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Ancon®

Masonry Reinforcement and Windposts

for the Construction Industry

January 2021

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Masonry Reinforcement and Windposts

Strengthening Masonry Panels

Large panels of masonry or panels with openings can be difficult to design. The traditional solutions have been to increase the thickness of the wall, introduce a masonry pier or use concrete filled hollow blocks.

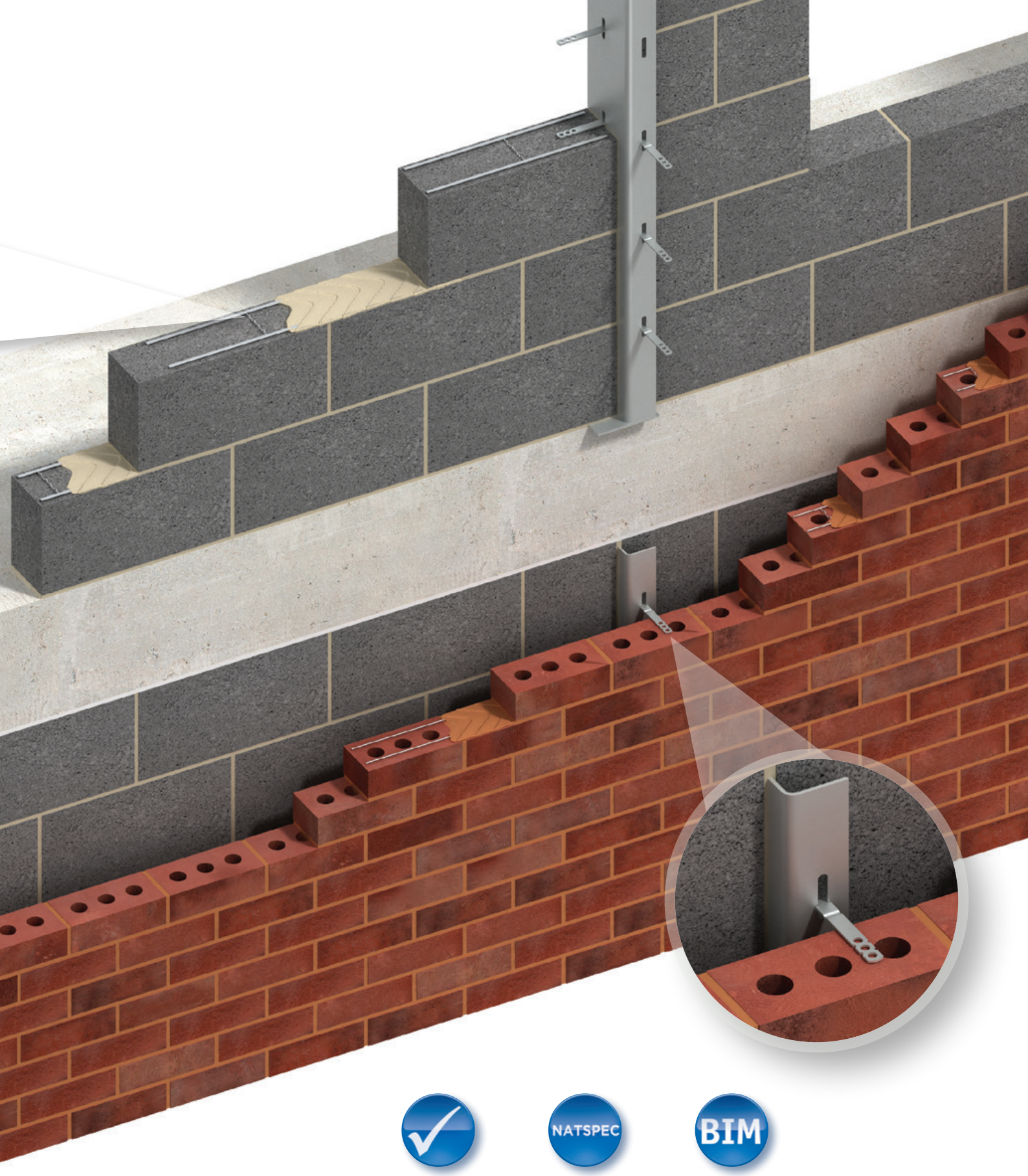
Ancon AMR Bed Joint Reinforcement and Ancon Windposts are designed to provide additional lateral support for panels of masonry.

Ancon AMR is a fabricated and flattened stainless steel reinforcement which locates in the bed joint to strengthen a wall.

Windposts can be installed into either the inner leaf of blockwork or into the cavity leaving the blockwork undisturbed.

Parapet Posts are used as vertical support for brickwork in parapet panels.

Contents



ISO 9001

Product information in Natspec

BIM Objects available

Improve structural performance

Minimise wall thickness

Reduce risk of cracking

Masonry Reinforcement and Windposts

Bed Joint Reinforcement

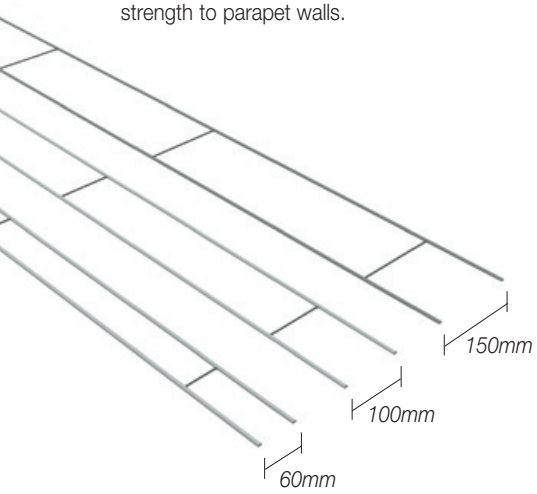
Bed joint reinforcement is used to improve the structural performance of masonry walls by providing additional resistance to lateral loads e.g. wind. It can also be used to reduce the risk of cracking either at stress concentrations around openings or as a result of movement, including the control of shrinkage. A structural engineer should be consulted to assess the spacing of control joints and bed joint reinforcement.

