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SUPERSTRUCTURE

1 Walls should be plumb, level and uniform with aligned perpends and comply with TW tolerances and NHBC standards.

2 Window formers must be the correct type and size in line with site / plot specifications. Ensure formers are built in plumb and level with brickwork carefully gauged to create a tight finish to the underside of the lintel.

3 ARC products are placed into cavities to mitigate the spread of smoke and flames. Refer to cavity barrier section on Page 161 for design information.

- 4 Lateral restraint straps are used to tie the building together and ensure forces and loads are transferred effectively through the building.
- 5 Party walls and floors are to be built in accordance with the site specific robust details and have the robust details checklist completed periodically throughout the build process (England and Wales).
- 6 Brickwork tolerances should be in line with CQA guidance.

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TRADITIONAL BUILD



1 Image indicates the various elements to focus on during the superstructure build.

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STRUCTURAL FRAME & / OR LOADBEARING WALLS

SUPERSTRUCTURE



1 Wall ties are to be embedded at a minimum of 50mm to either leaf and 90 degrees from the face of the walls with the drip sitting centrally in the cavity. Load bearing walls have been constructed to a high standard in which mortar joints have been consistently filled and any excess mortar removed. Perp joints should be vertical. Bed joints should be level, uniform and to the correct gauge.



2 Proprietary templates for brick and blocks should be used in the substructure and superstructure to maintain even margins between each component of the bay.



The brick and blockwork ties must be inserted and built into the brickwork to ensure the closer is stable in the opening and not subject to movement. Ties are generally required every block course and every third brick course on external walls. This is relatively easy to check with two simple steps;

3

1) View down the cavity to check to see if ties have been installed, and

2) Pull on the closer when in-situ. If the closer moves it has not been built in.



4 New Use coursing brickettes to make up cill heights as works progress. Coursing brickettes should be used to ensure the correct height is achieved for sills and lintels.

MORTAR MIXING GUIDELINES



KEY CONSIDERATIONS:

Mortar is a workable binding agent used to strengthen and secure brick and block work in place. Mortar mixes, material types and ratios are determined by the site location and exposure.

Check for patching (colour variation) -

this is where two different mixes have been blended together and are changing the colour scheme between bricks.

Documentation – ensure you check the labels on silos and the delivery note should be visible with mortar type clearly indicated, as per specification.

Listen to your bricklayers – if they have a problem with the mortar, make sure this is checked.

Cracks / Gaps – inspect finished brickwork to check for cracks and gaps in the mortar.

Brick quality – ensure the brick types have the correct specification for the required use.

MIXING GUIDELINES:

- 1 Preferences is that we use silo based, fully assessed and specified, premixed dry mortar.
- 2 If silos cannot be used, or in the absence of silos, we should use 'tubbed' premixed and delivered wet to site.

Best practice is not to move tubbed wet mortar from site to site as this may have a negative effect on the mix.

- **3** If 1 or 2 is not achievable, then we should use premixed, bagged, dry mortar with only water to be added onsite.
- 4 The practice of hand mixing separate quantities of sand, cement and water to create mortar (or render or screed) is banned. This also applies to any mortar supplied by any subcontractor that is not pre-bagged.

RETARDED MORTAR

MORTAR MIXES TABLE

			(PROPOF	COMPRESSIVE STRENGTH AT 28 DAYS			
M	IORTAR SIGNATION	COMPRESSIVE STRENGTH CLASS	CEMENT (OR COMBINATION OF CEMENT EXCEPT MASONRY CEMENT): LIME: SAND WITH OR WITHOUT AIR ENTRAINMENT	CEMENT: SAND WITH OR WITHOUT AIR ENTRAINMENT	MASONRY CEMENT: (INORGANIC FILLER OTHER THAN LIME) SAND	MASONRY CEMENT: LIME: SAND	N / MM²
	(i)	M12	1 : 0 to _ : 3	_	_	-	12
	(ii)	M6	1 : _ : 4 to 4_	1 : 3_ to 4	1 : 2_ to 3_	1:3	6
	(iii)	M4	1 : 1 : 5 to 6	1 : 5 to 6	1 : 4 to 5	1 : 3_ to 4	4
	(iv)	M2	1 : 2 : 8 to 9	1 : 7 to 8	1 : 5_ to 6_	1:4_	2

RETARDED MORTAR

Premixed factory-made mortars can be used over a longer period due to having a retarded setting factor. The durability and practicality of these mixes can be defined as per the manufacturers specifications. Typically, before using retarded mortars:

- 1 Consider the temperature prior to use – protect from freezing.
- **2** Do not use after the specified effective lifespan is breached.
- **3** With a delayed setting time, consideration must be given to follow on trades until mortar is fully set.

