

Insulà

Thermal Break Connections

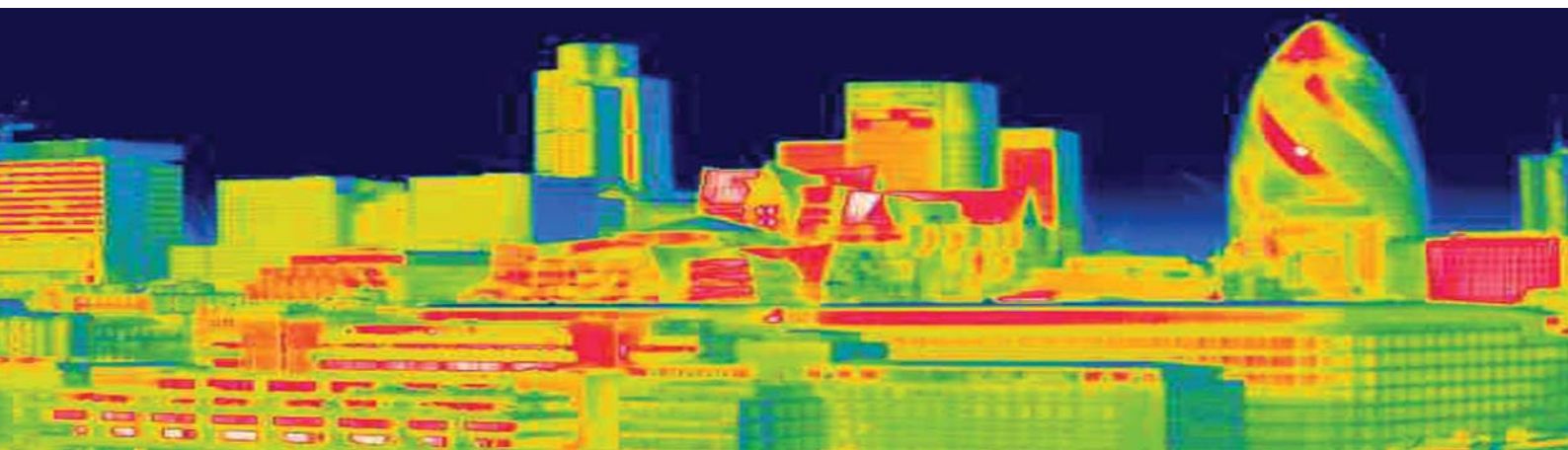


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Introduction

Regardless of who you are, where you live or what you do, the world is going green like never before and everyone has a part to play.

It is a little known fact that buildings are the main cause of wasted heat energy within the EU, with cold bridging accounting for 40% of total heat loss from the building..

The introduction of new building regulations in 2002 concerning the presence of thermal or cold bridging within buildings (Part L1a) is still catching many people, from architects to structural engineers alike, unaware and unprepared.

Stopping thermal bridging is one of the most effective ways to

drastically reduce the amount of wasted energy from buildings, therefore, the need for a versatile thermal break connection able to completely break the conductive path without compromising the load bearing capacity of the connection is greater than it has ever been.

Archtechnik are proud to announce their innovative range of ThermConX thermal break connections, designed to provide a solution for every instance where thermal bridging needs to be avoided.

What are the benefits of ThermConX?

- ThermConX contains no conductive path for heat energy to escape while still retaining full structural integrity.
- A single ThermConX unit saves the equivalent amount of energy as a continually burning 60w light bulb.
- ThermConX is the only thermal break connections to have been awarded full L.A.B.C. National Type Approval.
- ThermConX is totally inert and requires no running or maintenance costs for the lifetime of the building.
- ThermConX is available in a wide range of styles to suit all applications and methods of construction.
- ThermConX stops interstitial condensation and the formation of mould.
- ThermConX is delivered to site complete with all fixings, ready to be installed immediately.
- ThermConX is fully patented technology.

Alternatives

Why don't they work?

ThermConX are the only thermal break connections able to completely break the conductive path while retaining the full structural integrity of the connection.

The reason this is possible is because ThermConX are not reliant on metal supports running through the connection in order to provide the necessary structural integrity and load bearing capacity.

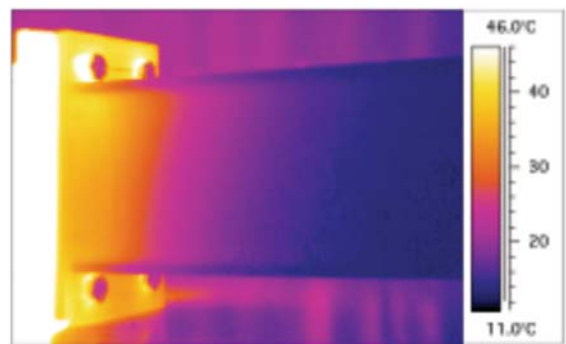
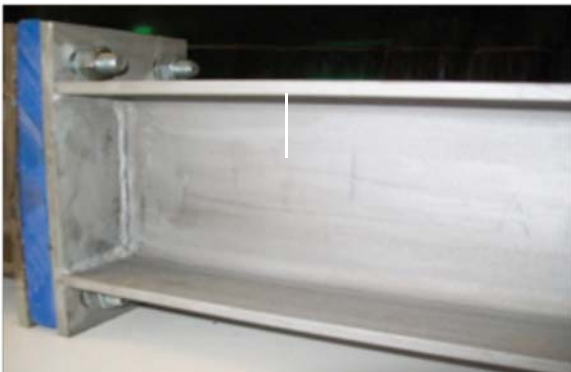
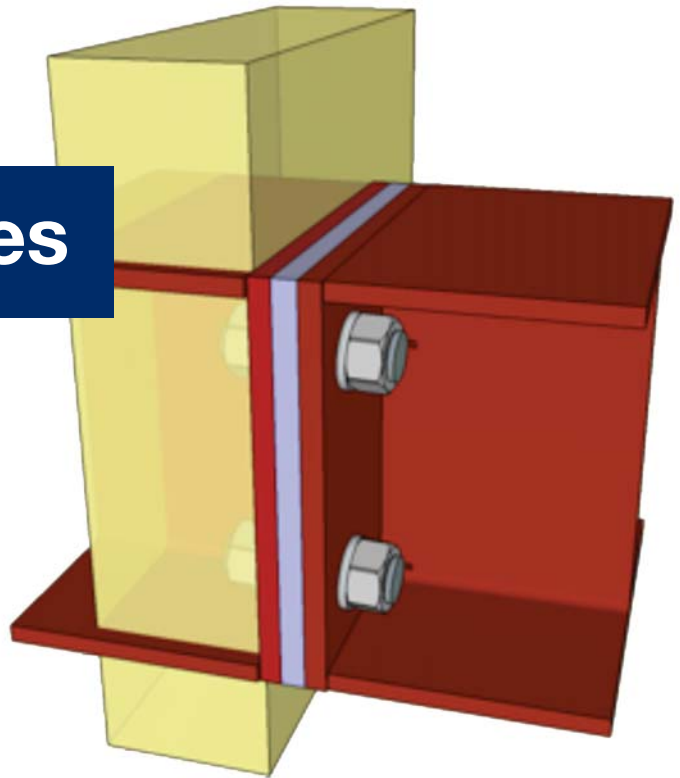
Currently, the most common method of thermal break connection design is based on a procedure known as breaking the beam. This procedure involves breaking the metal beam so that fixing plates can be welded back onto it. In between these fixing plates layers of neoprene and plastic are placed which are secured within the joint once the connecting bolts are tightened and the plates drawn back together.

Why doesn't this method work?

There are two main reasons as to why this method of thermal break connection design is flawed.

- 1) The procedure of breaking the beam means that the structural integrity of the beam and the connection becomes compromised and therefore considerably weakened. Sections of the metal beam will be located within the insulated cavity of the building.
- 2) The fixing bolts run right through the connection, maintaining contact with both ends of the beam.

This continuous contact through the connection means that there is still a pathway across which heat energy is able to travel and escape. This means that a very efficient cold bridge is still present.

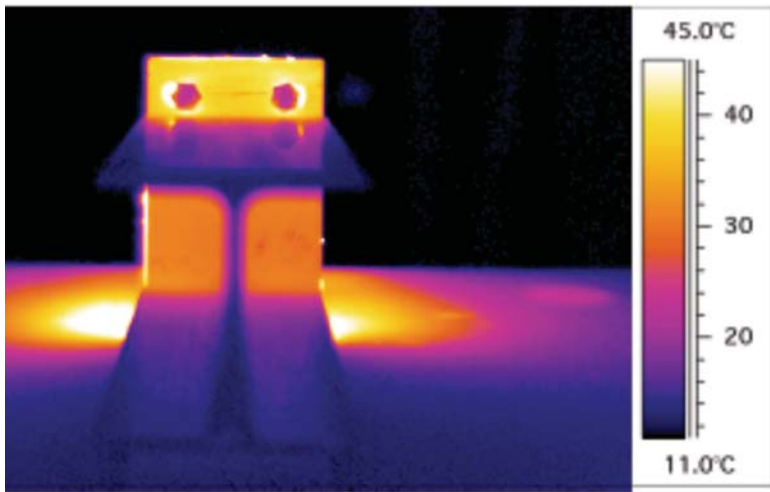


The diagram above clearly shows the cold bridge created by the metal bolts, and the subsequent loss of heat energy through this cold bridge. Heat energy applied to the left hand steel member can be clearly seen conducting through the connection in to the metal beam on the right..



The Insulated Pad

In line with our Quality management systems we have a program of continuous professional development to carry out ongoing research and development for our range of products. We continually undertake a series of in-house testing to gather accurate data about the thermal effectiveness of our products and to enable us to improve and develop further solutions for cold bridging in the build environment.



Independent research from the market place tells us that in an effort to try and eliminate cold bridging between two metal beams some Architects and Building Contractors specify an isolation pad to be used between two backing plates. This is usually made out of neoprene, plastic or a similar non conductive material. A section of the product is placed between two metal plates and the joint is drawn together usually with 4 metal bolts. We have reproduced this type of connection in our test lab to test its effectiveness at stopping or reducing the

passage of heat energy along the metal member thereby eliminating the cold/heat bridge. Further results of our testing can be found on our website at www.insula.ltd.uk.

How thermally conductive is ThermConX?

After carrying out extensive thermal modeling testing, we have been able to prove conclusively that our range of ThermConX thermal break connections have a thermal conductivity value (U-value) of 0.2w/mk. Each connection's U-value is calculated in accordance with both BN443 and BS EN ISO 6946 documents. Every thermal break connection that we supply is tested before it is sent to site to ensure that there is no pathway along which heat energy is able to travel and escape.

U-values should be calculated in accordance with the document BR 443; "Conventions for U-value calculations". The document refers to the simplified method for performing U-value calculations as described in BS EN ISO 6946; "Building components and building elements Thermal resistance and thermal transmittance – Calculation method". This method is suitable for the majority of common constructions, and is how U-value calculations are traditionally carried out. (Or, at least, that's how most U-values should be calculated.)

But both documents (BR 443 and BS EN ISO 6946) point out that there are situations where the simplified method given in BS EN ISO 6946 is not valid. The main situation, which invalidates the simplified method, is where an insulated layer is perforated with metal. Where the simplified method cannot be used, a numerical modelling approach must be adopted, in accordance with the requirements of BS EN ISO 10211; "Thermal bridges in building construction – Heat flows and surface temperatures".

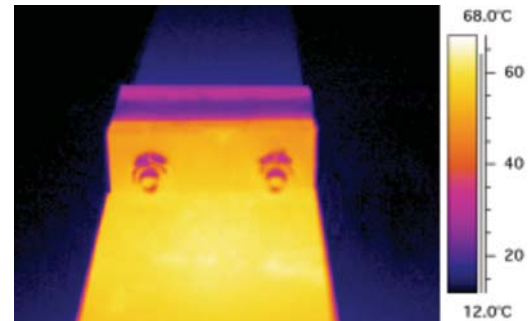
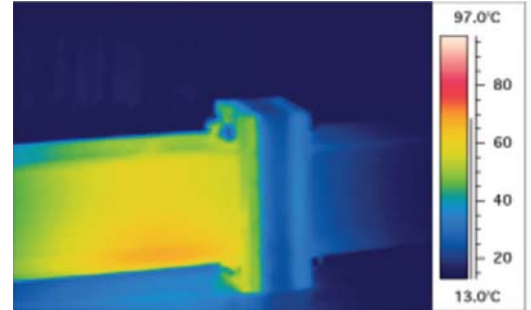
All our Thermal Images are taken by Thermal Efficiency Services at www.tesinfrared.co.uk



The tests were repeated and the Nylon 6 pad was replaced with a 'Structural

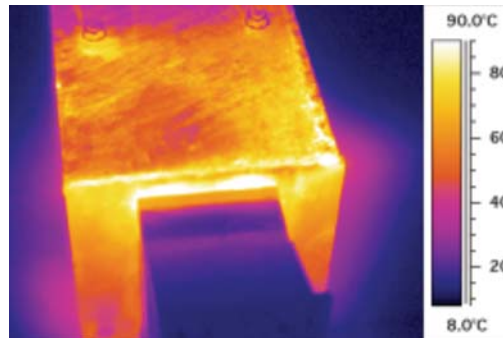
Insulà Products

Thermal break connection! A11-P75-250x150x80, this connection does not require metal through fixing! The results can be seen below as heat energy was applied to the 'internal' steel member. Heat energy can be seen conducting along the beam where it comes into contact with the Structural thermal break connection, at which point all heat transfer is halted and it can also be seen that no heat energy passes through the connection.

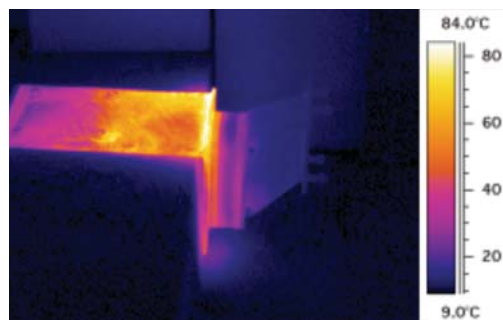


Strap Connection

Using the same Insulà thermal break connection mounted in our balcony strap connection assembly, the results can be clearly seen in the thermal images. They show a clear and defined halt in the heat transfer along the metal members when heat meets the Insulà thermal break connection.



Further thermal tests have been carried out with Insulà product range and their results can be seen on our website.

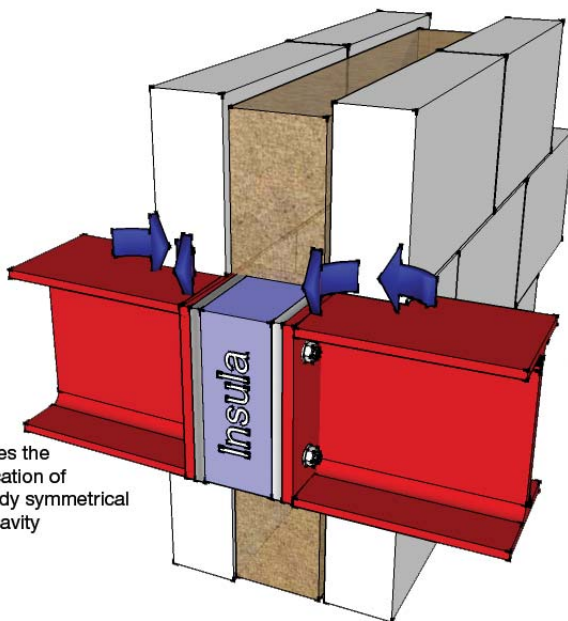


Patented Technology

How effective is ThermConX?

ThermConX utilises a combination of the very latest high technology ceramic alloy materials with cutting edge computer aided design in order to completely negate the requirement for continuous metal contact through the connection.

