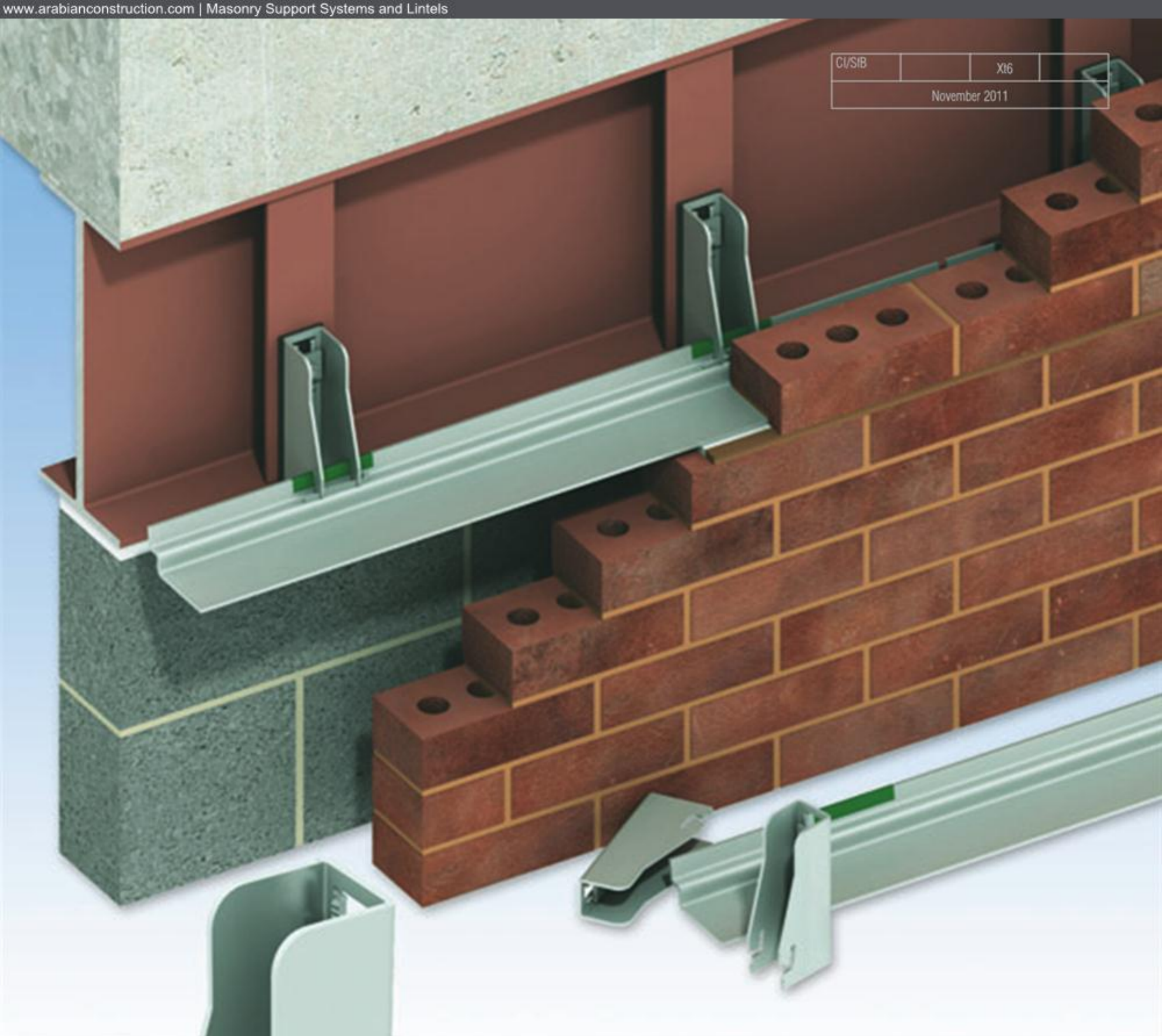


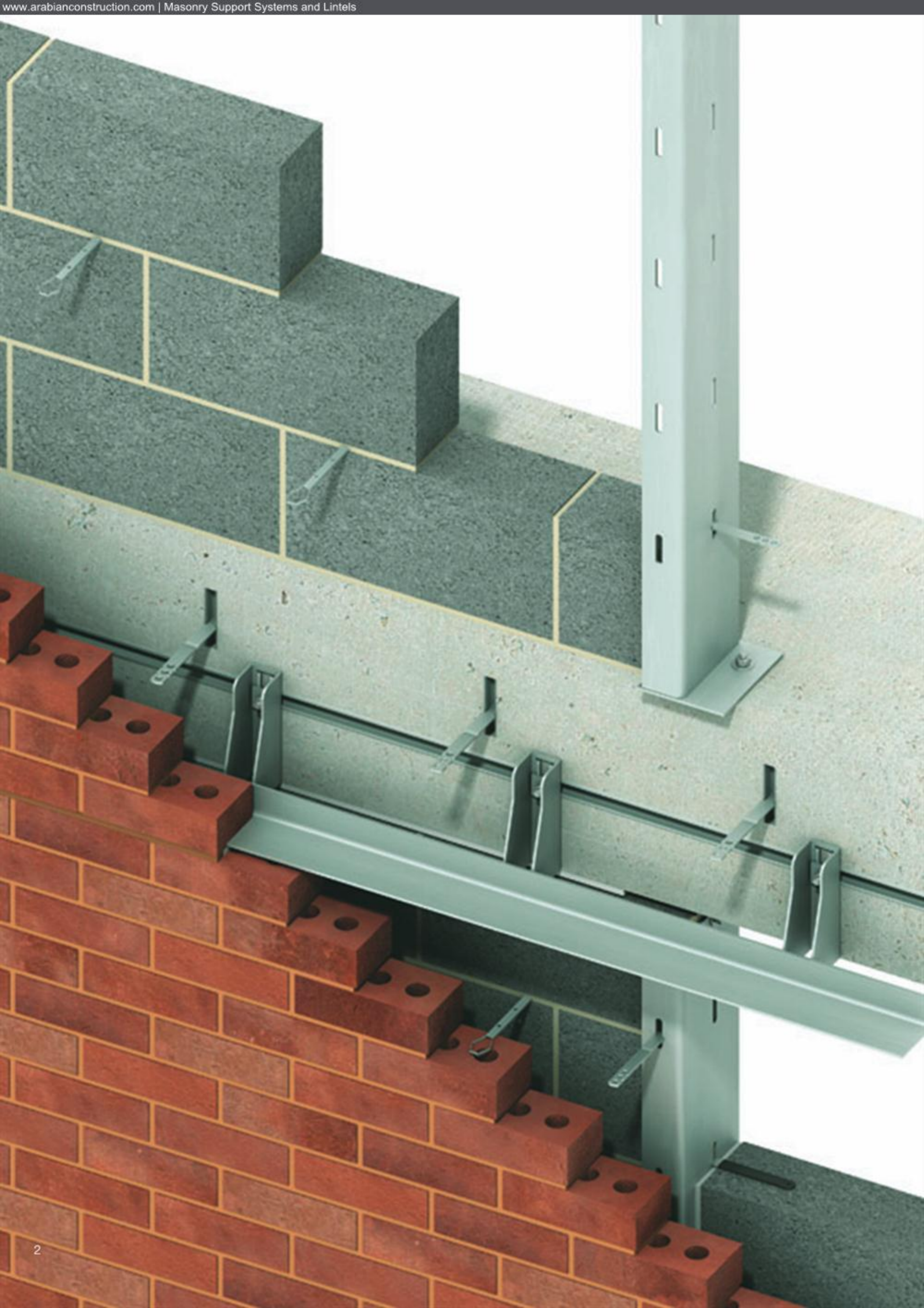
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November 2011			



Masonry Support Systems & Lintels

for the Construction Industry

Ancon[®]
BUILDING PRODUCTS



Ancon designs and manufactures high integrity steel products for the construction industry. Through continuous programmes of new product development, inward investment and employee advancement, the company is committed to maintaining the highest level of customer service within a dynamic and challenging industry.



Masonry Support Systems

Lintels

- Masonry Reinforcement
- Windposts and Parapet Posts
- Wall Ties and Restraint Fixings
- Channel and Bolt Fixings
- Tension and Compression Systems
- Insulated Balcony Connectors
- Shear Load Connectors
- Punching Shear Reinforcement
- Reinforcing Bar Couplers
- Reinforcement Continuity Systems
- Stainless Steel Fabrications
- Flooring and Formed Sections
- Refractory Fixings

Masonry cladding on steel or concrete framed structures is normally supported by stainless steel support systems.

Frame type, differential movement, type of cladding, masonry load and cavity width all need to be considered when designing the most appropriate fixing solution.

Introduction to Masonry Support Systems	4
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Ancon product information is available in NBS format for easy insertion into a NBS specification

Masonry Support Systems & Lintels



Standard AnconOptima System
Fixed to CombiDeck Edge Trim

MASONRY SUPPORT SYSTEMS

Structures with brick or stone cladding will usually necessitate the use of a stainless steel support system for the masonry.

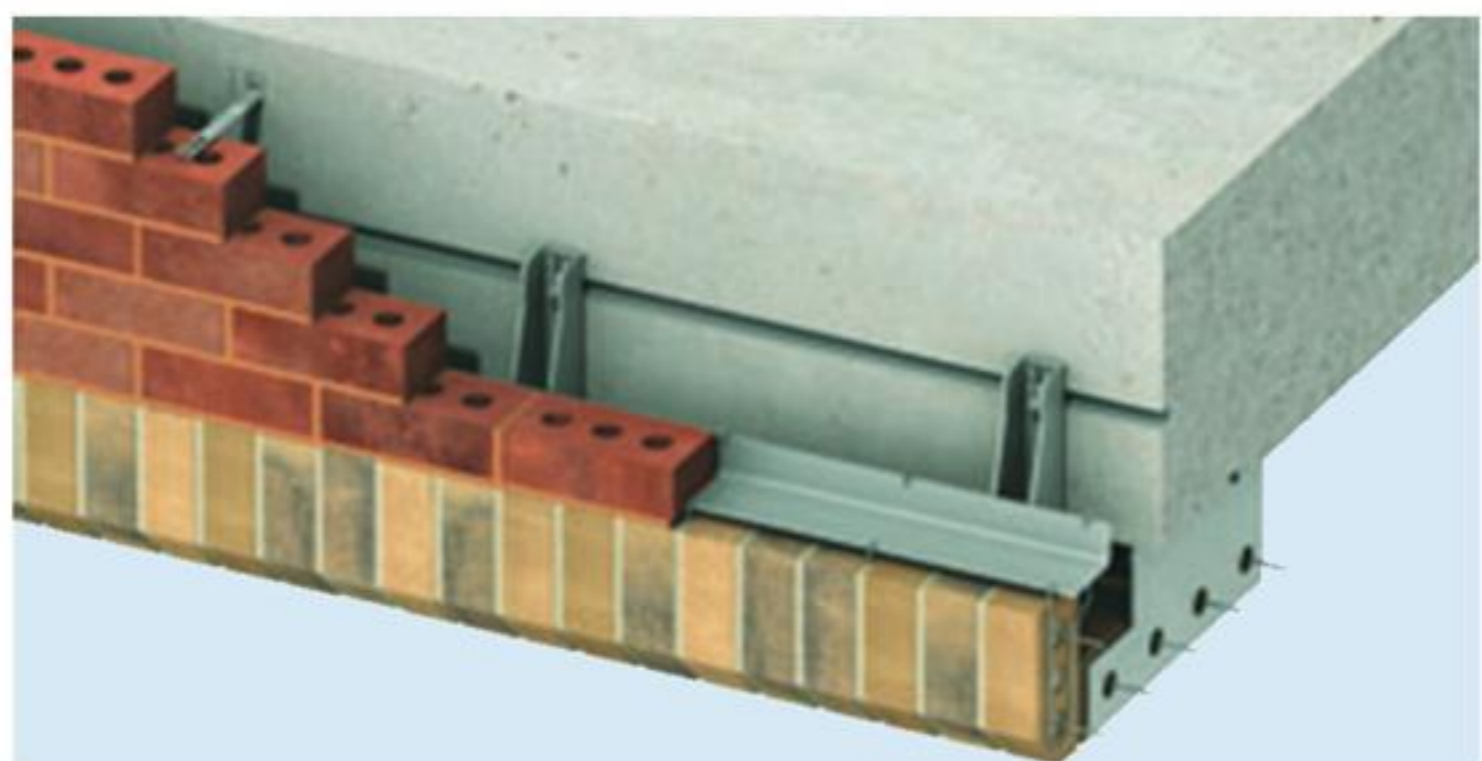
Bracket Angle Support System

AnconOptima is unlike welded systems, the brackets and angles are supplied as separate components. This provides greater flexibility in the final fixing position of the brackets and makes the system easier to handle on site. Standard systems are available to support a masonry load of up to 14kN/m. Brackets for these systems are stocked to suit cavities from 60mm to 150mm in 5mm increments. They can be changed on site to allow for cavity variations (pages 8-11).

Ancon MDC Systems have welded brackets and are designed to suit specific applications. They are available in various configurations and are ideal for supporting special masonry features. Material content is optimised to ensure the most economic solution is designed (pages 12-14).

Continuous Angle Support System

Ancon CFA Systems are mainly used where cavities are small or there is a requirement for the cavity to be closed at the support position (pages 20-21).



MDC Support System with Stirrups



CFA/I Support System Fixed to Structural Steel Edge Beam

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Individual Bracket Support System

Ancon Individual Brackets provide great flexibility in design. They are ideal for the support of brickwork curved on plan (pages 22-23).

Stonework Support

Natural stone cladding is often a combination of large individually-sized stones and requires particular attention. Ancon MDC/S Stonework Supports can be designed in a variety of configurations to suit the particular application (pages 24-27).



Special MDA Brackets Supporting Brickwork Curved on Plan



MDC/SC Stonework Support System

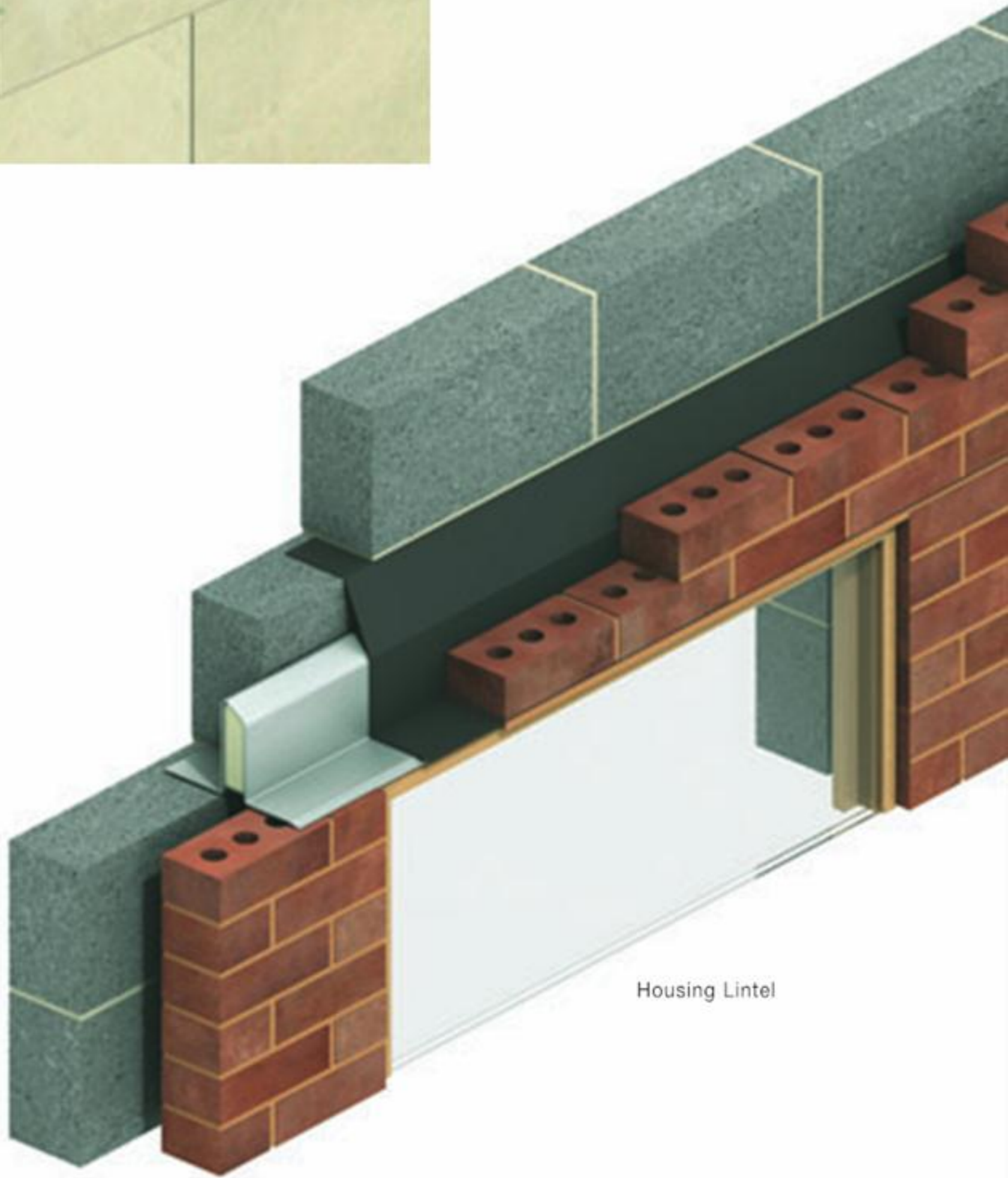
LINTELS

Ancon Lintels are manufactured from stainless steel and do not require any further corrosion protection (pages 28-33). The Housing and Unilintel ranges are designed to suit the light to heavy duty loading conditions found in the majority of residential and commercial buildings.

Special lintels can be manufactured to suit architectural features and wall constructions not covered by the standard range.

OTHER PRODUCTS & SERVICES

Ancon also manufactures Wall Ties, Windposts, Parapet Posts and Masonry Reinforcement. Free of charge technical services include advice on product selection, CPD seminars, masonry panel design and CAD details. Contact Ancon for further information.



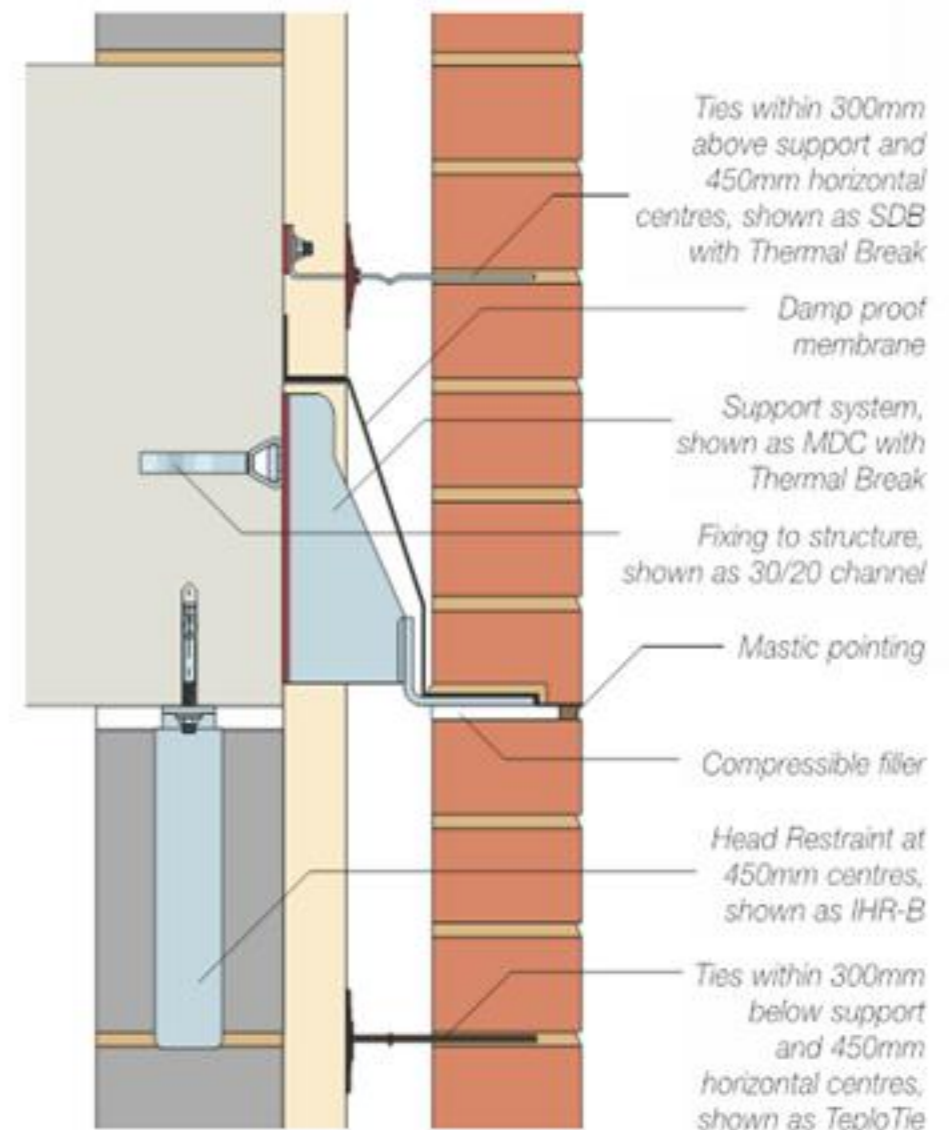
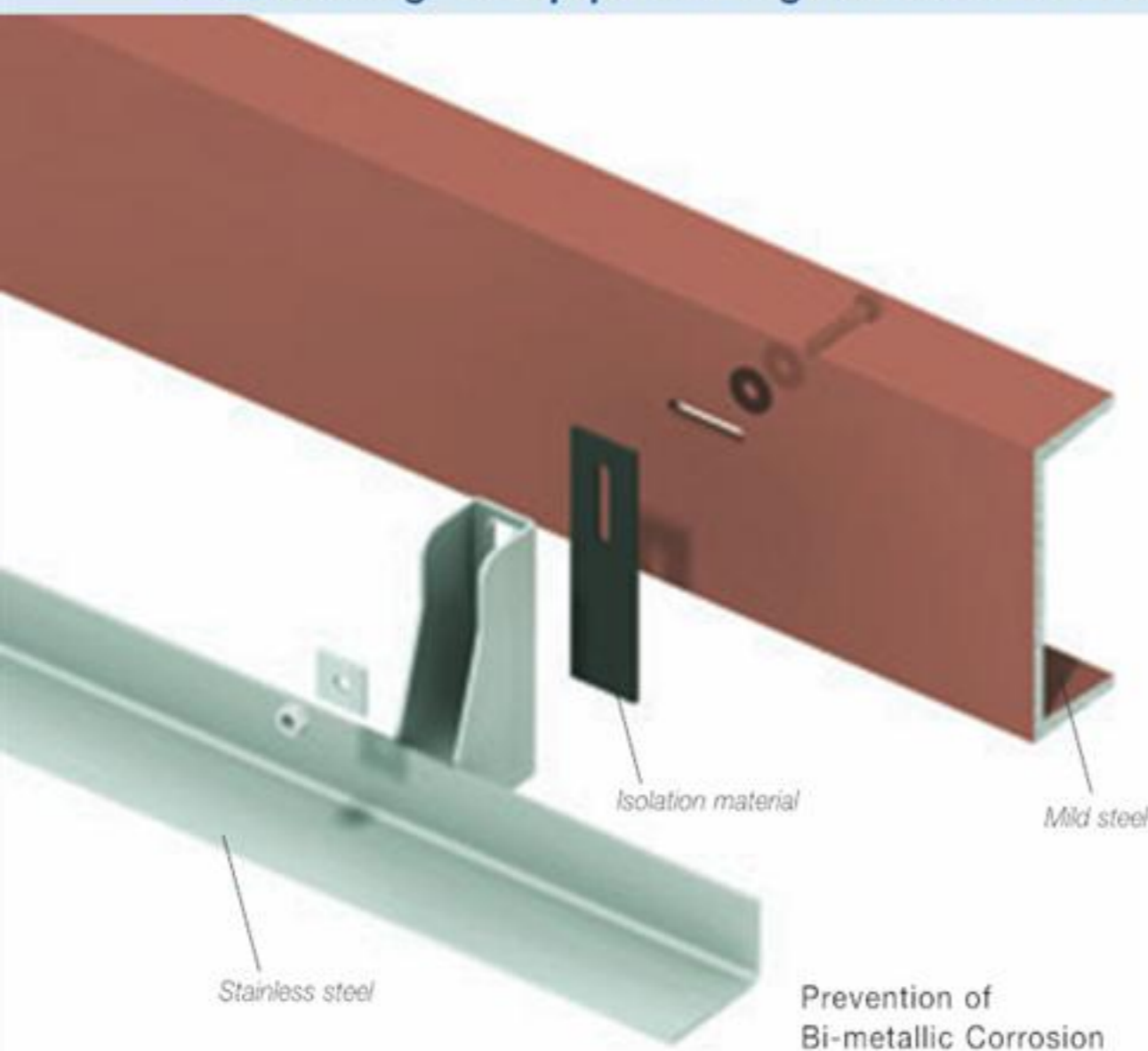
Housing Lintel

At the end of a long service life, a stainless steel product is 100% recyclable.



Stainless steel typically contains 60% recycled material.

Masonry Support Systems & Lintels



Typical Support Detail

DESIGN CONSIDERATIONS

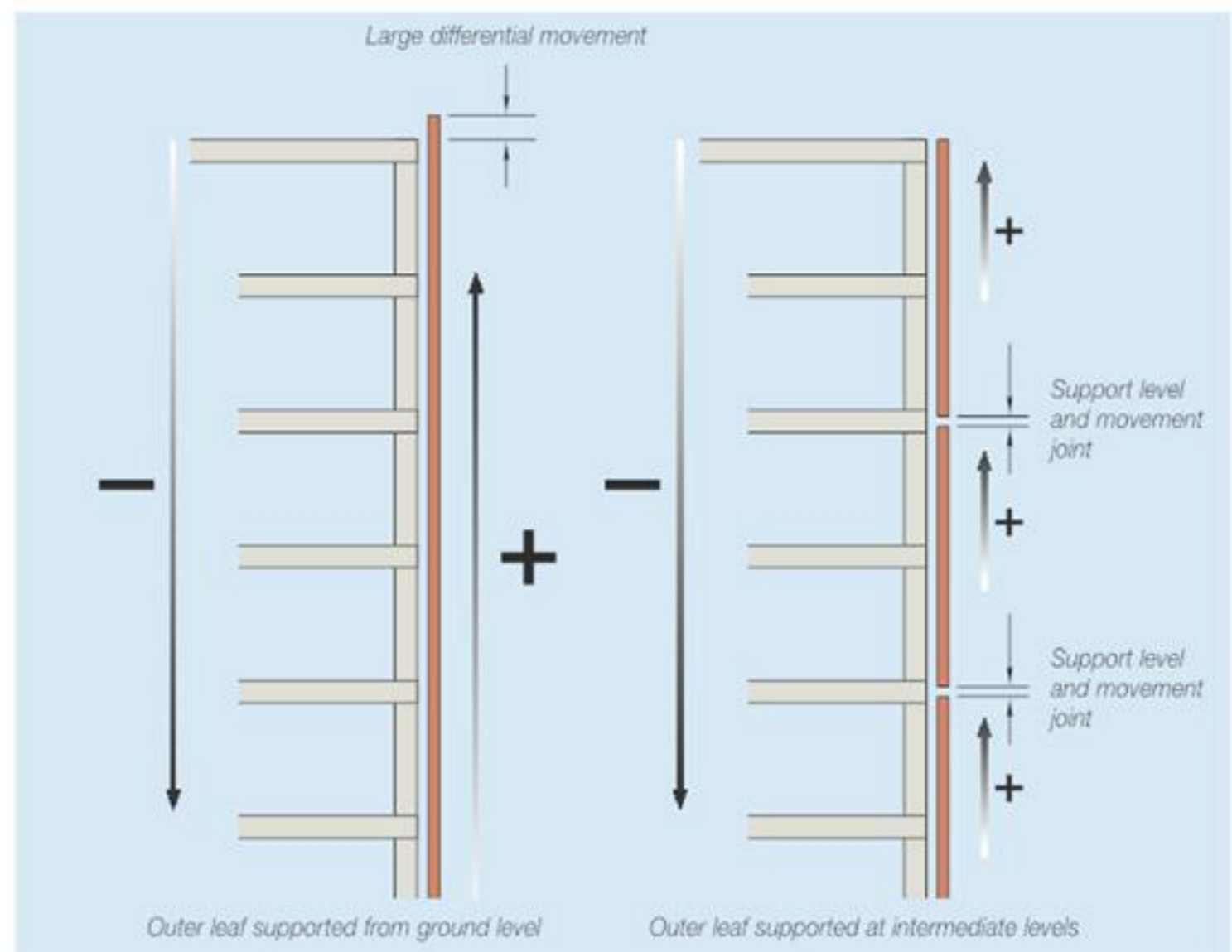
Structures with brick or stone cladding will usually necessitate the use of stainless steel support for the masonry over horizontal movement joints. Differential movement, corrosion resistance, type of cladding and frame type, all need to be considered.

Differential Movement

The maximum size of a masonry panel should be restricted to limit the effects of differential movement. This is particularly important if clay brickwork is used with concrete blockwork and a concrete frame. The outer leaf of buildings not exceeding four storeys or 12 metres in height, whichever is less, may be uninterrupted for its full height. For other buildings, the outer leaf should be supported at intervals of not more than 9 metres or three storeys, whichever is less, as stated in BS 5628 : Part 1 which, since the withdrawal of this British Standard, remains best practice. To allow for a vertical movement of around 1mm per metre, movement joints are generally positioned at every storey or every second storey. They are also incorporated in many buildings of less than four storeys or 12 metres in height.