Bed joint reinforcement may be used in both main and secondary reinforcement applications for a variety of purposes and locations, as set out in the table below.

Purpose / Location	Ladder Type Reinforcement
Increase panel sizes	✔
Increase movement joint spacing	✔
Feature courses, corbels, plinths	✔
Corner and T junctions	✔
Stack-bonded panels	✔
Differential movement control	✔
Above and below openings	✔

In walls which have door and window openings, bed joint reinforcement can reduce the frequency of control joints. Reinforcement should be provided in the first and second courses above and below all openings and should extend no less than 600mm either side of the opening.

Bed joint reinforcement can also be used near the top of the structural walls abutting concrete roofs and to provide additional strength to parapet walls.



Available in a range of widths and wire diameters

Ancon AMR 'Ladder Type' Masonry Reinforcement

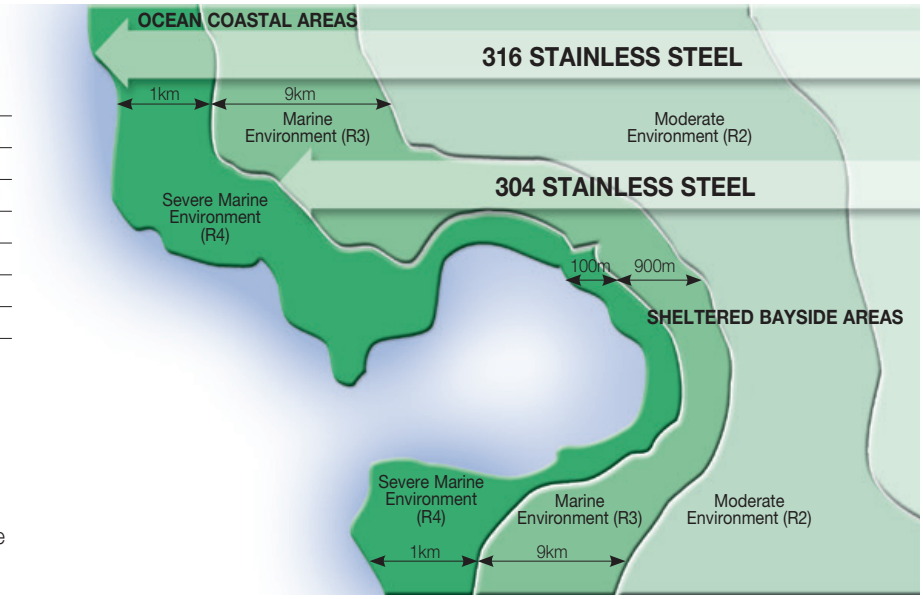
Available in various standard configurations, Ancon AMR and AMR-X suit a wide range of structural load conditions and wall widths. The longitudinal wires have a minimum characteristic yield strength of 500 MPa.

The range of Ancon masonry reinforcement is tested and manufactured to EN 845-3 to ensure the highest quality and complies with AS 3700. Wires are flattened to 3mm ensuring the longitudinal bars have space in the joint to be surrounded by mortar.

Durability

Material selection will be determined by the location of the building. Grade 304 can be used in all but the most aggressive applications and Grade 316 should be used in severe marine, industrial and below DPC with aggressive soil.

Durability Exposure Map



Materials

Available in both grade 304 and 316 stainless steel, Ancon masonry reinforcement provides the greatest corrosion resistance and life-cycle costing benefits.

Wire Diameters

Manufactured from three wire sizes which, after flattening, have an equivalent wire diameter of 3.0, 4.0 and 5.0mm, the range suits the majority of load conditions. AMR-X is available from stock in 4mm wire diameter with the other sizes available to order.

AMR Size	Cross Section Area mm²	
	Per Wire	Total
3mm AMR	7.07	14.14
4mm AMR	12.57	25.14
5mm AMR	19.63	39.26

Depth

The main longitudinal wires are flattened to less than 3mm. These wires are joined by cross wires welded in the same plane at 450mm centres. This profile ensures good mortar cover is maintained, even when the product is lapped or used with wall ties.

Length

Manufactured in standard lengths of 2700mm.

Widths

Standard AMR is available in three widths (60, 100 and 150mm), and can be used in wall widths from 90mm to 190mm. Care must be taken in selecting the correct width of reinforcement which should be 30mm - 50mm less than the width of the masonry unit.

AMR-X is stocked in a standard 60mm width for use in 90mm and 110mm masonry units. Other widths are available to order.