ThermConX not only solves the problem of cold bridging at source but also retains the connections ability to withstand loadings in compression, tension, shear and moment forces.



This diagram illustrates the importance of the location of the thermal Break body symmetrical within the insulated cavity

Correct ThermConX Installation

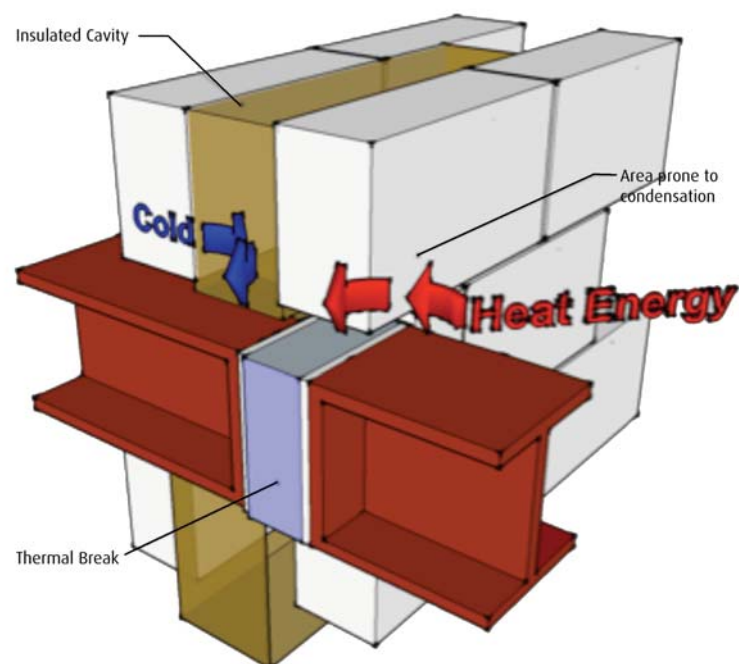
This diagram shows how ThermConX (Shown here in blue) fits snugly within any standard 100mm cavity when attached to two 10mm backing plates.

A snug fit is essential to ensure that no cold or heat energy is able to enter the insulated cavity.

Incorrect ThermConX Installation

This diagram shows how an incorrect ThermConX installation renders the connection ineffective.

In this instance the ThermConX connection is allowing heat or cold energy to enter the buildings' insulated cavity, thus creating a thermal bridge and negating the effect of the insulation.



Accreditation

What are these new regulations?

Building Regulation Part L1a The Conservation of Fuel & Power

The guidelines proposed by building regulations stated that:

“The building fabric should be constructed so that there are no reasonably avoidable thermal bridges in the insulation layer caused by gaps within the various elements.”

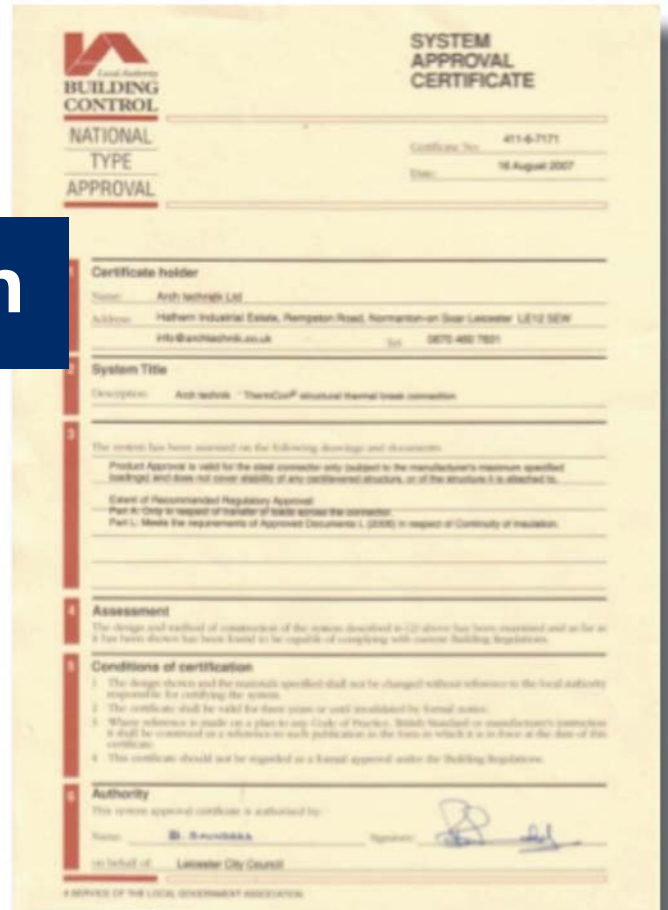
Although the 2002 building regulations highlighted, for the first time, the need to remove cold bridging from the design of new buildings, they offered only vague guidelines. Due to the vague nature of these guidelines, many companies began producing and marketing products called thermal break connections which did little or nothing to even reduce the amount of heat energy being wasted, let alone stop it completely.

National Building Specification (N.B.S.) introduced new guidelines regarding surface condensation, one of the major concerns caused by the presence of cold bridging. They proposed that: ***“To maintain an adequate internal surface temperature, and thus minimize the risk of surface condensation, it is recommended that the thermal transmittance (U-value) of any part and at any point of the external fabric does not exceed 1.2 w/m²k.”***

Although this proposed a value to which thermal break connections must conform, it was not a mandatory requirement and so ineffective thermal break connections continued to pass through unchallenged by building control.

Does ThermConX have any formal accreditation?

Yes it has. ThermConX are the only thermal break connections to have been awarded full Local Area Building Control (L.A.B.C.) National Type Approval. Building control will only award national type approval to a product once stringent evaluation has been carried out to ensure that the product is fully compliant with building regulations. This certification ensures complete peace of mind that whatever ThermConX thermal break connections have been specified in order to stop cold bridging there will be no objections from building control and/or building professionals. In conjunction with BRE at Watford we have carried out a very detailed program of continual development and testing of our product range enabling us to bring to market a leading edge innovative range of sustainable products for the building environment. The development of this close working relationship has accumulated in our product range being put on permanent exhibition (September 2011) in the BRE Innovation Park at Watford a world leading and ground breaking demonstration development designed to give a glimpse of how the future delivery of sustainable buildings and communities can be achieved not only in the UK but around the world. Included below are some companies we have worked with to gain accreditation throughout the UK and Europe.



What are the effects of cold bridging?

What are the health effects?

The main health concern caused by the presence of cold bridging is the formation and growth of mould and mildew.

If mould is absorbed into the body, either through inhalation or via moldy food, it can cause extreme sickness and lead to the formation of poisonous and even carcinogenic substances.

Mould can also cause serious allergic reactions in the bronchia and lungs. Mould can also grow in the lungs and sinuses and become invasive in immune-suppressed people.

What is mould?

Mould is a type of multi celled fungi which forms in areas where a condensational build up occurs due to the meeting of warm and cold air.

This build up of condensation leads to the formation of cold spots which in turn leads to the formation and growth of mould and mildew.

The following quote is taken from a report published in the Independent newspaper.

“An investigation for the Royal Institute of Chartered Surveyors (RICS) by the specialist Fugenex found harmful mould in around 25 per cent of homes. Fugenex performed DNA analysis on the mould present in the homes it studied, discovering the toxic variety, known as Stachbotrys Chartarum, was remarkably common. It has been linked with cancer, asthma, bronchitis and causing allergies.”

This picture shows the early effects of mould growth created by the balcony connection on the floor above.



Product Types Available

Our range of structure thermal break connection solutions are categorized to provide a solution for most instance where a thermal break connections are required to negate the effects of cold bridging.

Steel

Steel to steel
Steel to timber
Steel to concrete (compression)

Concrete

Concrete to steel
Concrete to steel (Juliet)
Concrete to timber
Concrete to concrete (tension)
Concrete to concrete (compression)
Concrete to concrete (key hole)

Timber

Timber to timber
Timber to steel
TB -P85-25
TB -P85-10

40% of our production are made to order thermal break connections, therefore please contact our technical department for details.

Passive House

Concrete to concrete (Box)
Concrete to steel (Box)

Retro Range

Low loaders

Assembled products

Brick shelf angle
Balcony connection assemblies
Stone support brackets.

Thermal Plate



Load Table

Please see website calculations for more details.

Type	Model	Size	Width Cavity	Vertical Shear Fv (Kn)	Horizontal Shear Fh (Kn)	Tensile Mpa T (Kn)	Moment Knm
Slim Line	A10-P75	250X150	50	600	475	475	10
Plate	TB-P	1mx150	10	-	-	-	-
	TB-P	1mx150	15	-	-	-	-
	TB-P	1mx150	25	-	-	-	-
Lo Loader	A12-P75	100x100	80	650	476	600	10
	A12-P75	150x100	80	650	476	600	14
	A12-P75	200x100	80	650	476	600	16
	A12-P75	200x200	80	650	476	600	16
	A12-P75	250x150	80	650	476	600	20
ThermCX	A11-P75	250x150	80	851	676	337	18
	A12-P75	300x150	80	650	325	600	22
	A12-P75	300x200	80	650	476	600	22
	A12-P75	400x200	80	650	476	600	24
XL	A12-P75	500x350	80	650	476	600	28
	A13-P75	100x50	50	650	476	600	10
	A13-P75	150x100	50	650	476	600	12
	A13-P75	250x150	50	650	476	600	15
Tang	A14-P75	100x50	80	200	200	450	6
	A14-P75	150x75	80	250	225	650	8
	A14-P75	200x100	80	300	325	850	10
Com- pression	A15-P75	300x300	100	400	425	650	-
	A15-P75	400x400	100	500	525	650	-
	A15-P75	500x500	100	600	650	650	-
Retro	A16-P75	50x100	200	200	345	400	2
	A16-P75	200x100	200	250	345	400	6
	A16-P75	100x100	200	200	345	400	3
Passive	A17-P75	250x150	350	600	400	600	15

Data Sheets

ThermConX are the original and innovative structural thermal break connections. They are designed to provide support for the majority of everyday applications, ranging from brise soleil and canopy's to balcony and fire escape staircase systems.

The A11 prefix refers to the type of connection, while P75 refers to the value of the insulating composite material used in the insulating body.

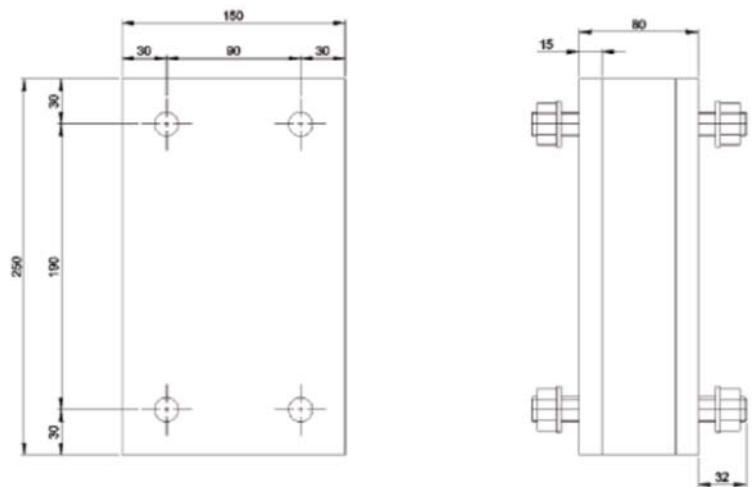
The subsequent numbers refer to the connections' vertical and horizontal dimensions and thickness respectively.

Two of our most popular A11-P75 range connections are shown here.

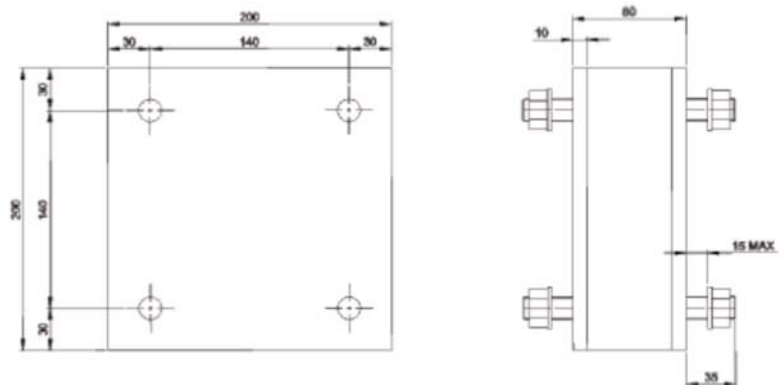
Further technical information is available on the data sheets on our website.

Steel Connections

ThermConX 250 x 150- 00685



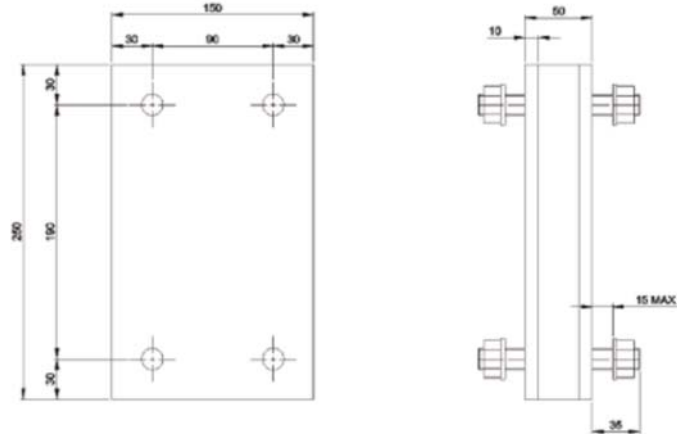
ThermConX 200 x 200- 00698



ThermConX Slimline

Our ThermConX Slimline thermal break connection was specifically designed for occasions where space is at a premium. Its 50mm body allows it to fit neatly within cladding and curtain walling systems such as Kingspan & Parklex.

ThermConX Slimline - 00683

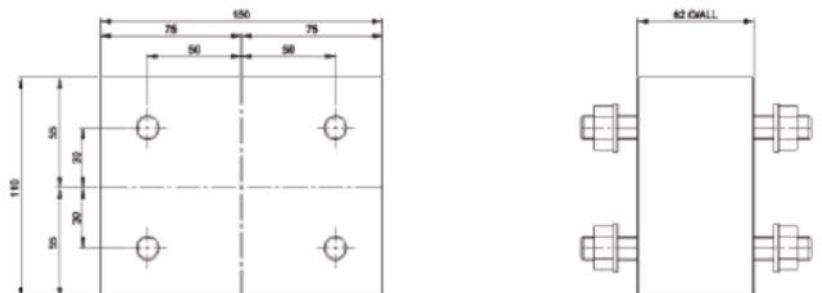


ThermConX Lo-loaders



ThermConX Lo-loaders are low cost connections available in a wide range of sizes. They can be specifically designed & engineered to suit customer's requirements & dimensions. Lo-loaders are suitable for the large majority of applications where lesser loading capacities are required.

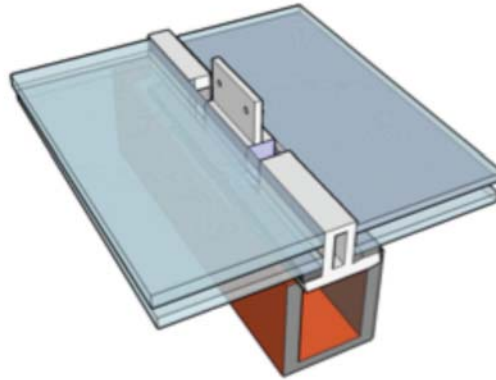
ThermConX Lo Loader - 00950



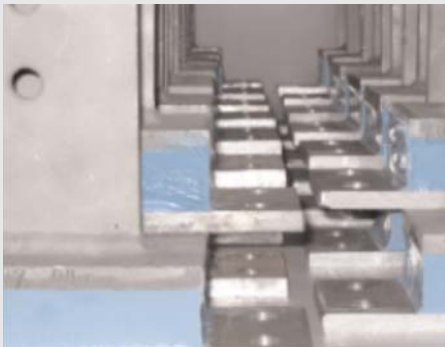
ThermConX Mullion

ThermConX Mullion are tall & narrow thermal break connections specially designed to be slim enough to mount inside the mullion or transom sections of façade and glazing systems.