Horizontal Movement Joints

The support will be positioned directly over the horizontal movement joint. The joint will often incorporate a compressible filler and should be of sufficient size to allow for expansion of the masonry below and any shrinkage or deflection of the structural frame. The underside of the support system should be positioned around 2mm above the joint to



Differential Movement Between Masonry Cladding and Frame

allow for the support leg to settle when supporting the brickwork above. The clear joint below should be at least 10mm where there is a single storey height of brickwork below the support system. Where there are two storeys or more of brickwork below the support system, the clear joint should be sufficient to accommodate all expected movements. This may result in clear joints in excess of 10mm. Damp-proofing is normally located at the support position. Wall ties should be incorporated within 300mm above and below the support.

Fixing Methods

There are various methods of fixing Ancon Support Systems to the structure. Cast-in channels with 'T' bolts or site drilled expansion bolts can be used with concrete frames. For steel frames the choice is set screws or Ancon Steelgrip into holes in the steel edge member, or where there is a metal deck floor, Ancon CombiDeck has a horizontal channel that accepts 'T' bolts. A range of suitable fixings is included on page 34. Further information is given on pages 15 to 17, and in the Ancon Channel and Bolt Fixings brochure.

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Tolerances

It is important to select the correct support system to ensure that building tolerances can be accommodated. Adjustment will be required in all three planes.

Ancon brackets have a slot at the back to provide vertical adjustment. A serrated surface prevents any slip. Longitudinal adjustment is provided by an Ancon cast-in channel in concrete structures, or horizontally slotted holes in steel framed structures. The AnconOptima System features a fixing zone providing a total of 50mm horizontal adjustment allowing the system to be fixed to pre-drilled holes rather than slots in steelwork and eliminates clashes with reinforcing bars in concrete.

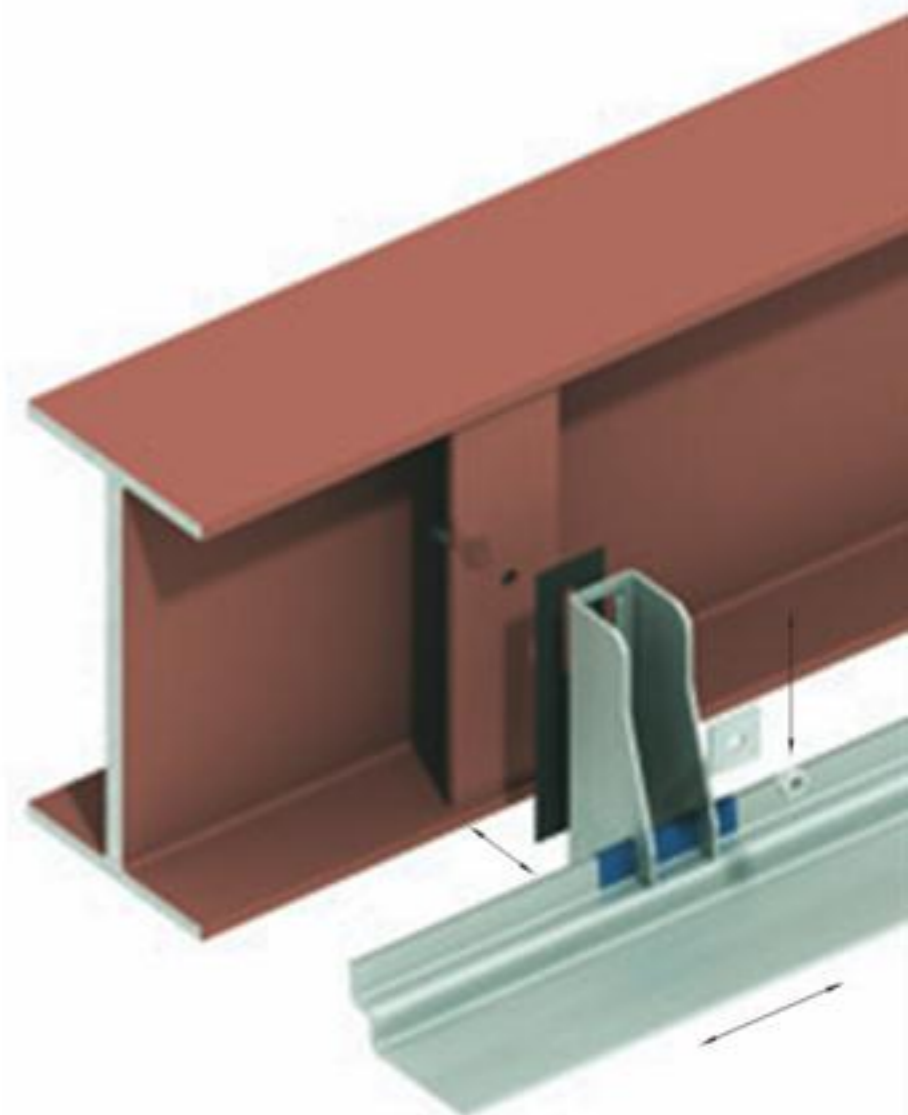
Subject to the type of fixing used, AnconOptima brackets can be changed on site to suit variations in the structural edge beam. Other systems accommodate such variations by adding shims between the system and the structure, or by increasing the bearing of the brickwork. The maximum thickness of shims should not exceed the outside diameter of the fixing or 16mm, whichever is less.

Corrosion Resistance

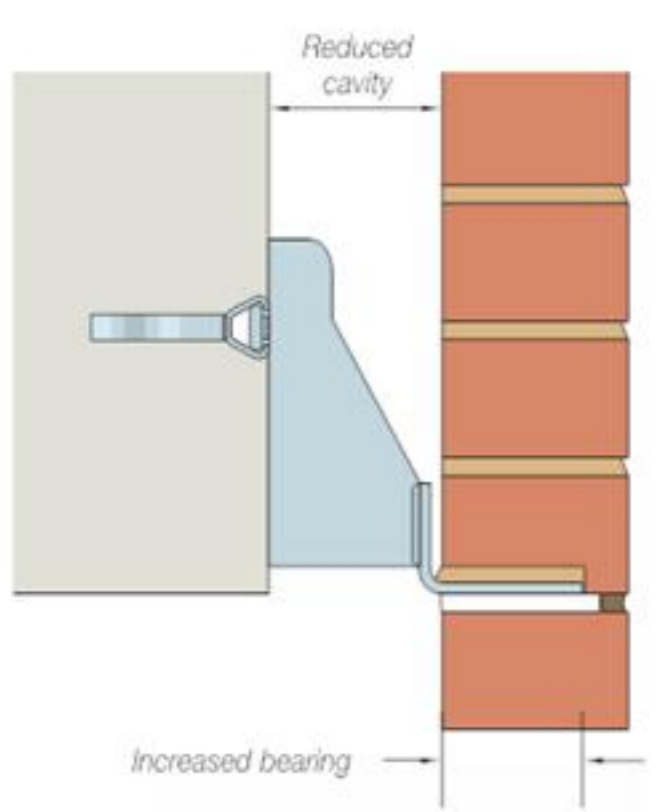
Ancon Support Systems are manufactured from grade 1.4301 (304) stainless steel and will be suitable for most building applications. In particularly corrosive environments, or where part of the support will be visible, grade 1.4401 (316) should be considered. Bi-metallic corrosion may occur in a damp environment where the stainless steel support system is bolted to the structural steel frame. This will not affect the stainless steel, but could slightly increase the corrosion rate of the carbon steel. This can be prevented by excluding moisture from the detail, or by isolating the two dissimilar metals. Isolation patches are available from Ancon Building Products for use with Ancon Support Systems. Further information is given in our brochure, 'The Use of Stainless Steel in the Construction Industry'.



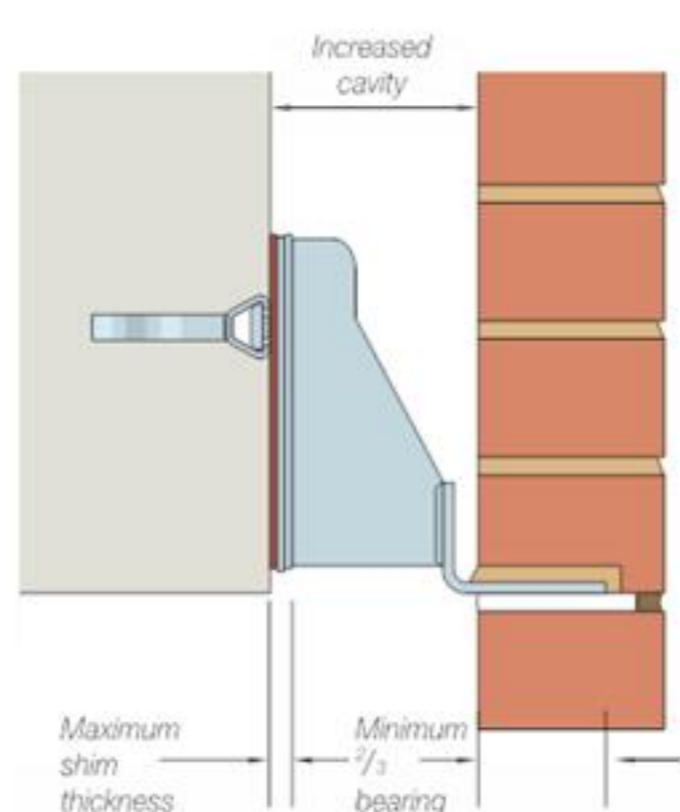
Patent No. 2 249 816
Adjustment of MDC Support System Fixed to Concrete



Patent No. EP 1211364
Adjustment of AnconOptima Fixed to Steelwork



Increased Bearing Used to Accommodate Reduced Cavity



Shims Used to Accommodate Enlarged Cavity. Shim closest to the structure shown as Thermal Break.

Manufacturing Tolerances

Unless otherwise agreed, the tolerances applicable to cold formed sections are shown in the table below.

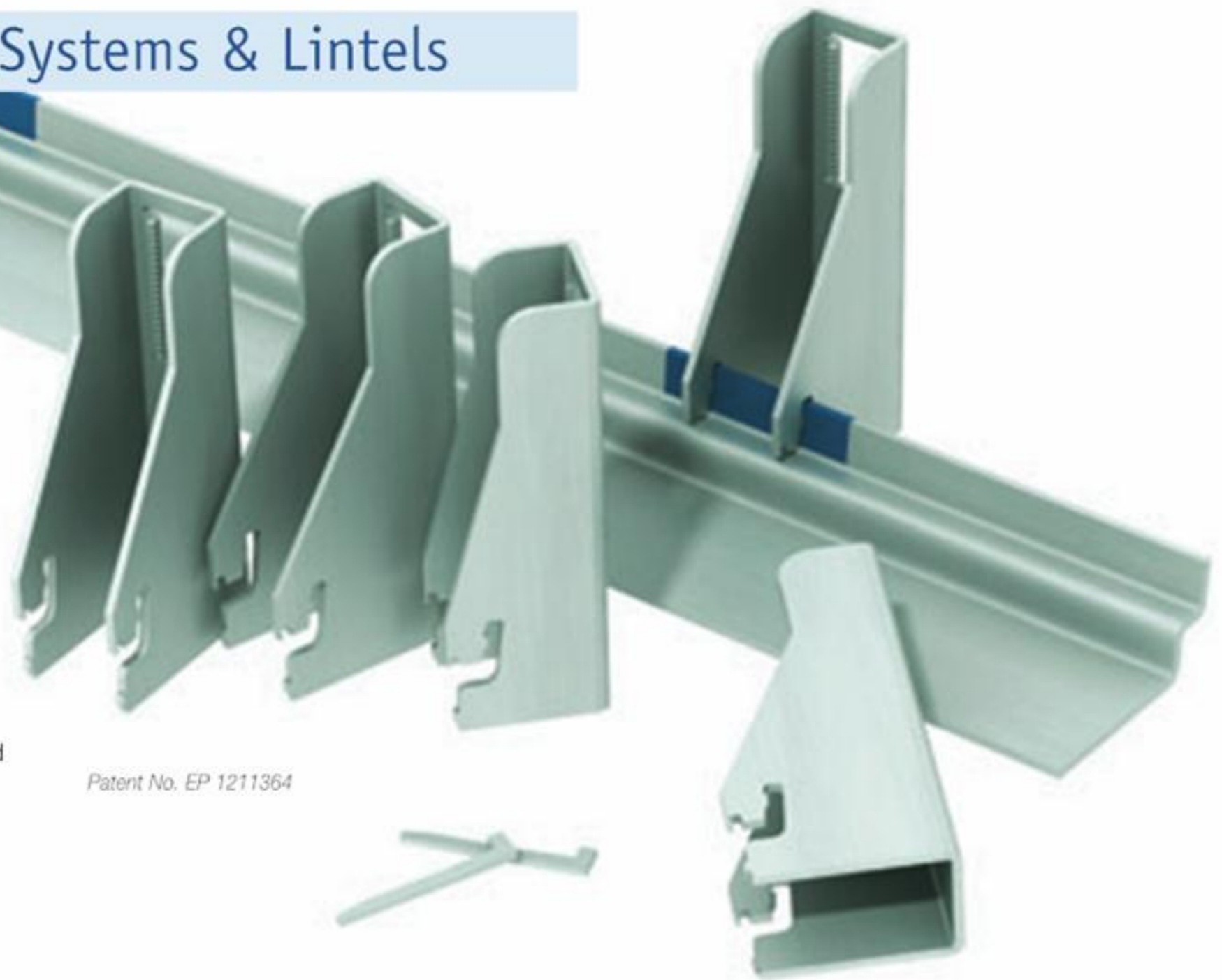
Element	Tolerance
Overall length	±5mm
Thickness	±7.5%
Leg length of angle	±3mm
Angle between legs	±2°
Hole or slot centre	±5mm
Mitred corners	±1°
Bow on either axis	±3mm per metre length

Masonry Support Systems & Lintels

Ancon
Optima®

Standard AnconOptima 14 System.
Standard Brackets, Locking Wedges and
a 790mm Angle with Blue Fixing Zones

Patent No. EP 1211364



ANCONOPTIMA

The Industry's growing emphasis on speed of construction, and the inability of welded bracket support systems to provide sufficient adjustment on site, led Ancon to develop AnconOptima.

AnconOptima is a bracket angle masonry support system. Unlike welded systems, the brackets and angles are supplied as separate components. This provides greater flexibility in the final fixing position of the brackets and makes the system easier to handle and move around site.

Systems comprise laser-cut brackets, two-step angles with pre-marked fixing zones and locking wedges to ensure the correct contact is achieved between the two.

AnconOptima Systems can be used with the standard Thermal Break (see page 13) to reduce cold bridging.



AnconOptima 12 System



Standard Systems

Standard systems, referenced AnconOptima 10, 12 and 14, support a masonry load of up to 10kN, 12kN and 14kN per metre respectively. All components are available from stock.

Brackets are available to suit cavities from 60mm to 150mm and are stocked in 5mm increments. Depending on the fixing type, brackets can be changed on site for one of a different depth to allow for cavity variations. Two brackets of a different depth can be used on the same angle.

The brackets used across the three standard systems are universal. The differing performance of the three systems is generated by the varying length and thickness of the angle and the fixing centres of the brackets.

Standard left-hand and right-hand corners are available.

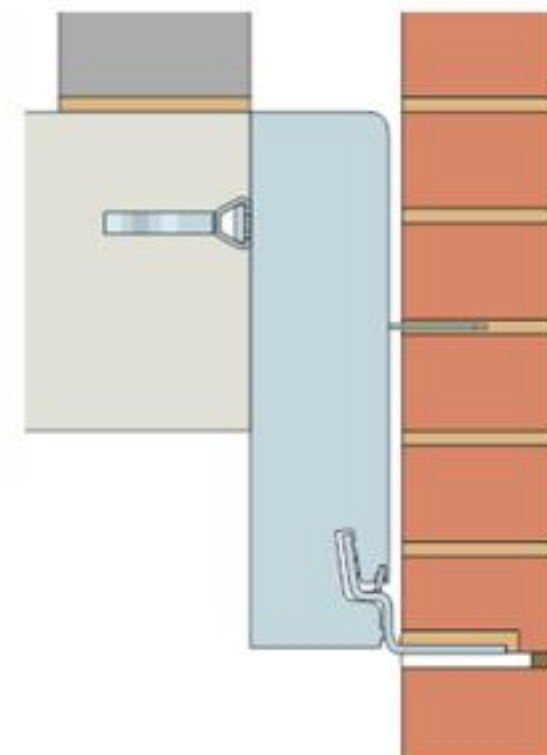
Not being specific to a particular project, unused components can be moved to another project or, for a small restocking charge, returned to Ancon.

Standard AnconOptima systems are specified from the simple load/cavity charts shown on page 11. Please note the fixing type may affect the maximum masonry load of the system specified.

Non-Standard Systems

AnconOptima was conceived by Ancon's technical staff primarily as a standard solution for loads up to 14kN/m, however it can be designed to suit other applications. Although the components of a non-standard AnconOptima system are not available from stock and cannot be returned to Ancon for restocking, they still provide greater flexibility in the fixing position and are less cumbersome to handle on site than a comparable welded bracket system.

Typical applications of a non-standard AnconOptima system are loads up to 20kN/m or where a different angle position on the bracket is needed e.g. projecting angle.



Bespoke AnconOptima/P Support System

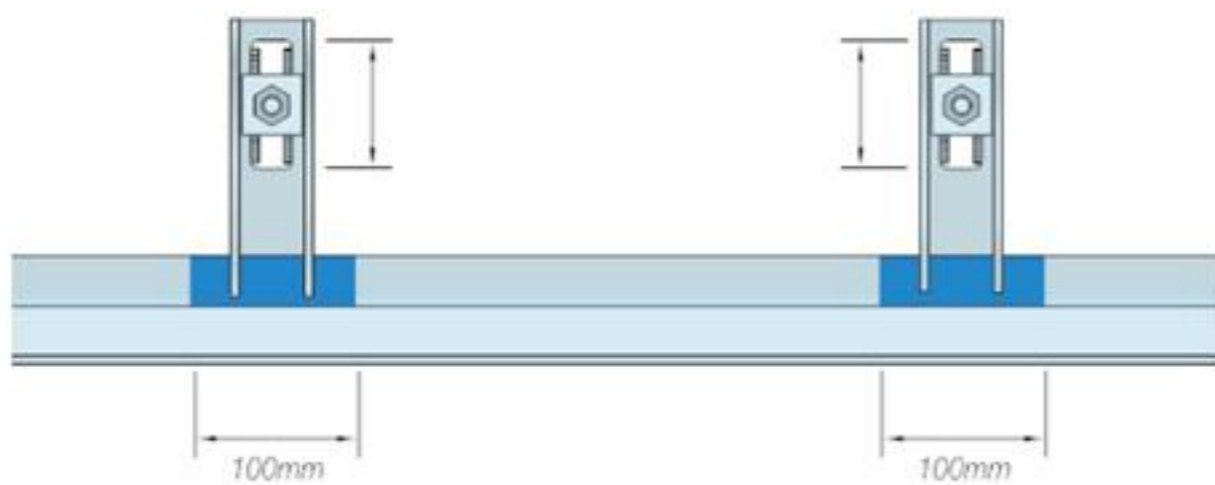
Tel: +44 (0) 114 275 5224 Web: www.ancon.co.uk



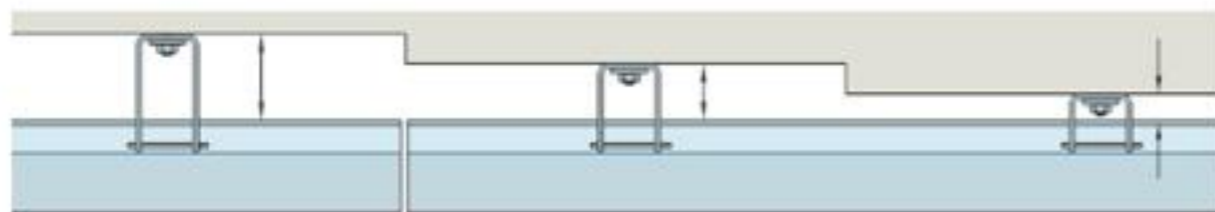
Cavity Variations

The ability of welded bracket support systems to accommodate variations in the line of the structure is limited by the maximum thickness of shims, normally 12mm. Some additional adjustment will be possible by varying the bearing of the brickwork on the support angle but this will be very limited, particularly where pistol bricks are used.

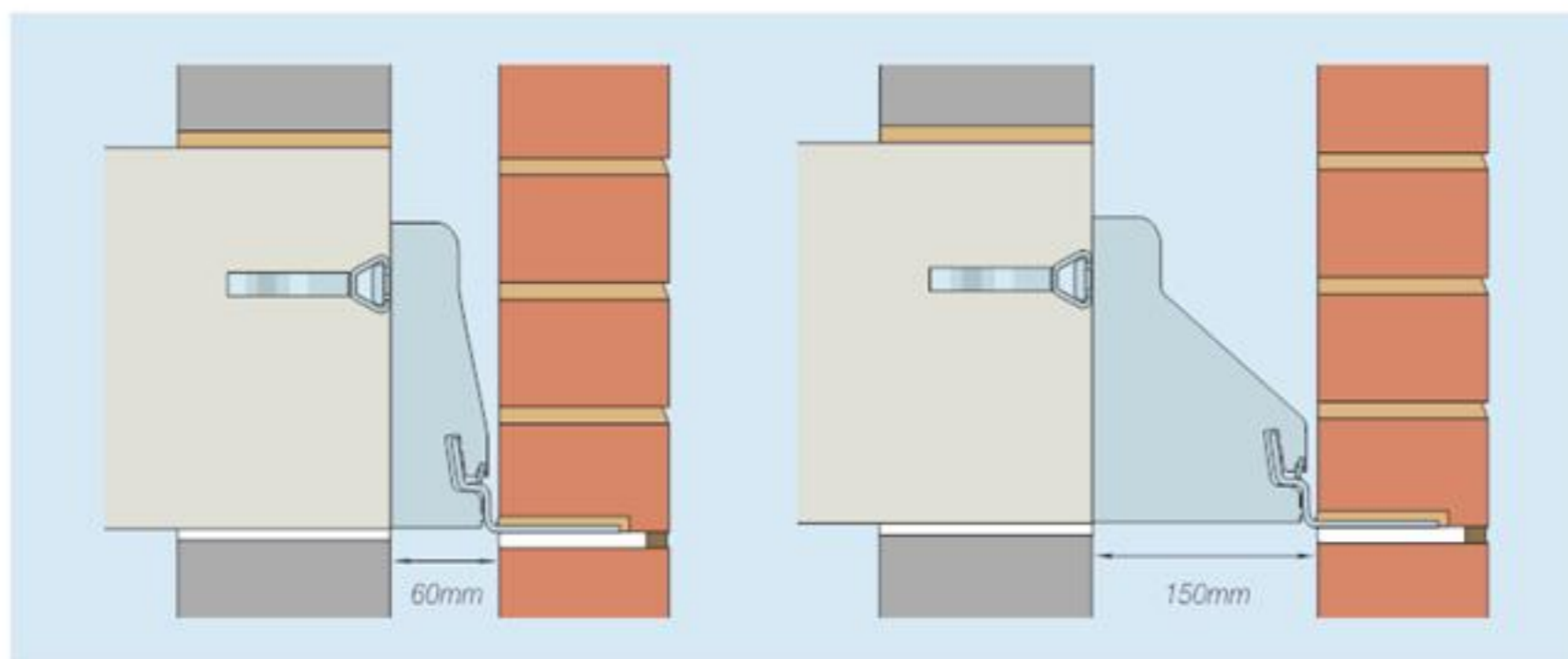
When using a standard AnconOptima system, brackets are available from stock to suit cavities from 60mm to 150mm in 5mm increments. They can be changed on site to allow for variations in the edge beam. Shims can be used for fine adjustments and should never need to be more than 4mm thick.



Adjustment of AnconOptima



AnconOptima accommodates variations in the line of the edge beam. Brackets of a different depth can be used on the same angle



Standard brackets are available to suit cavities from 60mm to 150mm

Vertical Adjustment

Vertical adjustment is achieved by the deep slot in the back of the bracket.

Horizontal Adjustment

AnconOptima angles have a 100mm pre-marked fixing zone which provides 50mm horizontal adjustment.

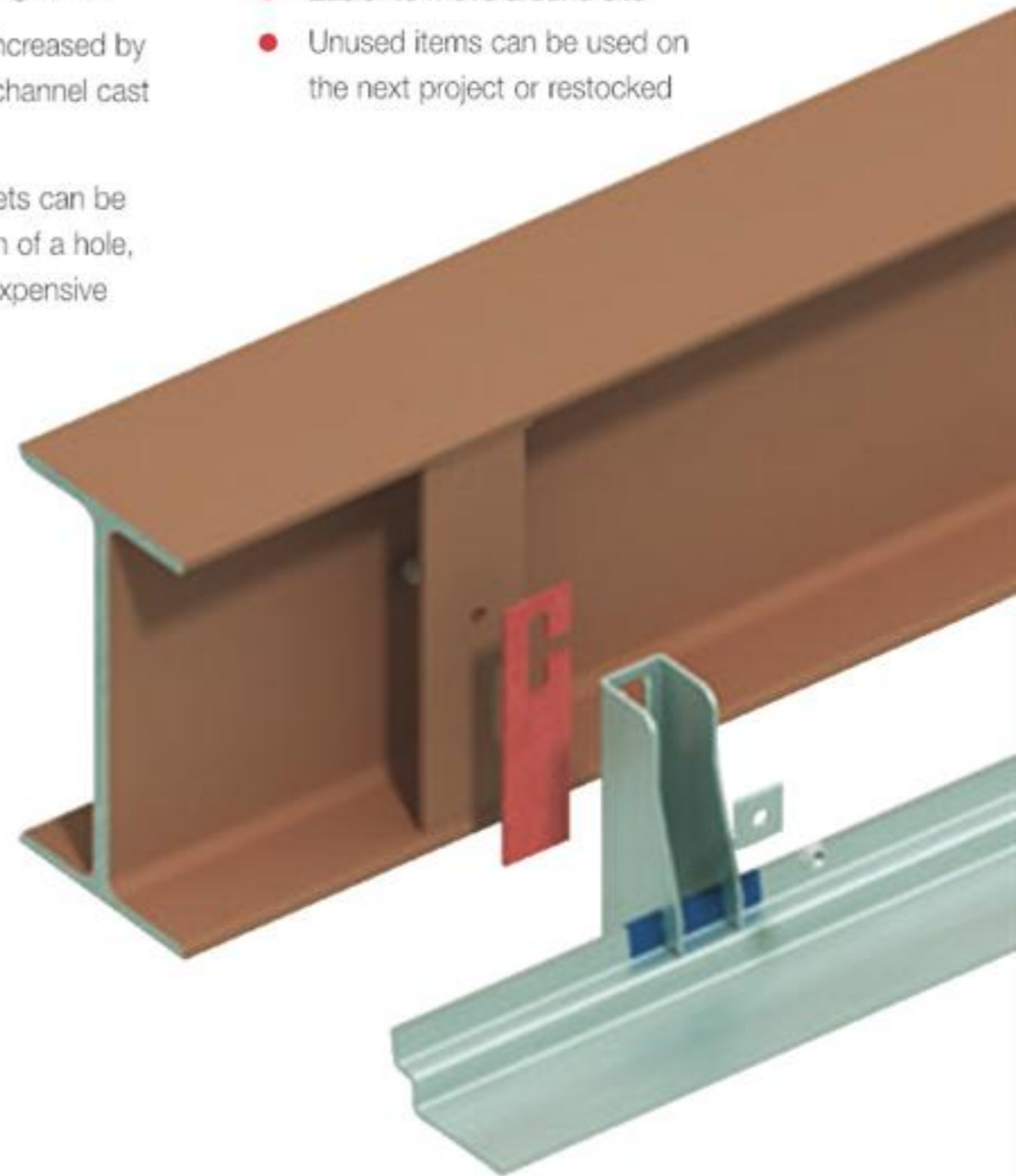
If fixing into concrete with expansion bolts, the bracket can be moved to eliminate clashes between the bolts and reinforcing bars.

Horizontal adjustment can be increased by fixing the system to an Ancon channel cast into the face of the concrete.

If fixing to steelwork, the brackets can be moved to align with the location of a hole, negating the need for a more expensive horizontal slot to be provided.

Benefits of Standard Systems

- More adjustable than welded bracket systems
- Specified by using simple load/cavity charts
- No requirement for detailed layout drawings
- Supplied from stock
- Faster to install
- Easier to move around site
- Unused items can be used on the next project or restocked



AnconOptima fixed through hole, rather than slot, in steelwork. Adjustment provided by fixing zone on angle. Shown with Ancon Thermal Break which also isolates the dissimilar metals.

Masonry Support Systems & Lintels



Setting Out of Standard Systems

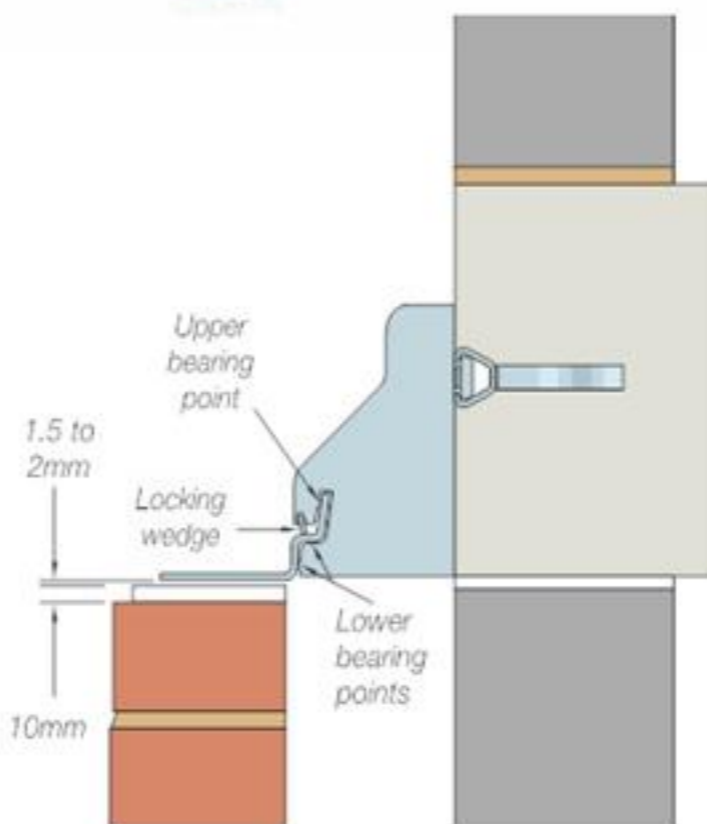
Unlike bespoke systems, there is no time-consuming setting out of individually referenced components with a standard system to a detailed layout drawing.

