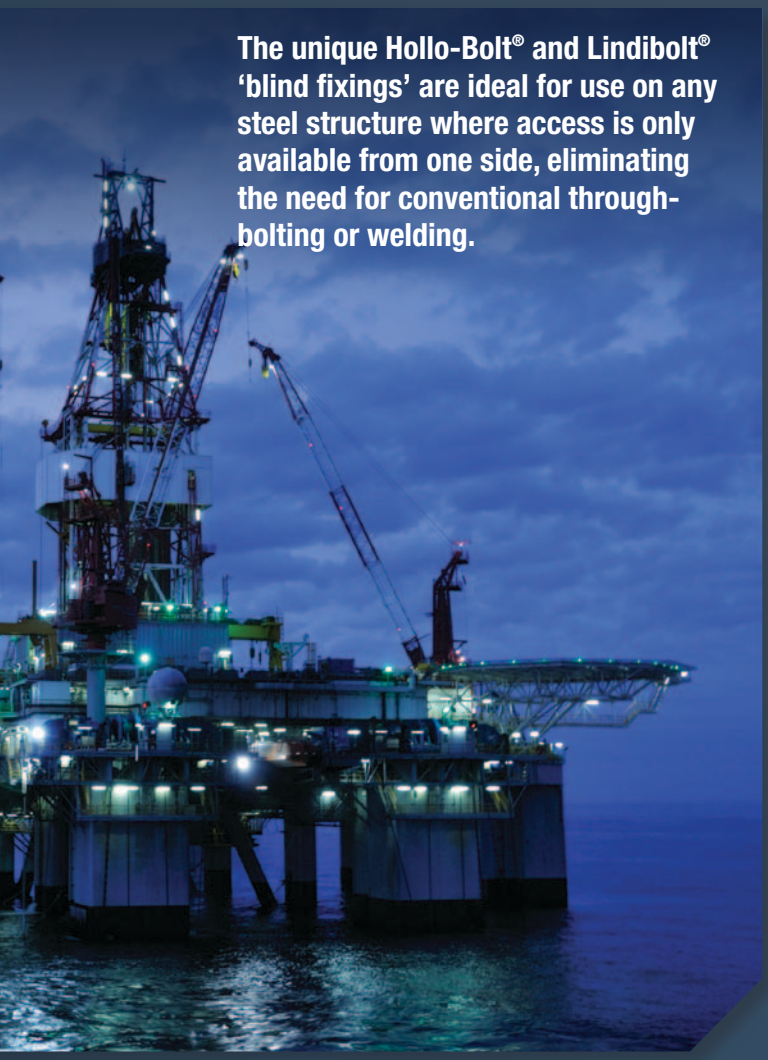
GC006-6





GC009-1

Hollow Section (HSS) Connections



The unique Hollo-Bolt® and Lindibolt® 'blind fixings' are ideal for use on any steel structure where access is only available from one side, eliminating the need for conventional through-bolting or welding.

Installation is carried out quickly and safely by inserting the product into pre-drilled holes then tightening to the recommended torque using only hand tools.

Applications include:

- Primary Connections
- Secondary Connections
- Blast wall reinforcement
- Staircases and handrails
- Almost any connection to hollow section
- Can also be used on I beams

Hollo-Bolt®: Perfect for new-build projects

The Hollo-Bolt is available in a wide range of diameters, lengths, finishes and head types to suit virtually any type of HSS connection, including square, rectangular, circular and oval profiles. The Steel Construction Institute (SCI) and British Constructional Steelwork Association (BCSA) recognize the Hollo-Bolt as a primary structural connection, in the design guide 'Joints in Steel Construction – Simple Connections'.

Lindibolt®: Ideal for refurbishments

The Lindibolt has been designed specifically to be used on refurbishment projects. This unique product will fit into standard pre-drilled steel sections. The Lindibolt is an incredibly flexible solution as it can be adjusted during installation to fit various thicknesses of steel, for example the 1" has a clamping range of $^{11}/_{16}$" - $2^{7}/_{8}$".

Recommended components for hollow section applications:

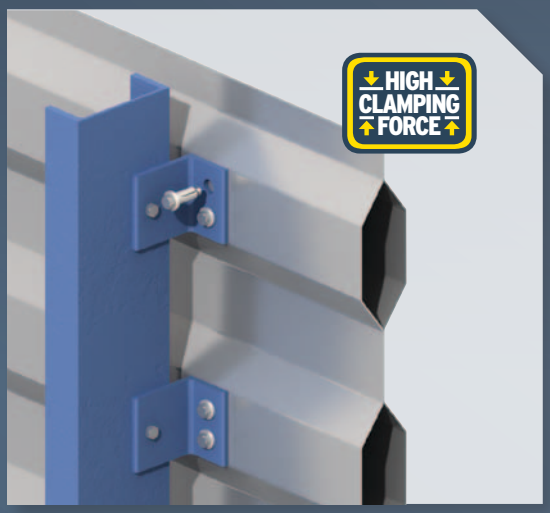
Hollo-Bolt Hex

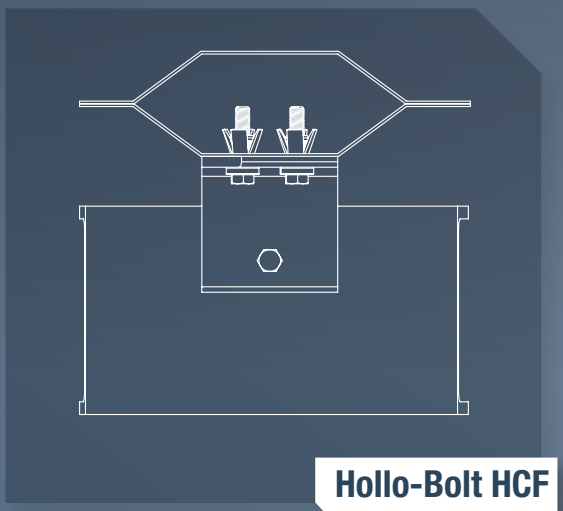
Hollo-Bolt HCF

Hollo-Bolt CSK (Head)

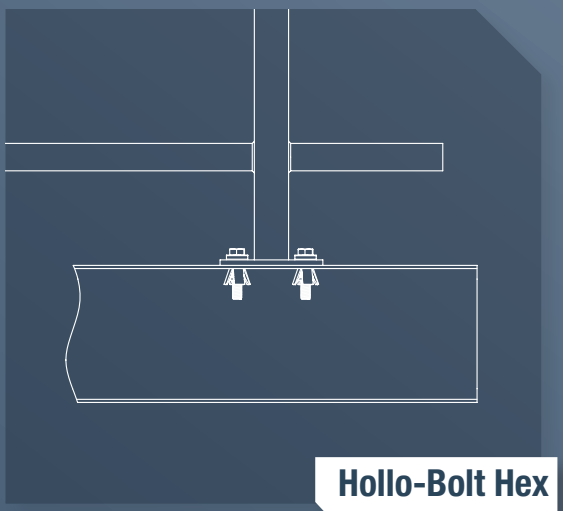
Type LB2 Lindibolt 2

Please refer to the Lindapter catalog or website for full product data.

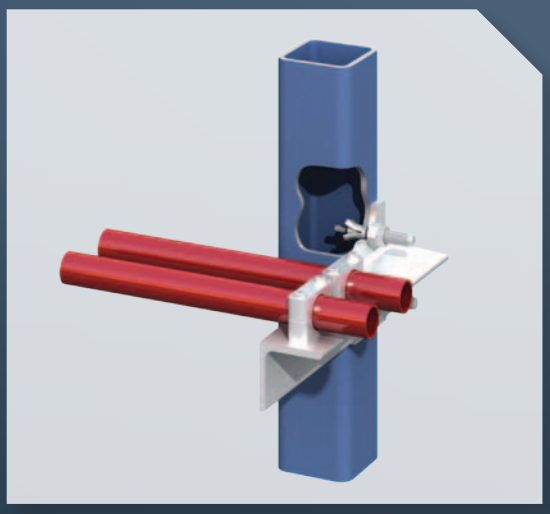


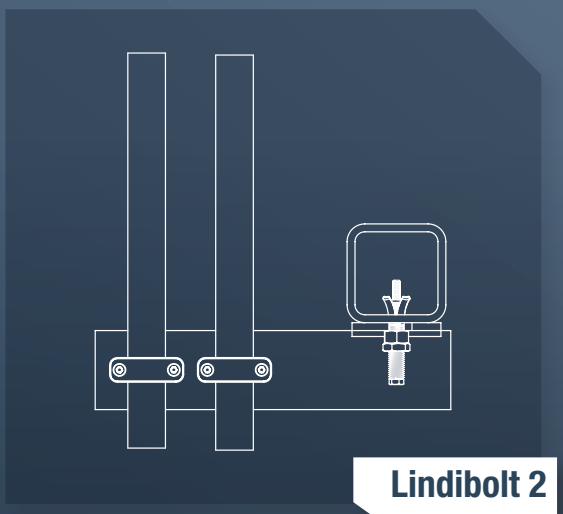


Hollo-Bolt HCF



Hollo-Bolt Hex





Lindibolt 2

Steel Floor Connections

Innovative solutions to connect steel flooring to supporting steel without on-site drilling or welding.

Access to the underside of the flooring is not required, eliminating the need for costly scaffolding or elevated floors. Installation can be carried out quickly and safely from above, often by one person. Lindapter floor connections significantly reduce installation costs in comparison to other methods such as shot firing.

Floorfast®

- For checker plate floor
- Unique stepped design locks under the flange
- Safely removed for maintenance access
- Lloyd's Register Type Approved
- Hot dip galvanized
- Available in stainless steel

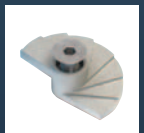
Grate-Fast®

- For open bar grating
- High-strength cast body
- Lloyd's Register Type Approved
- Fits a wide range of beams and grating
- Hot dip galvanized

Type 1055

- Custom product for Amec / Shell
- For fitting solid plate to open-grid flooring
- Plates can be positioned at any orientation
- Permanent or temporary fixing
- Stainless steel

Recommended components for floor applications:

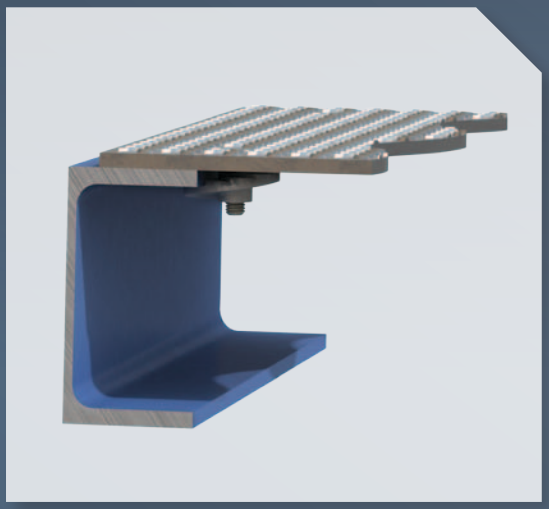


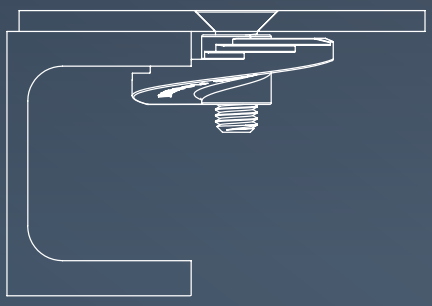
Floorfast

Grate-Fast

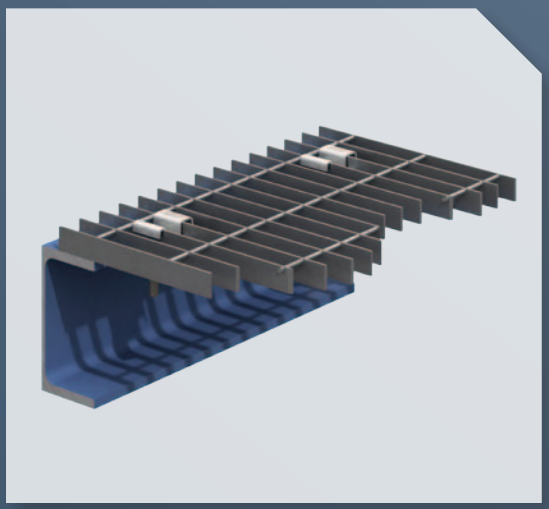
Type 1055

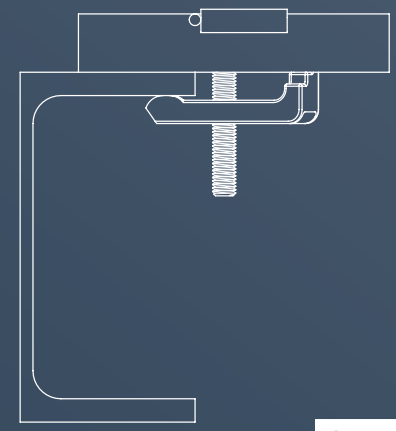
Please refer to the Lindapter catalog or website for full product data.