ThermConX Mullion - 00707A



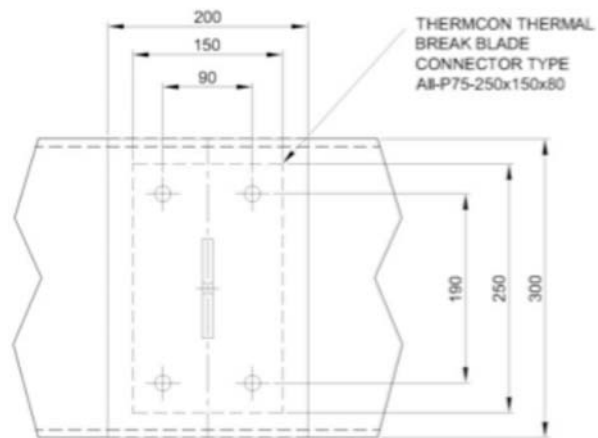
ThermConX Tang



ThermConX Tang thermal break connections allow external attachments to be secured back to the structure of the building through cladding systems such as Kingspan. Their slimline 50mm body allows the connections to be completely hidden from view, ensuring aesthetically pleasing, clean line design detail.

Please view connection details on our website.

ThermConX Tang - 00927



PART END VIEW

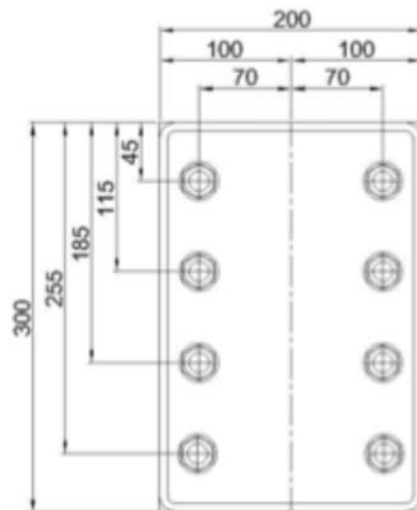
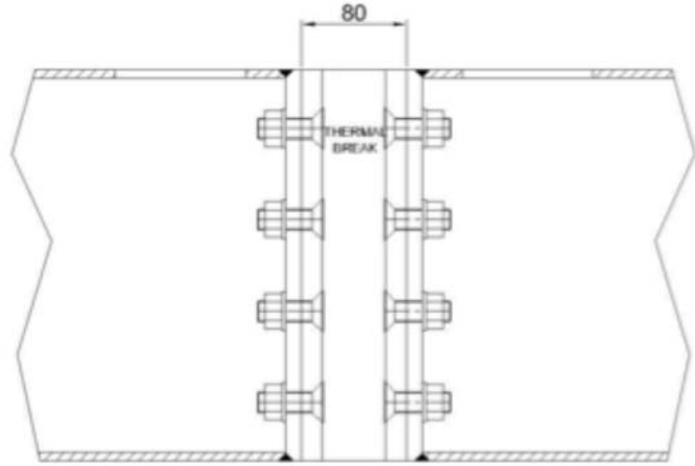
ThermConXL

ThermConXL are robust and heavy duty thermal break connections designed to provide support for the most extreme of external attachments.

Typical applications for ThermConXL include roof support & external walkway systems.



ThermConXL - 00632



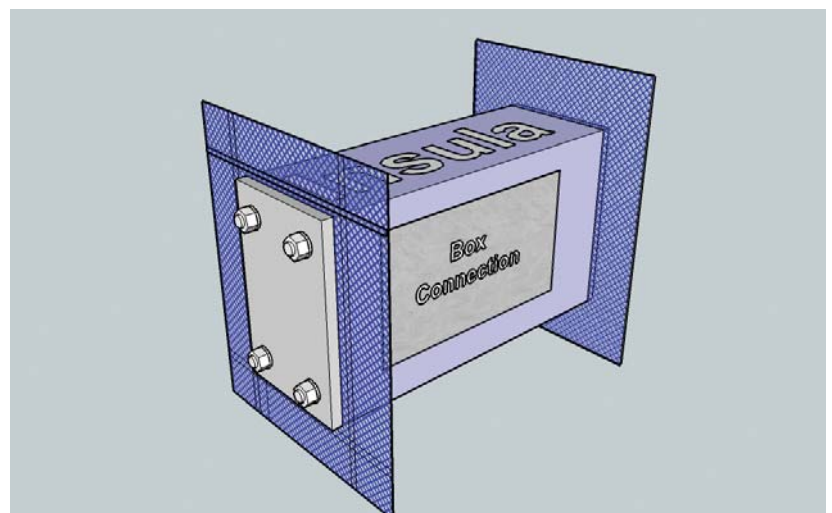
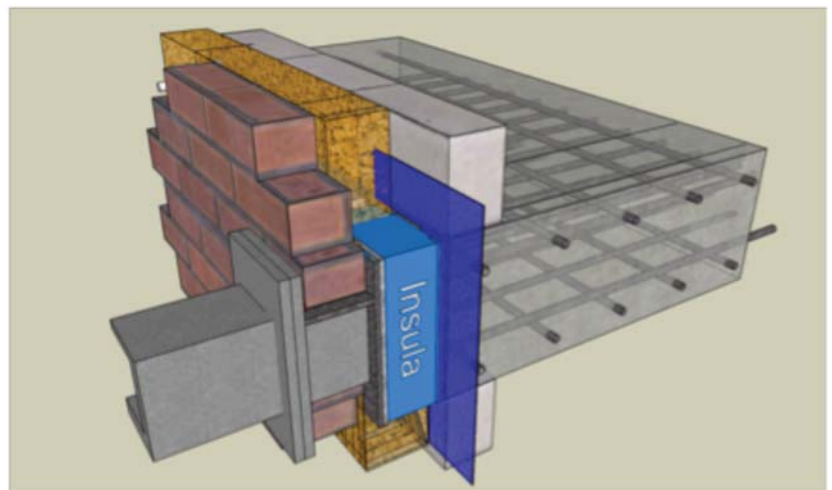
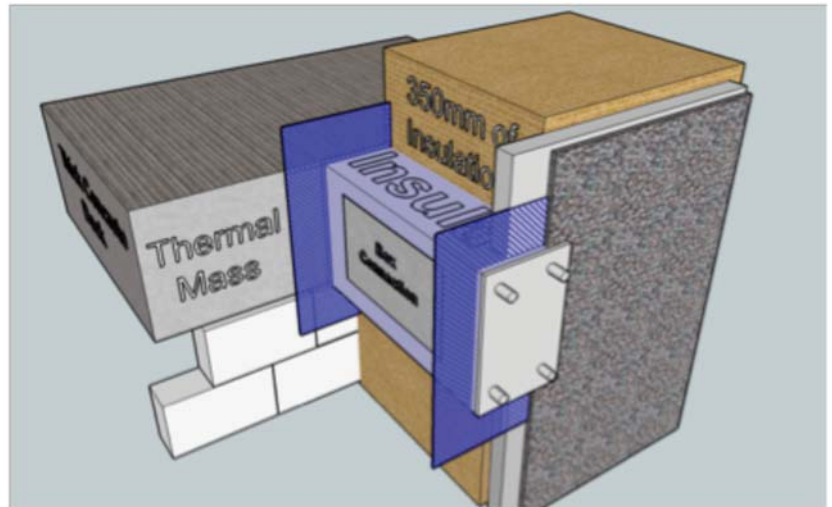
Sealant Skirts

Breathable and Airtight

Molded around the thermal insulated body of the Structural thermal break it greatly assists in achieving an airtight seal to the airtight envelope membrane of the building envelope.

The Sealant skirts are available on most of our range of Structural thermal break connections and are proving invaluable when making air tight protrusions through an insulated cavity.

Available with a double skirt, one of a water proof but breathable fabric and another of a non-breathable fabric, please specify when ordering.



ThermConX Concrete Connections

ThermConX Face Fix

ThermConX Face Fix connections are designed to allow a thermally broken connection to be made into the concrete face of a building.

It is possible for ThermConX Face Fix connections to be used as a retro fit item; however we would never recommend this as a first choice option.

Face fix are available on all sizes of ThermConX

ThermConX Rebar Nests

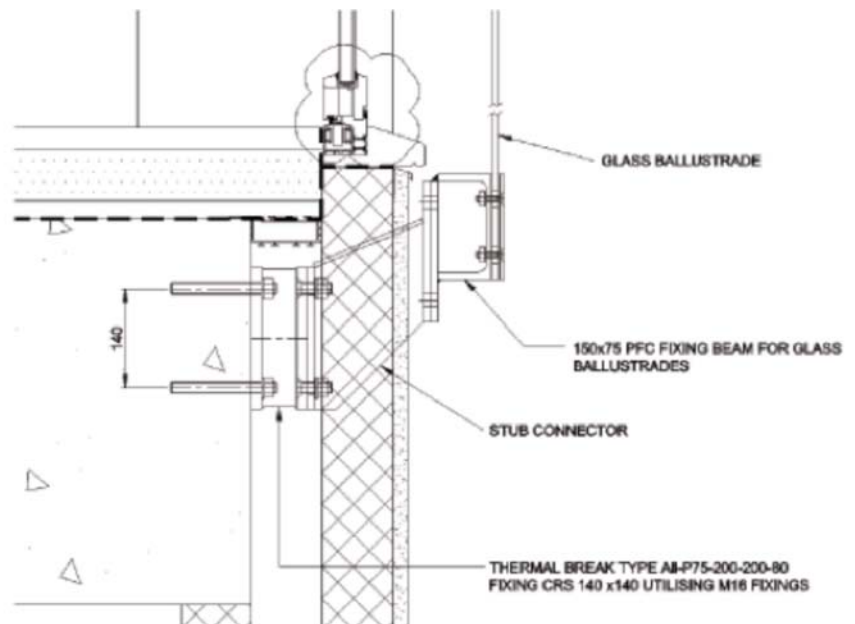
ThermConX Rebar nests allow thermally broken concrete to concrete and concrete to steel connections to be made.

The backing plates can be engineered to fit any thermal break connection from our range, allowing for complete freedom of design.

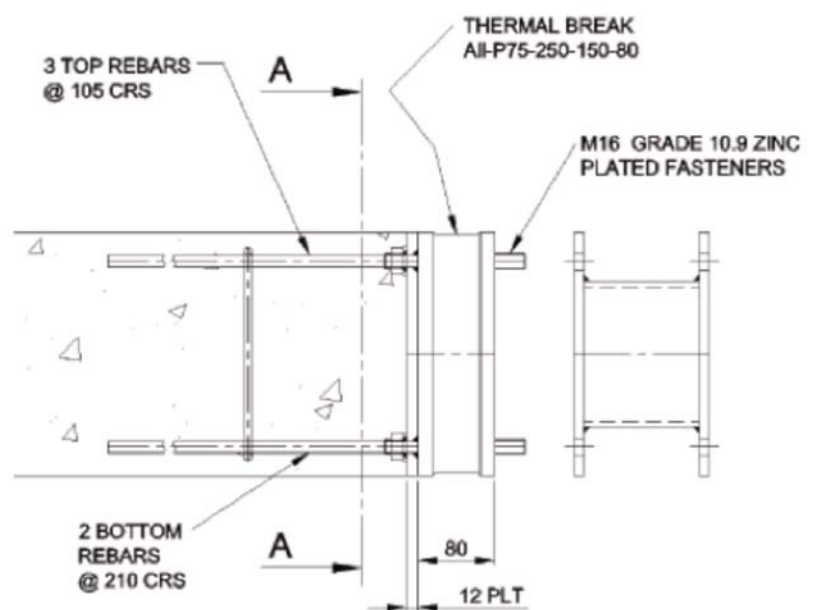
Rebar nests are available on all ThermConX connections, please see page 29.

Concrete Connections

ThermConX Face Fix 00903

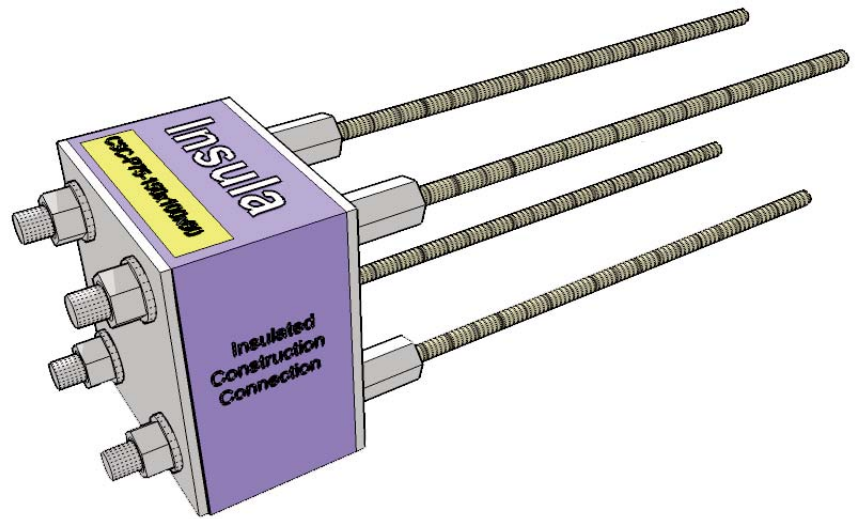


ThermConX Rebar Nests 00857



ThermConX Rebar Nests

The diagram opposite displays the rebar nests connection. These connections are available with a full range of interchangeable rebar's for a whole range of cast in situ situations.



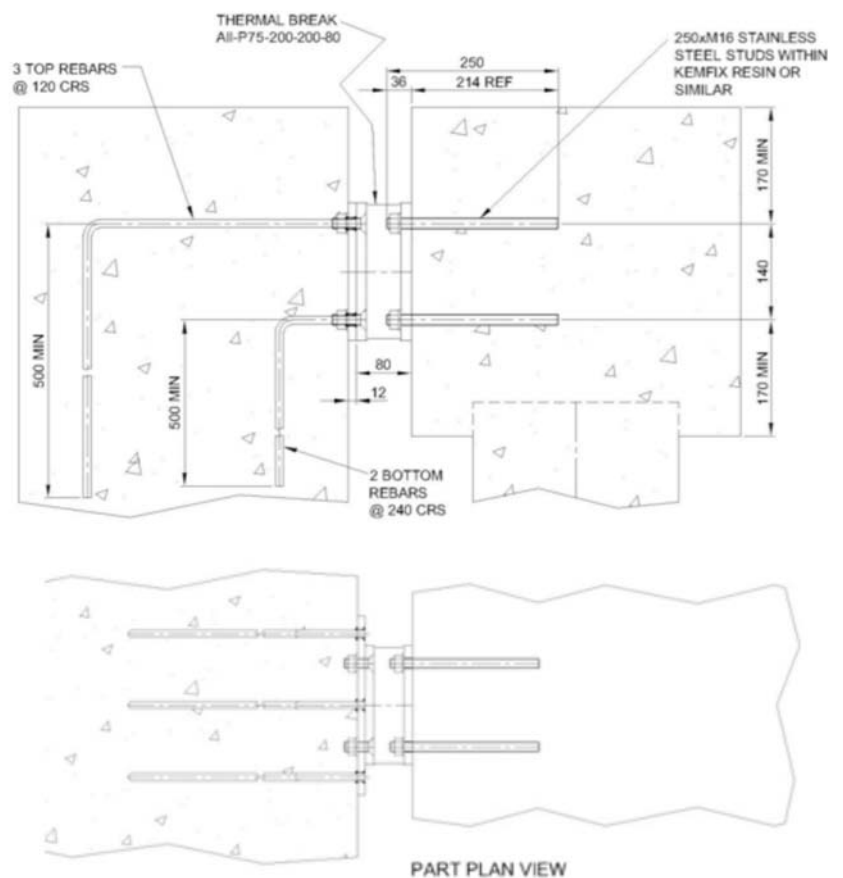
ThermConX Isowarm

These thermal break connections are for connecting pre-cast concrete to cast in situ.