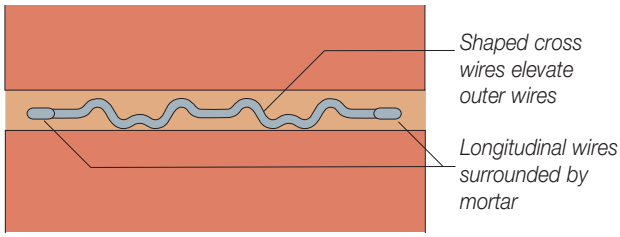
Ancon AMR-X, Enhanced Masonry Reinforcement

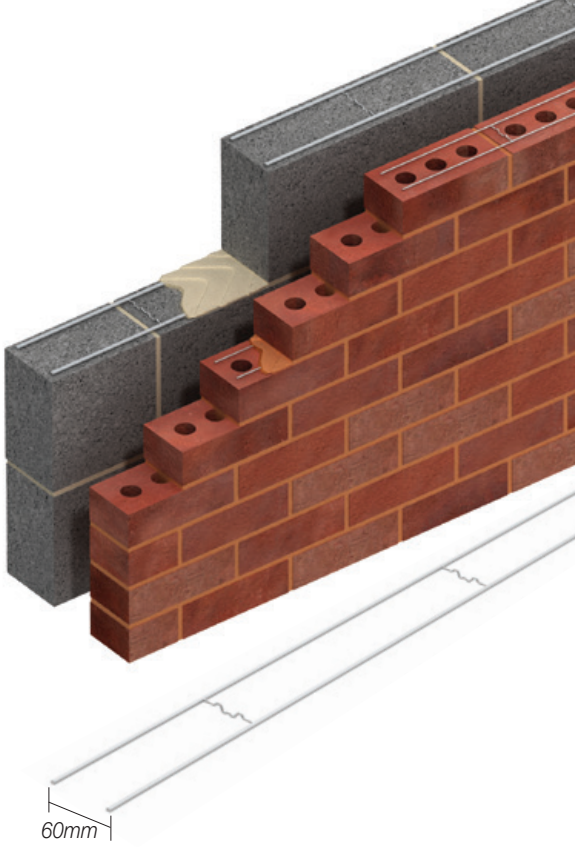
When compared to other ladder-type reinforcement, Ancon AMR-X can accelerate the speed of construction, improve build quality and reduce the requirement for site supervision.

To provide additional resistance to lateral loads and improve the structural performance of a masonry wall, it is important that the reinforcement is surrounded by mortar.

The designed performance of a wall panel may not be achieved if the bed joint reinforcement is simply laid directly onto dry masonry with a mortar layer applied above. Unfortunately, research has shown that this is common site practice, which led us to develop the new AMR-X reinforcement.

The product is based on standard Ancon AMR masonry reinforcement, but with shaped rather than straight cross wires. This innovative design is a simple, cost-effective way to correct poor site practice.





If applied to dry bricks or blocks, only the cross wires are in contact with the masonry; the longitudinal wires are elevated. When the next masonry unit is lowered, the mortar layer disperses around the steel, leaving the reinforcement fully surrounded.

The cross wires have been designed so the AMR-X can be installed either way up.

AMR-X is available in various configurations, suitable for brickwork or blockwork, internal or external walls and the majority of load applications.

BIM Objects

BIM objects for AMR-X masonry reinforcement are available to download from www.ancon.com.au/downloads/bim-object-library

'Using Ancon AMR-X will ensure bed joint reinforcement is accurately installed without compromising on build time'.

Structural Engineer

'I have recommended that we use this product as it can eliminate the risk of inadequate mortar bond around bed joint reinforcement'.

Site Manager

Specification / Identification

AMR is specified using the simple reference structure shown below. Each length of AMR is marked with a product reference to aid identification on site.

Material Reference — *Width (mm)*

e.g. **AMR/S304/D3/W60**

Product Code — *Wire (mm)*

Equivalent wire diameter after flattening

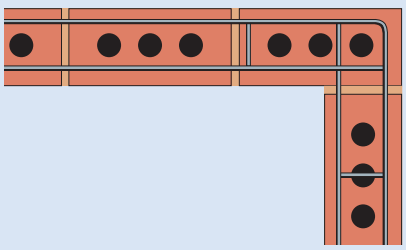
AMR and AMR-X Typical Applications

Masonry Width	Wire Dia.	Material Grade	Cross Wire	Product Reference
90/110	3	304	AMR	AMR/S304/D3/W60
	3	316	AMR	AMR/S316/D3/W60
	4	304	AMR	AMR/S304/D4/W60
	4	304	AMR-X	AMR-X/S304/D4/W60
	4	316	AMR	AMR/S316/D4/W60
140/150	4	304	AMR	AMR/S304/D4/W100
190/200	4	304	AMR	AMR/S304/D4/W150
	5	304	AMR	AMR/S304/D5/W150

Note: Other sizes available to order

Corners

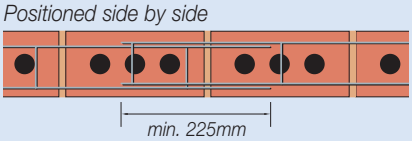
Corners are formed on site by cutting the inner wire and bending the outer wire.



Laps and Positioning

Laps should be a minimum of 225mm in length and must include at least one cross wire. The lap can be achieved by either stacking the product or positioning lengths side by side. The position of laps should be staggered throughout the masonry panel.

Positioned side by side



Stacked

Overall thickness when lapped is max. 6mm

Masonry Reinforcement and Windposts

Reinforcing Stack-Bonded Masonry

Stack bonding has a distinctive uniform bond pattern and is often detailed for its aesthetic appearance without consideration for its design limitations.