SOURCES OF SULPHATE

Cement can be broken down and deteriorated if exposed to sulphates, a common victim of this would be clay bricks. This is likely to happen to brickwork that's saturated for long periods, allowing soluble sulphates to penetrate the mortar. To reduce the risk of this happening, sulphate-resisting cement can be used in accordance with BS 4027:

- **1** Below the DPC level when sulphates are in the ground.
- 2 When clay bricks are used for parapets, chimney stacks, retaining / freestanding and rendered walls.
- **3** In areas with a high saturation risk and risk of severe exposure to driving rain.



SUITABLE WALL CONSTRUCTIONS FOR USE WITH FULL CAVITY INSULATION

		MINIMUM INSU THICKNESS (N	JLATION IM)	
EXPOSURE CATEGORY	SUITABLE WALL CONSTRUCTION	BUILT-IN INSULATION	RETRO- FILL (OTHER THAN UF FOAM)	UF FOAM
VERY	Any wall with impervious cladding	50	50	50
SEVENE	Fairfaced masonry with impervious cladding to all walls above ground storey	100	100	N / A
	Any wall fully rendered	75	75	N/A
	Fairfaced masonry	N/A	N/A	N/A
SEVERE	Any wall with impervious cladding or render	50	50	50
	Fairfaced masonry with impervious cladding or render to all walls above ground storey	50	75	50
	Fairfaced masonry	75	75	N/A
MODERATE	Any wall with impervious cladding or render	50	50	50
	Fairfaced masonry with impervious cladding or render to all walls above ground storey	50	50	50
	Fairfaced masonry	50	75	75
SHELTERED	Any wall with impervious cladding or render	50	50	50
	Fairfaced masonry with impervious cladding or render to all walls above ground storey	50	50	50
	Fairfaced masonry	50	50	50

NOTES

- 1 In Very Severe exposure locations fairfaced masonry with full cavity insulation is not permitted.
- 2 Render on an external leaf of clay bricks (F2, S1 or F1, S1 designation bricks to BS EN 771) in Severe or Very Severe exposures is not permitted where the cavity is to be fully filled with insulation.
- **3** This table covers walls where the external leaf does not exceed 12m in height.
- 4 The exposure category of the dwelling is determined by its location on the map showing categories of exposure to wind driven rain.

- 5 Fairfaced masonry includes clay, calcium silicate and concrete bricks and blocks and dressed natural stone laid in an appropriate mortar, preferably with struck or weathered or bucket handle joints. Cavity walls of random rubble or random natural stone should not be fully filled.
- 6 Recessed mortar joints should not be used.
- 7 In Scotland, it is not permissible to fill the full width of the cavity with any thermal insulation.



1 Bricklayer should check the dimensions, the materials (i.e. brick type) and double check what type of mortar is to be used confirming bond and any particular planning requirements.



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No brick or blockwork is to take place unless the temperature is 2° C and rising. Mortar may fail if it freezes because the water expands and forces apart the particles in the mortar.



Not all bricks will have a smooth finish and may contain a number of ridges to create a desired appearance. However, where chips / cracks occur that are not part of the normal appearance they should not be used and replaced.



4 Bricks should be laid uniform and to the correct line, level and gauge, whilst being the gauge, and frog up. Checks to be made involve; duct / vent locations, positioning of vertical and horizontal DPC, door and window openings. All walls should be constructed as per the working drawings.

Note:

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Bricks should be laid to the manufacturer's specification and ensure that they are the correct way up. Palettes of bricks should be mixed to avoid colour banding.

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Materials are to be neatly stacked 1 without obstructing the walkway, be adequately protected, ensuring a clean and tidy work area. See Section 21 for Protection.





2 A string / reference line is used in conjunction with a spirit level to help ensure each course of bricks are laid plumb and level. Blocks should be laid to a maximum of 6 block courses in a day or 18 brick courses of facing brick in a day.



3 For accuracy and quality, it is preferable cut bricks are used to complete brickwork to roof rafter line. Please agree with the local business unit if this method is adopted.



4 Bricklayers must work to gauge. Gauge determines the height of brick courses and is specified on drawings to show the heights of the window openings, doors openings, joist and wall plate. Failure to achieve gauge as per drawing will cause issues later in the build. Bricklayers must ensure they work to storey heights as these are critical to the correct headroom height and the stairs installation.

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1 Brickwork must not have excessive colour banding or large patches of obvious mortar with differing colours.



2 Banding is often related to mortar / brick variances and can be avoided through quality inspections, ensuring a good supply of blended bricks during installation using bricks from 3 palettes and ensuring the same type of mortar is used.



3 As the brickwork wall progresses, ensure it is plumb / level and is uniform with aligned perpends. Tolerances on brickwork should be within the guidance set out with TW CQA Document and NHBC Standards. The importance of maintaining a consistent cavity width has been reinforced with Technical Bulletin 0151-06-20.



4 Brickwork including cavity insulation must be covered with hessian for protection from the elements. Any cover should be weighted down to ensure it stays in place until the next working day.



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 Precautions should be taken to prevent excess mortar from entering the cavity by using temporary cavity protection methods. After each level, these are taken out and cleaned before the following course begins.