Cutting on site

Standard AnconOptima systems are not designed for specific buildings and certain angles will need to be cut on site to suit the length required. Each angle section must have at least two brackets.

Corners

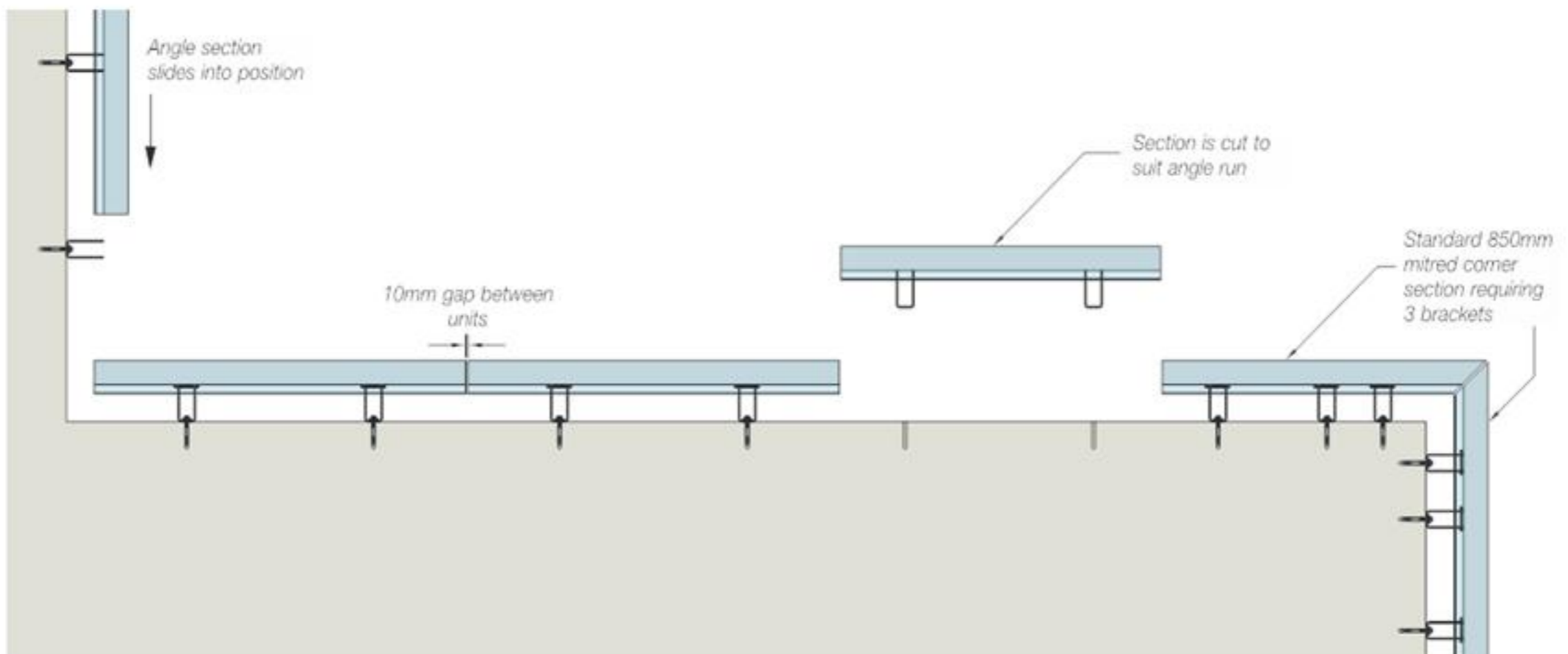
Standard left-hand and right-hand corners are available. Each corner section requires three brackets in order to achieve the required performance. These sections should never be cut.



Correct installation of AnconOptima

Installation

Installation of AnconOptima provides significant time savings over welded support systems. The individual components are easier to move around site, often without hiring crane time. The preferred technique of installers is to level and fix two brackets and simply slide the angle into position. This reduces the time spent tightening and loosening the fixing bolts of a welded bracket system, in order to achieve a level horizontal shelf. Where space limitations prevent the angle from sliding, the brackets can be positioned on the angle and conventionally fixed; the smaller lengths of angle simplify this method of installation. When the brackets and angle are in position a locking wedge is tapped with a hammer through the notches in each bracket. These wedges ensure the correct contact is achieved between angle and brackets. A detailed installation guide is available from Ancon.



Typical AnconOptima layout

Details for Specifying and Ordering

Standard AnconOptima Systems simplify the total supply process. They consist of standard components, all available from stock, and can be specified by using the simple load/cavity charts below. Specification does not involve the completion of detailed layout drawings and not being specific to any project, excess items from one site can be used elsewhere.

Standard Brackets

AnconOptima brackets are readily available from stock to suit cavities from 60mm to 150mm in 5mm increments. Brackets for wider cavities are available on request. A locking wedge is supplied with each bracket to ensure the correct contact is achieved between angle and bracket.

Standard System Specification Clause

Delete items shown in *italic* as applicable.
AnconOptima 10/12/14 standard masonry support system comprising a 'W' profile stainless steel angle complete with slide on, interchangeable fixing brackets to suit varying cavity width, and locking wedges.

Fix back to *concrete/steelwork* using *expansion bolts/cast-in channel/stainless steel set screws/Steelgrip™*.

System to be installed in accordance with Ancon's instructions.

Manufactured in Grade 1.4301 (304) Austenitic Stainless Steel.

Advisory Note

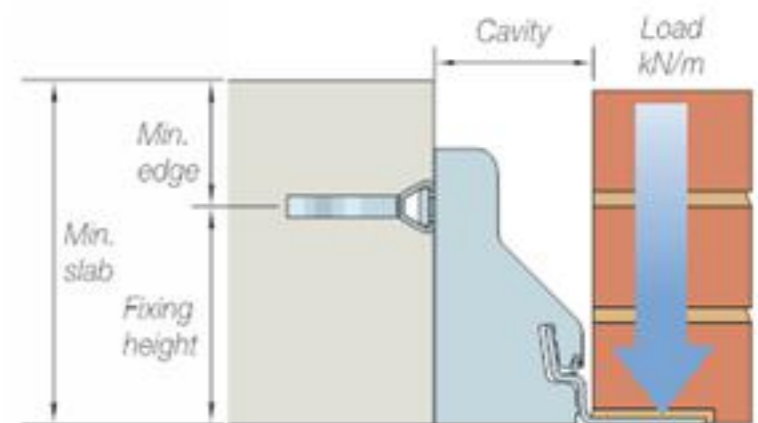
These load/cavity tables are designed to provide guidance only. The suitability of any AnconOptima system should be confirmed with Ancon's Technical Services Team. Edge distances, in particular, are critical to performance.

HIGHER LOAD SYSTEMS AND BRACKET VARIATIONS

Contact Ancon for applications outside the parameters in the tables. Although designed primarily as a standard solution for loads up to 14kN/m, AnconOptima components can be supplied to suit loads up to 20kN/m and be manufactured with a different angle position on the bracket.

Standard AnconOptima Systems

System	Maximum Load (kN/m)	Angle Length (mm)	Nominal Length (mm) <small>(including 10mm gap between angles)</small>	Fixing Zone Colour	Bracket Position (mm)
AnconOptima 10	10	990	1000	Red	500 centres
AnconOptima 12	12	990	1000	Green	500 centres
AnconOptima 14	14	790	800	Blue	400 centres



AnconOptima 10

Fixing	Fixing height (mm)	Min. edge (mm)	Min. slab (mm)	Maximum load (kN/m) for various cavity widths (mm)																			
				60	65	70	75	80	85	90	95	100	105	110	115	120	125	130	135	140	145	150	
30/20 channel	140	75	215	10	10	10	10	10	10	10	10	10	10	10	10	9.8	9.6	9.4	9.2	9.0	8.9	8.7	8.5
FAZII 12/30 A4*	140	75	215	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10
FBNII 12/30 A4**	140	90	230	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	9.8
M12 set screw	140	-	-	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10
M12 Steelgrip™	140	-	-	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10

AnconOptima 12

Fixing	Fixing height (mm)	Min. edge (mm)	Min. slab (mm)	Maximum load (kN/m) for various cavity widths (mm)																			
				60	65	70	75	80	85	90	95	100	105	110	115	120	125	130	135	140	145	150	
30/20 channel	140	75	215	10.1	12	11.8	11.6	11.4	11.1	10.9	10.7	10.4	10.2	10.0	9.8	9.6	9.4	9.2	9.0	8.9	8.7	8.5	
FAZII 12/30 A4*	140	75	215	10.1	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	11.8	11.6	11.4	
FBNII 12/30 A4**	140	105	245	10.1	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	11.8	11.6	11.4	
M12 set screw	140	-	-	10.1	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12
M12 Steelgrip™	140	-	-	10.1	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12

AnconOptima 14

Fixing	Fixing height (mm)	Min. edge (mm)	Min. slab (mm)	Maximum load (kN/m) for various cavity widths (mm)																		
				60	65	70	75	80	85	90	95	100	105	110	115	120	125	130	135	140	145	150
30/20 channel	140	75	215	12.7	14	14	14	14	13.9	13.6	13.3	13.1	12.8	12.5	12.3	12.0	11.8	11.5	11.3	11.0	10.9	10.7
FAZII 12/30 A4*	140	75	215	12.7	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14
FBNII 12/30 A4**	140	105	245	12.7	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14
M12 set screw	140	-	-	12.7	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14
M12 Steelgrip™	140	-	-	12.7	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14

Notes to above tables: Minimum slab thickness assumes the support angle is level with the bottom of the slab. A thicker slab will be required where this is not the case. *FAZII 12/30 A4 is an Ancon High Performance Bolt. **FBNII 12/30 A4 is an Ancon Single Expansion Bolt. See page 34 and the Ancon Channel & Bolt Fixings literature for these and other bolts.

Masonry Support Systems & Lintels



MDC Standard Support System

ANCON MDC BRACKET ANGLE SUPPORT SYSTEM

Ancon MDC Bracket Angle Support Systems can carry over 8 metres of brickwork and accommodate any width of cavity from 40mm in its standard form. The brackets are welded to the angle and the material content of both components is optimised to ensure the most economic solution is designed.

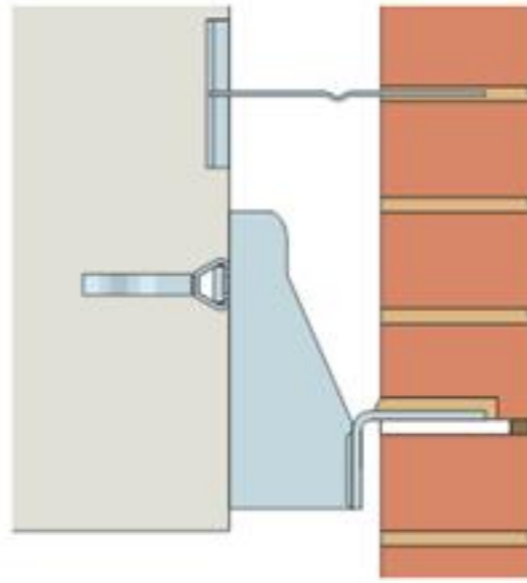
Design Variations

The Ancon MDC 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.

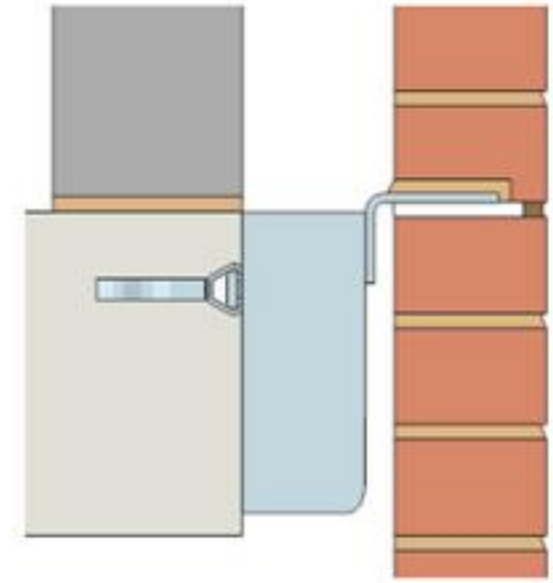
There are several variations of the standard MDC System. MDC/P has the bracket projecting below the structure, MDC/R has a reversed angle welded to the bracket, and MDC/I is a specially inverted system with the support angle at the top of the bracket. These variations allow the support leg of the angle to be positioned anywhere from the top of the bracket to a position below the bottom of the bracket. Non-standard AnconOptima can also be supplied in these variations (see page 8).

Soldier courses can be suspended from MDC systems by using stirrups at 225mm centres. The stirrups fit over the angle and stitching rods span between the stirrups, supporting cored or holed bricks.

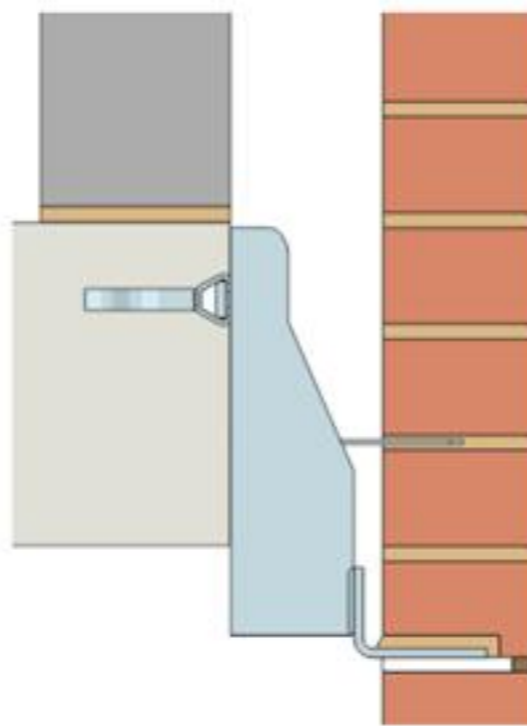
The Ancon MDC System can be supplied with extra components to suit the application e.g. closer plates, expanded metal etc.



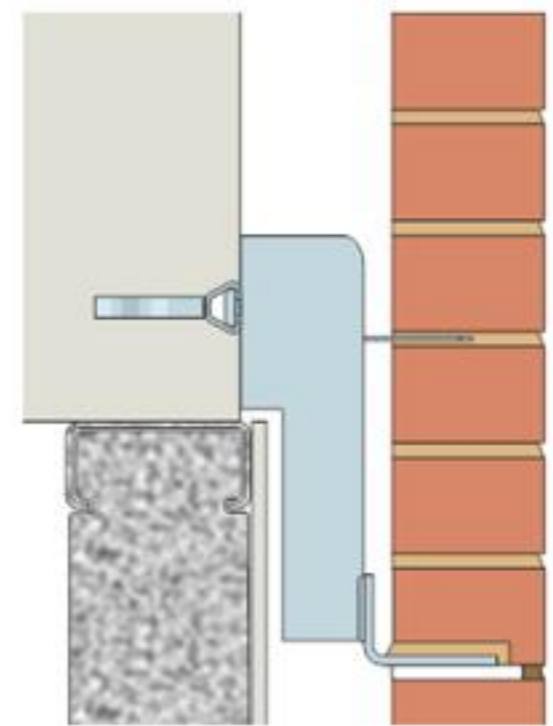
MDC/R Support System



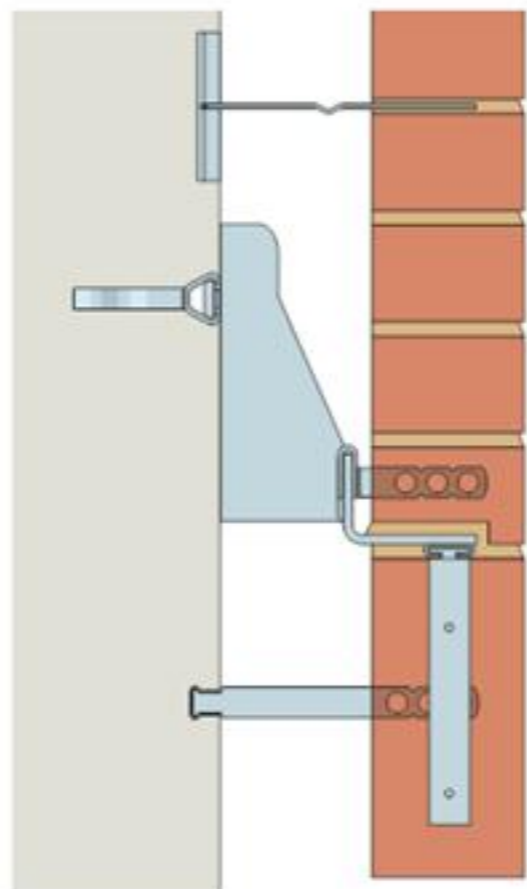
MDC/I Support System



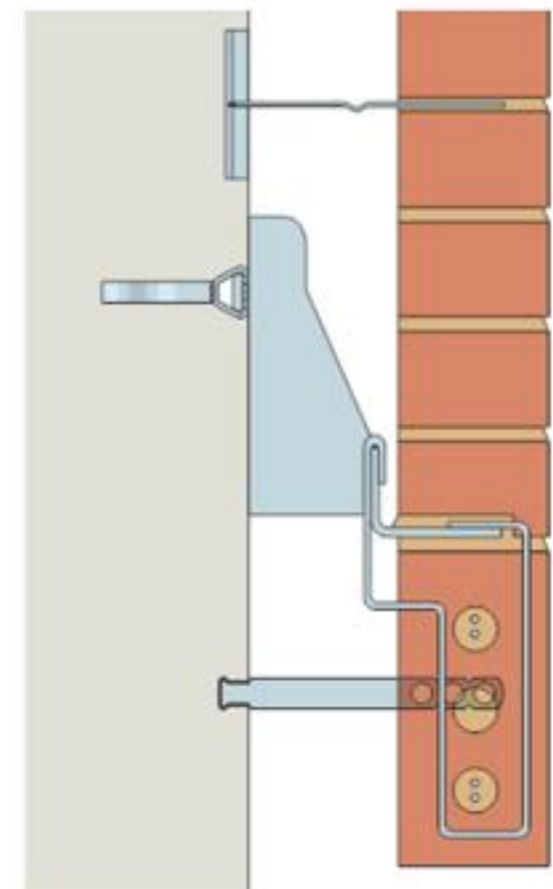
MDC/P Support System



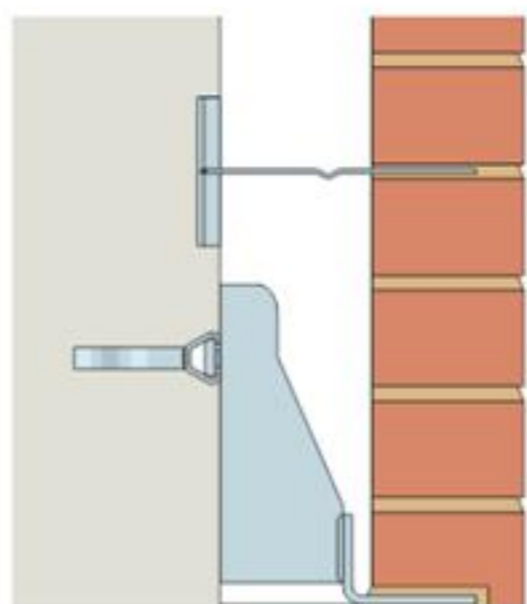
MDC/P/NB Support System



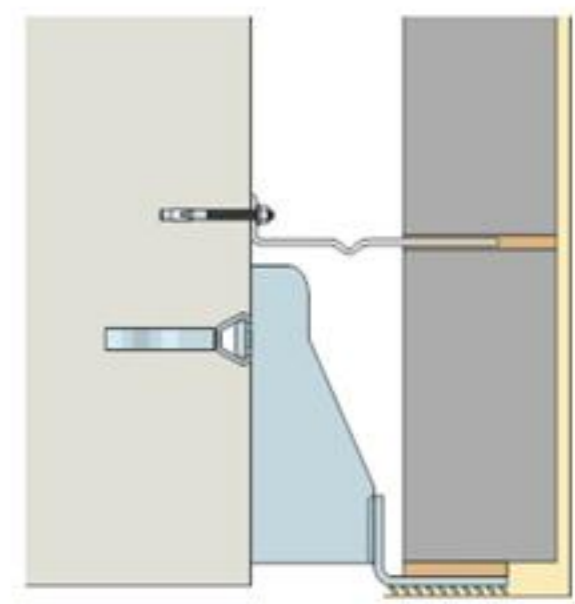
MDC with 36/8 Channel and Hangers Supporting a Soldier Course



MDC with Stirrups Supporting a Soldier Course



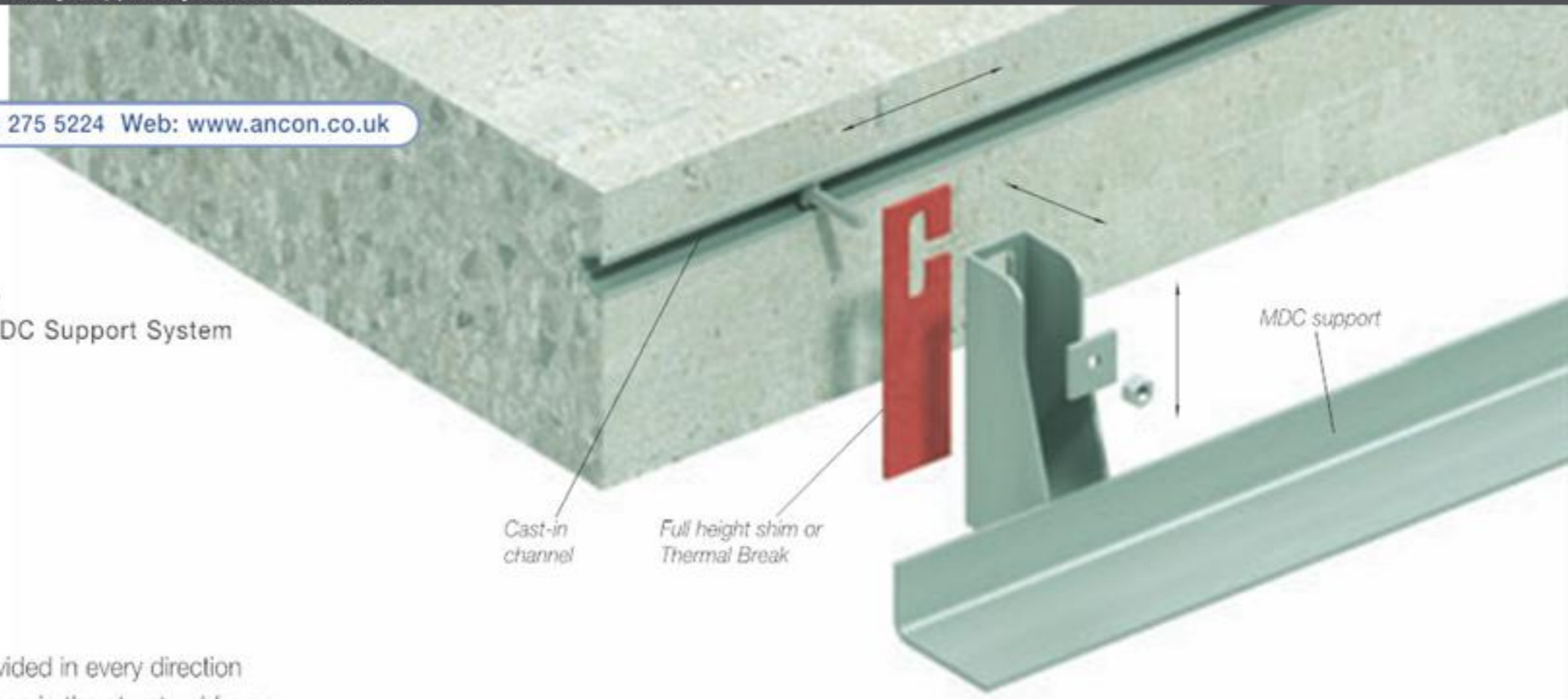
MDC with Closer Plate Welded to Underside



MDC with Expanded Metal Welded to Underside

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Patent No. 2 249 816
Adjustment of MDC Support System



Cast-in channel
Full height shim or Thermal Break

MDC support

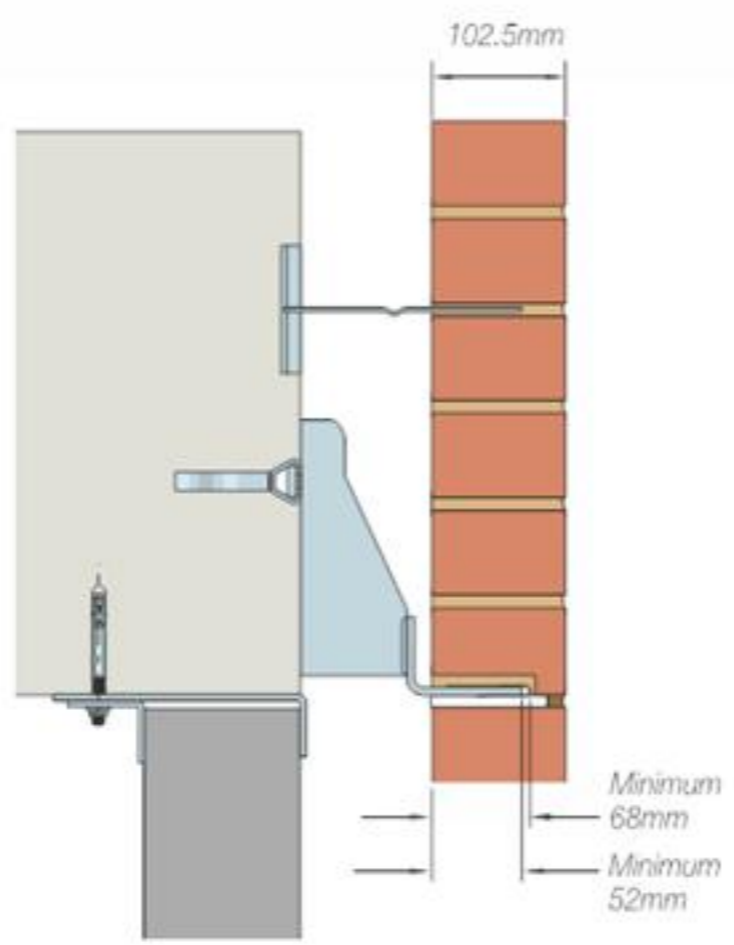
Adjustment

Adjustment is provided in every direction to allow for tolerance in the structural frame. The serrated and slotted face of the bracket allows for vertical adjustment. Cast-in channel will provide virtually unlimited horizontal adjustment; slotted holes in a steel edge member will offer more limited adjustment. Shims can be included between the bracket and the frame up to a maximum thickness of the outside diameter of the fixing bolt, or 16mm, whichever is less. When used, the 3mm thickness of an Ancon Thermal Break should be taken into account when calculating the maximum shimming allowance for a system.

Extension Plates

As an alternative to shims, Ancon Extension Plates can sometimes be used to increase the bearing for the brickwork. The support leg of the angle must provide a minimum of 52mm bearing for standard single skin brickwork for the entire length of the support. Without this bearing the brickwork may become unstable. This must be checked before work proceeds. The extension plates are pushed onto the leg of the angle with the flat surface on top. They are adjusted until the required amount of extension is achieved, this will be from 5mm to 17mm.

The plates can provide extra bearing but they should not extend more than 20mm from the front of the angle. Extension plates are usually 400mm long and fixed with a nominal gap between the plates of approximately 10mm.

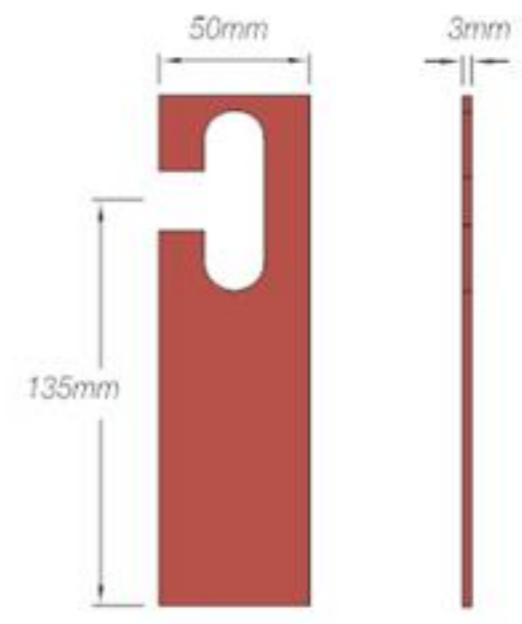


Extension Plate Fixed to MDC Support System

Ancon Extension Plates are designed to be used with Ancon Support Systems. The particular application should be agreed with Ancon technical staff to ensure that both the support system and extension plates are suitable. Contact Ancon's Technical Services Team for more information.

Thermal Breaks

Masonry support systems from Ancon can now be supplied with Thermal Breaks to minimise cold bridging, and improve the energy efficiency of your building project. Shaped like a standard Ancon key-hole shim, these Thermal Breaks are manufactured from a durable fibre-reinforced thermoset plastic, which has a thermal conductivity of just 0.3W/mK.



Ancon Thermal Break, ref. BK03

The standard Ancon Thermal Break, as illustrated, can be ordered using the product code 'BK03-135'. This product is suitable for standard AnconOptima support brackets and most Ancon MDC-type brackets.