Where masonry units are stacked one above the other, the lack of bonding between them will greatly reduce the overall flexural strength of the panel and the ability of the wall to spread vertical loads. In stack bonded masonry, concentrated loads will be carried down to the support by the particular vertical 'column' of masonry under load, with little distribution to adjacent masonry. Ancon AMR Masonry Reinforcement, located in the bed joints, will increase the panel's flexural strength and improve the capacity to resist lateral loads and spread vertical loads.

AS 3700:2018 defines stack bonded masonry as masonry in which the overlap of masonry units in successive courses is less than ¼ of the unit length or 50mm, whichever is greater. Clause 4.12 sets out the minimum requirements for bed joint reinforcement in a stack bonded wall:

Extract from AS 3700:2018 Clause 4.12
Bed joint reinforcement shall be spaced vertically at centres not exceeding six times the thickness of the stack bonded leaf and shall have an area not less than 0.00035 the gross vertical cross sectional area of the wall.

Bed joint reinforcement shall also be placed in the first joint above and below unrestrained edges and within 300mm of a horizontal line of lateral support. See adjacent illustration.

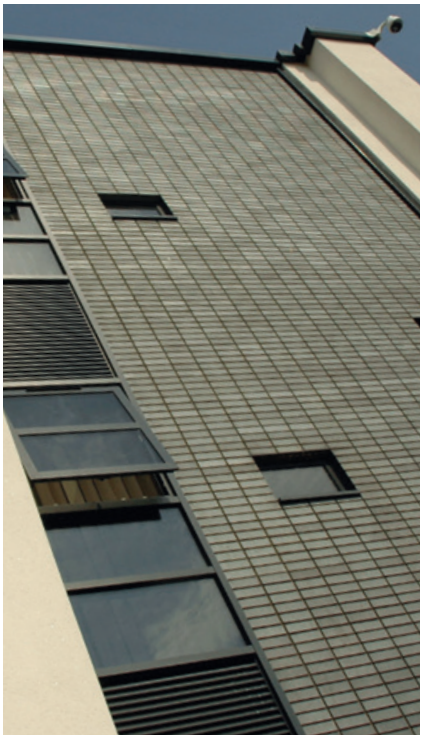
Examples

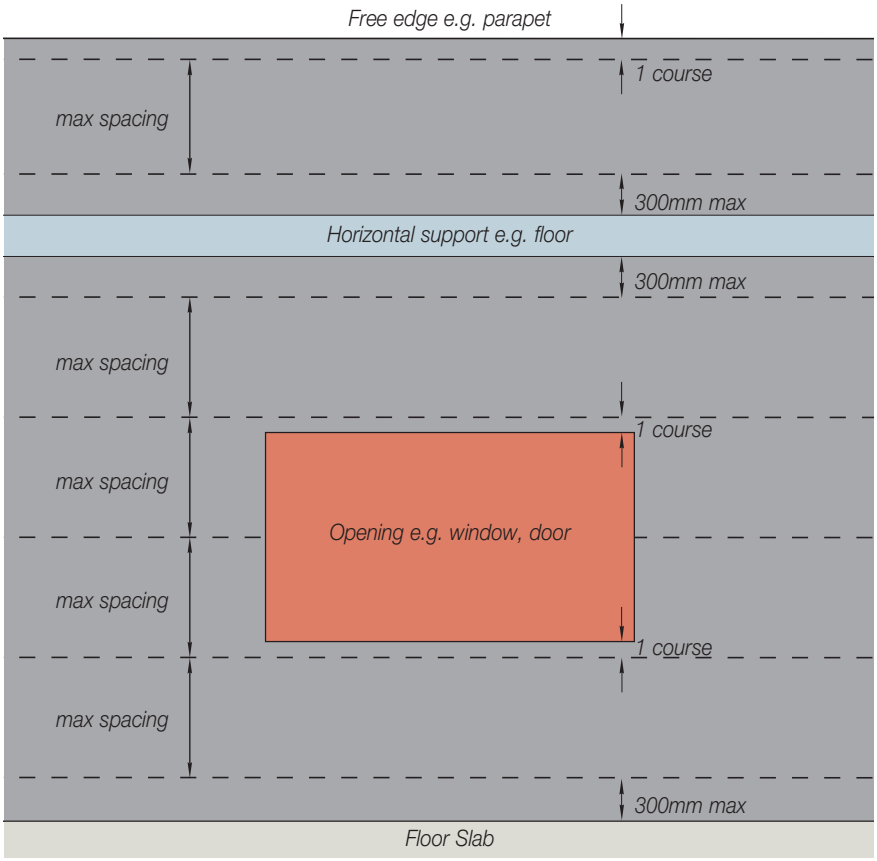
For 110x76 brick unit walls over 1.5m high 4mm diameter bed joint reinforcement should be placed in the third bed joint from the top and bottom of the wall panel and then in every fifth joint.

For 150x200 block unit walls over 1.5m high 4mm diameter bed joint reinforcement should be placed in the first bed joint from the top and bottom of the wall panel and then in every second joint.

Our technical team can advise on spacing for other masonry unit and wall heights. Contact us on 1300 304 320 or email info.ancon.au@leviat.com

Please note that these are minimum requirements to stabilise the stack bonded masonry. The project structural engineer may specify more than this to add additional strength to the wall panel.