They are designed specifically for applications where a long thermally broken concrete section is required such as partition or basement walling.

ThermConX I-so-warm is available in 1m & 1/2 m lengths. For smaller concrete to concrete connections please see our Concrete to concrete section.

ThermConX Isowarm - 00776



Concrete to Concrete Slab Connection

This new Isowarm is the most thermally broke concrete connection on the market today, shown here within the slab connection.

This unique and patented Connection uses the latest market leading technology developed so successfully by Insulà and applied so effectively in their ThermConX range of products this particular technology enables the structural integrity of the connection to be maintained without metal through fixing... yes **“no steal through fixings”**

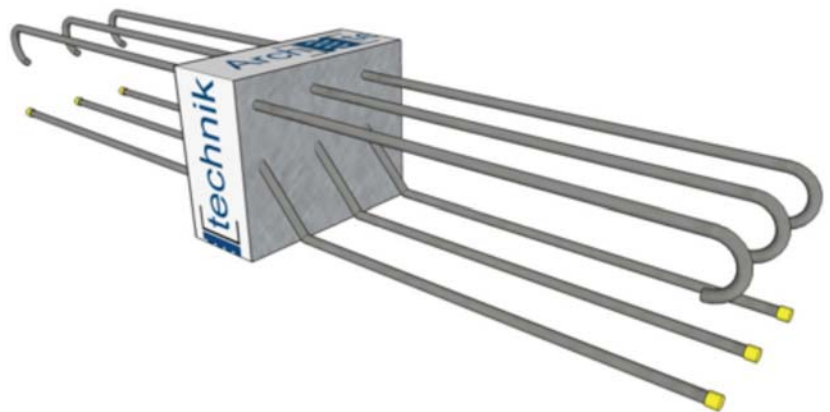
This gives the connection unrivaled levels of thermal efficiency.

I-so-warm connections come in simple to install 300mm modules, making them extremely quick and easy to install on site.

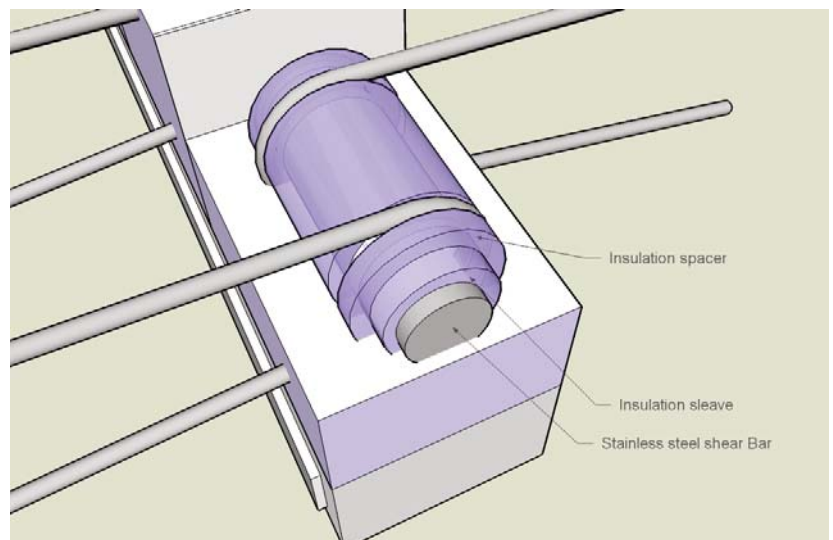
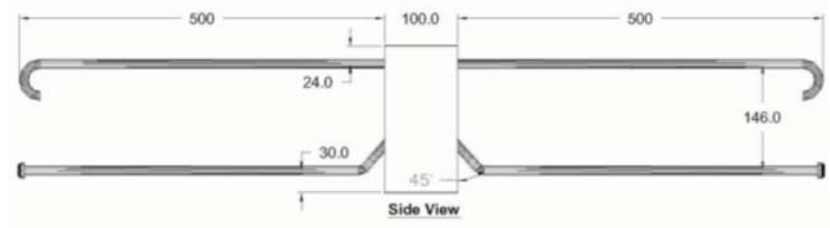
I-so-warm makes all other concrete to concrete connections ...obsolete!

Metal rebar's enter the insulated body, rap around the Insulated shear shaft and return back to concrete from which they came, returning the cold back to the cold side and the warm heat energy back to the warm side, but at all time's maintaining a thermally broken structural connection between the two elements.

Slab Connection Product



Data Sheet for Slab Connection

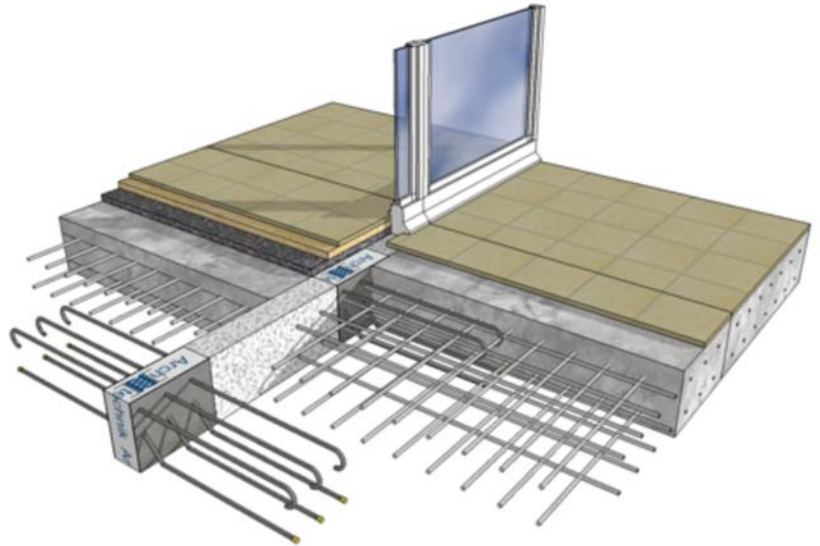


Concrete to concrete Slab Connection

Shown opposite is a 300mm thermal break module with a 700mm insulation unit. Most applications would only require one Thermal break module per linear meter, making the installation very cost effective.

The table opposite shows the properties of the insulated body in the thermal break connections. This area contains the inner workings of the unit and is blue in colour.

Slab Connection in Situation

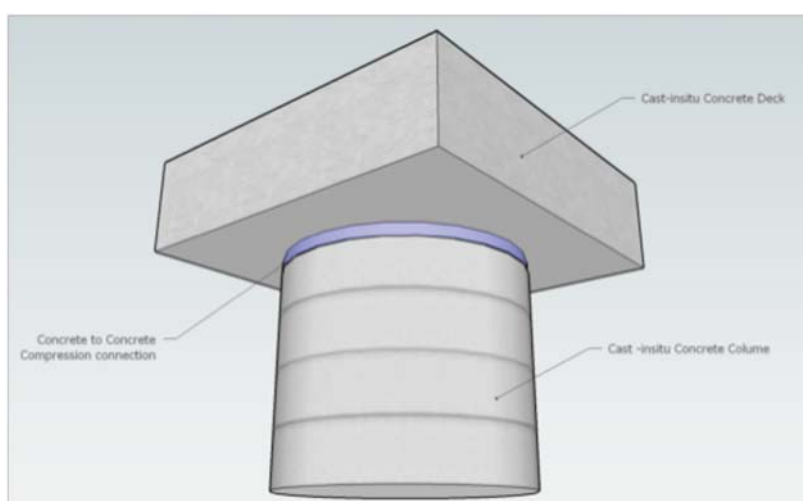
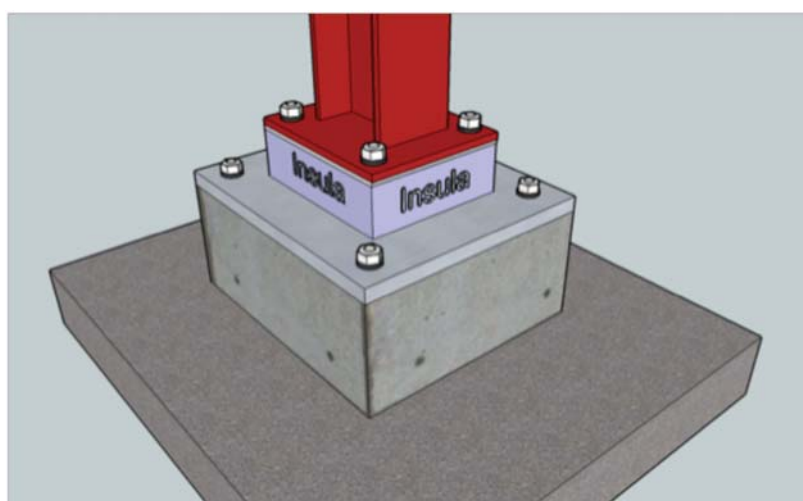
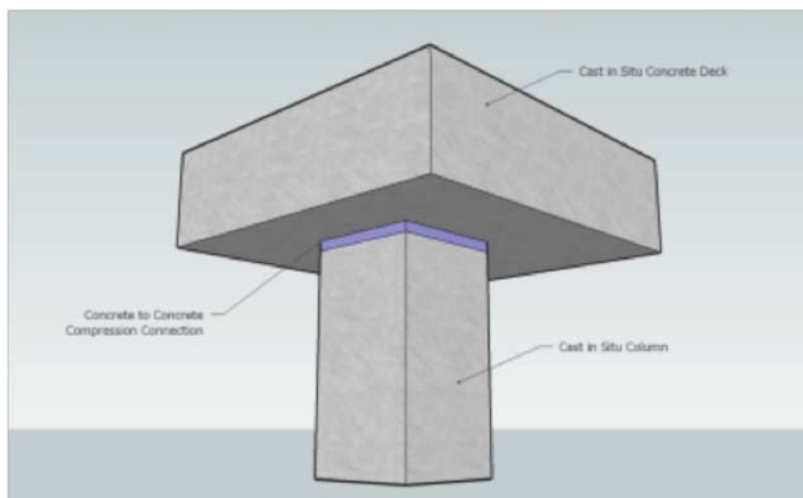


Properties	Standard	Units	Value
Compression Value	DIN 53517	N/mm ²	275
Hardness at 20°C	DIN 53505	Shore D	85
Tensile Strength	DIN 53504	MPa	66
Resilience	DIN 53512	%	45
Hardness at -5°C	DIN 53505	Shore D	87
Impact Strength at 20°C	ASTM D256	d/m	75
Thermal Conductivity	DIN 52612	W/m.K	0.11

Concrete to Concrete Compression Connection

Compressions Connections (Column to Deck) thermally break the vertical concrete columns at the point in which they connect into the horizontal concrete deck, these units are made to order and are cast into the column caps.

This unique and patented Connection again uses the latest market leading technology developed so successful by Arch technik and applied so effectively in their ThermConX range of products. This particular technology enables the structural integrity of the connection to be maintained with no metal through fixing again giving the connection unrivaled levels of thermal efficiency.

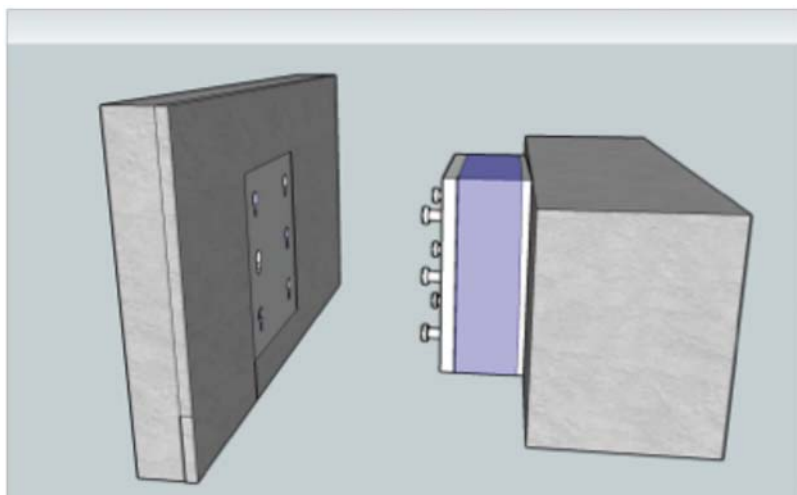
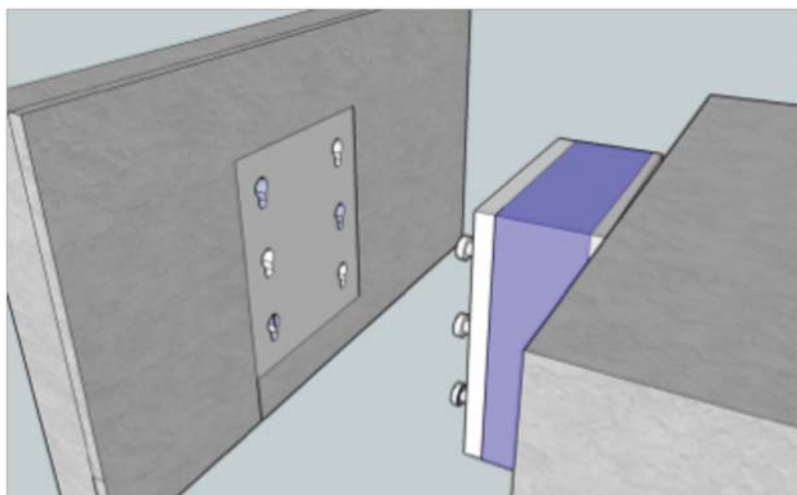
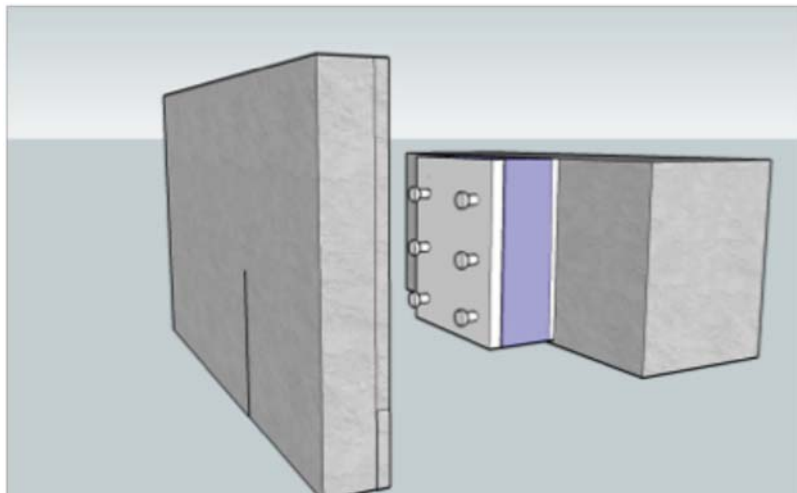


Keyhole Connection

Keyhole Connection

This has been developed for the pre-cast market and enables the pre-cast concrete units to be produced in the factory with cast-in Keyhole connection plates cast into the concrete.