Thermal Breaks can be specified with a support system using the suffix 'BK03':

MDC / Cavity / Masonry Load / Projection / Thermal Break

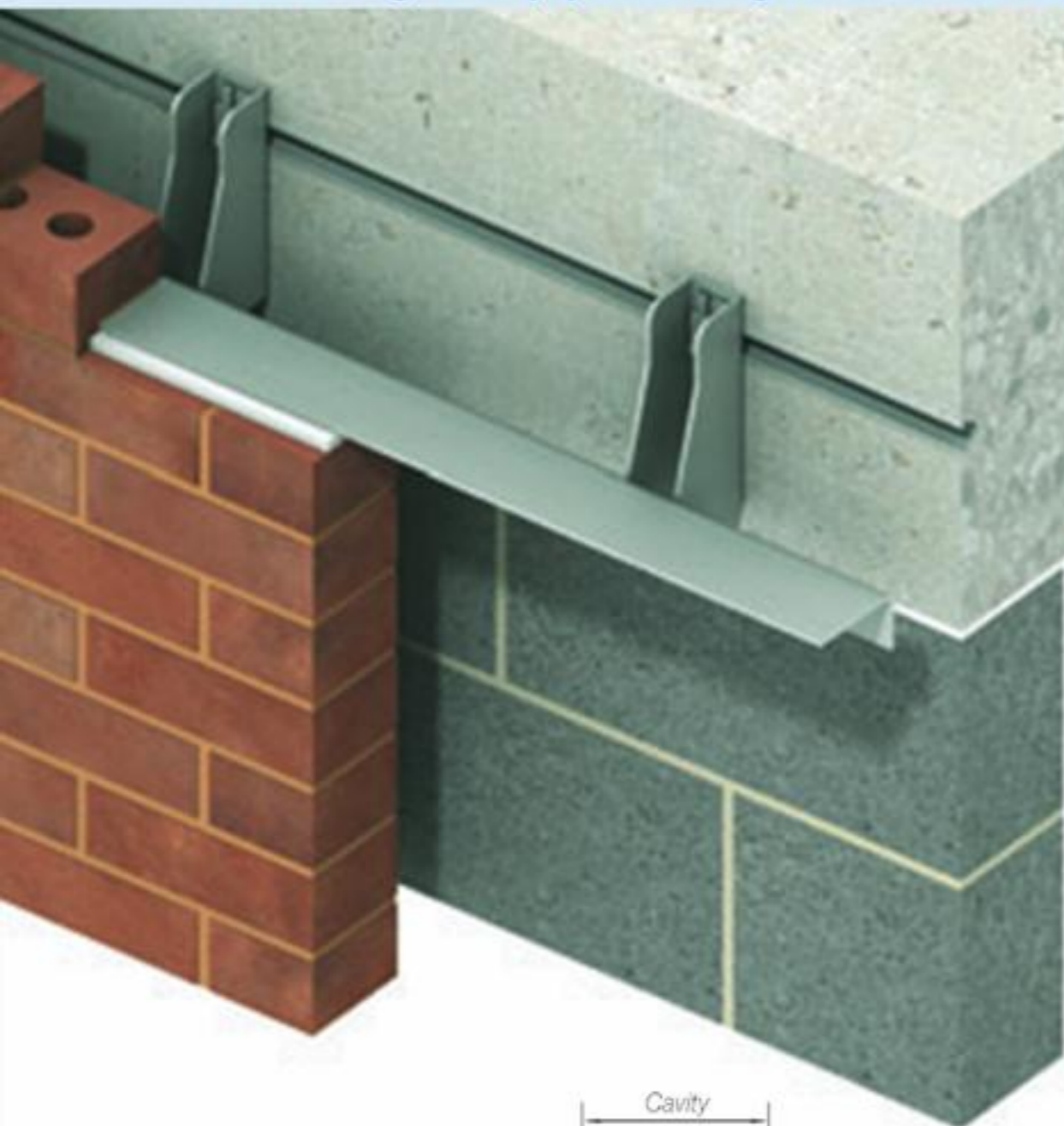
e.g. MDC / 75 / 8.2 / P75 / BK03

Non-standard Thermal Breaks can be designed to suit any Ancon support system. Contact the Technical Services Team for more information.



UK Patent No. 2 305 194
Extension Plates

Masonry Support Systems & Lintels



MDC/R Support System

Setting Out

Ancon can provide drawings showing the location of the fixings (cast-in channels for concrete frames, bolt positions for steel frames). Bracket angle units will be referenced and scheduled and all details submitted for approval before manufacture.

Details for Specification and Ordering

Ancon MDC Systems are tailored to suit each contract, and are based on the cavity size at the support and the masonry load to be carried. Ancon will design an economical configuration of channel, bracket and angle. Specification is as follows:-

MDC / type / cavity / masonry load
 e.g. MDC / R / 75 / 5.6

Ancon will design a system with a reversed angle to suit a 75mm cavity and carry 5.6 kN/metre run of masonry.

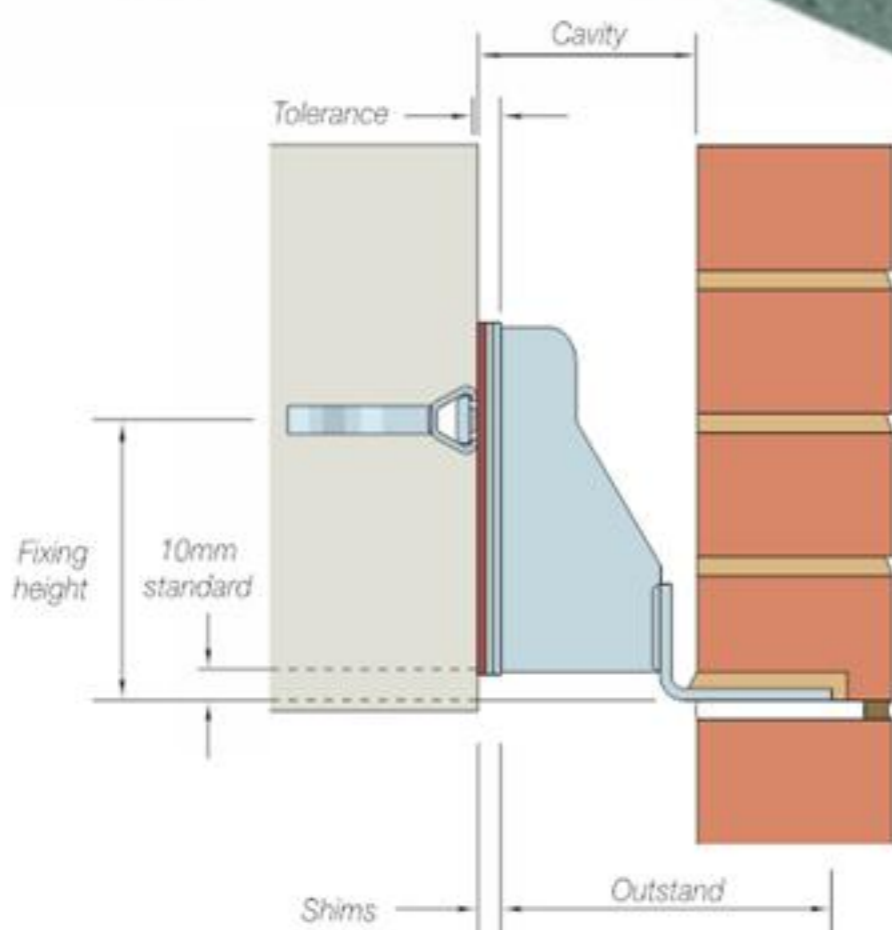
References

- MDC Standard system
- MDC/BK03 System with Thermal Break
- MDC/R System with reversed angle
- MDC/I Inverted system

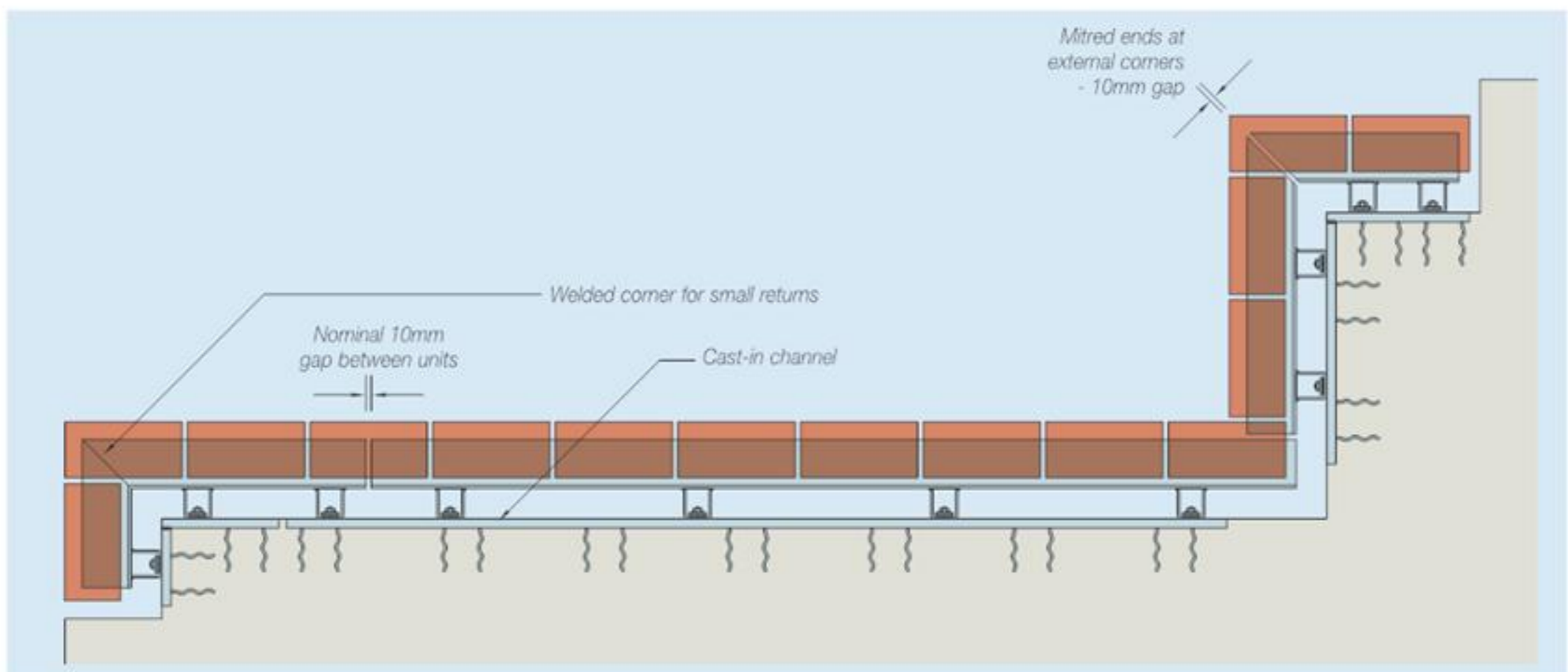
Some applications demand that the support leg is below the soffit of the structure. Where this is no more than 150mm, this can be specified as a suffix to the standard reference by **P projection**.

MDC / cavity / masonry load / projection
 e.g. MDC / 125 / 7.2 / P 75

Ancon will design a standard system to suit a 125mm cavity, carry 7.2kN/m, with a bracket projection of 75mm.



MDC Support System with Shims including a Thermal Break

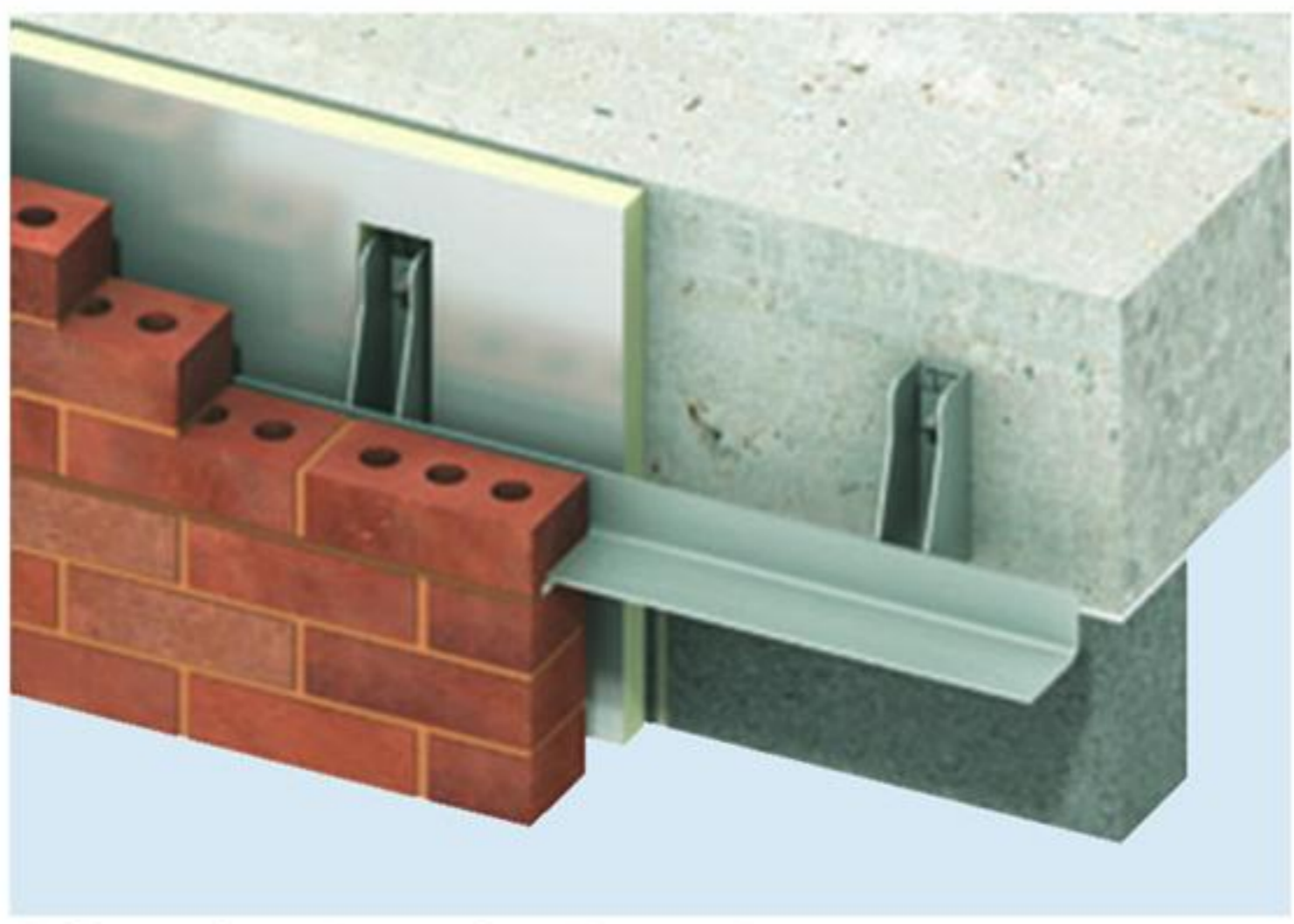


Typical Layout of MDC Support System

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MDC Support System fixed to 30/20 Cast-in Channel and Precast Masonry Unit



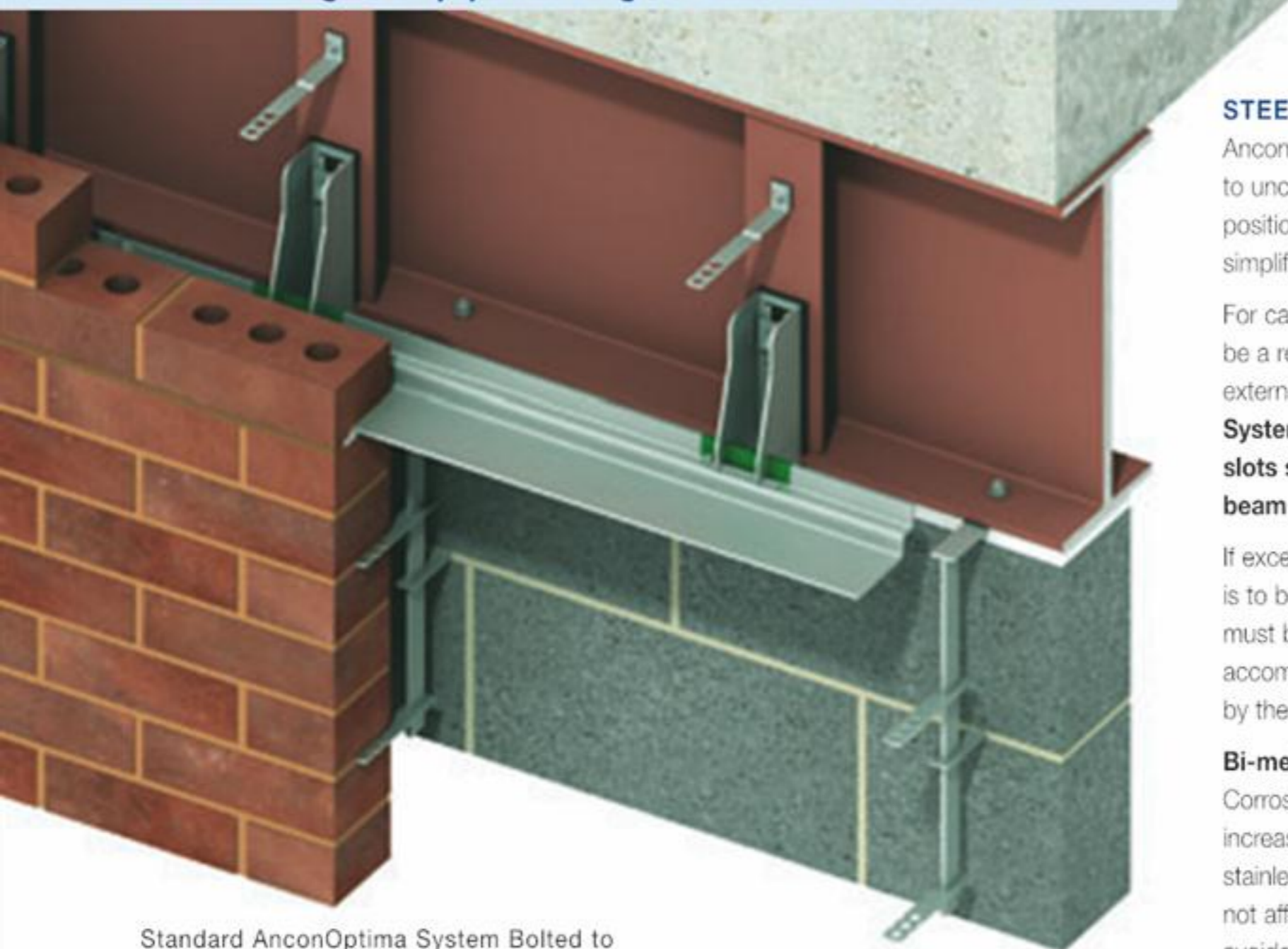
MDC Support System fixed with Single Expansion Bolts

CONCRETE FRAMES

Ancon Masonry Support Systems are generally fixed to either Ancon 28/15, 30/20 or 38/17 Channels cast into the edge of the concrete. For applications where particularly high loads are involved Ancon 40/25 Channel may need to be considered. Details of these channels are shown on page 34. The use of cast-in channels allows the support system to be fixed to the structure with 'T' bolts and moved along the line of the channel into the correct position. The slot in the back of the bracket allows vertical adjustment. This permits greater freedom in the positioning of the cast-in channel to avoid horizontal reinforcement.

As an alternative, Ancon Expansion or Resin Bolts can be used when cast-in channels have not been included in the edge beam.

Masonry Support Systems & Lintels



Standard AnconOptima System Bolted to Steel Edge Beam Stiffeners

STEEL FRAMES

Ancon Support Systems can be fixed directly to uncased structural steel frames. The fixing positions can usually be at constant centres to simplify the fabrication of the steelwork.

For cavities larger than 75mm there may be a requirement for additional fixings near external corners. **When fixing any Ancon System other than AnconOptima horizontal slots should be provided in the steel edge beam stiffeners to allow lateral tolerance.**

If excessive movement of the support system is to be avoided, the structural edge member must be designed to minimise deflections and accommodate the torsional forces created by the eccentric load from the brickwork.

Bi-metallic Contact

Corrosion of the steel frame may be slightly increased where there is direct contact with stainless steel in a damp environment. This will not affect the stainless steel and can be avoided by isolating the two dissimilar metals. This can be achieved by painting the contact area or by incorporating a separating membrane that can be supplied with the Ancon Support System. For further information see pages 6-7.



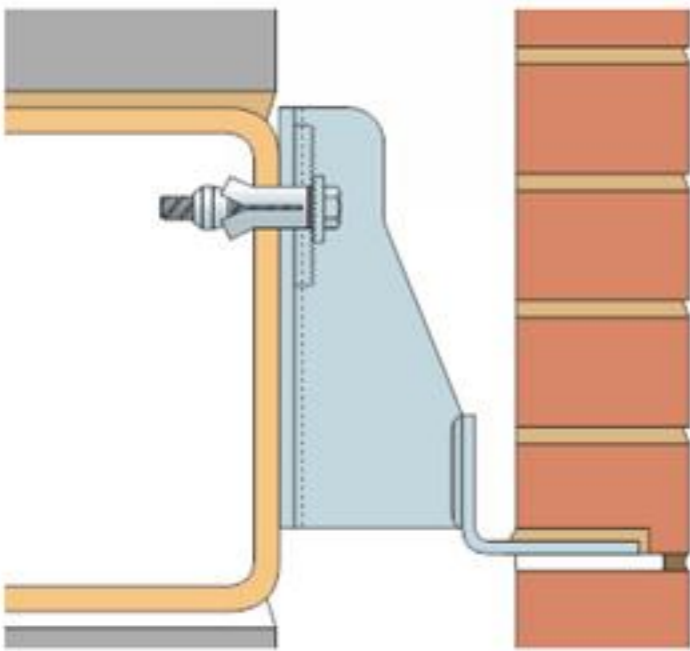
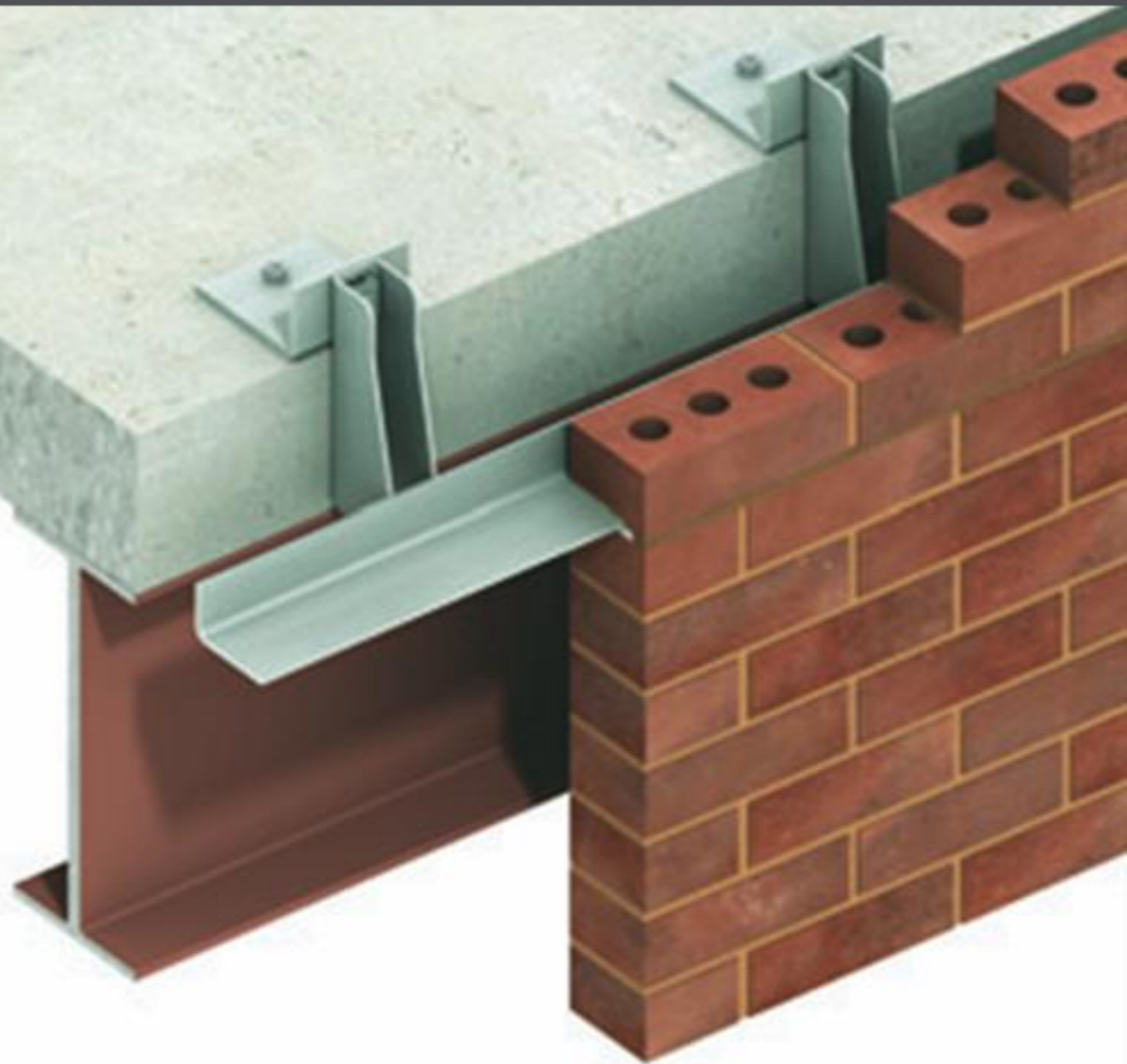
MDC Support System Bolted to Steel Edge Beam Stiffeners and a Corner Column

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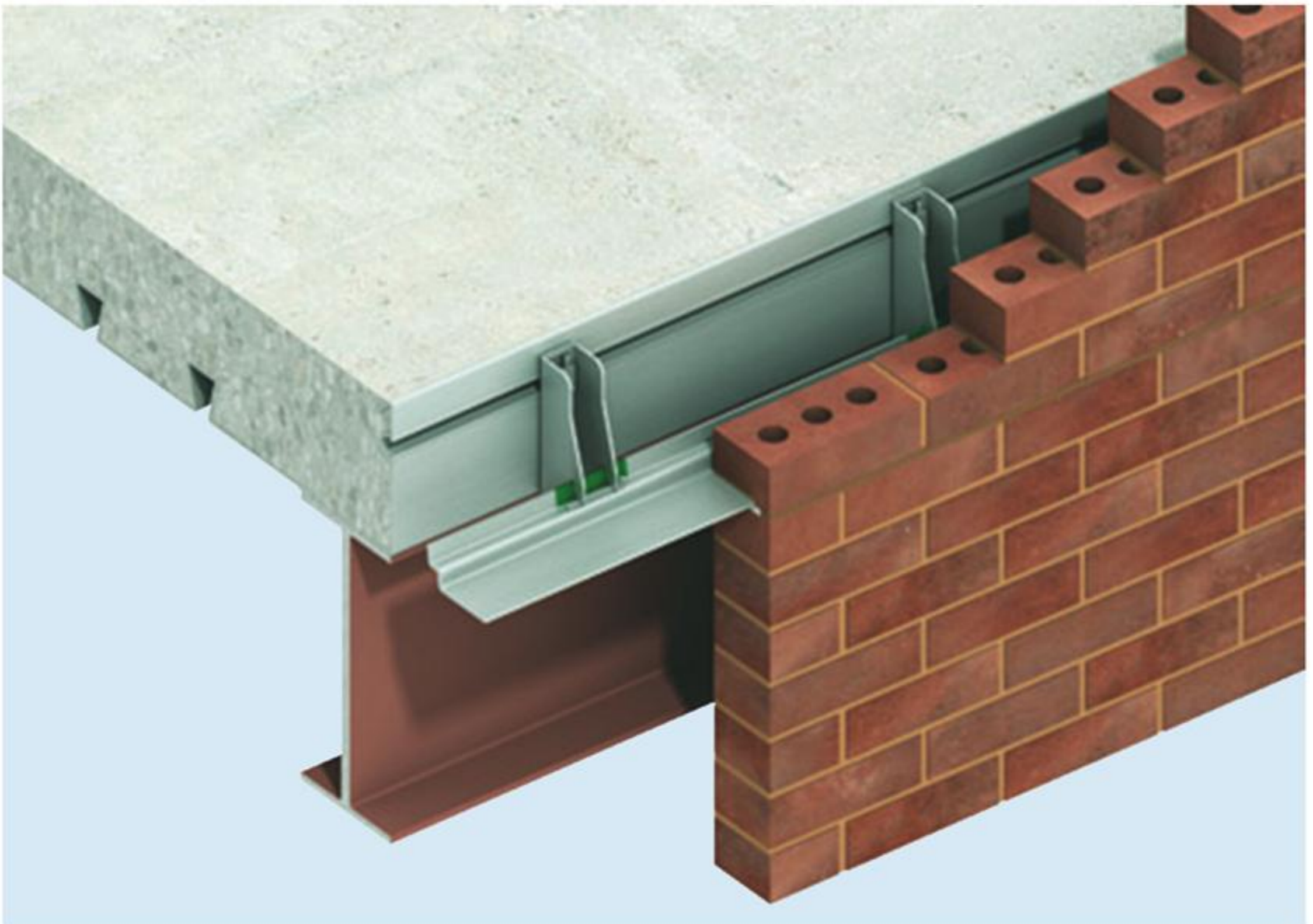
Ancon Support Systems can be fixed to Rolled Hollow Sections using Ancon Steelgrip fixings. These fixings are designed for use where access is only available from one side.

Ancon CombiDeck (see pages 18 and 19) can replace the edge trim of metal deck shuttering and allow the Support System to be fixed directly to the face of the concrete floor.

As an alternative for higher loading conditions the Ancon MDC/TC Top Cleat System can be employed to fix directly to the top of the composite deck using expansion bolts.