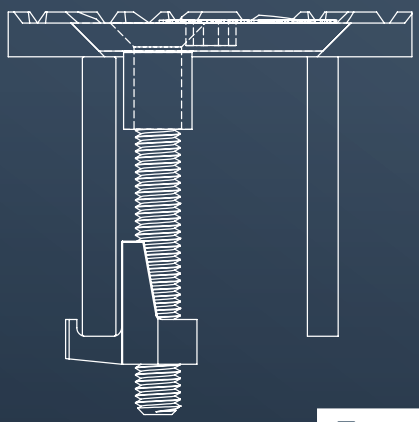


Floorfast





Grate-Fast



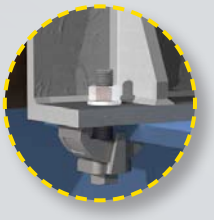
Type 1055

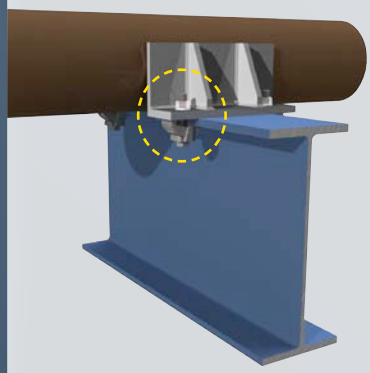
Experience

Location	Project	End User	Consultant/Contractor	Application	Product
Brazil	Degussa Chemical Plant	Degussa Chemicals	Bragussa Quimicos	Steel Connection	LR
Brazil	Petroquímica Suape	Petrobras Química S.A.	Odebrecht	Cable Tray Support	A, P1, P2
Brunei	Brunei Shell Petroleum	Shell	Kenwil Electrical	Conduit Support	F3
Brunei	Brunei Shell Petroleum Loading Pier	Shell	Steen Sehested & Ptrs	New Loading Jetty	GC, A, B
Canada	Land Rig Refurbishments	Various	Nabors Drilling	Pipe Support	A, B
China	Daya Bay Nuclear Power Station, Canton	CLP	GEC Alsthom	Steel Connection	GC, FL
China	Shaijao 'C' Power Station	ALSTOM	Ove Arup & Partners	Support Connection	F3, FL, LC
China	Phu My 2 Phase1 Extension Addon Plant	EVN	PECC3/Colonco/Fichtner	Cable Tray Support	AF
Finland	Kaverner Recovery Boiler	BURGORB	Aker Kvaerner	Pipe Supports	LR
Iceland	Fjardaal Smelter Project	ALCOA	Bechtel	Pipe Supports	AF, A, HW
Hong Kong	CL & P Black Point Power Station 'C'	CLP	Mouchel Asia	Steel Connection	GC, FL, LR
Hong Kong	CL & P Tap Shek Kok Power Station	CLP	Mouchel Asia	Steel Connection	GC, FL, LR
Kuwait	Sabiya Power Station	Sabiya Power Station	Hyundai Eng., Richard Lees	Services Support	A, P1, P2, AW
Kazakhstan	KTL Expansion Project, Enka, Tengiz	Bechtel-BE JV	Bechtel-BE JV	Steel Connection	A, C1
Malaysia	Jana Manjung Power Station	Jana Manjung	Alstom USA	Checker Plate Ins.	FF
Malaysia	Kikeh Project Dry Tree Unit	Petronas	Ranhill Worley	Pipe Supports	LR
Oman	Manah Power Station	United Power Co.	AMEC Power	Support Connection	F3, A
Qatar	QAPCO Fertilizer Plant	QAPCO	Thyssen Krup	Flooring	FF12
Qatar	QATALUM	QATALUM	K Holm International	Support Connection	HC, HW
Qatar	RasGas Onshore Operations	RasGas	RasGas Maintenance	Valve Lifting Beams	AF
Saudi Arabia	Saudi Kayan Petrochemical	SABIC	Fluor	Pipe Supports	F9
Saudi Arabia	Saudi Kayan Petrochemical	SABIC	KBR	Radiant Section	HC, HW
Singapore	Shell Eastern Petroleum – Ethylene Cracker	Shell	Toyo Engineering	Pipe Supports	A
U.A.E	Jebel Ali Condensate Refinery	ENOC	Larsen & Toubro	Pipe Supports	B
U.A.E	Aweer Gas Turbine Power Station, Dubai	AWEER	Mitsubishi Heavy Industries	Steel Connection	D1, D2, F3
U.A.E	Escravos Gas to Liquid Nigeria	KBR/Chevron	Gulf Piping	Pipe Supports	LR, F9
U.A.E	Borouge Ethylene Plant	Borouge	UTS Kent	Pipe Supports	A, LR
U.A.E	DUBAL	DUBAL	Belleli Energy	Plant Expansion	A
U.A.E	DUBAL	DUBAL	DUBAL Maintenance Team	Conveyor Support	HC, HW
U.A.E	Integrated Gas Development (IGD)	GASCO	UTS Kentz	Cable Ladder Supports	A, B
U.A.E	BP Sharjah - LPG Access Tower Repair	BP Sharjah	MIS	Tank Support	LR
UK	BNFL Sellafield Re-Processing Plant	BNFL	Wormald/AMEC	Checker Plate Ins	FF, HB
UK	Drax Power Station Gas De-Sulphurisation	Drax	Darchem	Cable Tray Supports	Special Assem
UK	Exxon Chemical Olefins	Exxon Mobile/ ABB	AMEC	Steel Connections	FF, A, B, D2
UK	Sizewell 'B' Nuclear Power Station	British Energy	N. G. Bailey	Cable Tray Supports	Special 'B'
UK	Shell Corrib Gas Processing Terminal	Shell	SIAC Butler	Grating Connection	GF
USA	Distrigas LNG Facility	Suez	Fluor	Stair Tower	GC
USA	DuPont Victoria	DuPont Victoria	Fluor Daniel	Girder Clamps	A, B
USA	Shell Narco	Shell Narco	Jacobs Engineering	Pipe Supports	B
USA	Shell Deer Park	Shell Deer Park	S & B Engineers	Pipe Supports	A, B
USA	Valero	Valero	Fluor Corp.	Monorail	C
USA	DuPontt Chemical	DuPontt Chemical	Ford, Bacon & Davis	Flooring	GF
USA	Baytown Texas Refinery	Exxon Mobil	–	Pipe Support	LR
Vietnam	Phu My 1 Combined Cycle Power Project	Mitsubishi Heavy Ind.	Sanyo Engineering & Cons.	Steel connections	A, CW

Case Studies

ExxonMobil Refinery Pipe Supports





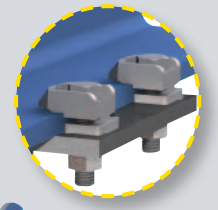
Location: USA

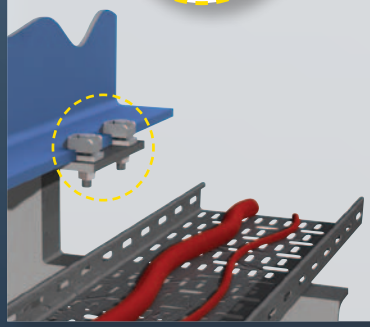
Lindapter's adjustable Type LR steel clamps were used to install pipe guides along a new pipeline spanning several thousand feet without any interference to plant production.

The new pipeline was installed running adjacent to the existing piping and supported by existing cantilever beams. The design specified that pipe guides should be installed to prevent any flexing from thermal expansion.

Avoiding hot work permits and related fire hazards of traditional welding and drilling methods, Lindapter provided the ideal solution with its Type LR that enabled pipe guides to be installed with simple hand tools and minimal interference. The Type LR is suitable for various beam thicknesses and slopes which enabled the contractor to use a single product across the entire length of the pipeline.