The pre-cast units can then be transported to site (flat packed) and then erected quickly and efficiently using Keyhole Thermal break connections. The images opposite show the Keyhole Connection from a number of angles, displaying ease of installation.



Assembled Products

ThermCom Assembled Products

ThermCon Balustrade Posts

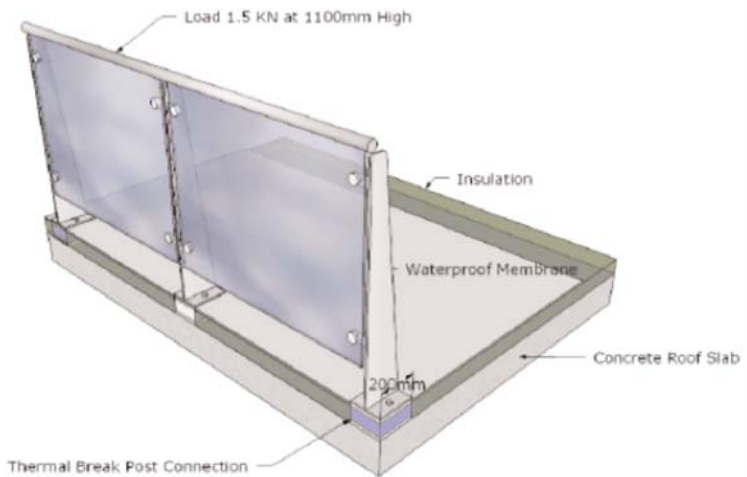
ThermCon balustrade posts are thermally broken balustrade posts designed for use in any instance where a balustrade is required to be secured back to the structure of the building (such as for a roof garden). Balustrade posts are available in any size, to suit all design detail. Both these products come complete with thermal break connection and all necessary fixings ready to be installed on site.

ThermCon Brise Soleil Arm

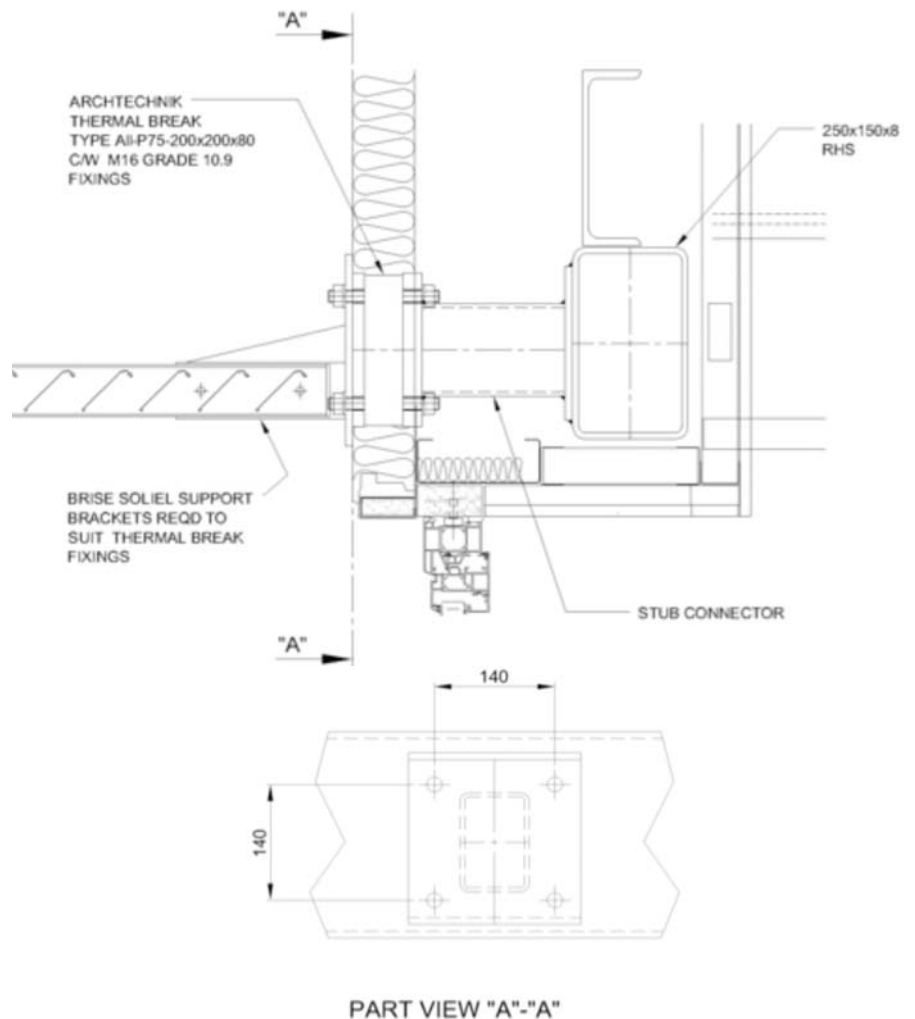
ThermCon brise soleil arms are complete units designed to provide thermally broken support for all instances where a brise soleil arm is required to attach back to the structure of the building.

They can be manufactured to suit customer's individual requirements.

ThermCon Balustrade Posts – 00885



ThermCom Brise Soleil Arm – 00918



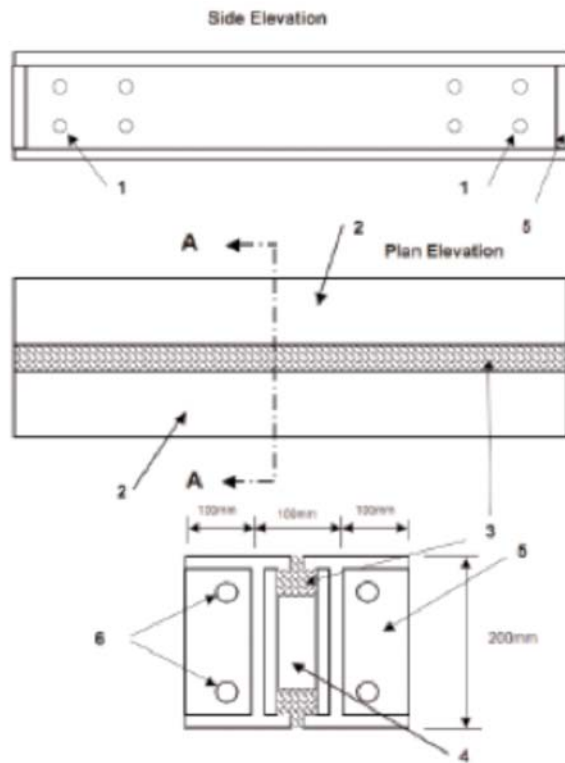
ThermCon Green Beams

ThermCon green beams are sections of thermally broken channel available in lengths of up to several meters designed & engineered to provide support for steel to steel connections. They can be manufactured from either a lightweight composite material or heavy duty steel I-beam. Green beams are suitable for applications such as support for a partition or basement wall.

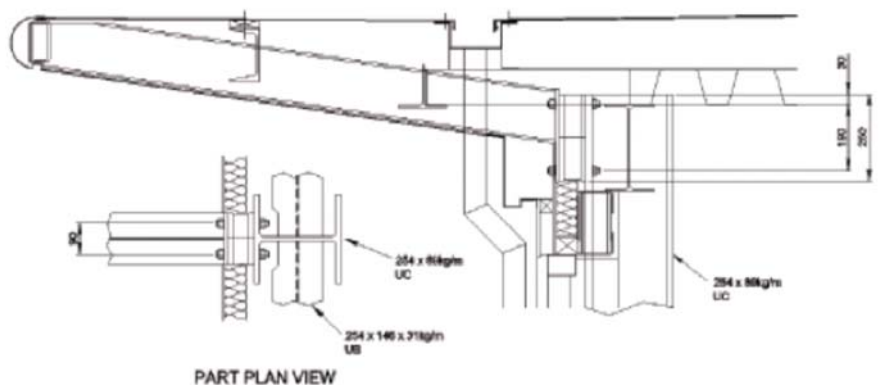
ThermCon Roof Pearlings

ThermCon roof pearlins are designed to provide support in instances where a roof purlin is required to extend past the edge of a building structure. They are available in any size, to suit any application, and are delivered complete with thermal break connection ready to be installed immediately.

ThermCon Green Beams



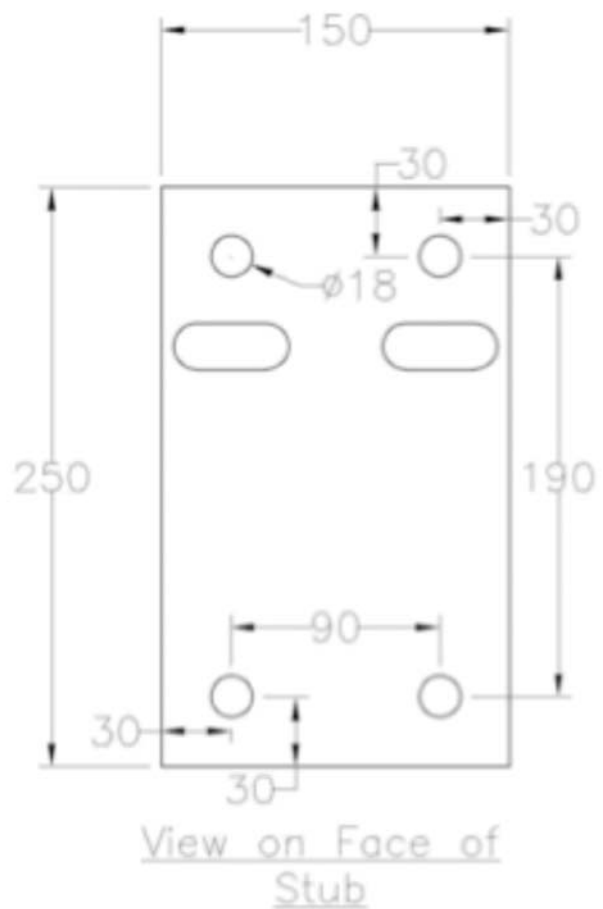
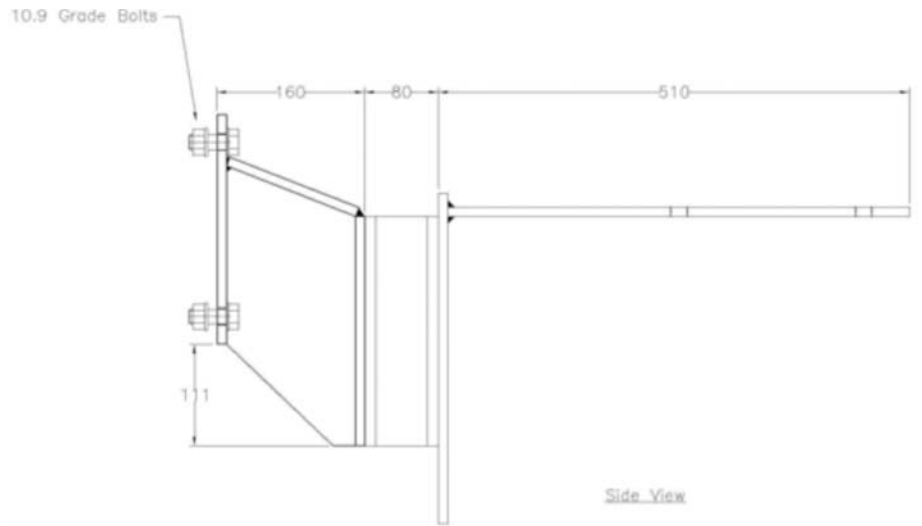
ThermCom Roof Purling Support – 00783



ThermCon Strap Connections

ThermCon strap connections allow thermally broken concrete to steel connections to be made by attaching a strap connection to the edge of the concrete floor slab.

The strap connection is attached to a stub connection which is then attached to a suitable ThermConX thermal break connection.



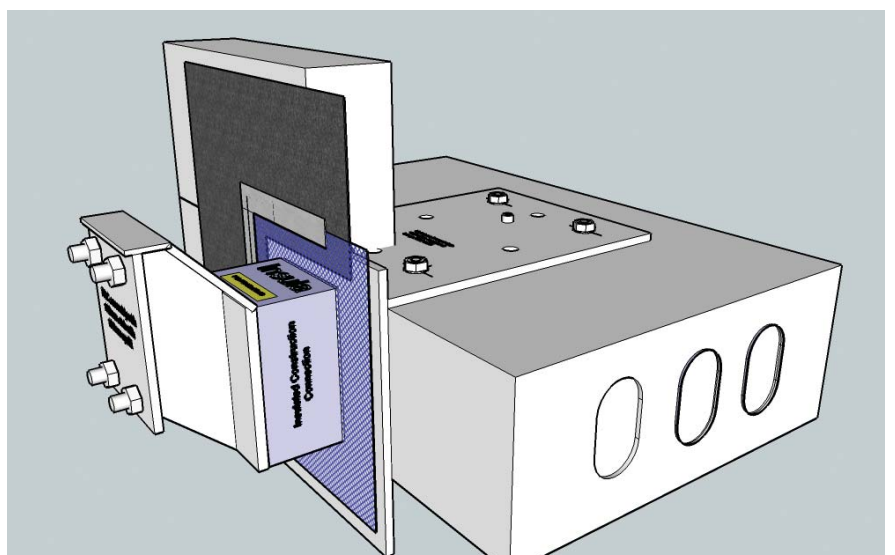
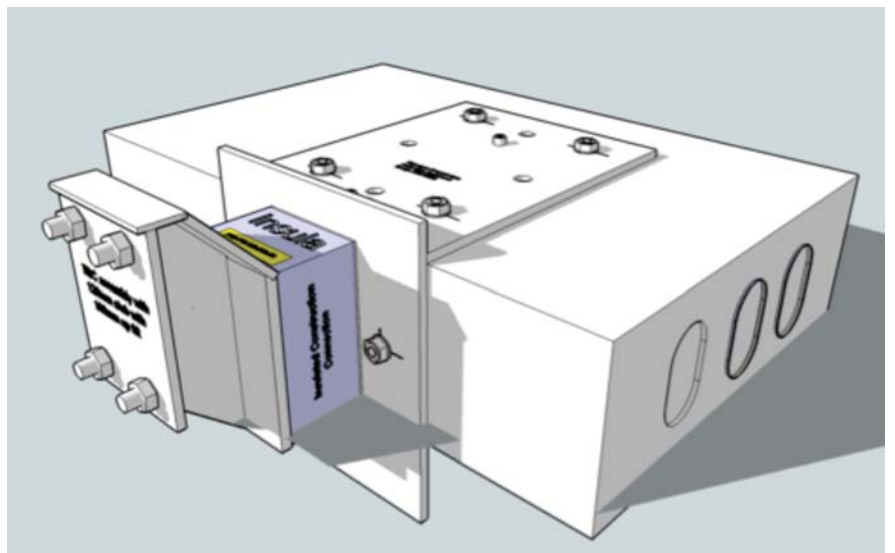
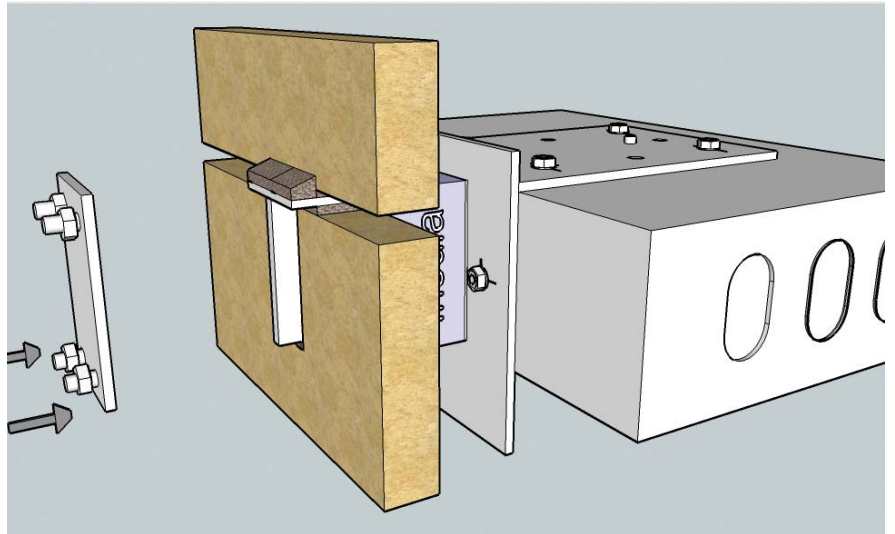
ThermCon Strap Connections

ThermConX strap connections allow thermally broken concrete to steel connections to be made by attaching a strap connection to the top surface and edge of the concrete floor slab.