MDC Support System fixed to face of RHS using Ancon Steelgrip



AnconOptima Support System Fixed to CombiDeck Edge Trim

Masonry Support Systems & Lintels



Corner Detail Showing Fixing Straps Between CombiDeck and Metal Deck Shuttering

ANCON COMBIDECK

Ancon CombiDeck has been developed for use with the permanent metal deck shuttering of steel framed structures. CombiDeck edge support is supplied with an integral channel section that accepts standard Ancon 'T' Head Bolts.

CombiDeck is manufactured in zinc coated mild steel with a stainless steel or galvanised steel channel. Alternatively the complete assembly can be manufactured in stainless steel.

It is supplied in standard three metre lengths in a variety of heights to suit the floor thickness. Corner assemblies and special units are available to suit particular applications.

The stainless steel channel welded into the edge support will usually be Ancon 30/20, positioned 55mm below the top.

The thickness of the floor slab will determine the capacity of the support system. A 130mm thick slab will limit the height of single skin brickwork to 4 metres. Thicker slabs will permit more masonry to be supported. Ancon CombiDeck does not require special reinforcement details providing the slab includes at least the equivalent of H8 Shape 13 bars at a maximum of 150mm centres.

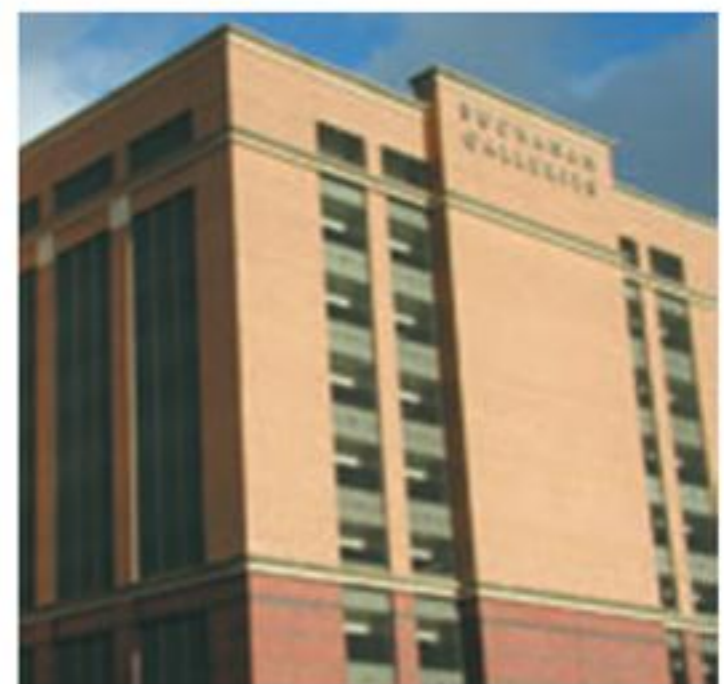
Design Variations

Most Ancon Support Systems can be used with CombiDeck.

Welded CombiDeck corner units are available for external corners, where it is not possible to fix directly to a corner column.

Adjustment

The adjustment provided by Ancon CombiDeck is identical to the use of cast-in channels. The serrated and slotted face of an Ancon bracket allows for vertical adjustment. The built-in channel will provide virtually unlimited horizontal adjustment. Shims can be included between the bracket and the frame up to a maximum thickness of the outside diameter of the fixing bolt or 16mm, whichever is less. As an alternative, Ancon Extension Plates can be used to increase the bearing for the brickwork (page 13).



MDC Support System Bolted to CombiDeck and a Corner Column

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Details for Specification and Ordering

Ancon MDC Systems and non-standard AnconOptima Systems are tailored to suit each project, based on the cavity size at the support and the masonry load to be supported. Ancon will design an economical configuration of channel, bracket and angle.

For applications using CombiDeck the specification is as follows:-

System / CD / type / cavity / masonry load
 e.g. MDC / CD / R / 75 / 5.6

Ancon will design a MDC System to fix to CombiDeck with a reversed angle to suit a 75mm cavity and carry 5.6 kN/metre run of masonry.

References

MDC/CD Standard CombiDeck system
 MDC/CD/R CombiDeck system with reversed angle

The CombiDeck edge support is specified as follows:-

CombiDeck / channel size / height of edge
 e.g. CombiDeck / 30 / 140

This will have a 30/20 channel and will suit a floor with a depth of 140mm.

Fixing CombiDeck to Steelwork

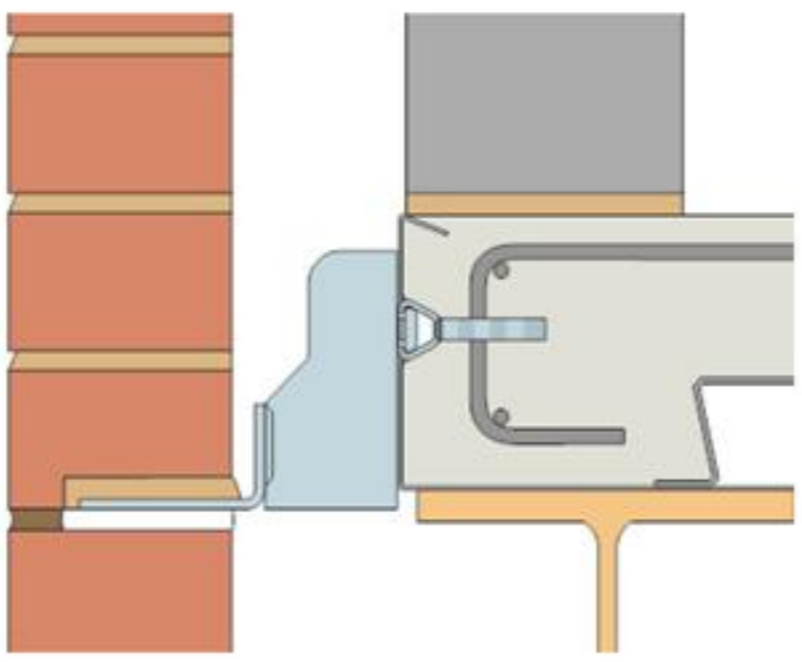
The standard edge trim used with metal deck permanent shuttering is designed to retain the wet concrete during construction of the floor. Ancon CombiDeck also has to support the external brickwork. It is therefore very important that the outside edge of the CombiDeck remains vertical. The installation procedure and allowable overhang may be different to those of the edge trim which CombiDeck replaces.

The CombiDeck should be fixed to the steelwork or metal deck at 300mm maximum centres.

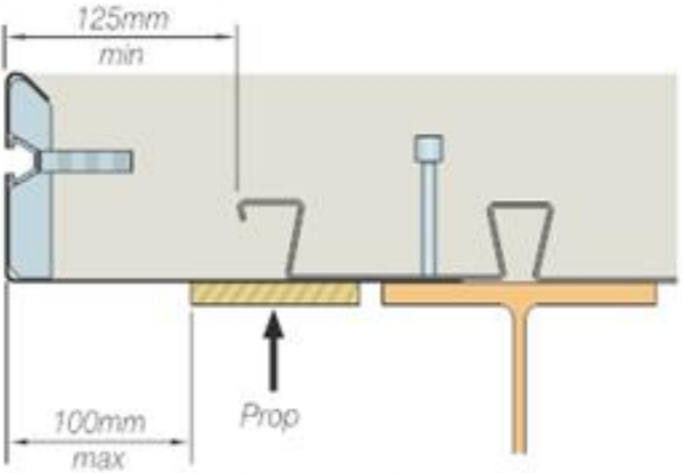
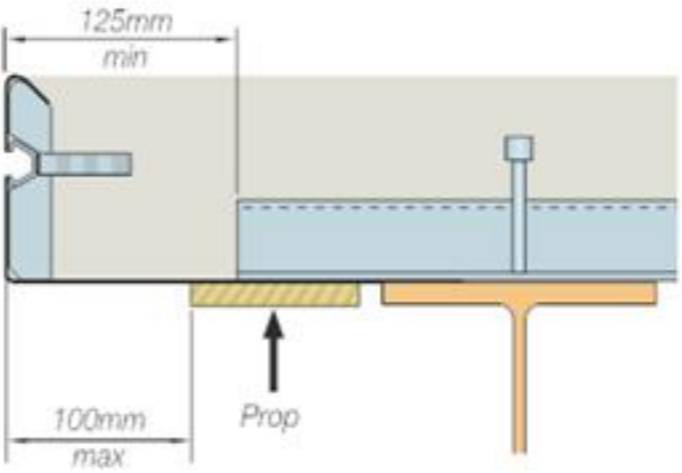
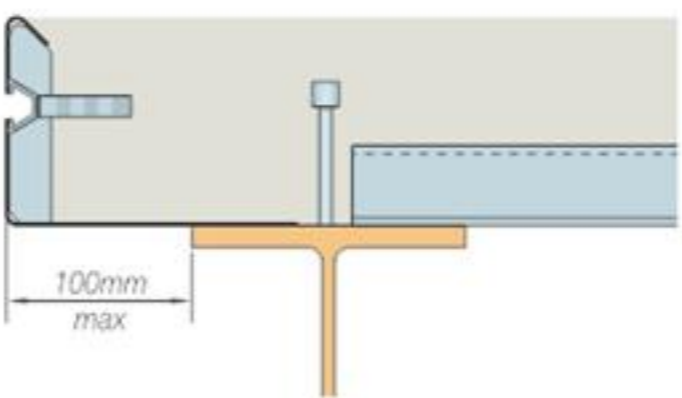
Fixing straps are supplied to restrain the top edge of the CombiDeck. These will be positioned within 100mm of each butt joint or end and at centres not exceeding 450mm. The straps are supplied in 1.5 metre lengths for cutting and bending on site.

The outer edge of the CombiDeck can extend beyond the steelwork up to a maximum distance of 100mm. If a greater distance is required, both the metal deck and the CombiDeck will need to be propped.

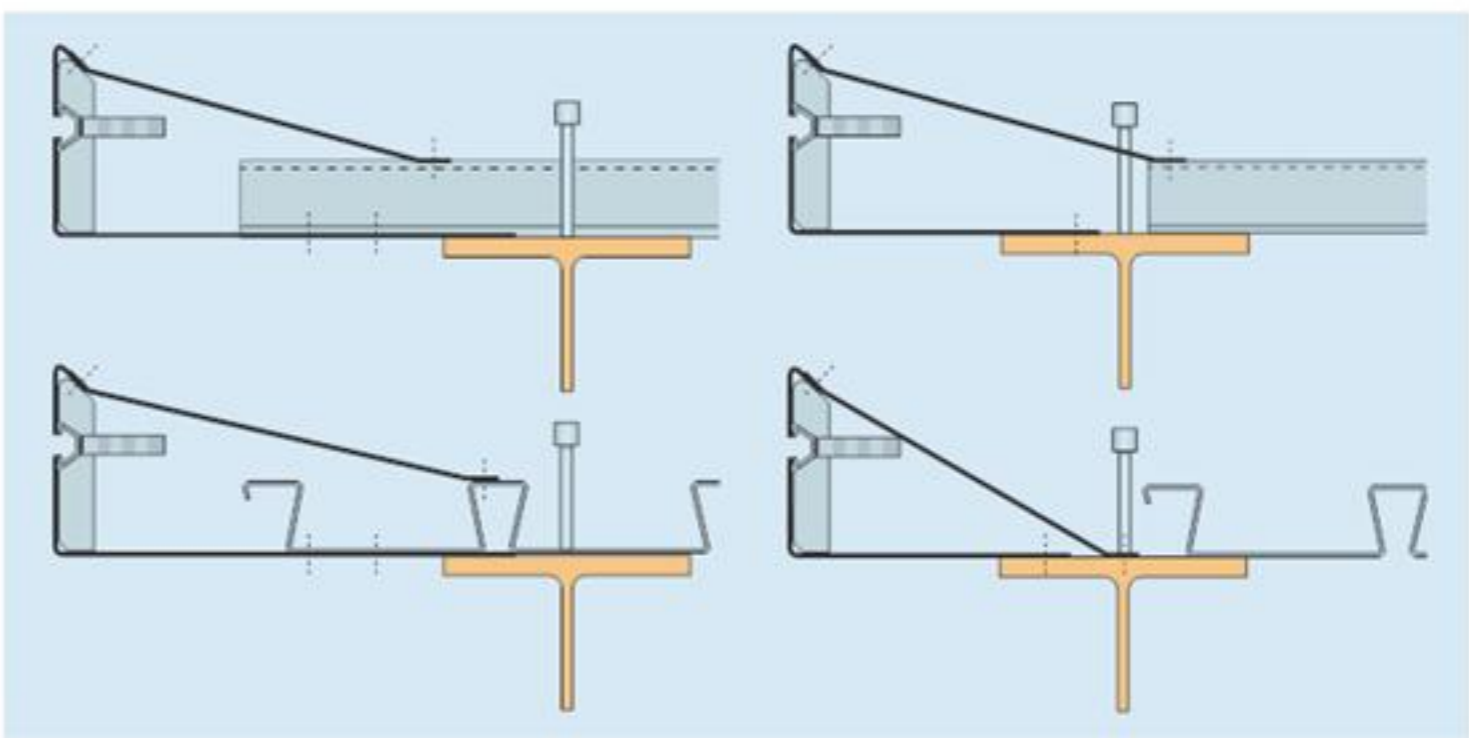
A minimum of 125mm should be left between the outer edge of the CombiDeck and the metal deck to allow sufficient space for the channel anchors and the local reinforcement. Where the decking is at 90° to the CombiDeck, the open troughs must be filled to retain the wet concrete. The butt joints between lengths of CombiDeck should be taped to prevent concrete leakage.



Typical Reinforcement Detail Behind CombiDeck



Maximum Overhang of CombiDeck



Typical Details of Fixing Strap Connections

Masonry Support Systems & Lintels



CFA/I Support System Fixed to Structural Steel Edge Beam

ANCON CFA CONTINUOUS ANGLE SUPPORT SYSTEM

Ancon CFA Systems can carry over 8 metres of brickwork and accommodate various cavity widths. For many applications, particularly where large cavities are involved, the Ancon MDC Support System may prove to be a more economical solution. Continuous angles are more suitable for applications where cavities are small or there is a requirement for the cavity to be closed at the support position. The angles are cold formed and will normally be supplied in lengths of up to 4 metres.

Design Variations

In addition to variations in angle size and thickness, an inverted version, the CFA/I, has the support leg at the top and the fixing slots positioned closer to the corner of the angle.

Steel Frames

Ancon CFA Support Systems can be fixed directly to uncased structural steel frames. Universal beams will require an angle to be welded between the flanges at each bracket position. **Horizontal slots should always be provided in the steel edge beam to allow lateral tolerance.** The angle will have vertical slots with serrated pads welded to the angle.

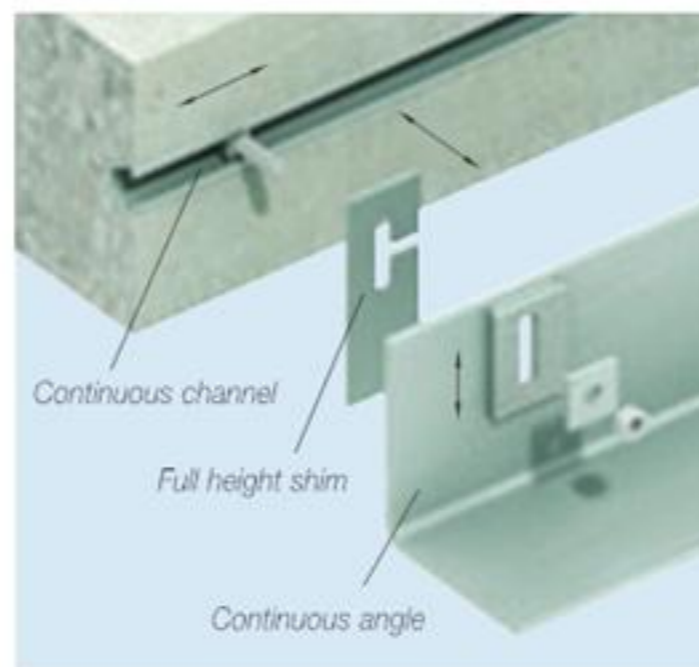
The structural edge member must be designed to minimise deflections and accommodate the torsional forces created by the eccentric load from the brickwork, if excessive movement of the support system is to be avoided.

Concrete Frames

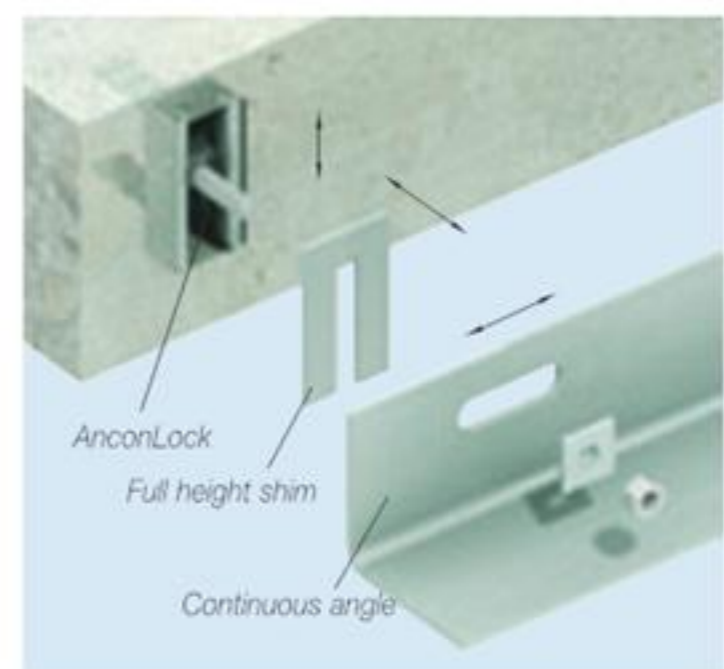
The CFA System can be fixed to cast-in channels or with expansion bolts. The support angle will either be provided with horizontal slots to suit AnconLock Toothed Channels or with vertical slots and serrated pads to suit continuous channels cast horizontally. For further information see page 34.

Adjustment

Adjustment is provided in every direction to allow for tolerance in the structural frame. Vertical slots in the angle with serrated pads allow $\pm 25\text{mm}$ adjustment. Horizontal adjustment is virtually unlimited when fixing to a continuous cast-in channel and will depend on the length of the slotted holes in the edge member when fixing to steel.



The serrated lips of the AnconLock Channel permit a vertical adjustment of up to $\pm 28\text{mm}$. Slotted holes ($18 \times 60\text{mm}$) in the angle allow horizontal adjustment of $\pm 22\text{mm}$. Shims can be included between the bracket and the frame up to a maximum thickness of the outside diameter of the fixing bolt, or 16mm whichever is less.



Bi-metallic Contact

Corrosion of the steel frame may be slightly increased where there is direct contact with stainless steel in a damp environment. This will not affect the stainless steel and can be avoided by isolating the two dissimilar metals. This can be achieved by painting the contact area or by incorporating a separating membrane that can be supplied with the Ancon CFA Support System. For further information see pages 6-7.

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Fabricated Angle used to Support Brick Pier

Setting Out

Ancon can provide drawings showing the location of the fixings (cast-in channels for concrete frames, bolt positions for steel frames). Angle units will be referenced and scheduled and all details submitted for approval before manufacture.

Fabricated Angles

Many features will need special design attention, especially if double skin brickwork is to be supported. Fabricated angles with stiffeners, used in conjunction with the Ancon MDC System for adjacent single skin brickwork, is often the best solution.

Curved Masonry

Curved angles can be supplied for arches or other applications. Where masonry is curved on plan, Ancon can provide either curved angles, individual brackets (pages 22-23) or an MDC System (pages 12-14) in short angle lengths.

Details for Specification and Ordering

Ancon CFA Systems are tailored to suit each job, based on the cavity size at the support and the load to be carried. Ancon will design the most economical system. Specification is as follows:-

CFA / type / cavity / masonry load
e.g. CFA / I / 50 / 6.0

Ancon will design a system with an inverted angle to suit a 50mm cavity and carry 6.0kN/metre run of masonry.

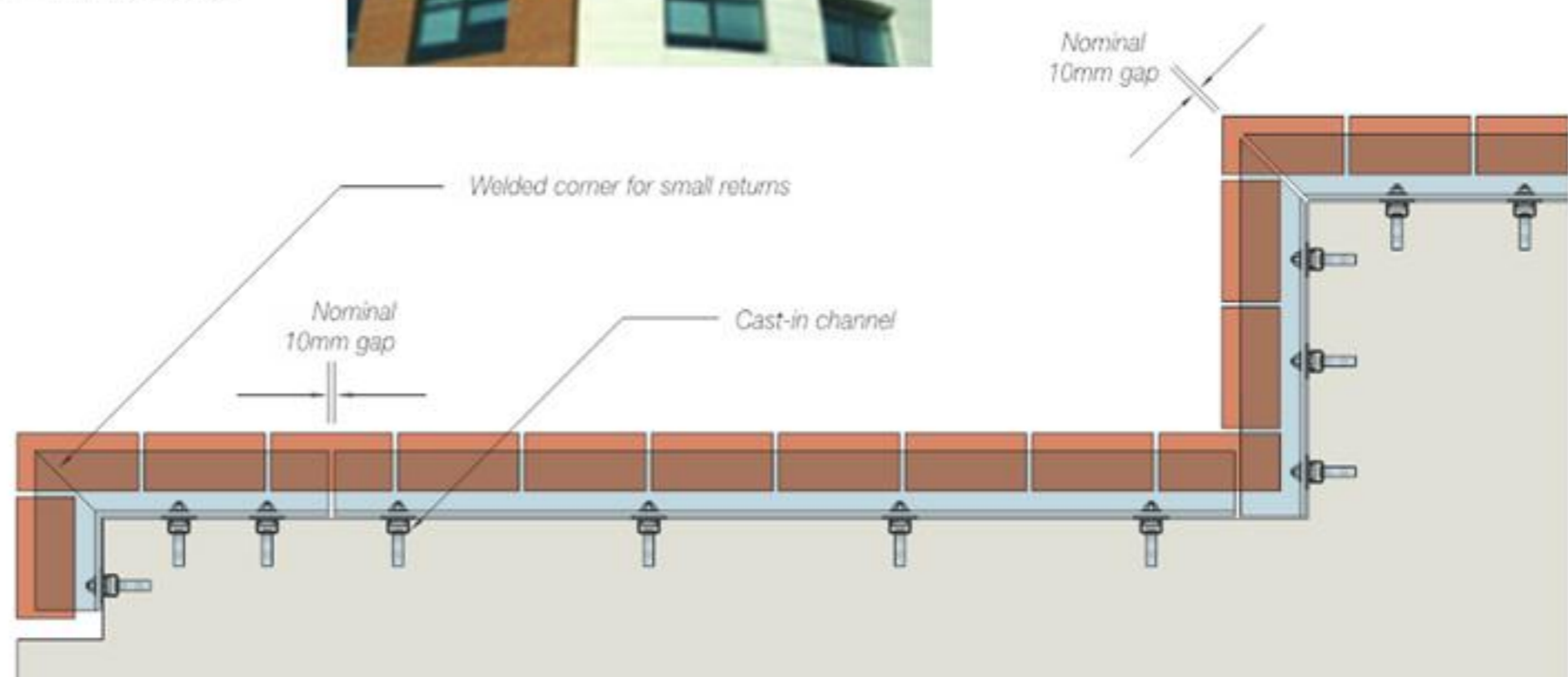
References

- CFA Standard system
- CFA/I Inverted system

Some applications demand that the support leg is below the soffit of the structure. Where this is no more than 75mm, this can be specified as a suffix to the standard reference by **D drop.**

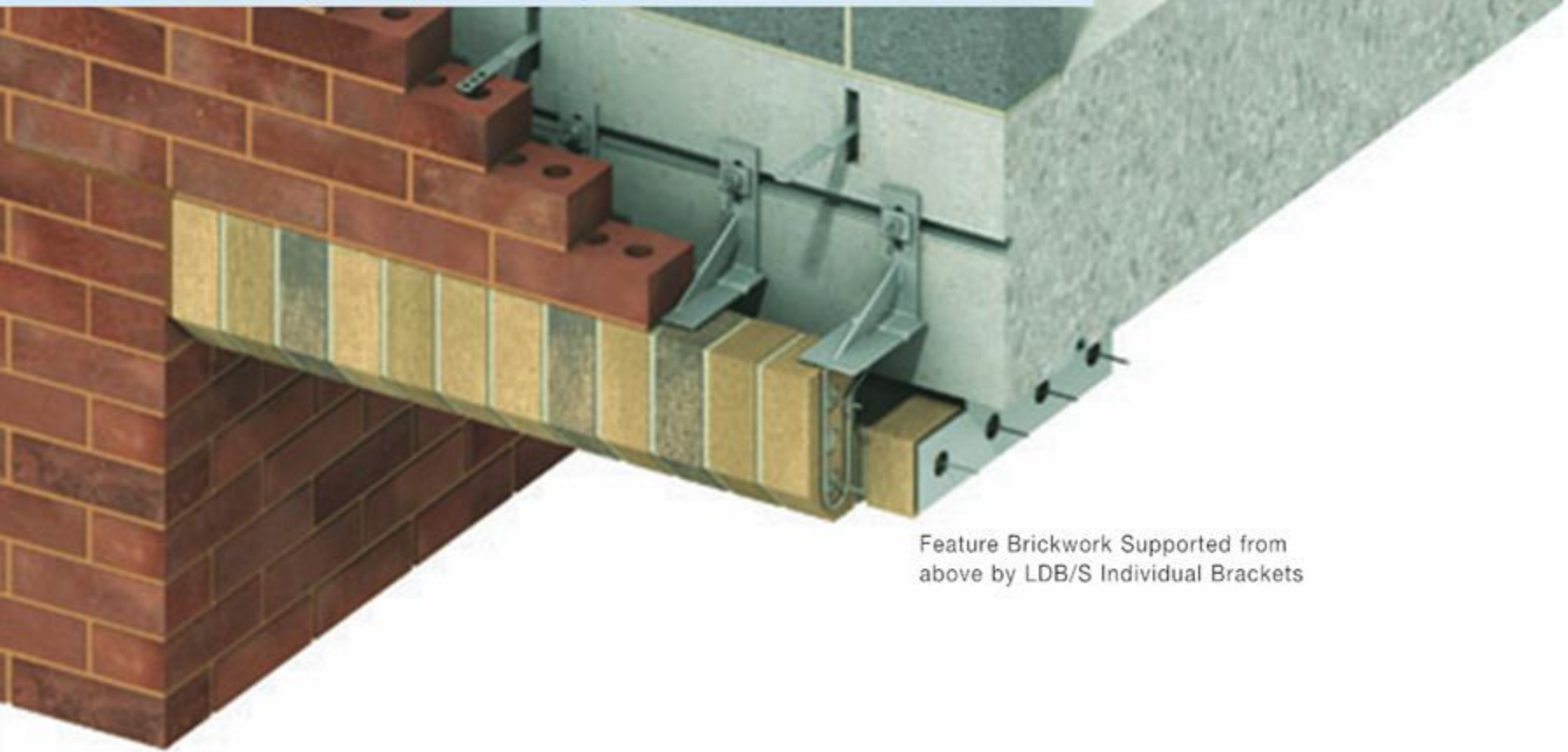
CFA / cavity / masonry load / drop
e.g. CFA / 50 / 5.6 / D 50

Ancon will design a standard system to suit a 50mm cavity, carry 5.6kN/m, with an angle drop of 50mm.



Typical Layout of CFA Support System

Masonry Support Systems & Lintels



Feature Brickwork Supported from above by LDB/S Individual Brackets

ANCON INDIVIDUAL BRACKET SUPPORT SYSTEM

Three versions of the Ancon Individual Bracket Support System are available, MDB, LDB and AMK. MDB brackets at 225mm centres will carry 8 metres of brickwork and LDB brackets will carry 4 metres. This capacity will reduce when they are used at 450mm centres to support blockwork.

Design Variations

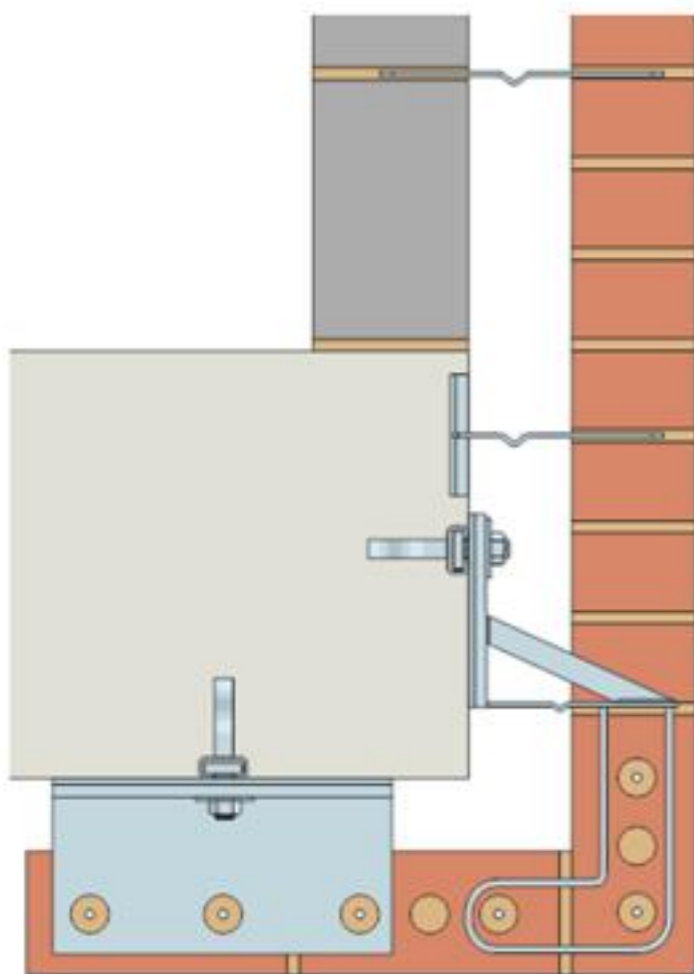
Two applications for individual brackets are for the support of soldier courses from above, and for the support of non-structural arched brickwork. Both these applications involve individual brackets at 225mm centres that have stirrups welded to the underside. Stitching rods span the stirrups and support the three bricks between the brackets.