Petroquímica Suape PTA Plant Electrical & Instrumentation





Location: Brazil

Lindapter Type A connections were specified and installed throughout the new PTA plant of Petroquímica Suape, set to become the most important integrated complex for polyester production in Latin America.

The Type A steel connections were used in a variety of applications across the plant to secure cable tray supports and instrumentation. Specified for its on-site adjustability and its no-weld no-drill installation, the fixings could be installed without any requirement for hot work permits, saving both time and money.

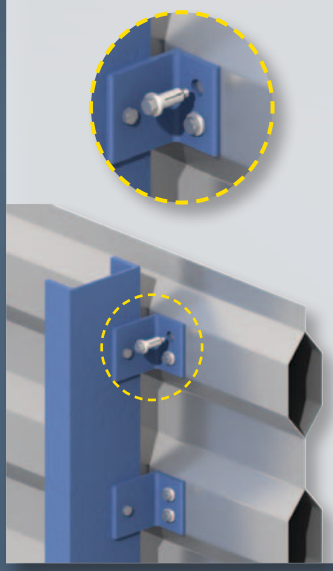
Offshore Projects

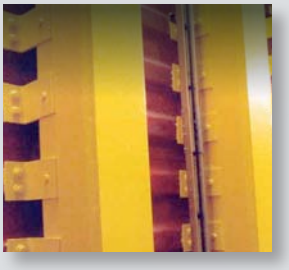
Experience

Location	Project	End User	Consultant/Contractor	Application	Product
Angola	Kizomba Gas Gathering	ExxonMobil	AMEC Paragon	Tray Supports & Ins Supports	LR, GF
Australia	North Rankin Platform	Woodside	Woodside	Handrail Support	HB
Australia	North West Shelf Development Project	Bhp Billiton	Woodside Energy	Cable Tray Supports	A
Australia	North West Shelf Development Project	Bhp Billiton	Woodside Energy	Platform Mounted Lighting	LR
Brunei	Brunei Liquified Natural Gas Jetty	Minconsult	Sahid Sendirian	GC (Special)	A, B, BR. HB
Canada	Terra Nova Platform	Petro-Canada	PSN Services	HSS Connection	HB, GF
Canada	Hibernia Topsides, Grand Bank	Hibernia	KBR	HSS Connection	HB
Malaysia	Sarawak Shell Berhad - M1 Expansion	Shell	Technip-Coflexip	Temporary Platform Expansion	GC
Malaysia	Talisman BKA Platform	Talisman	Talisman	Pipe Supports	A, LR
Malaysia	Bongkot Fields	PTTEP	PTTEP	Pipe Supports	LR
Malaysia	Malaysia Platform Crane Installation	Various	Favelle Favco	Monorails – Offshore Cranes	A, B
Norway	Eldfisk Modification Project	Philips Petroleum	KBR	Steel Connection	A, B
Norway	Froy Tie In	Pertra/DNO	Aker Offshore Partnership	Steel Connection	A, B, F9, LB
Norway	Gullfaks 'A' Modifications	Statoil	Kværner Installasjon	Steel Connection	A, B, LB, HB
Norway	Gullfaks 'C'	Statoil	HMV	Steel Connection	A, B, LR
Norway	Norge Shell Troll Kollsnes Topsides	Shell	Kværner Engineering	Steel Connection	A, B, LR
Norway	Oseberg 'A' and 'B'	StatoilHydro	HMV	Steel Connection	A, B, LR
Norway	Oseberg Øst-EPC Topside	StatoilHydro	Kværner Engineering	HSS Connection	HB (st.st)
Norway	Sleipner 'A' Platform	Statoil	ABB Offshore Technology	Runway Beam	AF
Norway	Snorre 'B' Platform	Statoil	ABB Offshore Technology	Handrail Installation	HB
Qatar	RasGas Offshore	RasGas	J Ray McDermott	Pipe Supports	HB
Saudi Arabia	Karan Offshore Subsea Project	Saudi Aramco	J Ray McDermott	Grating Connection	GF
Trinidad	Angostura Field Development	Bhp Billiton	Worley Parsons	Pipe Supports	A
Trinidad	BGTT HIBISCUS	BG	Fluor	Pipe Supports	AF
Tunisia	Gas Miskar Compression Unit	BG	British Gas	Cable Ladder Support	A
U.A.E	Platform Refurbishment	Petrofac	Dubai Petroleum/OIL	Riser Winch Support	LB, HB
U.A.E	Platform Refurbishment	Hurcules Drilling	Maritime Industrial Services	Recon Beacon Installation	HB
U.A.E	Falah B ESP Installation	Petrofac	Dubai Petroleum/OIL	Pipe Supports	LR, LB
UK	Piper Bravo Platform	Talisman	AMEC	Floor Connections	Floor Fixing
UK	Tern Alpha Production Platform	Shell	J. Ray McDermott	Strengthening Blast Wall	HB
UK	Eider Platform	Shell	J. Ray McDermott	HSS Connection	LB
UK	Production Flowline For Wellhead 16	Shell	Shell	Pipe Supports	A
UK	Britannia Ship to Shore	Britannia Project	KCA Drilling	Pipe Supports	LB, B,
UK	Shell Central FPSO Dev	Shell	Rockwater	Beam Mounted Transporter	A
UK	Condensate Pipework Replacement	Shell	Sigma3	Pipe Replacement	A, AF
UK	Auk Jubilee Project	Shell	KBR	Cable Tray Supports	B
UK	Elgin Puq	Total	Sparrows Offshore	Comp. Bundle Removal Beams	AF
UK	Maersk Giant Winch Re-locations	Maersk	Fabricom	Reloc. of B.O.P Winches	A
UK	NCP Rig Skidding Improvements	CNR	KCA Deutag	Rig Skidding Improvements	A
UK	Sarawak Shell Berhad	Shell	Samsung /Technip/KBR	Integral Deck Connection	A
UK	Leman B Platform	AMEC	Carpenter & Paterson	Hanger Assembly	A
UK	Duba Offloading Platform	KW Consultants	PMS	Pile Template struc. & Guide Assy	AF
UK	Amoco (operated) Lomond Platform	Texaco	Kværner H & G Offshore	Steel Connection	GC
USA	Exxon/Mobil Baytown	Exxonmobil	GDS Engineers/Fluor/KBR	Pipe Supports	D2, D3, LR
USA	BP - Mardi Gras Platform	BP	Paragon Engineering	Girder Clamps	A, B
USA	MEGI FPU Tanker	MEGI	Albert Garaudy Engineers	Pipe Supports	AF, AH
USA	BP	BP Tanker	Albert Garaudy Engineers	Girder Clamps	A, B
USA	Exxon Heritage Platform	Exxon	Albert Garaudy Engineers	Diluent Skid & Pipe Supports	GC