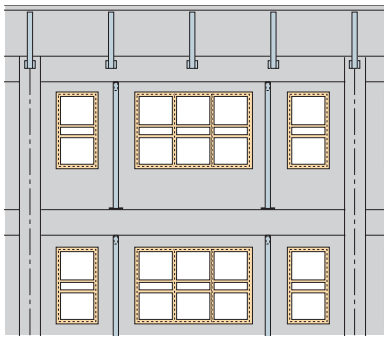




– – – – – *Masonry Reinforcement*

Windposts and Parapet Posts

Ancon Windposts are designed to suit your specific construction and load conditions. They are suitable for use where standard AMR ladder type masonry reinforcement is inadequate or when there is a requirement to split a large masonry panel.



Typical Layout of Windposts and Parapet Posts on an Elevation of Brickwork

Windpost Design

Ancon Windposts are designed to span vertically between floors to provide lateral support for panels of brickwork. The windposts will usually be restrained by the brickwork and designed as 'simply supported beams'.

Connections to the frame are designed to permit adjustment during installation. Serrated surfaces will be provided where adjustment is in the direction of the load. The top connection allows for shrinkage or vertical movement of the frame to take place. The type of fixing will depend on the nature of the frame. Expansion bolts are normally supplied for concrete frames and set screws will be supplied for steel frames. The tables on page 12 include part of the range of Ancon windposts. For further information or advice on specific applications, please contact our Technical Services Team.

Please note, it is the responsibility of the Engineer to design a suitable structure for connecting a windpost or parapet post.

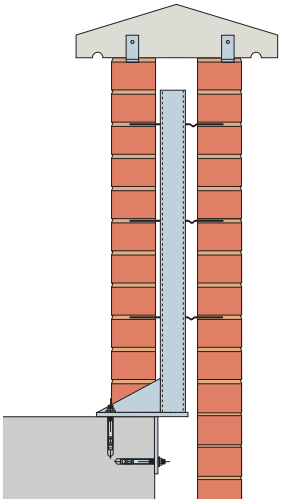
Where windposts are to be connected to a concrete frame, the project Structural Engineer should advise the concrete grade and whether the windpost connections should be designed for cracked or un-cracked concrete. In the absence of this information, we will provide designs based on N32 cracked concrete.

Parapet Posts

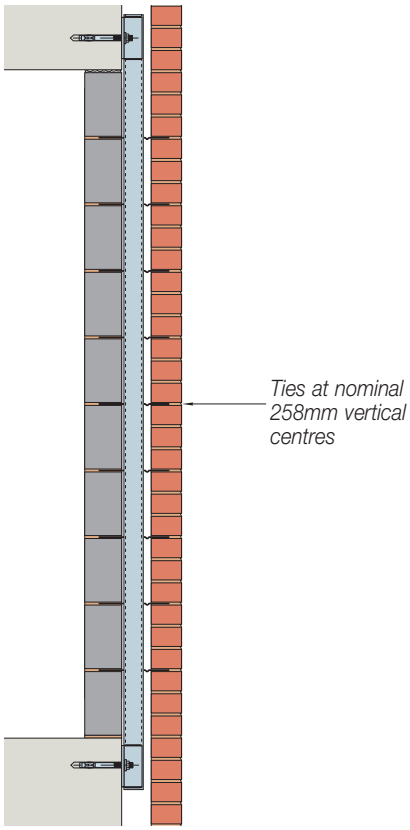
Ancon Parapet Posts provide lateral restraint to masonry that projects above the main structure. They are designed as 'cantilevers' and include a substantial base connection to transfer the bending moment to the structure. To ensure a practical base connection the posts are usually less than 1.6 metres in height. The tables on page 13 show part of the range of Ancon parapet posts. For further information or advice on specific applications, please contact our Technical Services Team.

BIM Objects

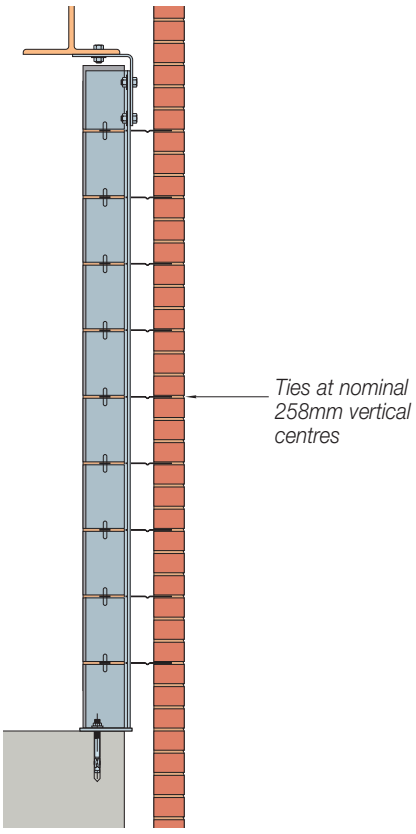
BIM objects are available to download from www.ancon.com.au.



WP3 Parapet Post Fixed to Top and Face of Concrete



WP3 Windpost Fixed to Face of Concrete Structure



WP2 Windpost Fixed to Top of Concrete and Underside of Steel Beam

Details for Specification and Ordering

Ancon Windposts are designed to EN 1993.

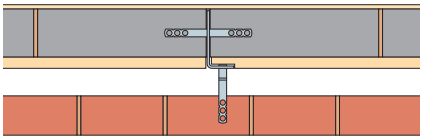
The following clause can be adapted for your bill of quantities to aid the specification of Ancon Windposts and Parapet Posts.