The use of LDB/IS brackets with the stiffener below the support plate provides greater freedom for the brickwork above.

Ancon Soffit Angles are used in conjunction with LDB/S brackets to extend the support of soffit brickwork. These are usually spaced at 225mm centres and fixed to Ancon 28/15 Cast-in Channel.

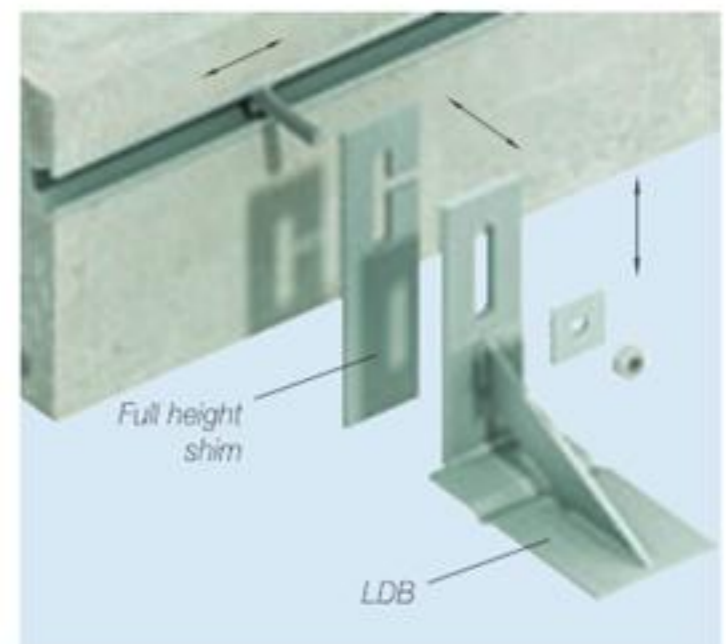
Adjustment

Adjustment is provided in every direction to allow for tolerance in the structural frame. The serrated and slotted face of the bracket allows for vertical adjustment. Cast-in channel will provide virtually unlimited horizontal adjustment. Shims can be included between the bracket and the frame up to a maximum thickness of the outside diameter of the fixing bolt or 16mm, whichever is less.

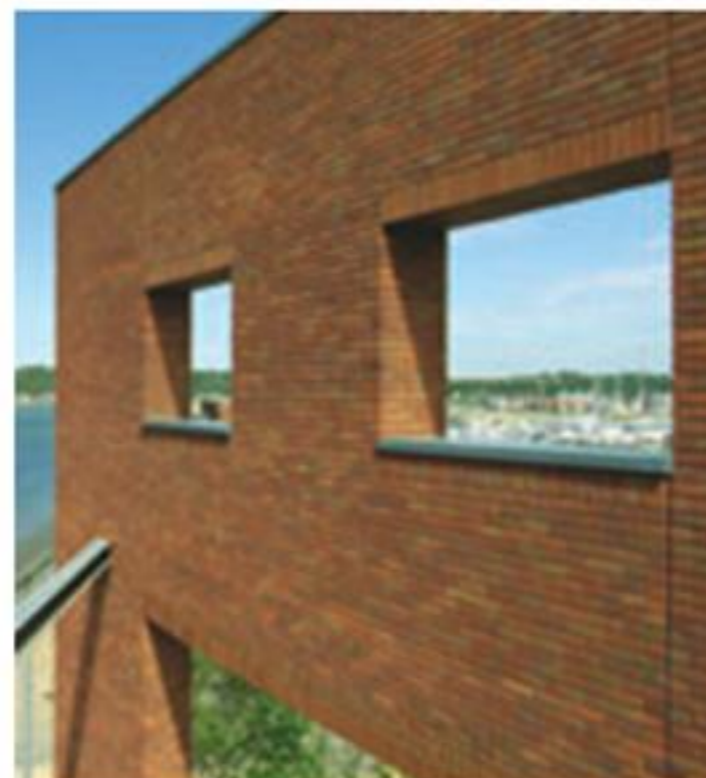


Soffit Support using LDB/S and Soffit Angle

The system comprises individual brackets positioned at each perpend, bolted back to a continuous channel cast into the edge of the concrete. The 4mm thick support plate of the standard bracket can be accommodated within a 10mm bed joint. LDA and MDA angle support brackets will generally be required at vertical movement joints and corners. These brackets have thicknesses of 6mm and 8mm respectively.



Adjustment of Individual Bracket Support System



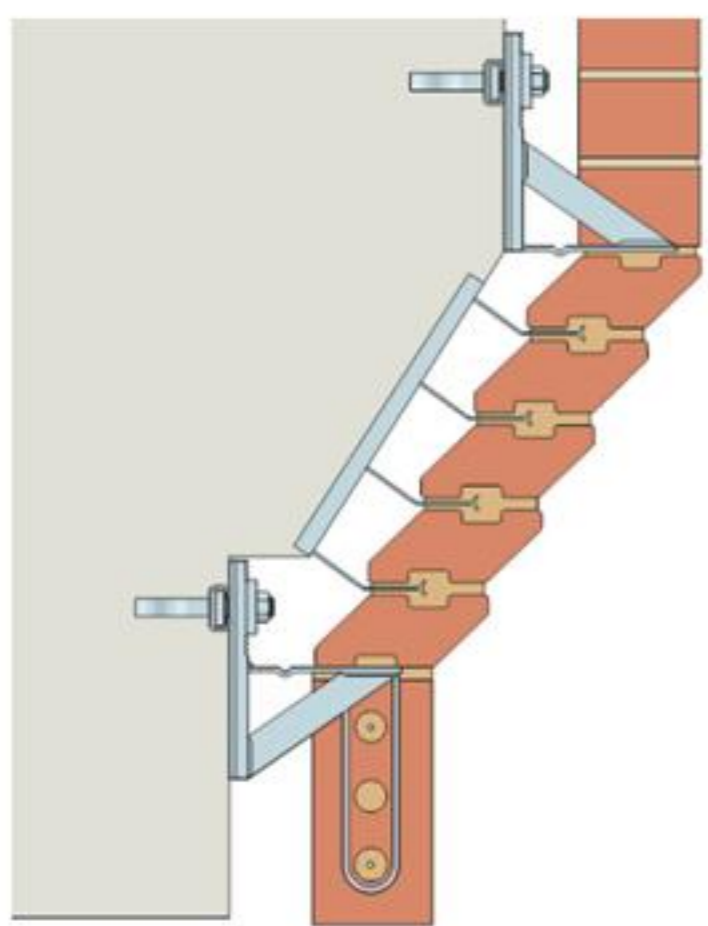
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Curved Brickwork

Ancon LDBs and MDBs are ideal for supporting brickwork that is curved on plan. As an alternative, special MDA brackets can be designed to suit a wider range of loads and cavity widths. When fixing to concrete, Ancon 28/15, 30/20 or 38/17 channel can be supplied curved to suit the radius or expansion bolts can be used.

Corbelled Brickwork

Individual brackets can be used to support brickwork at the top of the corbel. Ancon SC28 Corbel Ties restrain the corbelled brickwork to 28/15 channel cast into the sloping face of the concrete. LDB/IS can be used to suspend a soldier course over openings.



Corbelled Brickwork

Setting Out

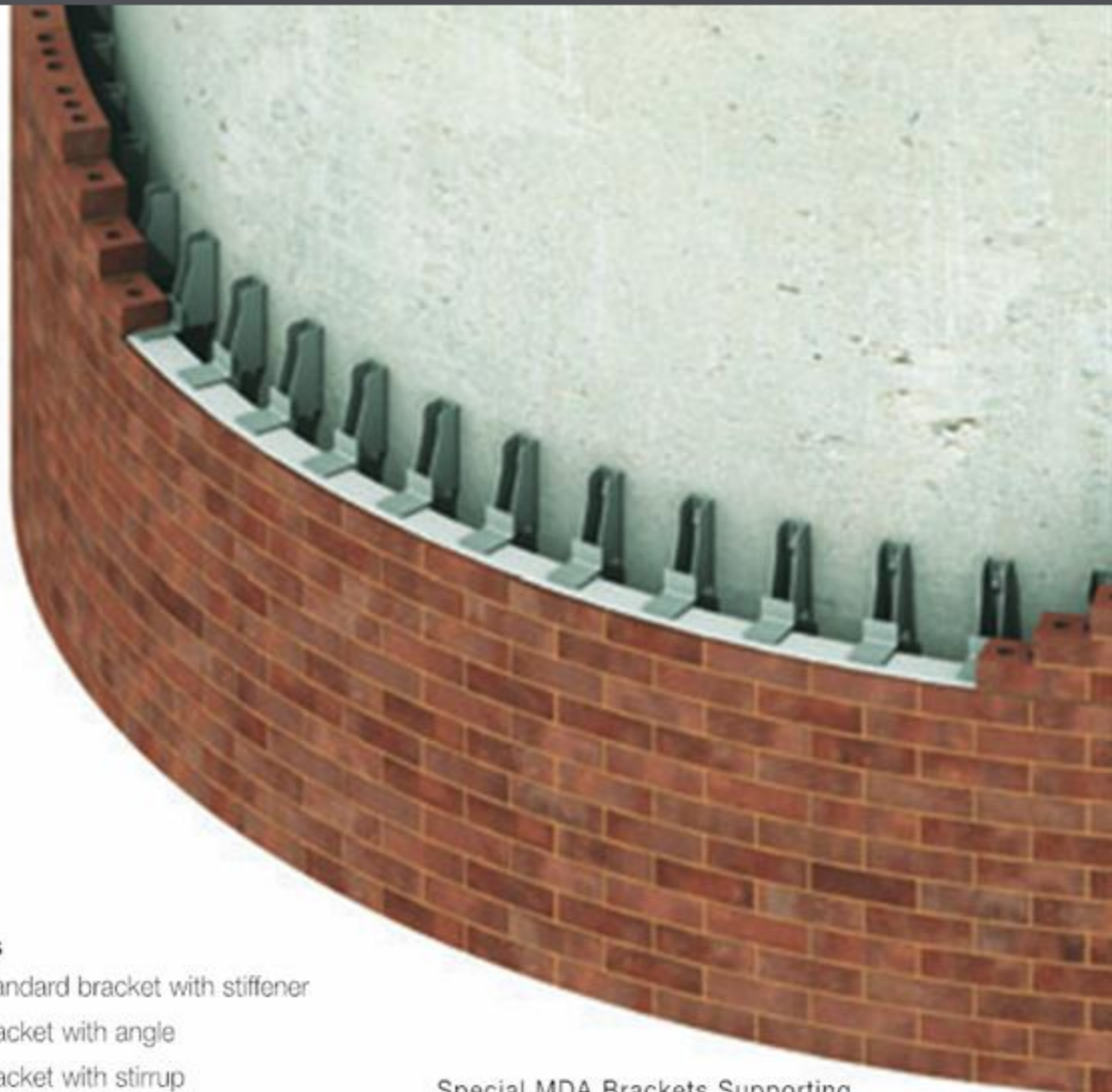
Ancon can provide drawings showing the location of the cast-in channels. Brackets will be referenced and scheduled, and all details submitted for approval before manufacture.

Details for Specification and Ordering

Ancon Individual Brackets are available to suit most cavity sizes and can be specified as follows:-

Type / cavity / masonry load
e.g. LDB / 75 / 8.0

Ancon will design an LDB system to suit a 75mm cavity and carry 8.0 kN/metre run of masonry.



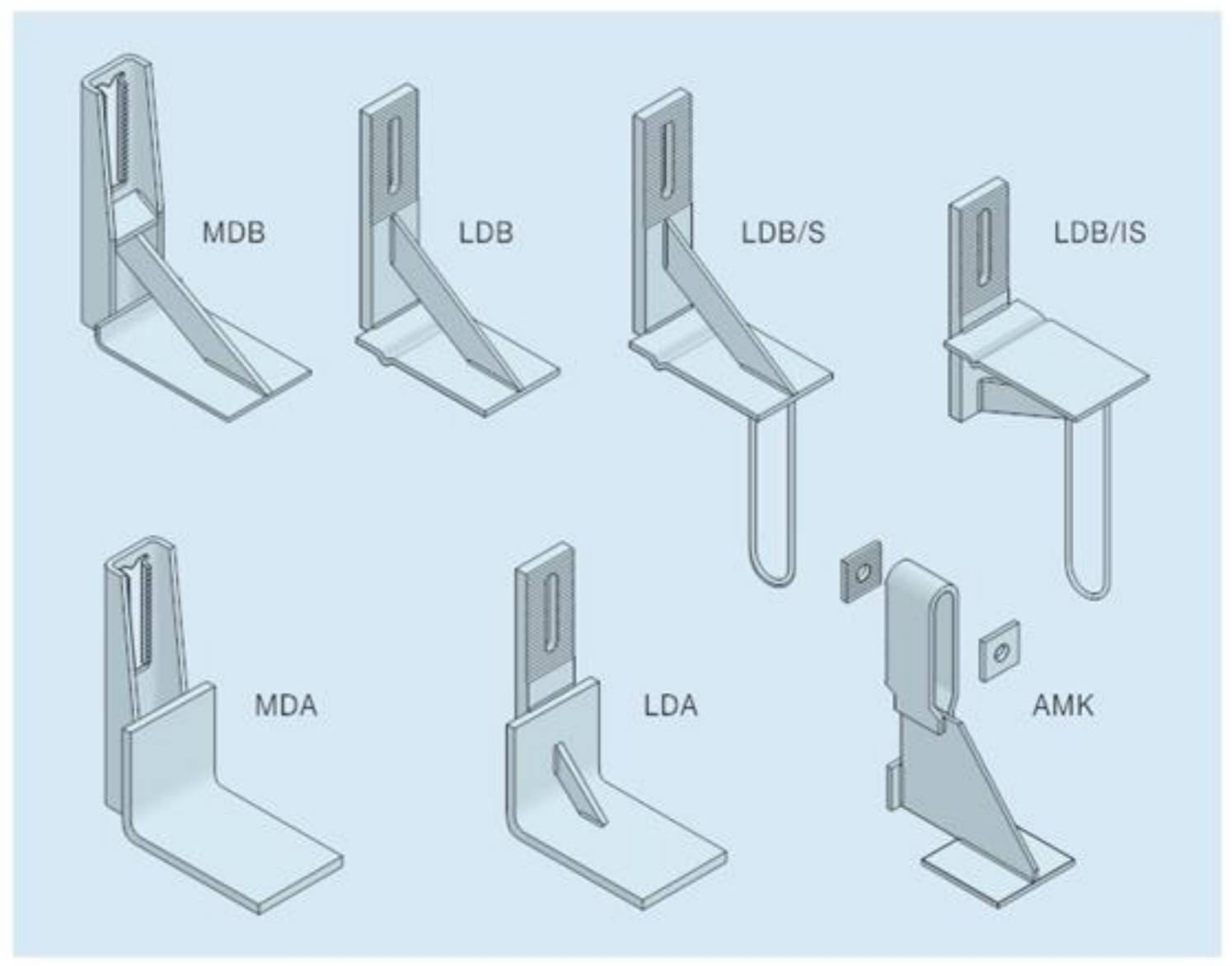
Special MDA Brackets Supporting Brickwork Curved on Plan

References

- LDB Standard bracket with stiffener
- LDA Bracket with angle
- LDB/S Bracket with stirrup
- LDB/IS Bracket with stirrup and the stiffener below
- MDB Standard bracket with stiffener
- MDA Bracket with angle
- AMK Standard bracket

Support to brickwork around external corners may involve special details.

Bracket Reference	SWL/Bracket (kN)	Typical Bolt
LDB/LDA	2.0	M10
MDB/MDA	4.0	M12
AMK 3.5	3.5	M12
AMK 7.0	7.0	M16
AMK 10.5	10.5	M16



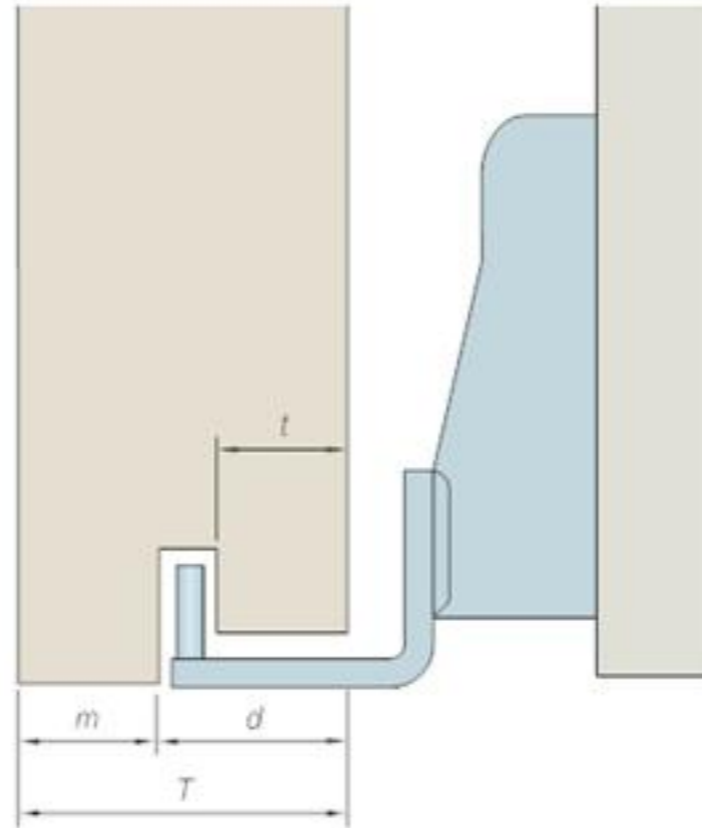
Masonry Support Systems & Lintels

STONEMWORK SUPPORT

Stone cladding is often a combination of large individually sized stones. These can sometimes vary in thickness and may include cornice or other stones that stand out from the general line of the cladding. Support for the stonework will usually be positioned over the horizontal movement joint at each floor level and over openings.



The most efficient method is for individual corbel supports to be positioned at the vertical joint between two adjacent stones. As an alternative, two smaller supports can be located near each end of each stone. The support of cornice and other particularly large stones will need special attention.



Recommended Minimum Dimensions

Design Considerations

The design of stone cladding should be in accordance with BS 8298 : 1994 Code of practice for the design and installation of natural stone cladding and lining.

The minimum bearing at the support is generally 50% of the thickness of the stone. A single support carrying two stones should be at least 75mm long. Where individual supports are used, these should be at least 50mm long.

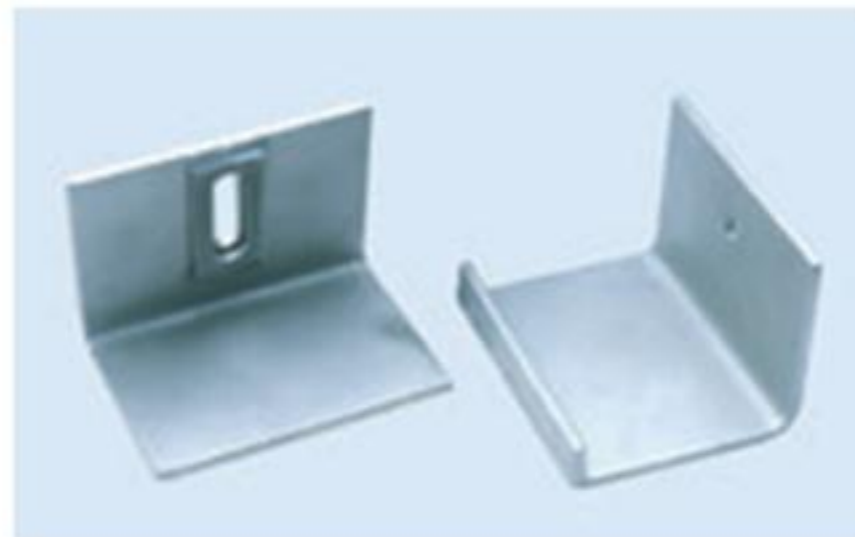
Minimum Dimensions for Stonework

Type of Stone	Less than 3.7m above ground including facias				More than 3.7m above ground including facias			
	T (mm)	d (mm)	m (mm)	t (mm)	T (mm)	d (mm)	m (mm)	t (mm)
Granite Slate White Marble Quartzite	30	20	7	12	40	25	7	15
Hard Limestone Travertine	30	20	7	12	40	25	7	15
Limestone Sandstone	50	25*	20	20*	75	37*	20	30*

Notes: Extract from BS8298: 1994 Code of practice for the design and installation of natural stone cladding and lining.
* T/2 if stone thickness (T) is greater than 75mm



Individual MDC/SC Stonework Support Brackets



Individual CFA/SC and CFA/SL Stonework Corbel Angles



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ANCON CFA/S STONEMWORK SUPPORTS

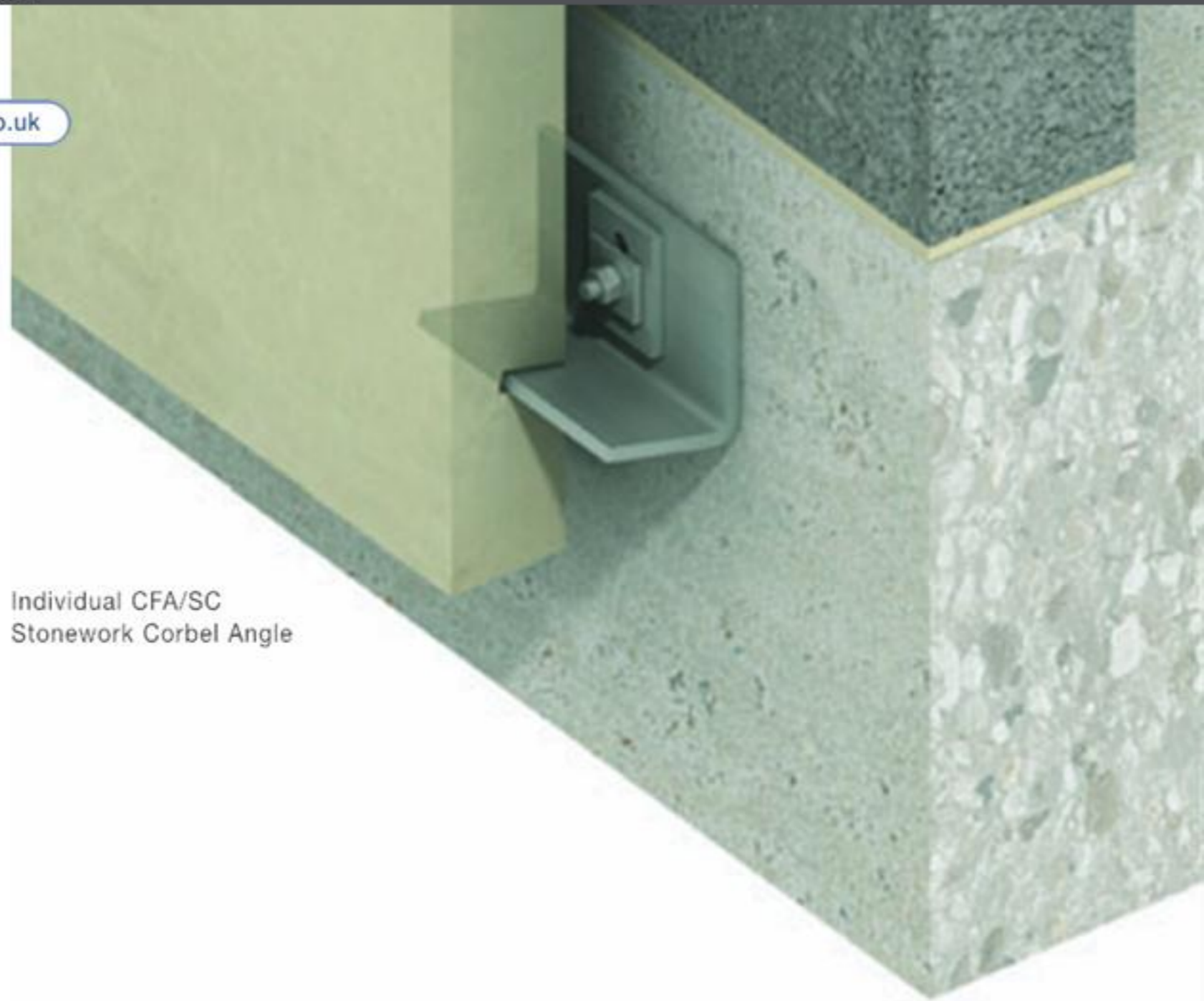
CFA/S Corbel Angles

These are individual angles that accommodate a fixing bolt in the vertical leg. The dimensions are chosen to suit the application. The angles can also be supplied with a lip or dowels to restrain the base of each stone (Ref CFA/SL or CFA/SD).

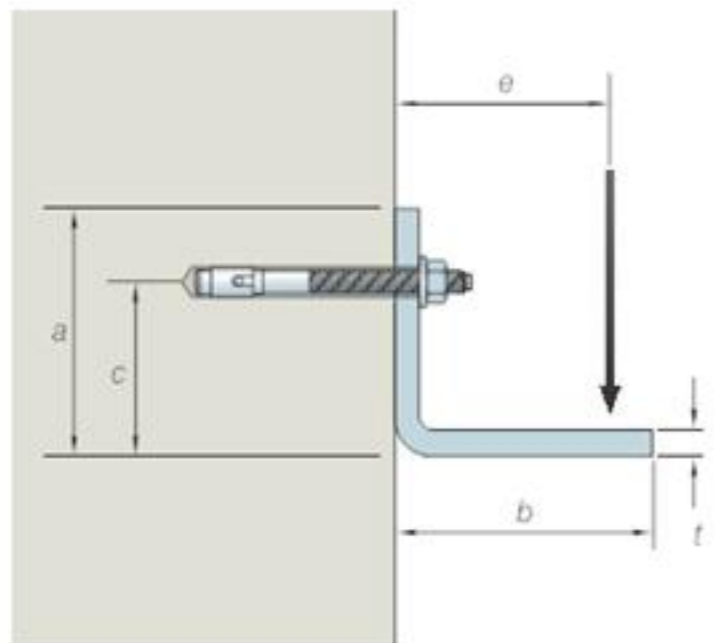
CFA/SC Corbel Angles

These are similar to the CFA/S, but the bottom leg is inclined at 15° to provide restraint where the support has to be positioned above the base of the stone.

Ancon Corbel Angles are designed to suit each application. The table shows examples of CFA/S and CFA/SC supports. Please contact Ancon's Technical Services Team to discuss specific requirements.



Individual CFA/SC Stonework Corbel Angle



Typical Sizes for CFA/S and CFA/SC Supports 150mm Long

Load Position e (mm)	Thickness t (mm)	Fixing Height c (mm)	Overall Height a (mm)	Outstand b (mm)	Load (kN)	Fixing Bolt Reference
60	8	70	100	73	3.4	FBNII 12/20 A4-126
	10	70	100	73	5.4	FBNII 12/20 A4-126
80	8	70	100	93	2.5	FBNII 12/20 A4-126
	10	70	100	93	3.9	FBNII 12/20 A4-126
	12	100	130	93	5.8	FBNII 12/20 A4-126
100	8	70	100	113	1.8	FBNII 12/20 A4-126
	10	70	100	113	3.1	FBNII 12/20 A4-126
	12	100	130	113	4.5	FBNII 12/20 A4-126
120	12	100	130	133	3.5	FBNII 12/20 A4-126
	15	120	150	133	5.7	FBNII 12/20 A4-126
140	15	120	150	153	4.3	FBNII 12/20 A4-126

Notes: Recommended fixings assume a minimum edge distance (all directions) of 115mm and a minimum bolt spacing of 230mm. Fixings are based on un-cracked concrete, min. C30/37. For specific applications please contact Ancon.

References

- CFA/S Standard corbel angle
- CFA/SC Corbel with angle leg inclined 15°
- CFA/SD Corbel angle with dowels
- CFA/SL Corbel angle with lip

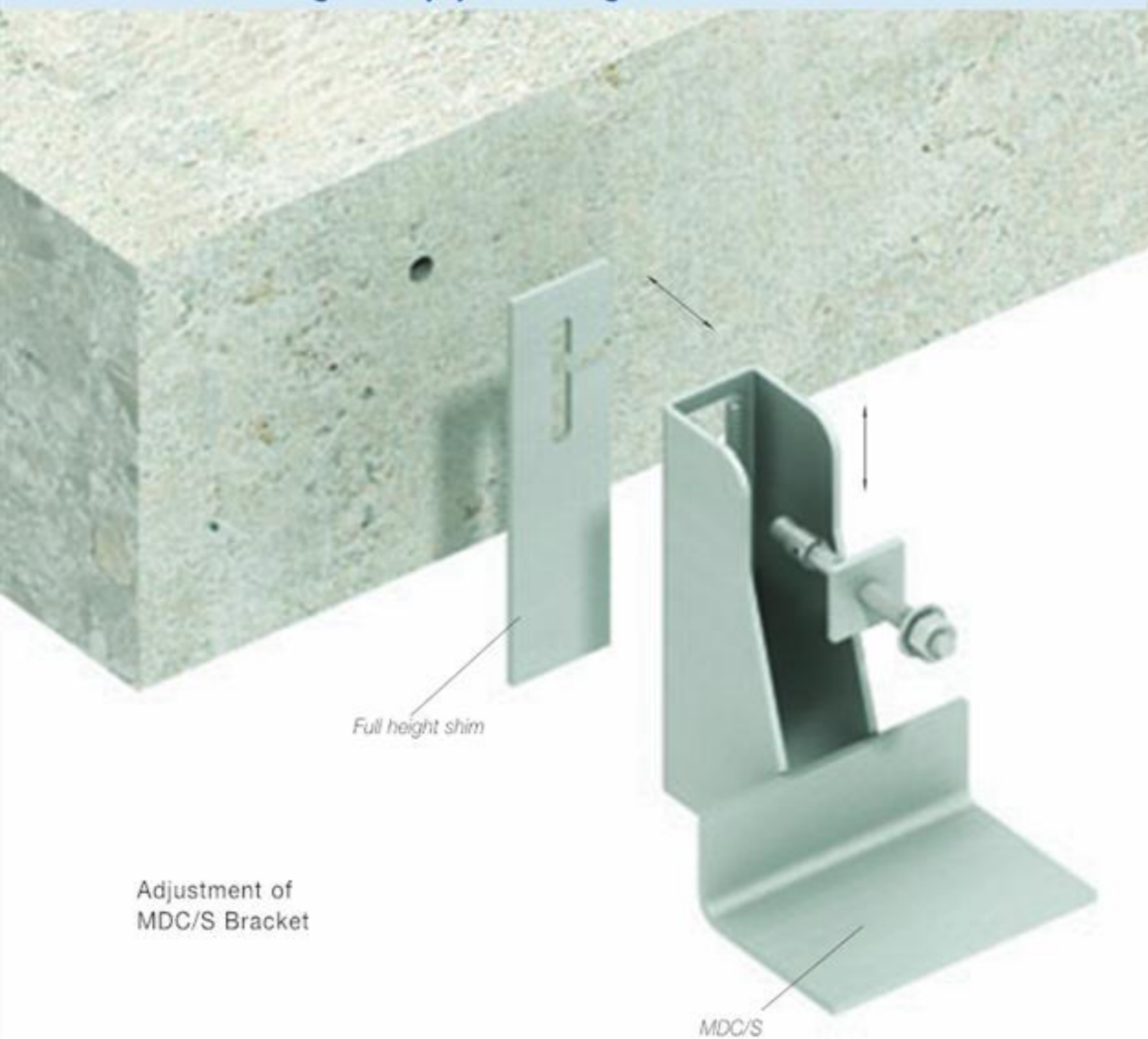


CFA/S



CFA/SD

Masonry Support Systems & Lintels



Individual MDC/SD Stonework Support Bracket

Adjustment of MDC/S Bracket

ANCON MDC/S STONEWORK SUPPORTS

Ancon MDC/S Stonework Supports are based on the MDC masonry support system. The bracket height and depth are varied to suit the cavity size and the loadings. The dimensions of the angle are selected to suit the stonework to be supported.