The strap connection is manufactured as a complete assembly, with a strap connection a thermal break connection and a stub connection this is then attached to the concrete floor deck as a complete unit.

Choose from a range of stub connections to suit different external envelopes and various finish floor levels.

Also available with sealant skirts and rain stop beads.'



Juliet Balcony Connection

This product has been developed in response to market demand caused by a rise in Health and Safety issues relating to the failure of the brick work around the window reveals to provide sufficient pull out resistance to meet the requirements of the building regulations.

“The hand rail is required to resist a load of 1.5kn at 1100mm from the floor”

The non bonded brick work around the window reveal will not give a pull out resistance to support this loading.

This thermal break connection cleverly transfers the forces back to the structure of the building but at the same time remains fully compliant with Part L and cold bridging.

This Insulà Thermal Break connection is available for connection to Timber, Concrete or Steel.

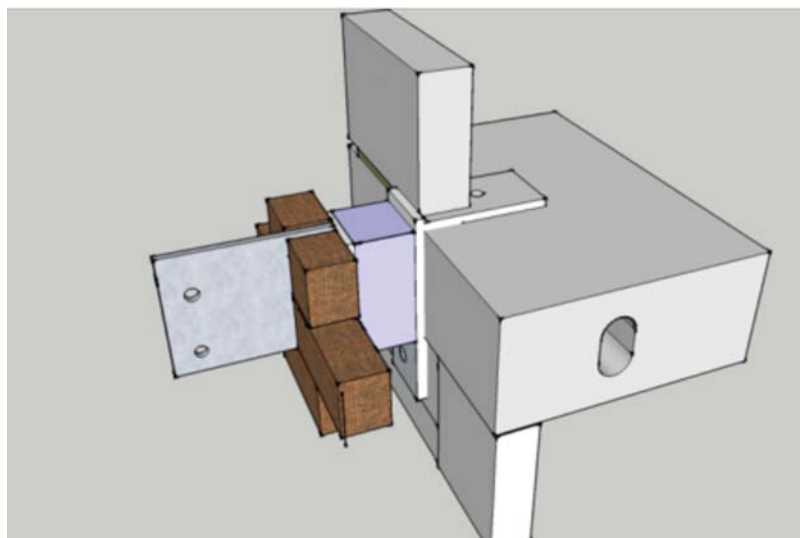
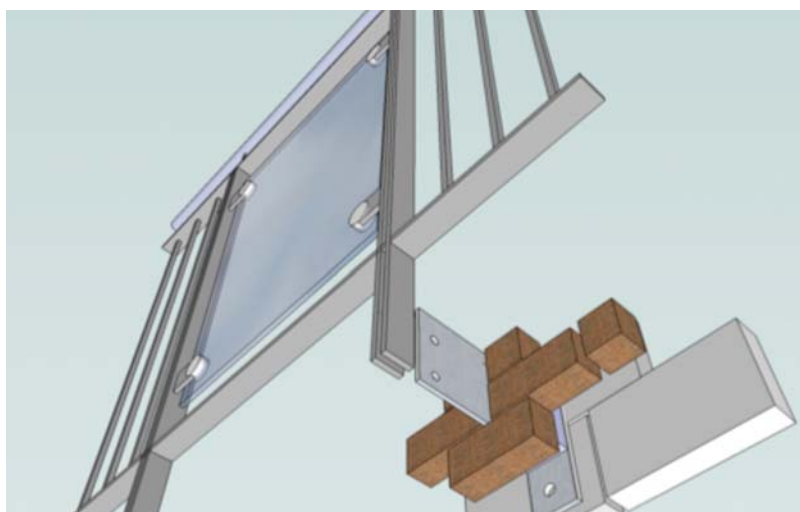


Diagram shows the connection about to fit into a twin post in order to attach a Juliet balcony

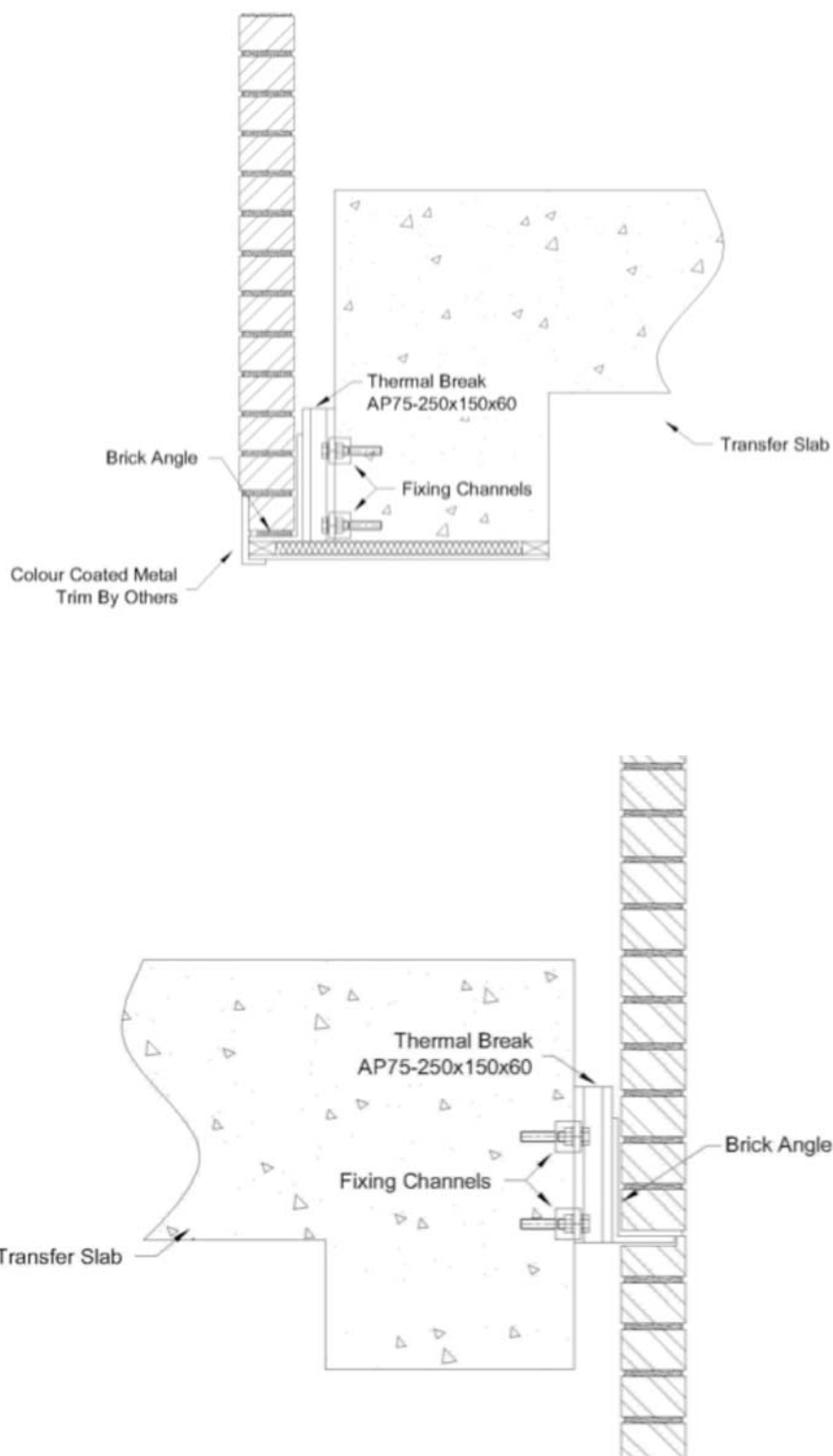


Brick Shelf Angle

Insula's thermally broke Brackets provide great flexibility in design. They are ideal for the support of brickwork straight or curved on plan. The support systems can carry over 8 metres of brickwork and accommodate any width of cavity from 40mm in its standard form. The brackets are mild steel galvanised angle and the material content of both components is optimised to ensure the most economic solution is designed.

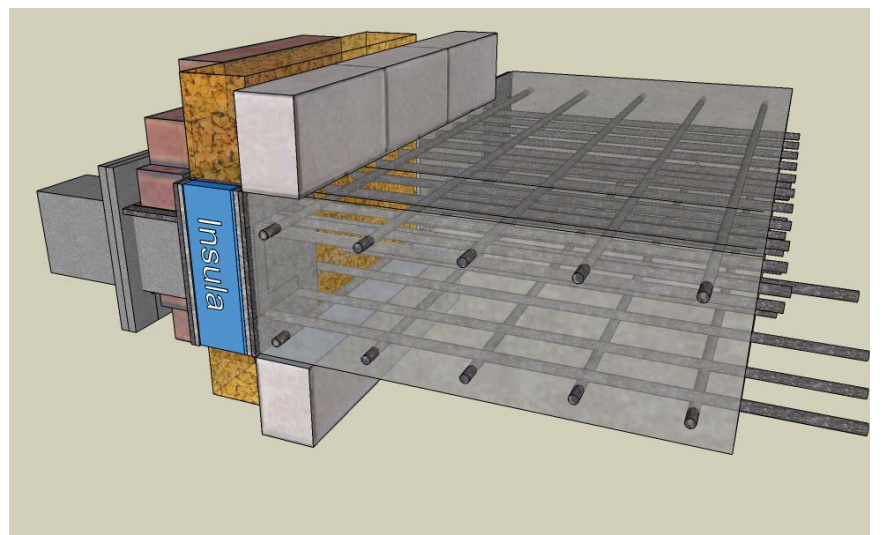
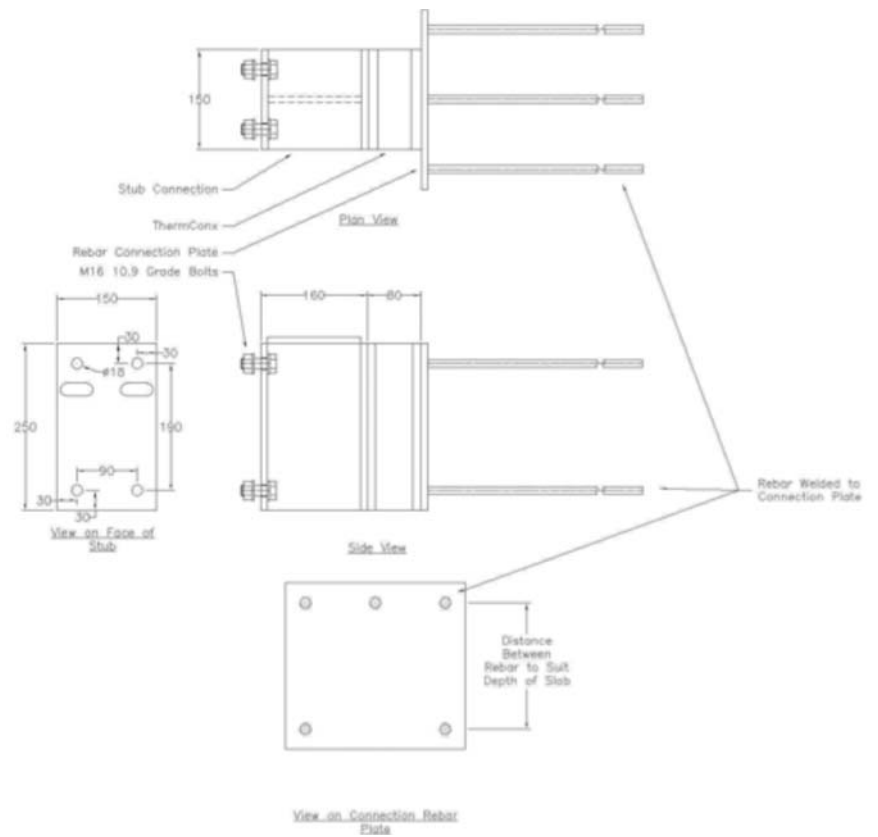
The Insulà System can be supplied in a variety of configurations to suit particular applications and support special masonry features. The size of the support angle can be varied to suit the thickness and height of the masonry to be carried. Bracket spacing, depth and height are all varied to suit loadings, fixing position and cavity width. There are several variations of the standard Insula System with details available on request.

The Insulà System can be supplied with extra components to suit the application e.g. closer plates and expanded metal with 36/8 Channel and Hangers supporting a Soldier Course.



Balcony Connection Assembled

The thermally broke balcony connections are part of a modulated system; the thermal break unit is selected for the load capacity required then the connection unit to the building is chosen to suit the construction i.e. cast in situ or timber frame. The stub connection is selected depending on the type of external cladding on the building envelope and then the connection assembly is manufactured from these standard units giving a fully approved thermally broke connection system at a competitive price.