Ancon Windposts WP3 65 x 60 x 4 in grade 304 stainless steel, overall length 2750mm complete with all ties and end connections.

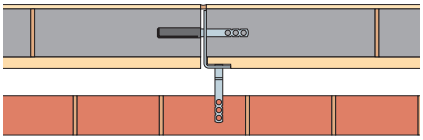
Masonry Reinforcement and Windposts

Ancon WP2 Windposts

Ancon WP2 Windposts are angle section windposts designed for either small cavities or where wind loads are high. One leg of the angle windpost is built into the blockwork, and the blockwork tied through the leg of the windpost to minimise any possible movement or cracking of internal finishes. The design of Ancon WP2 Windposts assumes full restraint to the longer leg of the post located within the vertical masonry joint. To prevent lateral movement of the post within this joint and ensure the windpost performs to its full capacity, it is essential that this joint is tightly packed with mortar. If a vertical movement joint is required in place of a tied joint, ties with a debonded end on one side can be supplied. The capacity of the post will be reduced in this configuration.



WP2 Windpost with SDN and SNS Ties in Cavity Wall

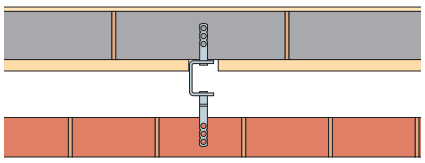


WP2 Windpost at Vertical Movement Joint in the Inner Leaf of Blockwork with Debonded Ties Across the Post

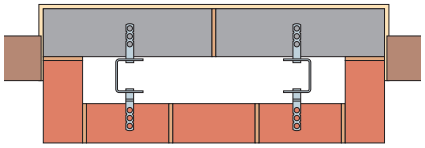
Note that the capacity of the windpost will be reduced in this configuration.

Ancon WP3 Windposts

Ancon WP3 Windposts are channel section windposts which are designed to be installed within the cavity leaving the blockwork undisturbed. The windposts are complete with end connections and ties which fit into the vertical slots in the flanges of the channel section.



WP3 Windpost with SDN and SPN Ties in Cavity Wall

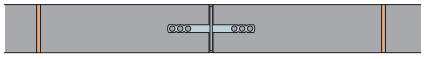


WP3 Windposts with SDN and SPN Ties Providing Support for Brick Pier

WP2 Windpost with SNS and SPN Wall Ties

Ancon WP4 Windposts

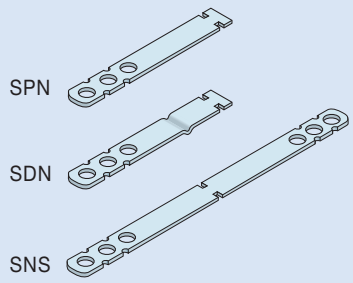
Ancon WP4 Windposts are generally used in internal blockwork walls that have a 'fair faced' finish to both sides and where the windposts cannot protrude beyond either face. Sometimes referred to as 'spine' posts they are flat plates designed to fit within the wall. Although the depth of a WP4 post is limited by the width of the masonry (ideally 20mm less than the wall width), the thickness of the post can vary to increase its load capacity. Blockwork is tied through the post.



WP4 Windpost with SNS Tie in Single Skin Blockwork

Windpost Ties

A range of ties is available to suit Ancon Windposts. SDN Ties are used to the outer leaf and SPN Ties to the inner leaf. SNS Ties are used across the posts in the inner blockwork and can be supplied with a debonding sleeve for use where there is a vertical movement joint.



WP3 Fixed to Concrete at the Base and a Steel Beam at the Top

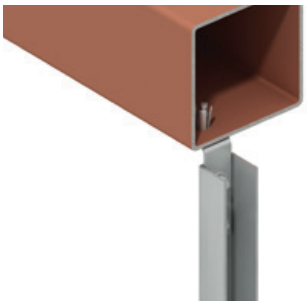
Fixings for Windposts and Parapet Posts

Connections to the frame can be made in a variety of ways and will depend on the type of post, structure and fixing being used. Typical examples of connections are shown below.

Top Connection of a WP2 Windpost to the Underside of a Steel Beam

Top Connection of a WP2 Windpost to the Underside of a Timber Wall Plate

Base Connection of a WP2 Windpost to a Concrete Infill in the Top of a Beam and Block Floor



Top Connection of a WP3 Windpost to the Underside of a Steel Box Beam

Top Connection of a WP3 Windpost to the Underside of a Steel Beam

Top Connection of a WP3 Windpost to the Underside of a Concrete Beam

Top Connection of a WP3 Windpost to the Face of the Concrete

Top Connection of a WP3 Windpost to the Top of a Timber Wall Plate

Top Connection of a WP3 Windpost to a Face-Fixed Timber Noggin

Top Connection of a WP3 Windpost to a Side-Fixed Timber Noggin

Base Connection of a WP3 Parapet Post to the Top and Face of a Concrete Slab

Base Connection of a WP3 Windpost to the Top of a Concrete Slab

Connections

The choice of fixing and its position is dependent on the type and length of the windpost and the structure to which it is being fixed. Leviat designs fixing details for the top and base of each windpost and a drawing is issued for approval prior to manufacture.