Case Studies

Shell Tern Alpha Project Blast Wall Reinforcement





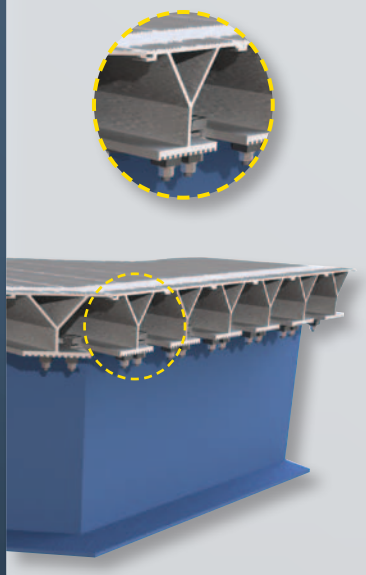
Location: UK North Sea

A safety upgrade required the original 1/64" corrugated steel plate of the north wall on the Shell Tern Alpha platform to be strengthened.

Engineers selected the easy to install Hollo-Bolt to avoid disruption and maintain the integrity of the structure. Access was only required from the internal side and the 'blind' fixings' high load bearing capabilities ensured the horizontal cladding rails remained safely secured.

The reinforcing blast wall was then connected to the cladding rails, strengthening the original wall. Lindapter 5/8" Hollo-Bolts proved ideal for this application, allowing the new blast wall to be simply bolted to the existing structure.

Centrica Rough Platform 47/8A Helideck Refurbishment



Location: UK North Sea

Lindapter Girder Clamps were used to permanently secure a refurbished helideck to the Centrica Offshore Platform.

Lindapter provided a custom connection solution featuring synthetic polymer coatings to eliminate electrical contact between the structural steel and aluminium deck, avoiding galvanic corrosion between the dissimilar metals. Configured with Type A and B clamps, the system featured on-site adjustability for precise alignment of the helideck's interlocking parts and required no welding or drilling for minimal interruption to productivity.

The products supplied were calculated to withstand dynamic loads associated with the landing and take-off of helicopters and their rapid installation had minimal impact on the rig's output, creating significant cost savings.

Approvals

Quality

Accredited to ISO 9001 since 1986, Lindapter strictly enforces a quality management system that includes vigorous product testing to ensure consistently high manufacturing standards.

Q 05143

Environment

Lindapter operates an ISO 14001 certified environmental management system and constantly monitors and improves aspects of the business that may have an impact on the environment, including the use of natural resources, the handling and treatment of waste, and energy consumption.

EMS 546660

Approvals

Lindapter has manufactured to the highest standard for over three quarters of a century, earning a multitude of independent approvals and a reputation synonymous with safety and reliability. Current accreditations include:

CE Marking
For Lindapter products in compliance with the provisions of the EC Construction Product Directive 89/106/EEC, please refer to the website: www.lindapter.com/about/ce

Deutsches Institut für Bautechnik is a body that approves construction products for use in structural and civil engineering industries in Germany.

Lloyd's Register Type Approved products have been subjected to tensile, frictional, shear, vibration and shock tests, witnessed and verified by Lloyd's Register.

TÜV NORD is the certifying authority for safety, quality and environmental protection in Germany.

Det Norske Veritas has approved the use of Lindapter products in lifting applications. This includes their use on both mobile and fixed offshore installations.

Factory Mutual, the American insurance organisation, offers an approval which is recognized by the fire protection industry world-wide.

Verband der Schadenversicherer e.V. is one of Germany's leading independent testing institutions for products used in fire protection applications.