Design Variations

The MDC/S Stonework Support can be supplied in a variety of configurations to suit the particular application.

Ancon MDC/SD has a dowel to restrain the base of each stone, MDC/SC has the bottom leg of the angle inclined at 15° to provide restraint where the support has to be positioned above the base of the stone.

Adjustment

The serrated and slotted face of the MDC/S bracket allows for vertical adjustment. Cast-in channel will provide horizontal adjustment, but because fixing positions can be difficult to predetermine, expansion bolts are often used. Shims can be included between the bracket and the frame up to a maximum thickness of the outside diameter of the fixing bolt, or 16mm, whichever is less.

Details for Specification and Ordering

Ancon Stonework Supports are generally designed to suit specific contracts. Ancon technical staff will be pleased to discuss the most appropriate support system. Standard stonework supports may however be specified as follows:-

MDC / type / cavity / stone width / load
 e.g. MDC / SD / 100 / 75 / 4

Ancon will design individual MDC/SD supports with dowels to suit 75mm thick stone with a 100mm cavity behind. Each bracket will support a load of 4kN.

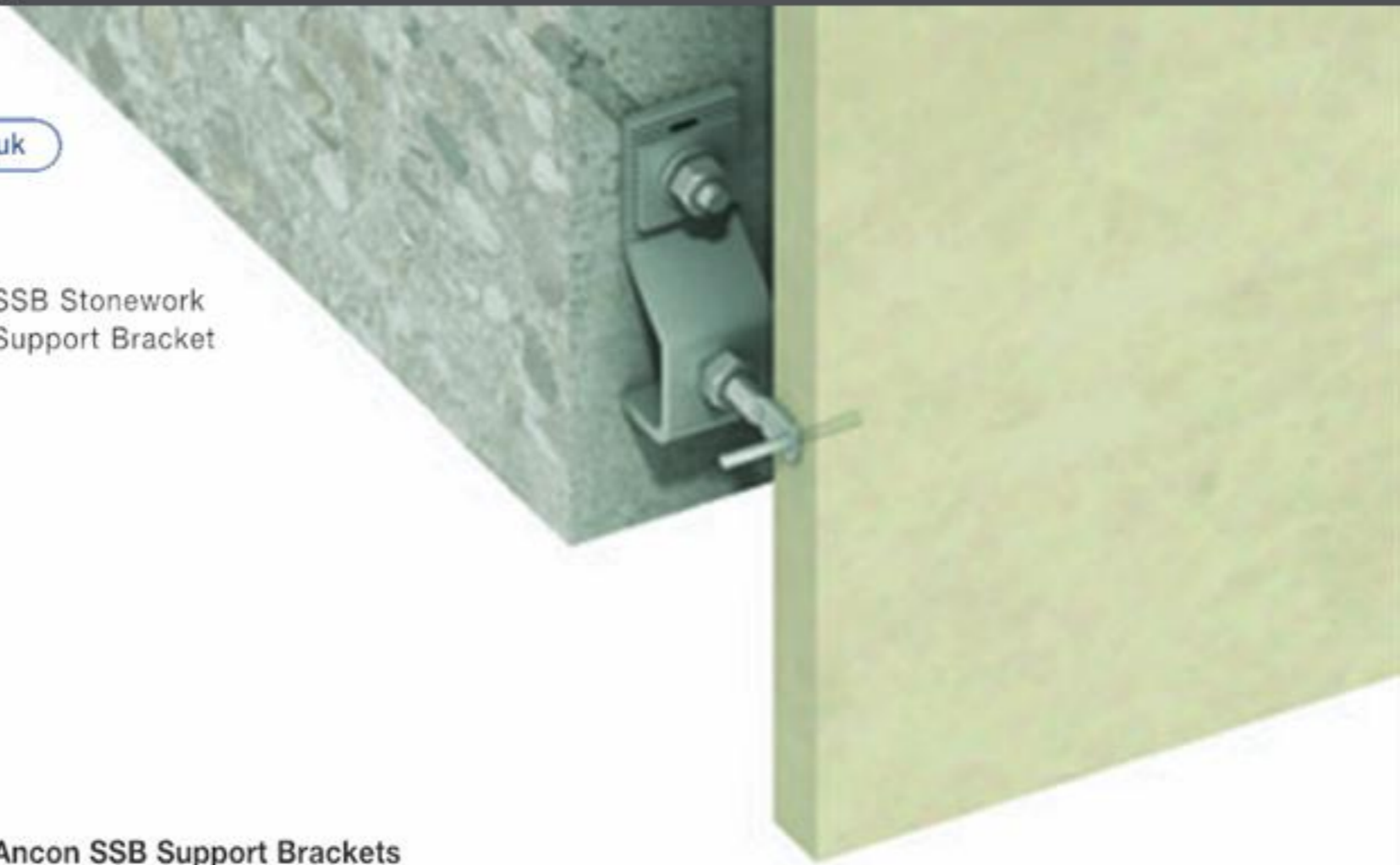
References

- MDC/S Standard MDC Stonework Bracket
- MDC/S/BK03 With Thermal Break
- MDC/SC Bracket with angle leg inclined 15°
- MDC/SD Bracket with dowels
- MDC/SL Bracket with lip



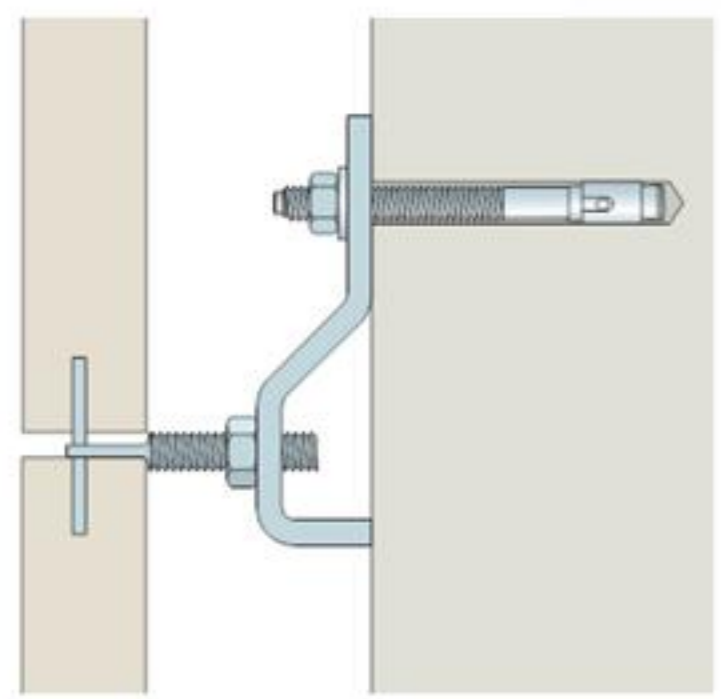
Tel: +44 (0) 114 275 5224 Web: www.ancon.co.uk

SSB Stonework Support Bracket



ANCON SSB SUPPORT BRACKETS

The Ancon SSB Bracket supports and restrains stonework with a facing thickness of between 25mm and 40mm. They can be positioned in either the vertical or the horizontal joints and allow adjustment without the need for shims.



SSB Stonework Support Bracket

Ancon SSB Support Brackets

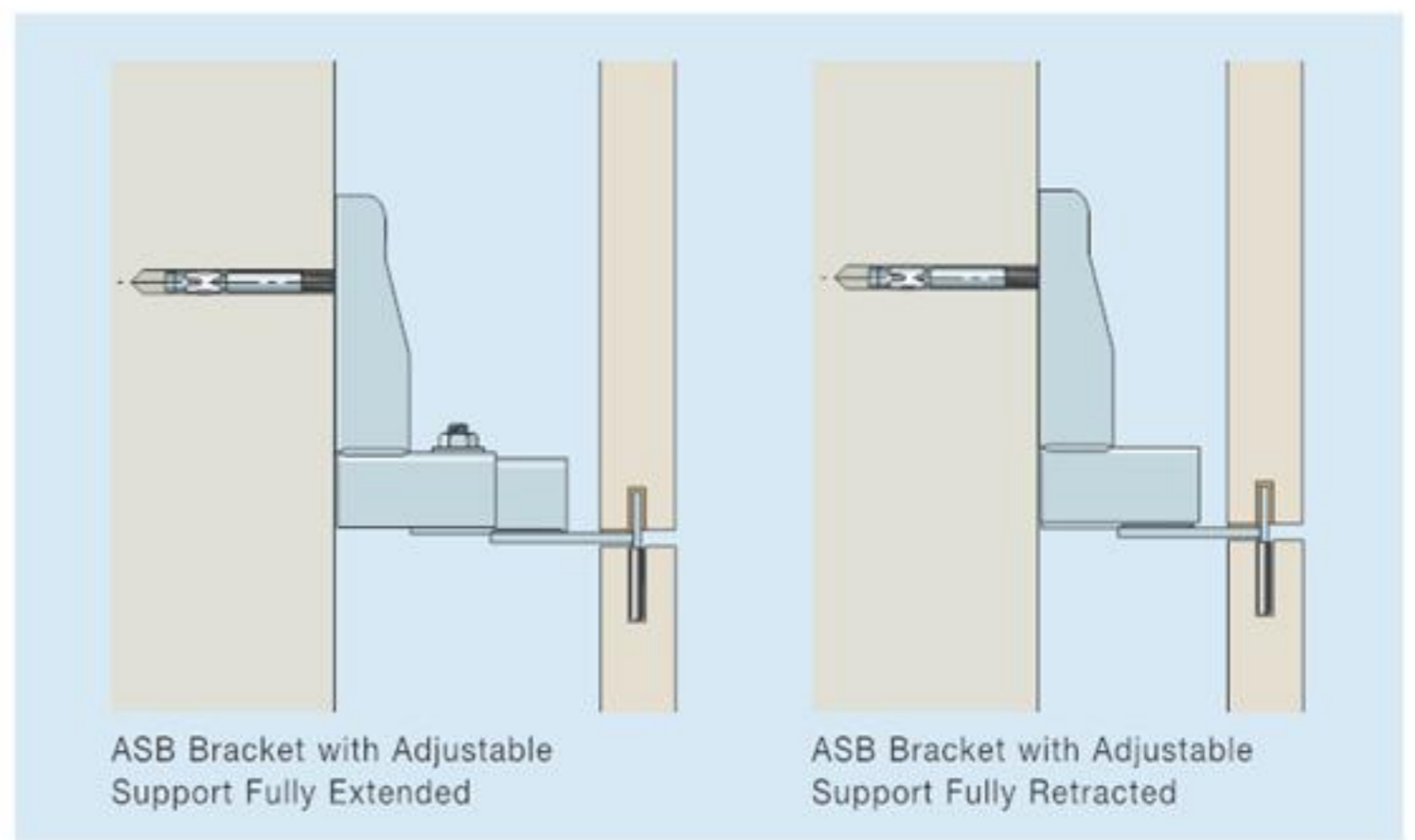
Reference	Facing Thickness (mm)	Cavity Size (mm)	Adjustment +/- (mm)	Dead Load (N)	Wind Load (N)	Fixing Height (mm)	Fixing Load (N)
SSB-1	25	50	10	450	400	107	736
	30						
	40						
SSB-1a	25	60	10	450	400	107	779
	30						
	40						
SSB-2	25	60	10	850	750	132	1330
	30						
	40						
SSB-2a	25	75	10	850	750	132	1426
	30						
	40						
SSB-2c	25	100	10	700	600	132	1289
	30						
	40						

ANCON ASB BRACKET

The ASB is an adjustable bracket for the support of thin stone and rain-screen cladding. It offers exceptional capacity for adjustment without cutting on-site, allowing rapid and accurate installation of stone panels. Vertical adjustment in 1mm increments is provided by the slot in the bracket and the use of shims between the two components of the bracket. These shims are supplied as standard.

Very large cavities of up to 270mm are easily accommodated. The standard ±20mm horizontal adjustment can be increased to ±25mm with the use of optional shims.

Each bracket can support up to 250kg, and is designed for stone up to 50mm thickness.



ASB Bracket with Adjustable Support Fully Extended

ASB Bracket with Adjustable Support Fully Retracted

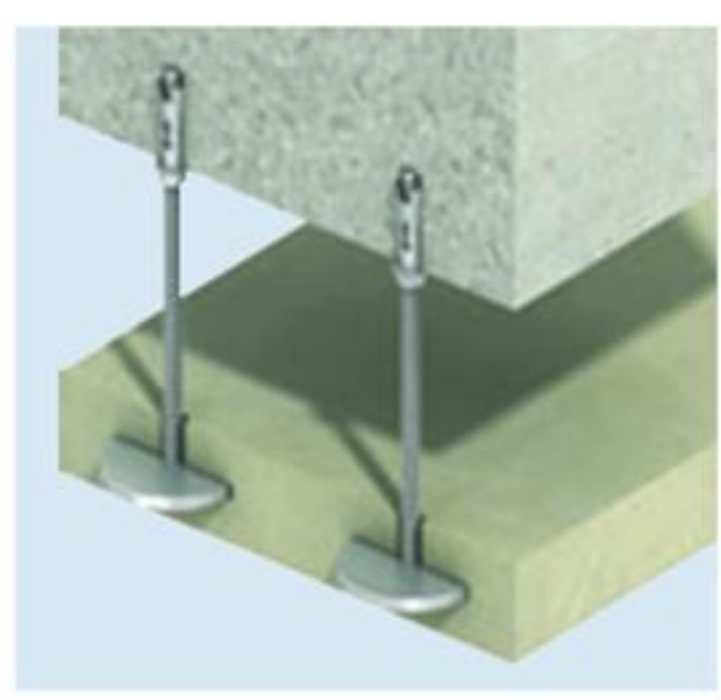
ANCON SOFFIT FIXING

Ancon Soffit fixings are a simple and secure method of fixing thin facing slabs. This heavy duty support and restraint fixing comprises a stainless steel head and bolt and is quick and easy to install. The disc fixing is fully adjustable and able to support a safe working load of 600N in tension.

The stone should be checked to ensure it is capable of withstanding the localised bearing stress under the disc.

Ref.	Torque	Length	Disc size	Hole size
SF150	8 - 10Nm	150mm	50 x 5mm	8 x 65mm

Note: Other sizes can be manufactured on request.



Soffit Fixings

Masonry Support Systems & Lintels

LINTELS

Ancon Building Products manufactures a complete range of stainless steel lintels. The Housing and Unilintel ranges are designed to suit the loading conditions found in the majority of residential and commercial buildings. Ancon's comprehensive standard range consists of:

- Housing Lintels
- Unilintels
- Channel Lintels
- Solid Wall Lintels
- Single Leaf Lintels
- Timber Frame Lintels
- Box Lintels

Technical Assistance

Ancon's Technical Services Team is available to advise on specification, design, installation and structural loading conditions.

Online Product Selector

Visit www.ancon.co.uk to use Ancon's online Lintel Product Selector. Answer a series of simple questions concerning your application and the most suitable lintel will be referenced.

Custom Lintels

In order to meet the requirements of today's challenging industry, Ancon Building Products can design and manufacture special stainless steel lintels for applications where standard lintels are unsuitable.

Solutions can be supplied for complex features such as corbels and other architectural details.

Special cranked, bay, corner and cantilevered corners are available in addition to the following arch shapes:

- Segmental arch
- Semi-circular arch
- Apex arch
- Gothic arch
- Flat top arch
- Double arch
- Arched on plan

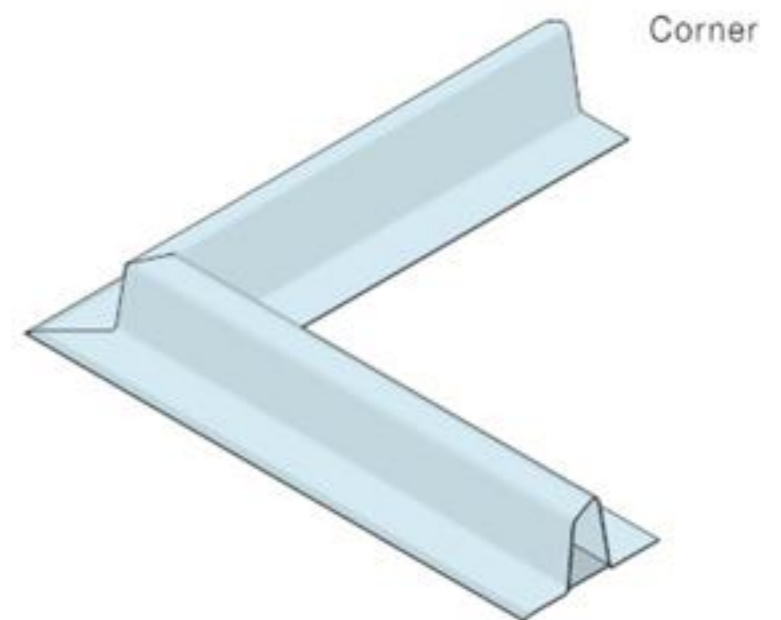
Ancon's Technical Services Team will offer advice on the most appropriate lintel or alternative method of supporting masonry.

The following information will aid the design of a custom lintel and if available should be supplied with your enquiry.

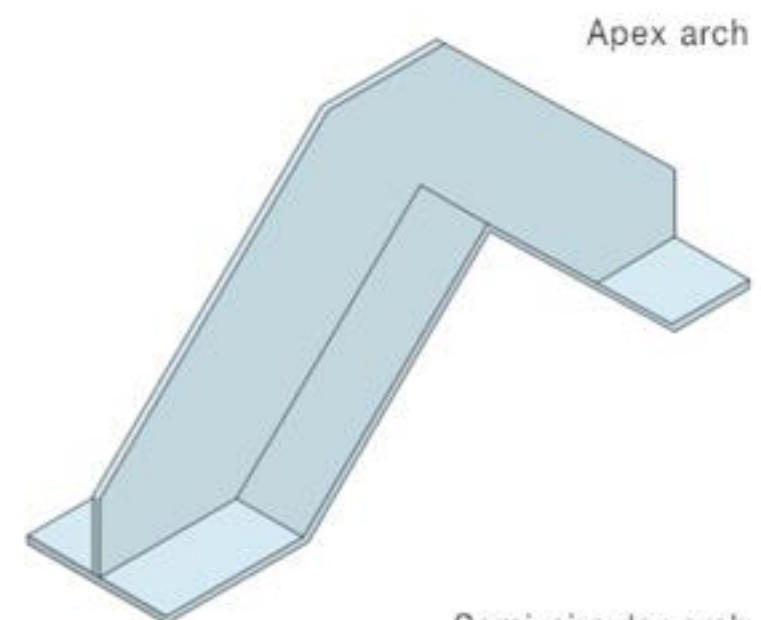
- Wall construction: outer leaf, inner leaf and cavity size.
- Clear span of opening.
- Bearings available (if less than 225mm).
- Radius or rise of arch and angles for apex/ cranked and corner lintels.



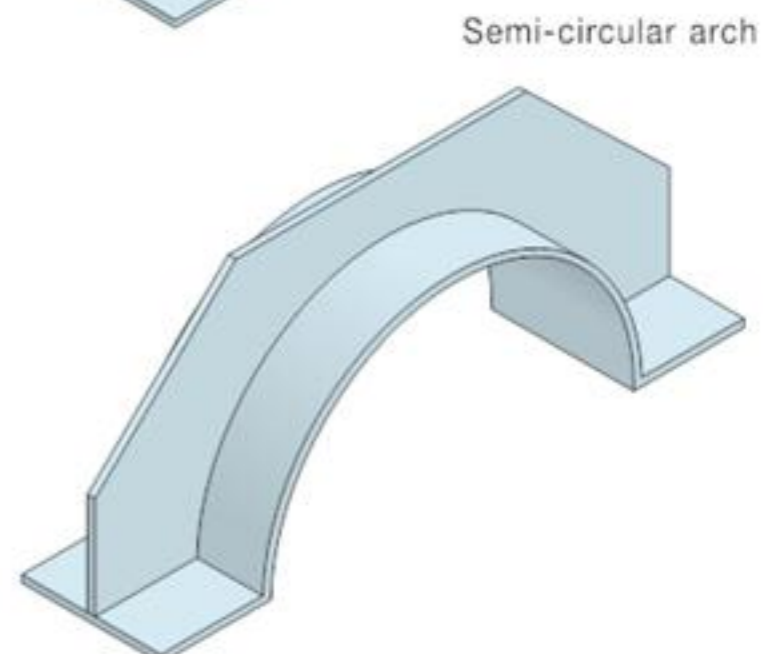
Gothic arch



Corner

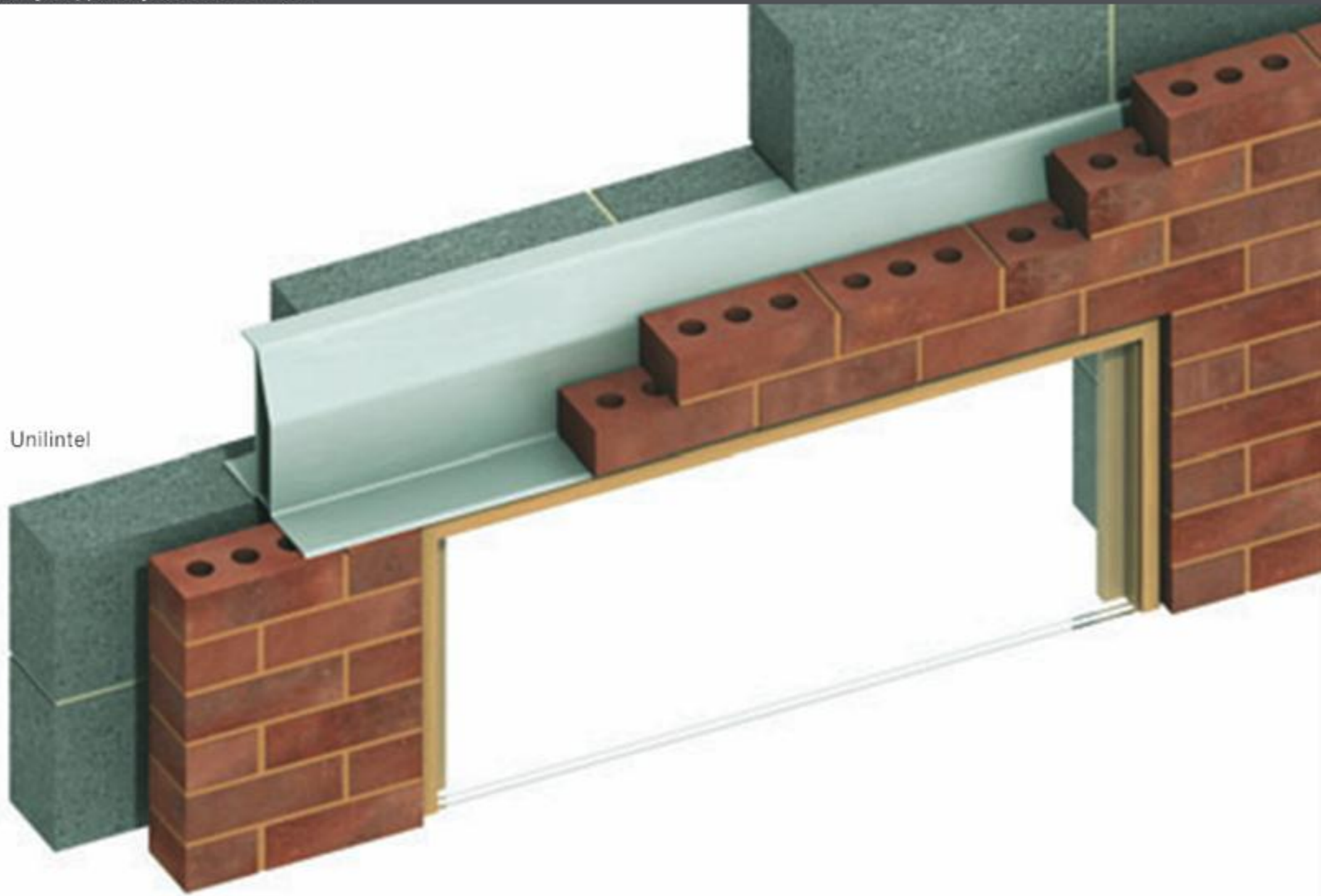


Apex arch



Semi-circular arch

Unilintel



Corrosion Resistance

Ancon Lintels are manufactured from Austenitic stainless steel and will not require any further corrosion protection.

Thermal Performance

The thermal transmittance, i.e. 'U' value, of any wall construction depends on the thermal characteristics of the individual components being used. The design of both the Housing Lintel and Unilintel is such that it allows for continuity of construction down to window head level.

Housing Lintels are supplied insulated with CFC-free, high density polystyrene manufactured in accordance with BS 3837 : Part 1 : 2004 to be CFC-free with an ozone depletion potential of zero.

Structural Performance

The safe working loads are derived by calculation and supported by tests to establish their validity.

Load Ratios

The safe working loads for Housing Lintels and Unilintels in the tables on pages 30 and 31 are for situations where the total distributed load on the lintel is shared between the inner and outer leaves in ratios of between 1:1 and 3:1 respectively. For other load ratios, point loads or lintels carrying concrete floors, please contact Ancon's Technical Services Team.

Installation

The lintel should be firmly bedded in mortar with at least 150mm end bearing onto a full brick/block. Please consult Ancon when using limited bearing. The front and back of the lintel must be level before proceeding and a separate dpc incorporated if required.

When installing Housing Lintels and Unilintels the inner and outer leaves should be raised together to avoid twisting the lintel; blocks should continue for the full length of the inner flange. Masonry should have a maximum overhang of 25mm and blockwork should be built as close as possible to the upstand. Point loads should be applied at least 150mm above lintel flanges.

Although the lintels have a drip edge on the external flange to shed moisture, good practice should be followed at the junction of the window head and lintel by sealing with a suitable mastic, thereby ensuring that driving rain does not penetrate.

Weep vents are generally required above lintels at a maximum of 450mm centres. Each opening should have at least two weep holes and stop ends are required to prevent moisture penetration.

Long spanning lintels and all single leaf lintels will require propping during installation to limit deflections.

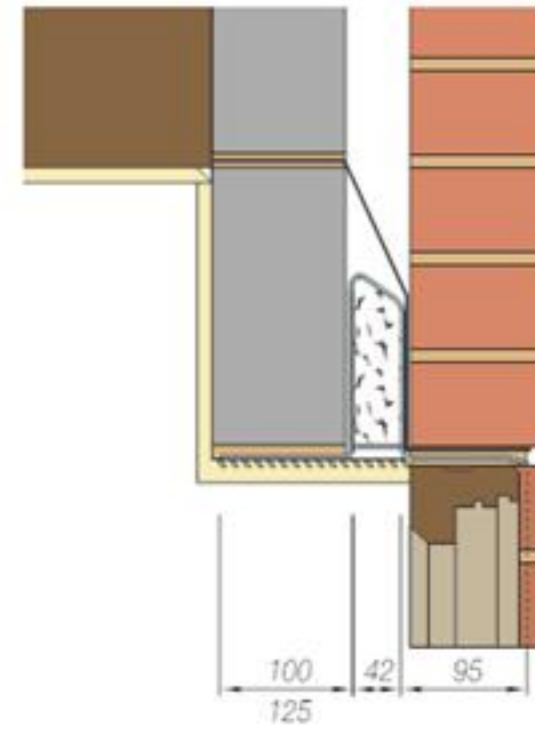
Masonry Support Systems & Lintels

Housing Lintels

These are suitable for most domestic, small commercial developments and framed structures. They are supplied complete with insulation and metal lathing to provide a plaster key. Housing lintels require a separate dpc.