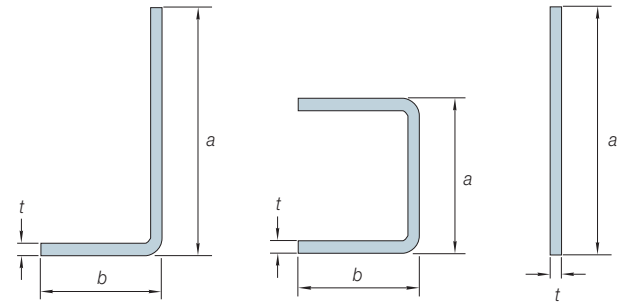
The bolt in the slotted connection at the top of the windpost is positioned so that vertical movement of the frame can take place.

Masonry Reinforcement and Windposts

Properties and Recommended Loads for Windposts to EN 1993

Ancon Windposts are designed as 'simply supported beams' with a maximum deflection of span/360. The tables below include examples of our range of Windposts with maximum design loads to EN 1993. The design resistances shown should be compared to factored loads.

The section sizes shown are an example of those available. For further information or advice on specific applications please contact our Technical Services Team.



WP2 WP3 WP4

Performance of WP2 Windposts to EN 1993

	Size	Design Resistance (kN) per Post (uniformly distributed) for Various Windpost Spans							
	a x b x t	2.5m	3.0m	3.5m	4.0m	4.5m	5.0m	5.5m	6.0m
WP2	125x70x4	9.46	7.07	5.46	4.32	3.48	2.86	2.38	2.01
	140x70x4	12.28	9.25	7.20	5.74	4.66	3.84	3.21	2.72
	150x70x4	14.21	10.86	8.49	6.80	5.54	4.59	3.85	3.26
	130x70x6	15.83	11.93	9.30	7.42	6.03	4.98	4.17	3.53
	170x70x4	17.92	14.48	11.41	9.21	7.56	6.30	5.31	4.53
	160x70x5	**20.26**	15.94	12.54	10.11	8.30	6.91	5.82	4.96
	150x70x6	**20.26**	16.64	13.09	10.54	8.64	7.19	6.05	5.15
	170x70x5	**20.26**	18.29	14.44	11.69	9.63	8.04	6.79	5.80
	180x70x5	**20.26**	20.80	16.48	13.37	11.05	9.26	7.85	6.72
	150x80x8	**20.26**	22.59	17.76	14.31	11.74	9.77	8.23	7.01
	185x70x6	**20.26**	**24.76**	21.24	17.31	14.36	12.08	10.28	8.82
	170x80x8	**20.26**	**24.76**	23.81	19.31	15.96	13.37	11.33	9.70
	180x80x8	**20.26**	**24.76**	27.15	22.09	18.31	15.38	13.07	11.22

Note: *Table based on tie spacing of 258mm, ties on each leg, no vertical movement joint and long leg restrained by the masonry. Figures in* **bold** *indicate capacity limited by tie capacity.*

Performance of WP3 Windposts to EN 1993

	Size	Design Resistance (kN) per Post (uniformly distributed) for Various Windpost Spans							
	a x b x t	2.5m	3.0m	3.5m	4.0m	4.5m	5.0m	5.5m	6.0m
WP3	55x60x4	3.19	2.22	-	-	-	-	-	-
	55x60x5	3.93	2.73	-	-	-	-	-	-
	65x60x4	4.68	3.26	2.39	1.83	-	-	-	-
	65x60x5	5.80	4.03	2.96	2.27	-	-	-	-
	75x60x4	6.49	4.53	3.33	2.55	-	-	-	-
	75x60x5	8.07	5.63	4.14	3.17	2.50	-	-	-
	85x60x4	8.63	6.03	4.44	3.40	2.69	2.18	-	-
	85x60x5	10.75	7.51	5.54	4.24	3.35	2.72	2.24	-
	95x60x5	**13.29**	9.72	7.17	5.50	4.35	3.52	2.91	2.45
	105x60x5	**13.29**	12.22	9.04	6.94	5.49	4.45	3.68	3.09
	115x60x5	**13.29**	15.03	11.16	8.59	6.80	5.51	4.56	3.83
	115x60x6	**13.29**	**16.24**	12.77	9.82	7.78	6.31	5.22	4.38
	115x65x8	**13.29**	**16.24**	16.97	13.06	10.34	8.39	6.93	5.83

Note: *Table based on tie spacing of 258mm. Figures in* **bold** *indicate capacity limited by tie capacity.*

Properties and Performance of WP4 Windposts to EN 1993

	Size	Design Resistance (kN) per Post (uniformly distributed) for Various Windpost Spans							
	a x t	2.5m	3.0m	3.5m	4.0m	4.5m	5.0m	5.5m	6.0m
WP4	90x8	4.89	3.43	-	-	-	-	-	-
	100x8	6.65	4.68	3.46	2.65	2.10	-	-	-
	110x8	8.74	6.20	4.59	3.53	2.79	2.26	-	-
	120x8	11.18	7.98	5.94	4.57	3.62	2.94	2.43	2.04

Note: *Table based on post restrained by the masonry.*

Properties and Recommended Loads for Parapet Posts to EN 1993

Ancon Parapet Posts are designed according to EN 1993 for a maximum deflection of height/180. The tables below indicate the maximum uniformly distributed design load and the maximum point load at the top.

The design resistances shown should be compared to factored loads. Posts should be selected from the appropriate table. If the post is to be designed for both uniformly distributed and point loads, please contact our Technical Services Team.