Lindapter is a member of the following organizations:

American Institute of Steel Construction

British Constructional Steelwork Association

The Steel Construction Institute

Technical Support

Experienced engineers offer an unrivalled support service, including free design and custom new product development. Lindapter's philosophy is to deliver the highest quality at every stage of the service, from initial connection design to installation guidance.

- Specialist advice from experienced engineers
- Free connection design based upon your requirements
- Custom drawings delivered in 2D and interactive 3D formats
- CAD files available to import into all major software applications
- Contractor training and on-site visits (where required)

Engineered Solutions

- Design and development of custom products, manufactured to Lindapter's exacting standards
- Thoroughly tested with detailed reports

(Above) *One of two 224,800lbs testing machines in Lindapter's Research & Development Facility*

(Left) *An example of Lindapter's custom interactive 3D drawings, just one part of the connection design service on offer*

Ask Lindapter to design a solution to your connection requirements:

Technical Support: support@lindapterusa.com
General Enquiries: inquiries@lindapterusa.com

lindapter®

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www.lindapterusa.com

OGB-USA-12a

Lindapter Connections for

RAIL

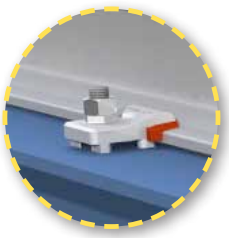
BENEFITS

- ✔ Fast, cost effective connections
- ✔ No on-site drilling or welding
- ✔ For permanent & temporary connections
- ✔ No damage to existing steel
- ✔ For parallel & tapered flanges
- ✔ On-site adjustability
- ✔ Only hand tools required
- ✔ Network Rail approved products*

** Contact Lindapter for more information*

TYPICAL APPLICATIONS

- Station construction & refurbishment
- Overhead line equipment & electrification
- Maintenance walkways
- Low speed rail
- Signage

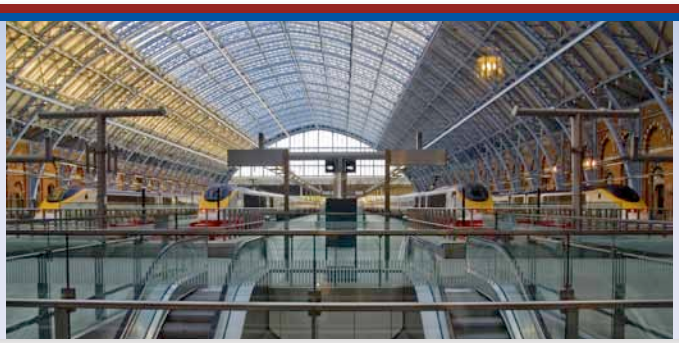


Example above: Lindapter Type HD, Hitachi Ashford Depot, UK.

See inside for more of Lindapter's Project Experience...

STATION REFURBISHMENT

Project: St Pancras Station
Location: London, UK
Product: Type AF
Application: Connecting the steel framework of the new roof to the station's existing structure

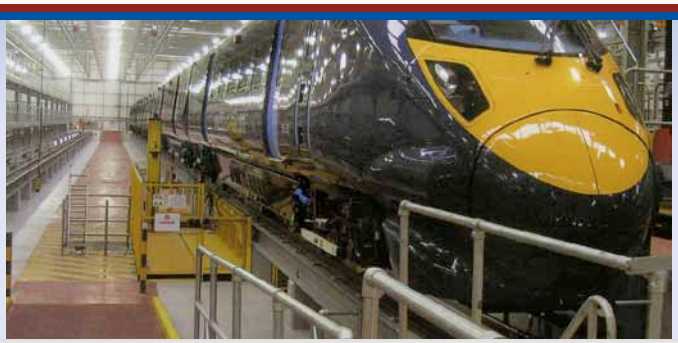


OVERHEAD LINE EQUIPMENT

Project: Rail Infrastructure Corporation
Location: New South Wales, Australia
Product: Type CF
Application: Connecting overhead line equipment brackets to support masts

LOW SPEED RAIL

Project: Hitachi Ashford Depot
Location: Kent, UK
Product: Type HD
Application: Connecting low speed rail lines at Hitachi's Ashford Train Maintenance Centre



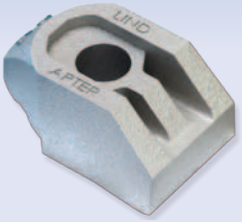
SIGNAGE

Project: Berlin Railway Station
Location: Berlin, Germany
Product: Type A
Application: Suspension of visual display equipment on the station platforms

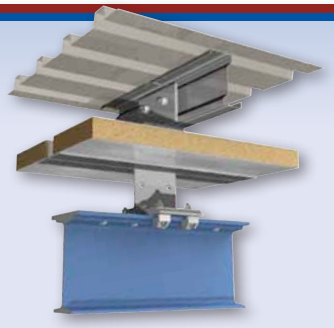
MAINTENANCE WALKWAY

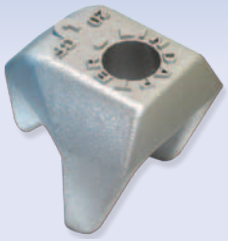
Project: Arnside Viaduct
Location: Cumbria, UK
Product: Type FF – Floorfast®
Application: Securing maintenance walkway alongside the replacement viaduct deck

Image: Network Rail

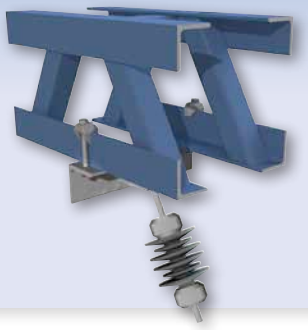


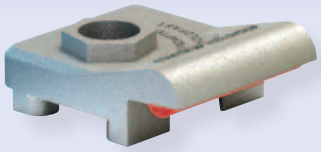
The Type AF was specified to secure the steel framework of a new roof to the existing structure of the grade 1 listed shed designed by William Henry Barlow at St Pancras Station. In the most crucial part of the refurbishment, Lindapter's high strength clamps avoided drilling or welding, therefore removing the risk of damaging the historic Victorian arches.