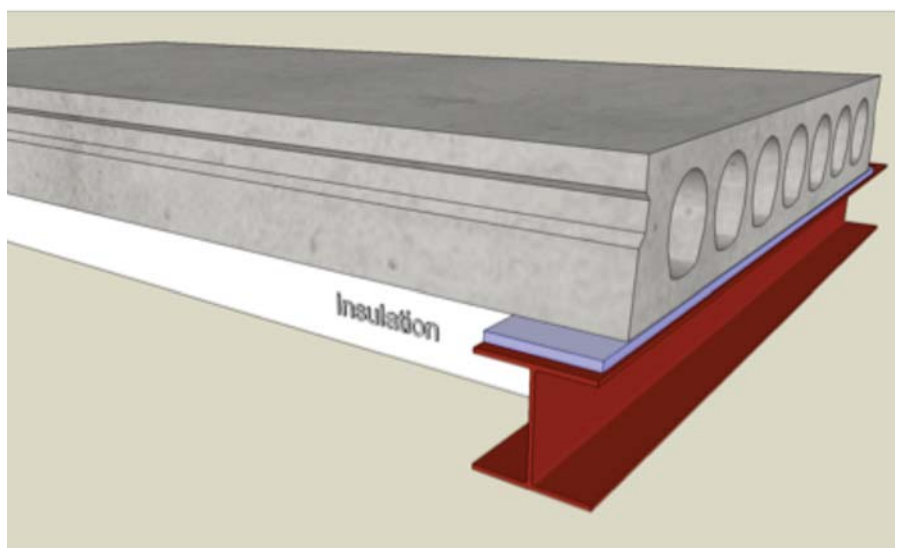
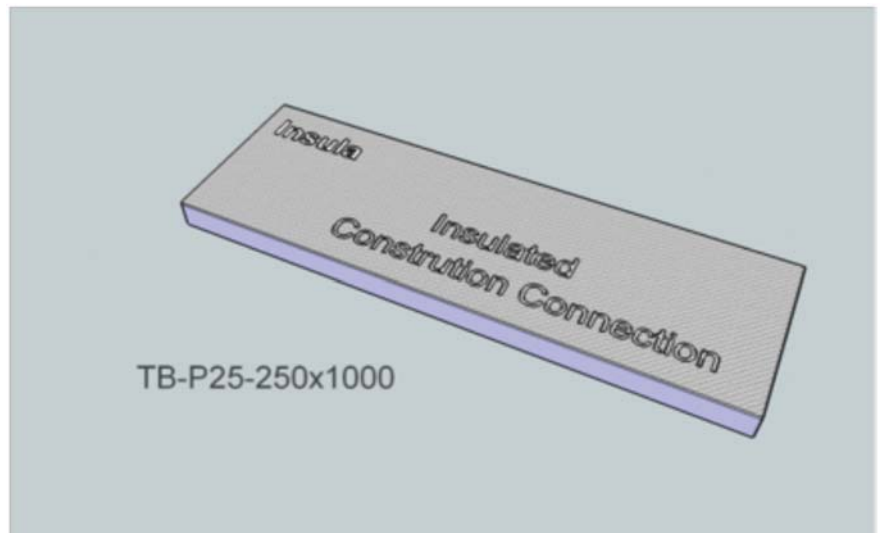
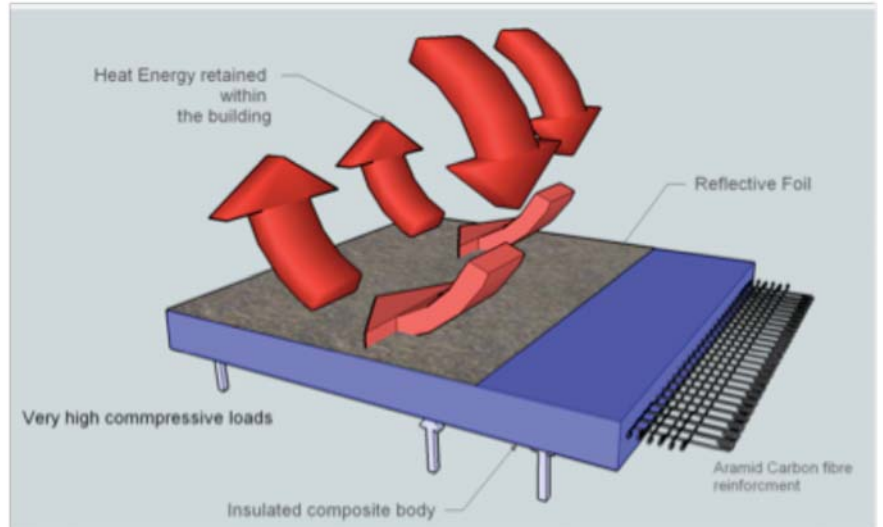


Thermal Plate

A very popular product from the Insula range of insulated construction connections is the TB-P25-250x1000. This thermal break plate is a high performance, high strength thermally insulated plate used in many modern day building applications where a thermal break is required between building elements.

Adopting technology developed for ballistic protection for military applications an extremely tough composite material laminated with Kevlar lattice fibers gives this material extremely high compression and shock load capabilities but very low conduction properties and will not degrade in use by UV chemical or build salts.

Used mostly to form a thermal barrier between horizontal steel eye beams supporting precast concrete floor planks, but is also used in vertical applications forming a thermal barrier between Steel or Concrete columns and the outer envelope of the building. The plate comes with double sided tape pre fixed to one surface to retain itself in position until permanently fixed by the building element.

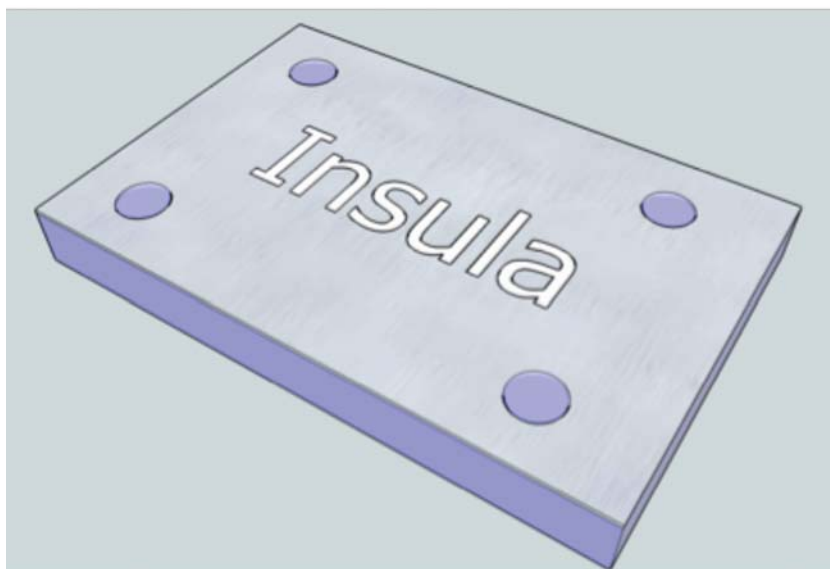


Available in standard 1m lengths x 100mm or 150mm wide in 10mm 15mm and 25mm thick and also machined to customers profiles with holes or slots to suit.

TB10, TB15, TB20, TB25, Is a highly effective Thermal break material. It is a very high strength (up to 350N/mm² (MPa) = 350,000kN/m²) non-compressible composite material with a thermal conductivity of 0.035 W/mK interlaced with Kevlar re-enforcement the material is water jet cut to the customers requirement.

It is used extensively in construction applications to insolated metal member from each other and other substrates it is available in different specifications but the most popular is with an adhesive fixing tape on one or both sides to affix itself. It is used mostly in compression applications were no metal through fixing is required

Note: If metal through fixing are used to secure the Thermal plate it will not perform as a Thermal break due to the cold bridging through the fixings.



Thermal Plate values are as follows:

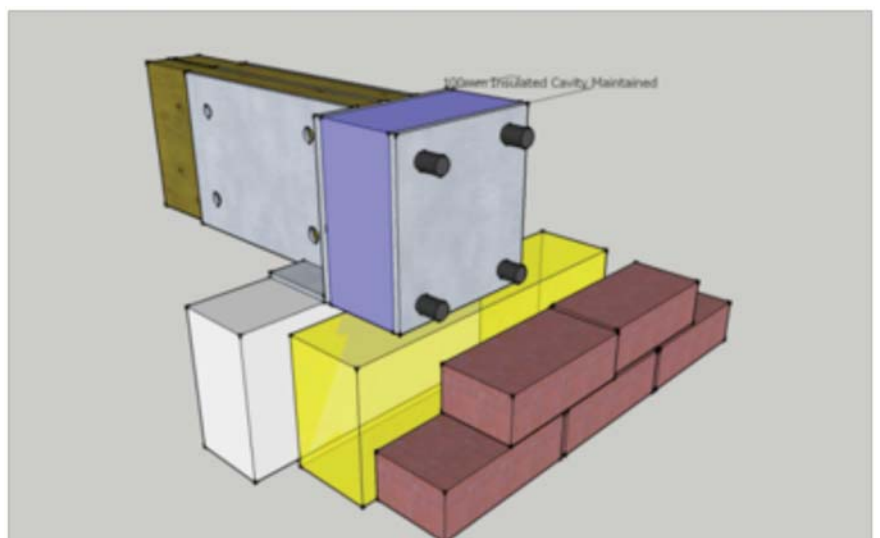
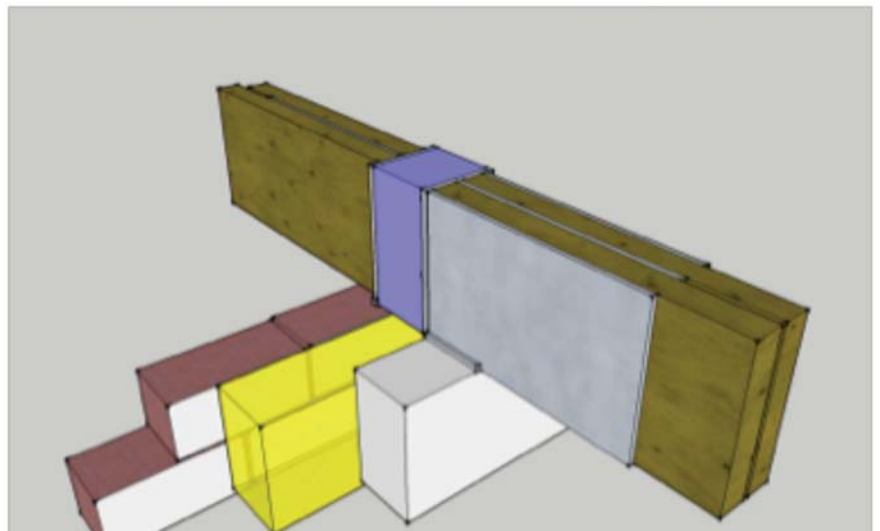
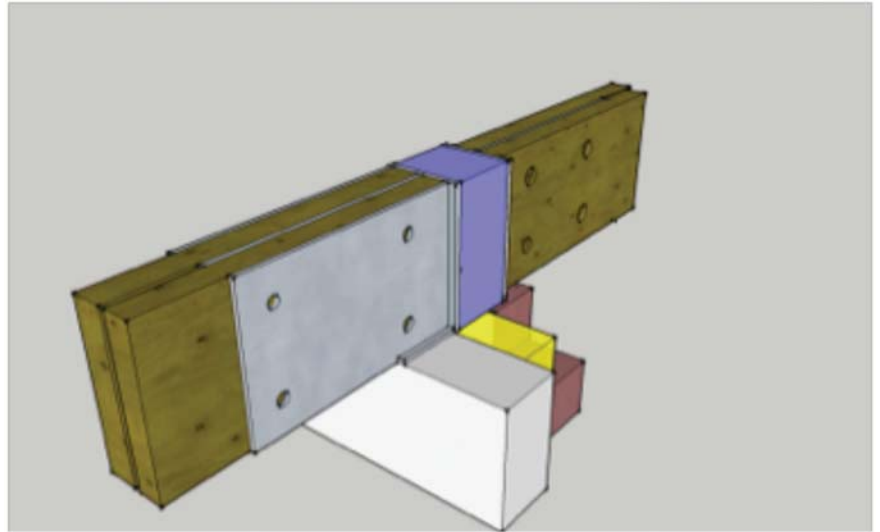
Properties	Standard	Units	Value
Compression Value	DIN 53517	N/mm ²	280
Hardness at 20°C	DIN 53505	Shore D	85
Tensile Strength	DIN 53504	MPa	66
Resilience	DIN 53512	%	45
Hardness at -5°C	DIN 53505	Shore D	88
Impact Strength at 20°C	ASTM D256	d/m	75
Thermal Conductivity	DIN 52612	W/m.K	0.11

Timber Tee Connections

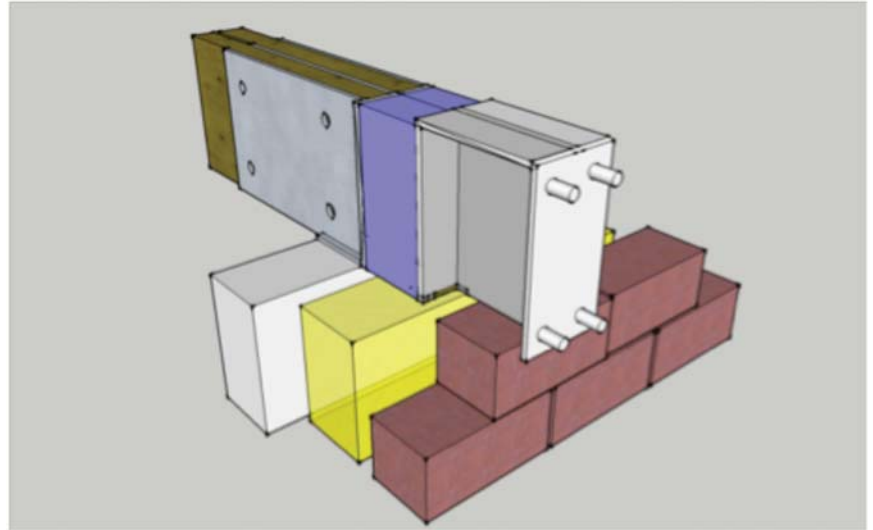
The most cost effective method of attaching a Structural thermally broke balcony connection to a timber construction is by double joisting, this involves inserting within the floor void two solid timber joists side by side whereby an Insulà Timber Tee connection can be fitted as shown in the diagram.

This is a very efficient load bearing connection due to the Tee element of the connection having protruding teeth which bite into the surface of the timber joists when compressed, allowing the cantilever forces within the connection to be transferred to shear acting on both surfaces of the joists.

This makes for a very efficient connection as it does not rely on the clamping force generated by the compression plates and bolts which have a danger, under load, of splitting the grain of the timber, causing failure of the connection.

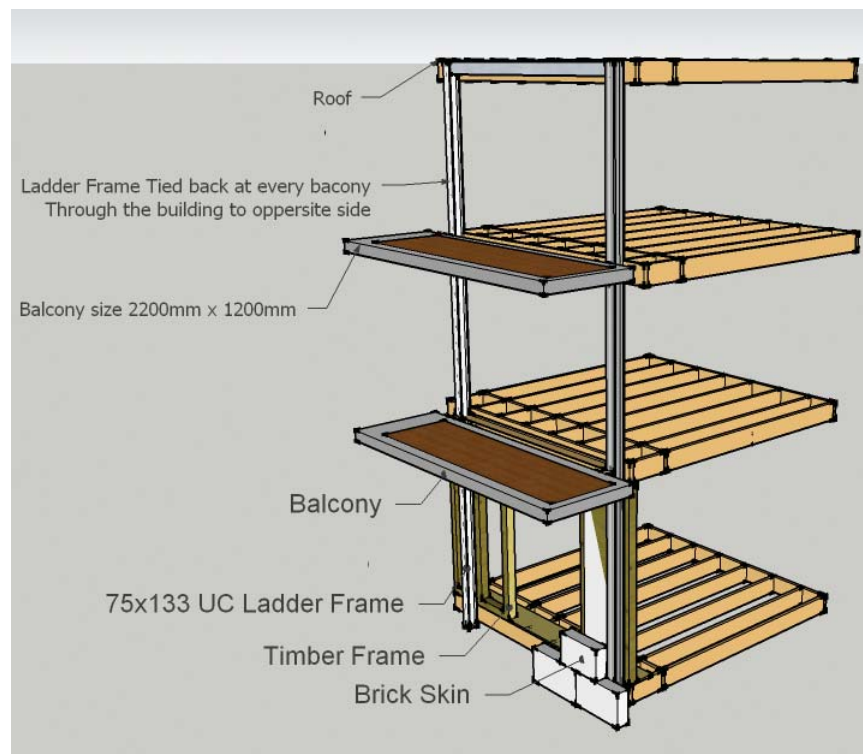


Timber Tee Connections are available in timber to steel, timber to timber, concrete to timber and steel to timber. This diagram shows a Timber to Steel application using a Timber Tee Connection.



Ladder frame system

A balcony ladder frame system is available for larger timber frame structures whereby a steel ladder frame is designed and erected with in the outer rain screen cavity independent of the timber frame structure were the cantilevered balconies, canopies or brise soleil are attached as required. Further details are available on request.