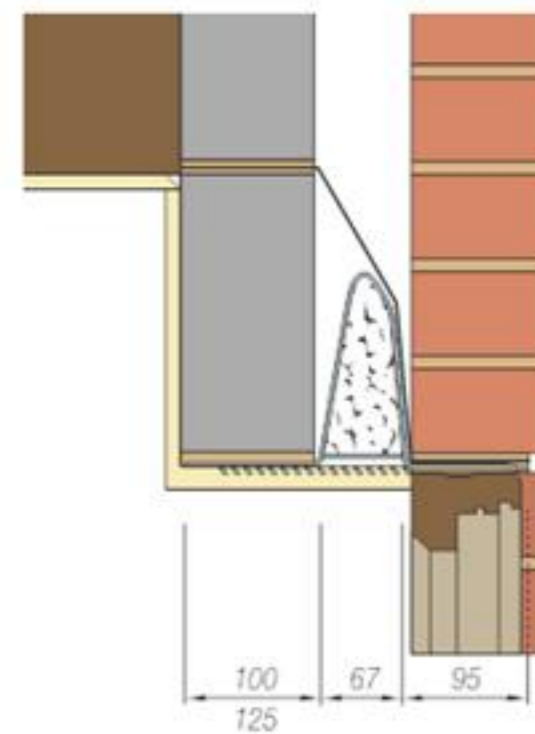
When installing Housing Lintels and Unilintels the inner and outer leaves should be raised together to avoid twisting the lintel; blocks should continue for the full length of the inner flange. Masonry should have a maximum overhang of 25mm and blockwork should be built as close as possible to the upstand. Point loads should be applied at least 150mm above lintel flanges.

Cavity (mm)	Inner Leaf (mm)	Wall Widths (mm)	Ref.	Nom. Height (mm)	Gauge (mm)	Ixx (cm ⁴)	Zxx (cm ³)	Length (mm)	SWL (kN)
50-74	100-124	250-285	SH221	150	2.0	306.9	29.9	750-2100	20
			SH321	150	3.0	460.4	44.8	750-1650	33
								1800-2550	24
								2700-3000	20
			SH331	225	3.0	1300.0	89.4	750-2550	50
								2700-3300	35
					3450-3900	30			
50-74	125-150	275-310	SH221E	150	2.5	402.0	38.0	750-2550	20
			SH321E	150	3.0	482.4	45.6	750-1650	30
								1800-2550	20
								2700-3000	18
			SH331E	225	3.0	1345.0	90.8	750-2550	40
								2700-3300	30
					3450-3900	25			



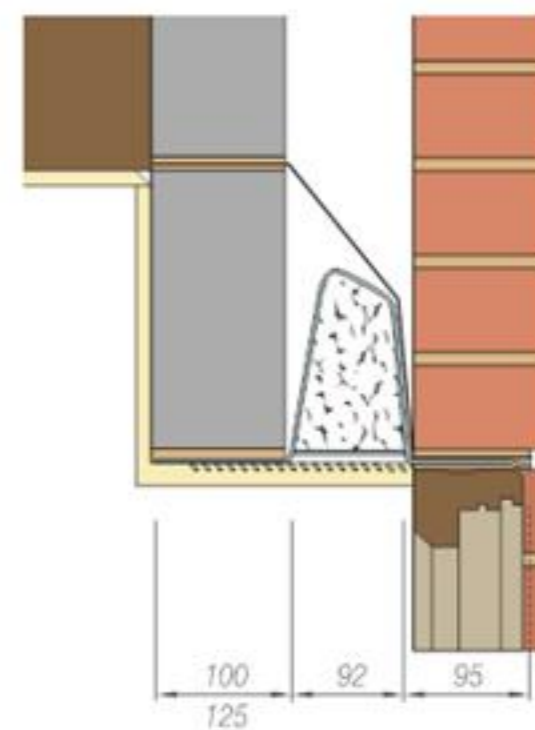
50-74mm Cavity

Cavity (mm)	Inner Leaf (mm)	Wall Widths (mm)	Ref.	Nom. Height (mm)	Gauge (mm)	Ixx (cm ⁴)	Zxx (cm ³)	Length (mm)	SWL (kN)
75-99	100-124	275-310	SH222	150	2.0	310.0	30.0	750-2100	20
			SH322	150	3.0	465.8	44.9	750-1650	33
								1800-2550	24
								2700-3000	20
			SH332	225	3.0	1276.4	87.0	750-2550	50
								2700-3300	35
					3450-3900	30			
75-99	125-150	300-335	SH222E	150	2.5	404.2	38.1	750-2550	20
			SH322E	150	3.0	485.1	45.7	750-1650	30
								1800-2550	20
								2700-3000	18
			SH332E	225	3.0	1320.0	104.6	750-2550	40
								2700-3900	30



75-99mm Cavity

Cavity (mm)	Inner Leaf (mm)	Wall Widths (mm)	Ref.	Nom. Height (mm)	Gauge (mm)	Ixx (cm ⁴)	Zxx (cm ³)	Length (mm)	SWL (kN)
100-125	100-124	300-335	SH223	150	2.0	315.91	29.56	750-2100	20
			SH323	150	3.0	476.06	44.41	750-1650	33
								1800-2550	24
								2700-3000	20
			SH333	225	3.0	756.73	50.92	750-2550	50
								2700-3300	35
					3450-3900	30			
100-125	125-150	325-360	SH223E	150	2.5	405.78	37.19	750-2550	20
			SH323E	150	3.0	483.62	44.41	750-1650	30
								1800-2550	20
								2700-3000	18
			SH333E	225	3.0	922.49	61.09	750-2550	40
								2700-3900	30



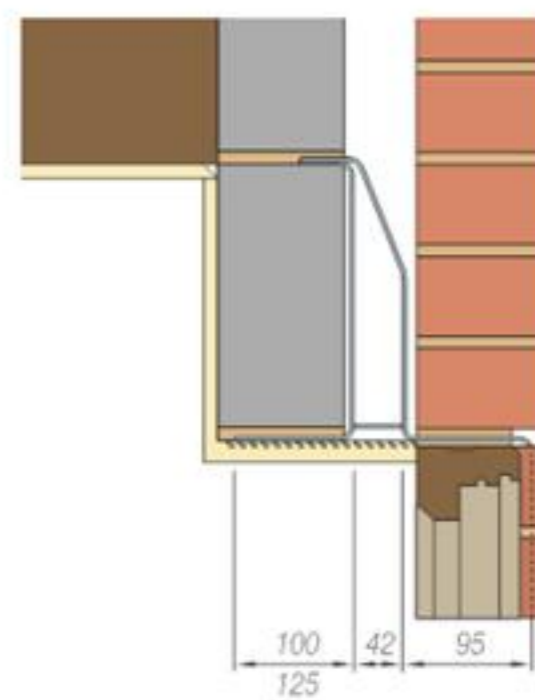
100-125mm Cavity

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Unilintels

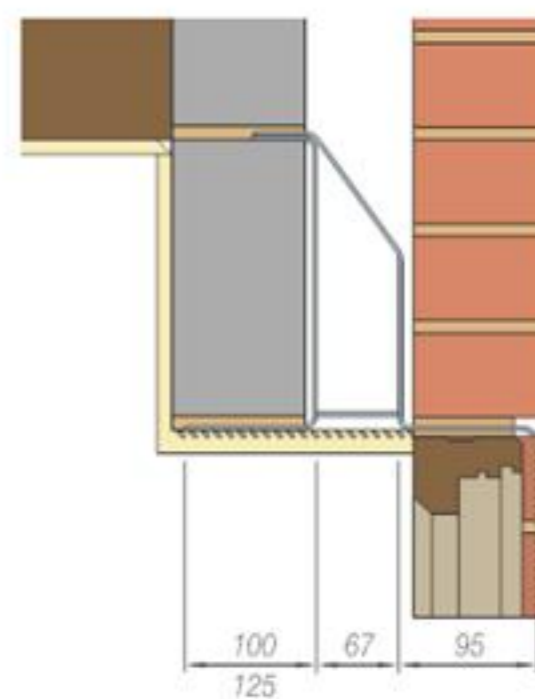
Unilintels are designed for the heavy duty loading conditions often found in commercial developments and have the top flange built into the inner leaf. They are complete with metal lathing to provide a plaster key and can be used without a separate dpc. Insulation can be supplied as an optional extra.

Cavity (mm)	Inner Leaf (mm)	Wall Widths (mm)	Ref.	Nom. Height (mm)	Gauge (mm)	Ixx (cm ⁴)	Zxx (cm ³)	Length (mm)	SWL (kN)
50-74	100-124	250-285	SU221	157	2.5/2.0	535.8	57.5	750-2100	30
								2250-2700	25
			SU321	157	3.0/2.0	590.5	63.5	750-2100	38
								2250-2700	31
			SU231	233	2.5/2.0	1317.4	99.6	750-2100	50
								2250-2700	48
			SU331	233	3.0/2.0	1462.0	110.7	2550-3150	48
								3300-3900	36
			SU431	233	4.0/4.0	2391.6	180.4	3000-3900	58
			SU531	233	5.0/5.0	2989.4	225.6	3000-3900	65
			SU221E	157	2.5/2.0	562.7	58.8	750-2100	30
								2250-2700	25
50-74	125-150	275-310	SU321E	157	3.0/2.0	622.7	65.0	750-2100	38
								2250-2700	31
			SU231E	233	2.5/2.0	1380.7	101.9	750-2100	50
								2250-2700	48
			SU331E	233	3.0/2.0	1527.7	112.8	2550-3150	48
								3300-3900	36
			SU431E	233	4.0/4.0	2505.6	186.0	3000-3900	58
			SU531E	233	5.0/5.0	3132.0	232.5	3000-3900	65



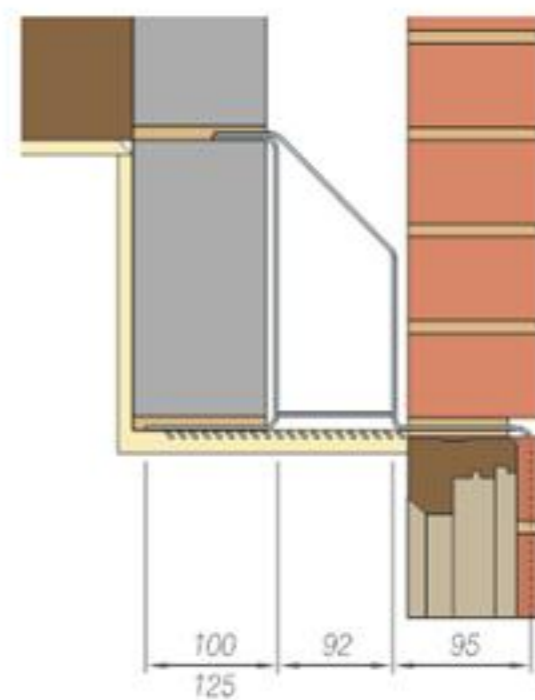
50-74mm Cavity

Cavity (mm)	Inner Leaf (mm)	Wall Widths (mm)	Ref.	Nom. Height (mm)	Gauge (mm)	Ixx (cm ⁴)	Zxx (cm ³)	Length (mm)	SWL (kN)
75-99	100-124	275-310	SU222	157	2.5/2.0	561.4	59.4	750-2100	32
								2250-2700	27
			SU322	157	3.0/2.0	616.8	65.6	750-2100	40
								2250-2700	32
			SU232	233	2.5/2.0	1375.1	102.9	750-2100	52
								2250-2700	50
			SU332	233	3.0/2.0	1519.0	114.0	2550-3150	50
								3300-3900	38
			SU432	233	4.0/4.0	2562.4	193.2	3000-3900	60
			SU532	233	5.0/5.0	3203.0	241.5	3000-3900	66
			SU222E	157	2.5/2.0	583.6	60.4	750-2100	32
								2250-2700	27
75-99	125-150	300-335	SU322E	157	3.0/2.0	643.5	66.6	750-2100	40
								2250-2700	32
			SU232E	233	2.5/2.0	1436.2	105.1	750-2100	52
								2250-2700	50
			SU332E	233	3.0/2.0	1583.1	116.0	2550-3150	50
								3300-3900	38
			SU432E	233	4.0/4.0	2684.8	196.0	3000-3900	60
			SU532E	233	5.0/5.0	3311.0	245.0	3000-3900	66



75-99mm Cavity

Cavity (mm)	Inner Leaf (mm)	Wall Widths (mm)	Ref.	Nom. Height (mm)	Gauge (mm)	Ixx (cm ⁴)	Zxx (cm ³)	Length (mm)	SWL (kN)
100-125	100-124	300-335	SU223	157	2.5/2.0	668.3	69.8	750-2100	33
								2250-2700	28
			SU323	157	3.0/2.0	801.9	83.7	750-2100	41
								2250-2700	33
			SU233	233	2.5/2.0	1642.3	121.8	750-2100	53
								2250-2700	51
			SU333	233	3.0/2.0	1970.7	146.1	2550-3150	51
								3300-3900	39
			SU433	233	4.0/4.0	2627.6	194.8	3000-3900	60
			SU533	233	5.0/5.0	3284.5	243.5	3000-3900	66
			SU223E	157	2.5/2.0	509.49	51.98	750-2100	33
								2250-2700	28
100-125	125-150	325-360	SU323E	157	3.0/2.0	573.65	58.83	750-2100	41
								2250-2700	33
			SU233E	233	2.5/2.0	773.86	55.08	750-2100	53
								2250-2700	51
			SU333E	233	3.0/2.0	855.01	61.07	2550-3150	51
								3300-3900	39
			SU433E	233	4.0/4.0	1371.52	99.46	3000-3900	60
			SU533E	233	5.0/5.0	1722.99	124.58	3000-3900	66



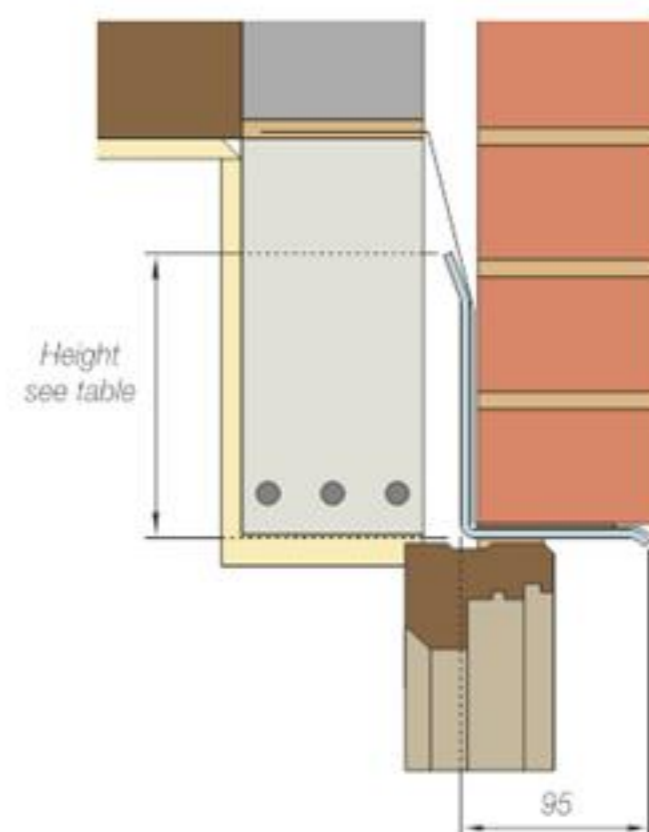
100-125mm Cavity

Masonry Support Systems & Lintels

Single Leaf Lintels/Angle Lintels

These lintels carry a single leaf, usually the external leaf, of a cavity wall. The lintel can be supplied with lips to either leg if required. Single leaf lintels require propping during installation to limit deflections. A separate dpc is required.

Outer Leaf (mm)	Ref.	Height (mm)	Gauge (mm)	Ixx (cm ⁴)	Zxx (cm ³)	Length (mm)	SWL (kN)
95-120	SL31	95	3.0	50.7	7.2	750-1800	4
	SL41	95	4.0	66.5	9.5	750-2400	6
	SL32	150	3.0	175.4	17.1	750-2400	8
	SL42	150	4.0	231.2	22.6	750-2400 2550-3300	12 10
	SL33	200	3.0	379.7	29.1	750-2400 2550-3300	15 12
	SL43	200	4.0	502.5	38.6	750-2400 2550-3300	20 14
	SL53	200	5.0	622.3	48.0	750-1800 1950-3300	30 26



Single Leaf Lintel

Channel Lintels

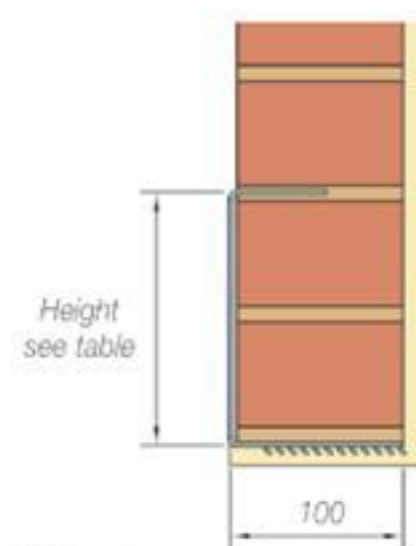
The Channel Lintel can be supplied with welded metal lathing on any side to provide a plaster key. For wall widths over 100mm, please contact Ancon's Technical Services Team.

Width 100mm

Ref.	Nom. Height (mm)	Gauge (mm)	Ixx (cm ⁴)	Zxx (cm ³)	Length (mm)	SWL (kN)
SC322	155	3.0	328.4	37.3	750-1500	20
SC422	155	4.0	437.8	49.7	1650-2100	20
SC522	155	5.0	547.3	62.2	2250-3000	20
SC332	233	3.0	837.7	65.4	750-1500	20
SC432	233	4.0	1117.0	87.2	1650-2100	30
SC532	233	5.0	1396.2	109.1	2250-3000	40

Note: Channel Lintels

These lintels have been tested using composite action with surrounding masonry to BS 5628, and should be suitably restrained during construction.



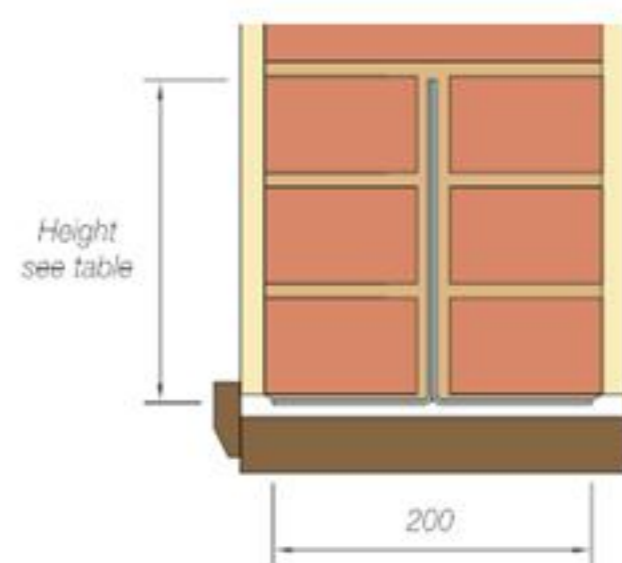
Channel Lintel

Solid Wall Lintels

For use with solid walls, the Standard Duty has a top flange built into the brickwork. The Light Duty version is suitable for spans up to 2700mm.

Width 200mm (Light Duty)

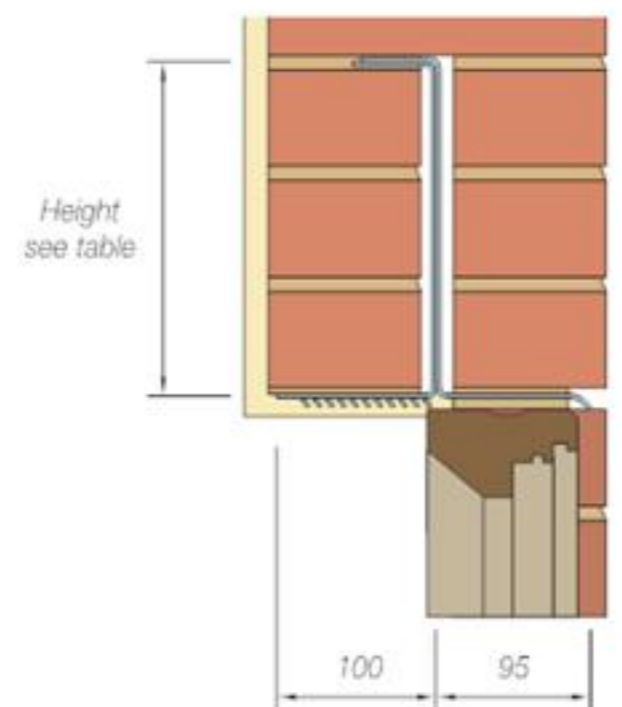
Ref.	Nom. Height (mm)	Gauge (mm)	Ixx (cm ⁴)	Zxx (cm ³)	Length (mm)	SWL (kN)
SS312	75	3.0	57.3	9.7	750	12
					900-1500	10
SS422	150	4.0	371.3	35.4	1650	15
					1800-1950	14
					2100-2700	13



Light Duty Solid Wall Lintel

Width 200mm (Standard Duty)

Ref.	Nom. Height (mm)	Gauge (mm)	Ixx (cm ⁴)	Zxx (cm ³)	Length (mm)	SWL (kN)
SS321	158	3.0	503.6	58.7	750-1800	40
					1950-2700	30
SS331	233	3.0	1581.2	125.9	750-1800	60
					1950-2700	50
					2850-3600	40
SS431	233	4.0	2108.3	167.8	750-3900	55



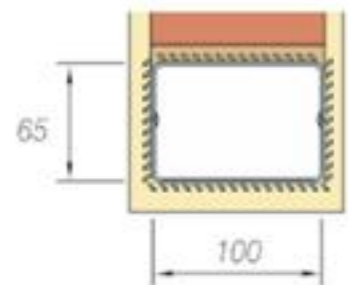
Standard Duty Solid Wall Lintel

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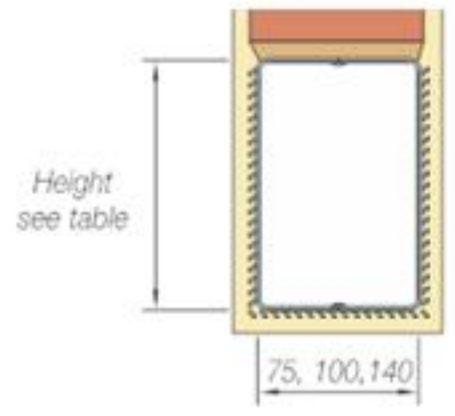
Box Beam Lintels

For use with solid wall constructions Box lintels can be supplied with welded metal lathing to provide a plaster key on any side.

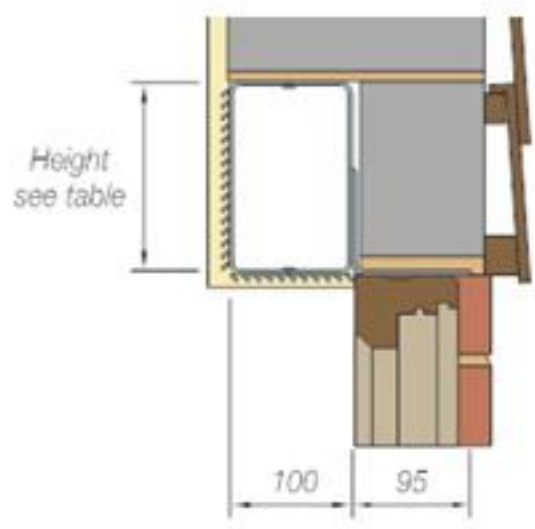
Ref.	Height (mm)	Wall Widths (mm)	Gauge (mm)	Length (mm)	SWL (kN)
SB211H	65	100	2.0	750-1350 1500-2100	18 10
SB211V	100	75	2.5	750-1650 1800-2100	17 12
SB222V	140	100	2.5	750-2100 2250-3000	28 20
SB232V	215	100	2.5	750-2100	51
SB332V	215	100	3.0	2250-2850 3000-3900	44 32
SB213V	100	140	2.5	750-1500 1650-2100	30 20
SB223V	140	140	2.5	750-2100 2250-3000	36 25
SB333V	215	140	3.0	750-3300 3450-3900	47 39
SBL22V	140	195-225	2.0	750-2100	28
SBL22V2	140	195-225	2.5	2250-2550 2700-3000	30 21
SBL23V	215	195-225	2.0	750-2100	43
SBL33V	215	195-225	3.0	2250-2850 3000-3900	40 30



SBH Light Duty Lintel



SBV Lintels for 75-150mm walls



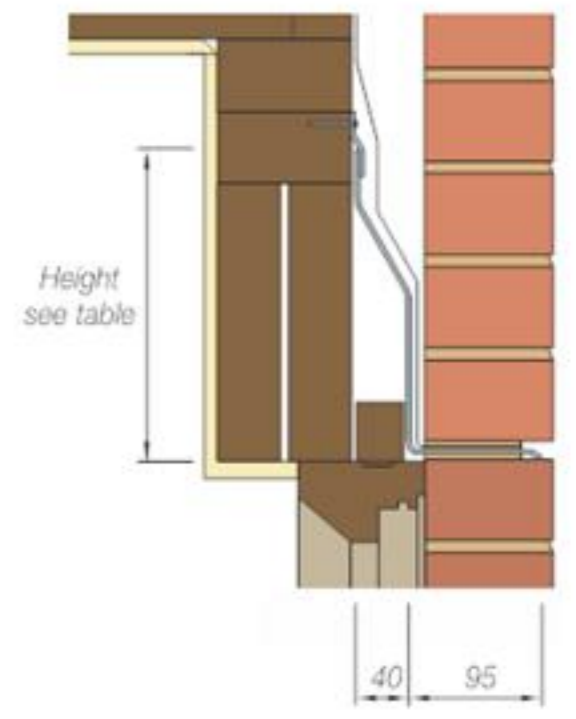
SBL Lintels for 195-225mm walls

Timber and Steel Frame Lintels

These lintels are designed to support the external brickwork over openings in timber or steel framed buildings. Timber frame lintels are supplied with retaining clips and should be used with a separate dpc.

For Walls with 40-65mm Cavity

Ref.	Nom. Height (mm)	Gauge (mm)	Length (mm)	SWL (kN)
ST22	158	2.5	750-1800 1950-2100	15.0 13.0
ST32	158	3.0	2250-2400 2550-2700	13.0 11.0
ST42	158	4.0	2850-3300 3450-3900	12.0 10.0



Timber & Steel Frame Lintel ST22-ST42

Other stainless steel lintels in the Ancon range include Eaves Lintels.

Eaves Lintel

Housing Lintel with reduced leg used at eaves

Masonry Support Systems & Lintels

CHANNEL AND BOLT FIXINGS

This is a selection of Ancon fixings. For complete information please refer to Ancon's Channel and Bolt Fixings brochure.

Cast-in Channels and T-Head Bolts

Cast-in Channels provide the necessary adjustment required when fixing to concrete and can eliminate site drilling. Fixing to channels is by 'T' head bolts. These are inserted into the channel and turned through 90°. The bolt must then be tightened to the correct torque.



Expansion Bolts

The Single Expansion bolt is a cost-effective anchor, available in grade 1.4362 (duplex) stainless steel in a wide range of sizes. Ancon also supplies high performance through bolts which have double expansion clips that reduce axial and edge spacing and achieve high performance even in cracked concrete.



Capsule Anchors

The capsule contains epoxy resin, quartz granules and a hardener, and provides an expansion-free anchorage for stainless steel studs. These can be used in a variety of solid materials including concrete, stone and masonry.



Ancon Steelgrip

Ancon Steelgrip is a high performance fixing which simplifies the fixing of masonry support systems to hollow steel sections where access is only available from one side. This bolt is only available for use with Ancon systems. It features a serrated washer that corresponds with the serrations on all Ancon brackets. As the head is tightened to the correct torque, the sleeve expands.



Set Screws for Steel Frames

Ancon stainless steel set screws, nuts and washers are available in a range of thread sizes (M6 to M20) and are manufactured from grades A2 (1.4301) and A4 (1.4401) stainless steel. Set screws can be shrink-wrapped and are supplied complete with nylon washers to prevent bi-metallic corrosion when fixing to steel.



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PROJECTS



Bear Lane, London



Granary Wharf, Leeds



Big Wood School, Nottingham



Temple Quay, Bristol



Oxford Exchange, Belfast

OTHER ANCON PRODUCTS

Masonry Reinforcement

Ancon AMR masonry reinforcement improves the structural performance of a wall by providing additional resistance to lateral loads. Located in the bed joint, it has a flattened profile to maintain good mortar cover even when lapped or used with wall ties. It is available in various standard configurations.

Windposts and Parapet Posts

Large panels of masonry or panels with openings can often be difficult to justify structurally. Ancon Windposts are designed to provide additional lateral support for panels of brickwork. The range is manufactured from stainless steel and includes Windposts which can be installed into the inner leaf of blockwork and Windposts for installation into the cavity, which leave the blockwork undisturbed. Parapet Posts are used as vertical support for brickwork in either parapet or spandrel panels.

Wall Ties and Restraint Fixings

In addition to standard cavity wall ties, Ancon manufactures fixings in a variety of lengths and types for restraining brickwork, blockwork and stonework. Restraints can be fixed to concrete and steelwork, as well as any type of masonry.

Tension Systems

Tie bars are increasingly being used in structures and buildings as an architectural as well as a structural element. Ancon Tension Systems comprise a range of components which can be supplied in carbon steel or stainless steel in a variety of sizes and finishes. A variety of assemblies can be created from simple tie bars to complex bracing systems involving several bars joined at one point.

Insulated Balcony Connections

Ancon Isolan connectors join external concrete balconies to internal concrete floor slabs. Used to minimise cold bridging, they provide continuity to the thermal insulation. Standard systems, comprise rigid CFC-free polystyrene insulation and duplex stainless steel shear reinforcement, suit most depths of free cantilever and propped cantilever balconies.

Punching Shear Reinforcement

Used within a slab to provide additional reinforcement around columns, Ancon Shearfix is the ideal solution to the design and construction problems associated with punching shear. The system consists of double-headed studs welded to flat rails, positioned around the column head or base.



Masonry Panel Design Service



Design Program Available



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These products are available from:

The construction applications and details provided in this literature are indicative only. In every case, project working details should be entrusted to appropriately qualified and experienced persons.

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