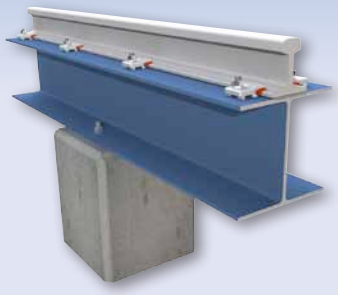


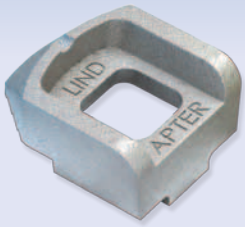
Lindapter's Type CF high friction 'hook' clamps were used to connect overhead line equipment (OLE) brackets to the support masts along the line. The Type CF allowed for horizontal adjustment of the brackets as they are tightened with hand tools rather than drilled or welded in fixed positions.



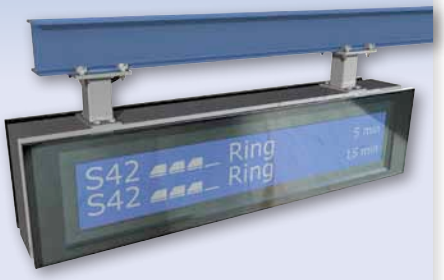


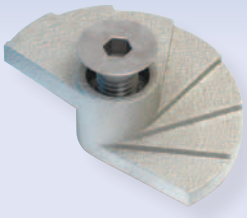
Lindapter's $^{3}/_{4}$" Type HD Rail Clip was used to safely secure FB rails along lengths of UKC way beam, in turn supported by reinforced concrete plinths. These low speed rails were installed in pairs down the length of the new depot building to give access for maintenance and repair work on the trains. The Type HD facilitated the precise alignment of the rails by allowing a high degree of stepless lateral adjustability.



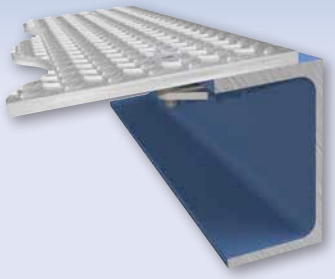


Lindapter's standard Type A steel clamps were used in a Girder Clamp configuration to suspend digital information monitors from existing steel beams within the station building. The easy to install connections do not cause any damage to the existing steel, and can be easily removed and adjusted so that signage can be easily altered as required.





The major upgrade of the 150 year old Arnside Viaduct required the replacement of the entire deck. Checker plate flooring was secured to supporting box girder sections along the length of the new deck using 8000 of Lindapter's quick and easy to install Floorfast fixings. The ease of installation allowed the flooring to be fitted as the deck units were removed, helping the major renovation to be completed on schedule.



THE lindapter RANGE

STEEL CONNECTIONS

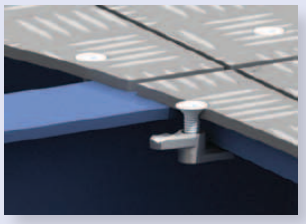
Lindapter has pioneered a unique and proven concept: Innovative clamping systems that eliminate the need to weld or drill. This method not only reduces installation time and labor costs but provides an installation method with zero damage to existing steel; perfect for the refurbishment of railway stations.

HOLLOW SECTION (HSS) CONNECTIONS

Featuring the legendary Hollo-Bolt®, Lindapter's HSS connections are designed as a simple cost-effective solution for connecting to structural hollow section or wherever access is only available from one side. The versatile Hollo-Bolt has been used for the connection of power and signalling poles, signage and cladding panels.

PIPE / CONDUIT SUPPORTS

Lindapter provides a range of connections solutions for suspending the wide variety of services found through the rail industry from supporting steel, from piping to signalling electrics. Lindapter's flexible support connections can be used in stations, depots and along railway lines.



STEEL FLOOR CONNECTIONS

Lindapter's unique no-weld no-drill concept extends to the connection of steel flooring. Open bar grating and checker plate flooring can be installed for railway maintenance walkways alongside tracks and around industrial buildings by one person without the need to access the underside of the flooring.

CUSTOM PRODUCT DEVELOPMENT

Lindapter products are designed to be adjustable to the precise requirements of an individual project. However, where an off-the-shelf solution is unavailable, Lindapter's R&D Facility has the capability to design and manufacture custom connection solutions. For instance, the team developed the tamperproof Button Security Head Hollo-Bolt ideal for seating and signage applications in railway stations.

For more info visit ***www.lindapterusa.com*** *or email* ***inquiries@lindapterusa.com*** *to request a catalogue.*