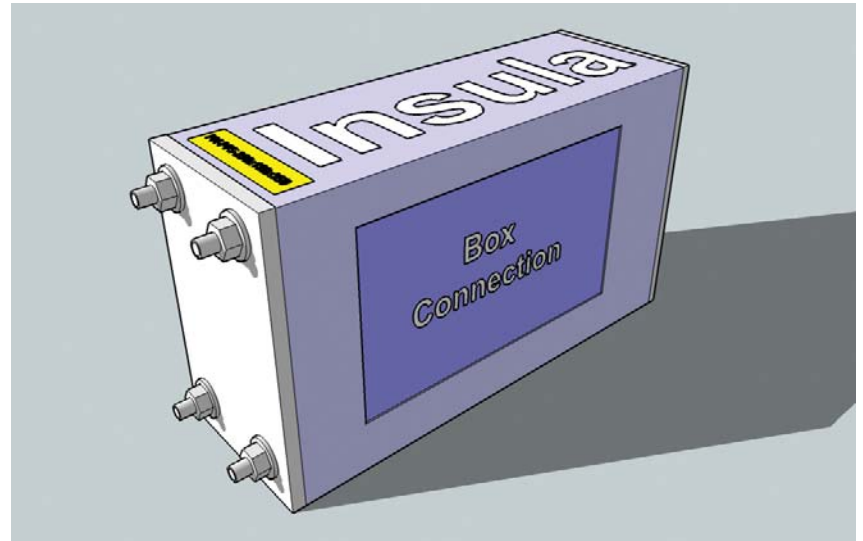


Passive House Box Connection

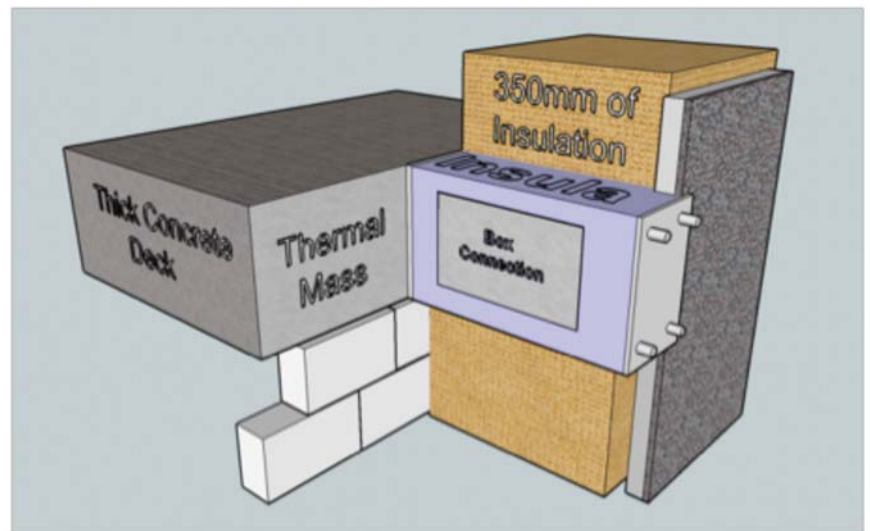
This connection is the first of our passive house range of connections the main difference being the wide insulated cavity the thermal break connection has to span to connect the building structure to the external element but at the same time offering an extremely low insulation value (U value)

Using the very latest technology developed by Archtechnik to produce the "Insula" range of insulated construction connections Archtechnik has pushed the boundaries of Thermal break connection design and produced another market leading first with their Passive House Box connection.

With insulation values only achievable with the "no metal, through fixings" technology developed by Archtechnik the passive house connection has U values of ? ,but with no reduction in its ability to transmit load.



These new generation connections allow the Architect and designer complete freedom in building design while respecting societies longer term needs. The image below shows a typical passive house type cavity; in this case 350mm.



Retro Fit Range

Retro Fit Range

The following diagram depicts a house with 200mm external insulation; the numbers represent where each of the retro fit products would be used on such a project.

Archtechnik has applied its thermal break technology to the emerging retro fit market, whereby in order to meet the ever increasing requirements placed on our existing Housing stock to meet the new energy reduction targets the insulation values of the properties will need to be increased significantly. In most cases this can only be achieved by retro fitting approx 200mm of insulation on the outside of the building's existing envelope. This is creating a requirement for a range of low loader thermal break connections to attach many building products to the outer envelope of the building.

It will not be possible to attach to the 200mm of insulation or the thin protective coat of render to any item which is required to exert any load on to the substrate. There will be a requirement for a range of low loader thermal break connections which will require a first fix element to be fitted to the existing brick work before the insulated jacket is applied and therefore Archtechnik has started to developed a range of connections to fulfill those demands.



The diagram above depicts a typical rendered house with 200mm external insulation. There are many features attached to the outside of this structure and different types of Insulà retro fit connections designed in order to fasten them back to the building whilst avoiding a cold bridge. The house is labeled with numbers on or next to a certain external attachment; these numbers correlate to the numbers of the connections listed in the next few pages.

36

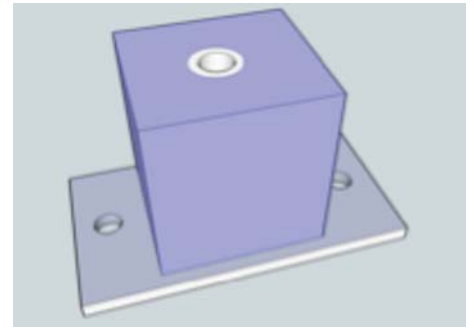
1. Block Connection

Description

The Block Connection holds the most loads out of all the retro fit range, designed to support items requiring heavier capacity needs.

Applications

- Security Cameras
- External Lights
- Alarm Systems



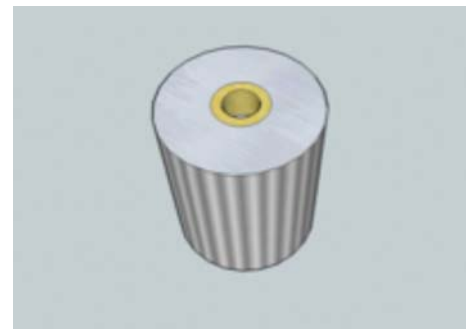
2. Plug Connection - Deep

Description

The Plug connection is ideal for products of medium weight; however they do not require connecting back to the brickwork of the building. These connections sit inside the insulation on the outside of the house.

Applications

- Trellis's
- Letterboxes
- Large External Lights



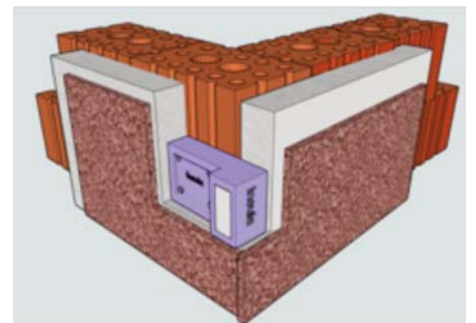
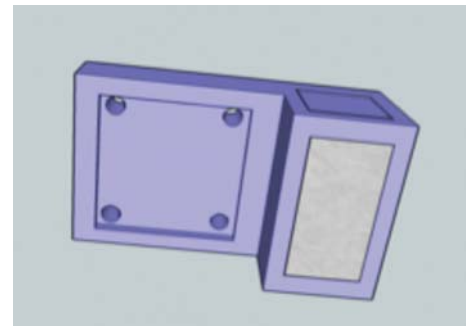
3. Corner Connection

Description

Corner connection is named due to its applications often on the house corners, where brackets and hinges are required for gates and products with a swing factor. They fasten to the brickwork and only a small area of the connection is exposed outside the render of the house.

Applications

- Window Shutters
- Gates
- Any corner fix application



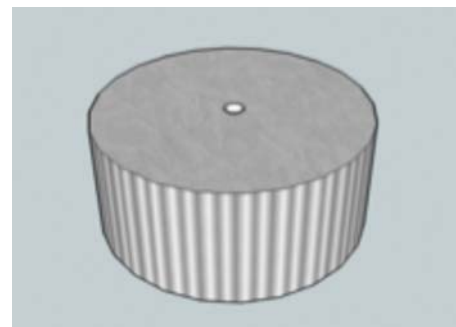
4. Counter Bore Connection

Description

The Counter bore is used only for the lightest of external products. This connection is wider yet shallower and perfect for products such as those listed below.

Applications

- All rainwater downright pipes
- Signage
- House Numbers



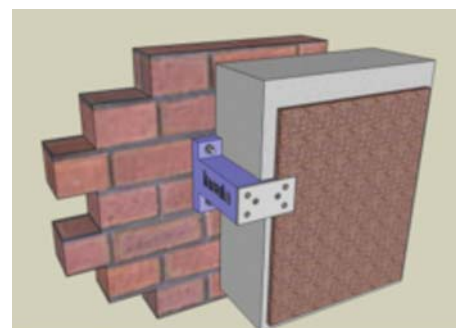
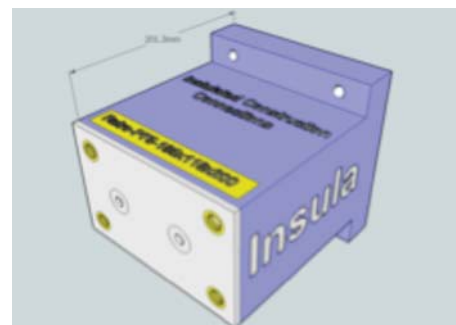
5. Dish Connection

Description

This was developed due to a rise in demand for options to attach a Satellite Dish and bracket back to a retro fit house whilst remaining thermally efficient. One of the more heavy duty connections in the range uses the Insula system to thermally break the Dish whilst maintain the load capacity required when attached back to the house itself.

Applications

- Satellite Dishes



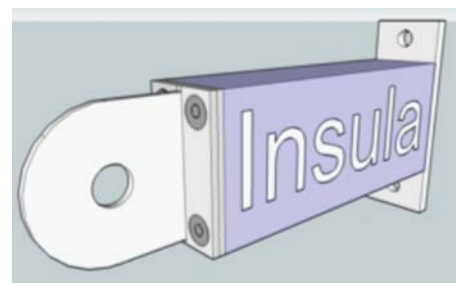
6. Blade Connection

Description

The blade Connection has been designed for use on an externally insulated building, however has a much higher load capacity than the other connections within this range. The blue, middle part of the product has been extended to travel through the external insulation and the case is attached back to the building framework. The blade connection is very similar to the Tang thermal break connection; however it has been adapted for use within this range.

Applications

- Lightweight canopy



Archtechnik have been nominated for a number of awards, however most recently was the Rushlight Energy Reduction Award 2009.

Awards

Awarded to the technology or innovation that reduces the use of energy in a commercial or consumer setting. This award is open to any kind of innovation, technology, product, system or process that has or can significantly reduce the amount of energy that is consumed. The winning entrant may have a product or system that avoids energy wastage that enables less energy to be used for a given purpose or that enhances overall energy efficiency. The award is designed to identify, celebrate and publicise a technology, product, system or process that can be adopted or used to reduce the use of energy overall, whether it be for light, heat or fuel.

The ThermConX structural thermal break won the award which took place at a Gala in Westminster, London. The Rushlight Awards are judged by leading experts in their chosen fields who are entirely independent of sponsors, headline partners and Eventure Media. They have been invited to join the panels due to their impartiality, vast experience and knowledge. This is the reason Archtechnik are so proud of this achievement.



The demand for greener and more innovative products in the construction industry is greater than it has ever been. Such products however, are only made possible by marrying the very latest and most effective tools and

software available with lateral and forward thinking concepts. Thermal break connections **must** be used in every instance where a cold bridge would otherwise have been created by fixing an item back to the building structure through the insulated cavity. Our extensive range of **LABC approved** thermal break connections offer a complete solution for any and every instance where cold bridging must be avoided.

Summary

Whatever the application
Whatever the design
Whatever the value

ThermConX is the only 100% solution.



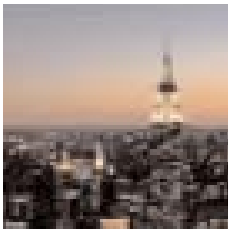
“Within the European Union such vast quantities of energy are being lost through roofs and walls alone that Europe's entire Kyoto commitment could be achieved through improving insulation standards.”

Andris Piebalgs,
EU Energy Commissioner

Previous Projects

The Strand Hotel, NYC

Contractor: Atlantic Stars Hotels & Cruises
 Architect: Gene Kauffman
 Situated in the heart of New York's trendy Manhattan midtown fashion district, this £10m development utilized over 50 ThermCon Tang thermal break connections.



Durrington Lane, Worthing

Contractor: Castle Oak Ltd
 Architect: Tooley & Foster
 4242 Durrington lane is a £5 million state of the art care home development containing a selection of one and two bedroom independent living flats together with communal facilities.



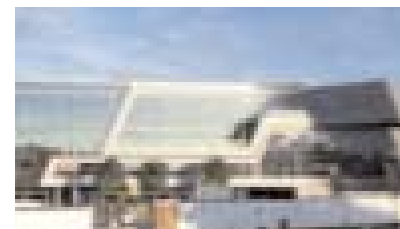
The Links Parade, Carnoustie

Contractor: Scotia Homes (North) Ltd
 Architect: Michael Gillmore
 The Links is the first zero-carbon multiple occupancy development to be built anywhere in the world, comprising of 78 two and three bedroom apartments located over four levels and overlooking the world renowned championship golf course.



Evelyn Grace Academy

Contractor: Mace Plus
 Architects: Zaha Hadid
 The Evelyn Grace Academy is a single, 4-storey building with a sports hall annex designed to create a "set of schools within schools" comprised of two middle & two secondary schools.



North Liverpool Academy

Contractor: Waites
 Structural Engineers: Billington Structures
 The North Liverpool Academy is a state-of-the-art sixth form education centre comprising over 100 ThermConX connections in order to support the curved roof of the large central structure.



Whittington Barracks

Contractor: Carillion Enterprise
 Architects: TPS Architects
 Due for completion in 2010, the £200 million redevelopment of Whittington Barracks will become the new headquarters of Defense Medical Services and will be home to more than 1,000 military and civilian staff.



Birmingham Bullring

Contractor: Sir Robert McAlpine
 Architect: Benoy
 The Birmingham Bullring is Britain's busiest shopping centre, with an average of 36.5 million visitors per year. The £800 million development is home to some of the world's most exclusive designer stores and boasts over 25 impressive restaurants.



The Arena, Hayes

Contractor: Barratts West London
 Architects:
 Located at the site of the former Hayes sports stadium, the Arena is a large residential development comprised of 1 & 2 bed apartments along with 3, 4 & 5 bed town houses.



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Oldbury Library

Contractor: Morgan Ashurst
Architect: Sandwell Borough Council
Oldbury library is a new, £6m, eco-friendly, library development utilising over 400m² of floor space.



Beech Ridge Lodge, Baldock

Architect: Kyle Smart Associates
General needs flats, supplied with Thermal Breaks.



St. Clements Hospital, Ipswich

Contractor: Kier Eastern
Architect:
Two major construction projects, comprising an 11 bed low-secure ward along with a new state of the art 3 acre facility set to house four new wards, including a new intensive care unit and a dementia assessment ward.



Evesham Leisure Centre, Evesham

Contractor: Galliford Try
Thermal breaks used for leisure centre renovation.



12 Templewood Avenue, London

Contractor: A & I Construction
Engineers: Price & Myes
Thermal Breaks for swimming pool.

St Whites Farm, Cinderford

Contractor: Bloor Homes
Thermally broken Bolt on Balconies provided for new housing development in Cinderford.



Av Venezuela no8, Gerona, Spain

Contractor: Bellapart
Thermal Breaks for ...

St Marks Street, Peterborough

Contractor: Lindum Sturgeon
Architects: PDG
Apartments blocks for housing association all with front or rear facing thermally broken bolt on balconies.



Liberty Shopping Mall, Romford

Contractor: Anglia Maintenance & Construction Ltd
Thermally Broken escape staircases.



Birley Centre, Kent

Contractor: Metal Fab Engineering
Insulà Thermal Plates were supplied for multiple areas of the build.

The Birmingham Ormaston Academy

Contractor: Bovis Lend Lease
Structural Engineers: Nolan Associates
This new build academy used Insulà Compression connections throughout the structure where the columns and the floor slabs met.



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