Performance of WP2P parapet posts to EN 1993 under uniformly distributed load

	Size	Design Resistance (kN) per Post (uniformly distributed) for Various Parapet Post Lengths						
	a x b x t	0.8m	1.0m	1.2m	1.4m	1.6m	1.8m	2.0m
WP2P	125x70x4	**6.75**	6.33	5.27	4.52	3.95	3.51	3.02
	140x70x4	**6.75**	**6.75**	6.51	5.58	4.88	4.34	3.90
	150x70x4	**6.75**	**6.75**	7.40	6.34	5.55	4.93	4.44
	130x70x6	**6.75**	**6.75**	8.74	7.49	6.55	5.83	5.05
	170x70x4	**6.75**	**6.75**	**9.00**	8.00	7.00	6.22	5.60
	160x70x5	**6.75**	**6.75**	**9.00**	9.07	7.94	7.06	6.35
	150x70x6	**6.75**	**6.75**	**9.00**	9.79	8.57	7.61	6.85
	170x70x5	**6.75**	**6.75**	**9.00**	10.15	8.88	7.90	7.11
	180x70x5	**6.75**	**6.75**	**9.00**	**11.25**	9.88	8.78	7.90
	150x80x8	**6.75**	**6.75**	**9.00**	**11.25**	13.13	11.06	9.47
	185x70x6	**6.75**	**6.75**	**9.00**	**11.25**	12.66	11.25	10.13
	170x80x8	**6.75**	**6.75**	**9.00**	**11.25**	**13.50**	**13.50**	12.52
	180x80x8	**6.75**	**6.75**	**9.00**	**11.25**	**13.50**	**13.50**	14.19

Note: *Table based on tie spacing of 258mm, ties on each leg, no vertical movement joint and long leg restrained by the masonry. Figures in* **bold** *indicate capacity limited by tie capacity.*

Performance of WP2P parapet posts to EN 1993 under point load

	Size	Design Resistance (kN) at Top of Parapet Post for Various Lengths						
	a x b x t	0.8m	1.0m	1.2m	1.4m	1.6m	1.8m	2.0m
WP2P	125x70x4	3.95	3.16	2.63	2.24	1.82	1.51	1.27
	140x70x4	4.88	3.90	3.25	2.79	2.36	1.97	1.66
	150x70x4	5.55	4.44	3.70	3.17	2.77	2.31	1.96
	130x70x6	6.55	5.24	4.37	3.73	3.05	2.54	2.15
	170x70x4	7.00	5.60	4.66	4.00	3.50	3.08	2.62
	160x70x5	7.94	6.35	5.29	4.53	3.97	3.39	2.88
	150x70x6	8.57	6.85	5.71	4.89	4.22	3.54	3.01
	170x70x5	8.88	7.11	5.92	5.07	4.44	3.88	3.31
	180x70x5	9.88	7.90	6.58	5.64	4.94	4.39	3.77
	150x80x8	15.55	11.36	8.75	6.99	5.74	4.80	4.09
	185x70x6	12.66	10.13	8.44	7.23	6.33	5.62	4.85
	170x80x8	20.12	14.82	11.48	9.22	7.60	6.39	5.45
	180x80x8	22.58	16.69	12.97	10.44	8.62	7.26	6.21

Note: *Table based on the post having ties on each leg, no vertical movement joint, long leg restrained by the masonry and with top rail or other such connection transferring the point load to the top of the post.*

Performance of WP3P parapet posts to EN 1993 under uniformly distributed load

	Size	Design Resistance (kN) per Post (uniformly distributed) for Various Parapet Post Lengths						
	a x b x t	0.8m	1.0m	1.2m	1.4m	1.6m	1.8m	2.0m
WP3P	55x60x4	**4.43**	4.13	2.95	2.19	1.69	1.34	1.08
	55x60x5	**4.43**	**4.43**	3.49	2.59	1.99	1.58	1.28
	65x60x4	**4.43**	**4.43**	4.22	3.18	2.46	1.96	1.59
	65x60x5	**4.43**	**4.43**	5.05	3.78	2.92	2.32	1.88
	75x60x4	**4.43**	**4.43**	5.67	4.32	3.38	2.70	2.20
	75x60x5	**4.43**	**4.43**	**5.90**	5.18	4.04	3.22	2.62
	85x60x4	**4.43**	**4.43**	**5.90**	5.60	4.42	3.56	2.91
	85x60x5	**4.43**	**4.43**	**5.90**	6.77	5.32	4.27	3.49

Note: *Table based on restrained parapet post with tie spacing of 258mm. Figures in* **bold** *indicate capacity limited by tie capacity.*

Performance of WP3P parapet posts to EN 1993 under point load

	Size	Design Resistance (kN) at Top of Parapet Post for Various Lengths						
	a x b x t	0.8m	1.0m	1.2m	1.4m	1.6m	1.8m	2.0m
WP3P	55x60x4	2.45	1.61	1.12	0.83	0.63	0.50	0.40
	55x60x5	2.90	1.90	1.33	0.97	0.75	0.59	0.48
	65x60x4	3.47	2.32	1.64	1.21	0.93	0.73	0.59
	65x60x5	4.15	2.76	1.95	1.44	1.10	0.87	0.71
	75x60x4	4.51	3.14	2.25	1.67	1.29	1.02	0.83
	75x60x5	5.56	3.78	2.69	2.00	1.54	1.22	0.99
	85x60x4	5.80	4.06	2.95	2.21	1.71	1.36	1.10
	85x60x5	7.11	4.91	3.55	2.65	2.05	1.63	1.32

Note: *Table based on restrained parapet post with top rail or other such connection transferring the point load to the top of the post.*

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