Before installation of wall ties, ensure you're using the correct type with the correct spacing. Partial fill cavity insulation materials should be installed on the cavity face of the inner leaf and the appropriate residual cavity to the outer leaf.

The first row of insulation boards or batts should be supported on wall ties: - with a minimum of two ties to each board or batt,

- which coincide with horizontal joints in the insulation.



 Wall ties are to be built with equal embedment on either leaf ensuring that a minimum of 50mm embedment is achieved.
Note: Wall ties require at least 20mm cover to the external edge. Ties should be installed sloping towards to external leaf and should be positioned so that the drip faces downwards within the cavity.

Wall ties should be installed at 900mm horizontal centres and 450mm vertical centres





Check window and door frames measurements against working drawings. Stone cills should have a DPC / cavity tray slip plane installed as per manufacturers' instructions.

Stone sill protection must be installed as work progresses. Please see Section 21, Protection.

CAVITIES, BARRIERS & INSULATION

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1 Typical cavity wall construction. Dimensions between each skin are dependent on building type. For specific sizes, refer to the working drawings.

Cavity widths must be in line with the design and be consistent. It is crucial that the cavity constructed is to the designed width to help reduce the risk of structural failure or increased risk of fire spread as per TB 0151/06/20.



2 Where partial cavity insulation is used, all internal and external joints are to be installed tightly together with wall tie spacings of 600mm in rows, vertical centres coinciding with the joints and not staggered as per a normal cavity. The insulation board must start at a **minimum of 225mm** below the DPC and brickwork must be clean prior to fitting to avoid cold bridging. Ensure that insulation is fitted tightly at all times.



T Barrier ARC product (with DPC to front edge) cavity socks should be installed in compression to a vertical position to all party wall line. It should be installed in accordance with manufacturer's detail and the barrier must fit snugly between the block and brickwork and with no gaps between the barriers themselves. Any projecting feature brickwork such as dentil bands need consideration to prevent smoke/gas pathways due or are to be formed using brick specials so inside of cavity does not deviate.



4 ARC Cavity stop socks are designed to be installed as the blockwork and brickwork progresses leading to a compression installation. The cavity sock requires no mechanical fixings. Butt joints should be tightly fitted with no gaps and must fully fill the cavity from brick to block. Any cavity insulation must be cut back.



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Weep vents should be full depth rather than pencil to allow air circulation to the cavity.

NATURAL STONE



1 All bricks, concrete blocks and natural stone masonry must comply with the relevant product standard and be CE marked. Bricks and blocks should not be accepted on site unless there is a CE mark on the packaging or the delivery note. Where natural stone is to be used, confirmation on the mortar type and detailing for that specific stone should be obtained from the Technical Department, prior to commencement of work.



2 Natural stone used could be limestone, sandstone, granite of slate and the elements must comply with BS EN-771-6 and will be dimensional stone blocks. Squared rubble or rubble stone must have subjected to frost testing. The dimensional stone can be supplied in random lengths and bed heights and could have a split face.



- 3 The method of construction will be similar to that used for brickwork / blockwork. In all cases, the stone used, particularly random height dimensional blocks, squared rubble and random rubble must be bought to course height every 450mm at wall tie locations. Where squared or random rubble is used, at wall tie locations the bed thickness must be between 8mm 15mm.
- 4 Stone walling must include a minimum of 50mm clear cavity between the face of the insulation and the back of the stone full fill insulation must not be used. There must be a minimum of a 75mm clear cavity in areas marked 'Very Severe' exposure zones in England and Wales. In Scotland, 'Very Severe' exposure zones require a 50mm clear cavity.

Where natural stone sills are used, they must have a DPC / cavity tray below and be fully bedded. The evenness of the cavity face should be considered to ensure that it complies with the fire barrier installation and its fitting. SUPERSTRUCTURE

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Prior to rendering a plot, provide sufficient protection to sensitive areas such as the windows, sills, doors, gas boxes and certain parts of the brick / blockwork. The depth of each coat of render should be applied as per the manufacturers specifications/ recommendations for the development (i.e. should be site specific). Render specification to be provided by the manufacturer



2 Proprietary render should be installed as per manufacturer's specifications and beads should be installed as per their fixing specification. Horizontal beads should be stopped either side of expansion joints.



3 Weep holes are required in severe or very severe exposure zones where rendering is returned back into the window or door head. Weep holes are not required where render is not returned. To prevent staining to render, weep holes must be of a type which restricts the entry of wind driven rain.



4 Temporary downpipes / gutter bags are installed to stop rain and excess water wetting the blockwork too much – if the building face is too wet, the render will be postponed in order to ensure a quality finish.

Note:

Brickwork, render, external cladding and tile hanging should not be taken below DPC level given regarding the carrying out of works, depths of foundations etc. Render should be installed as per manufacturer instructions and site specific specification.



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Check the location and position of 1 movement joints as per plot specific design. The movement joint should be installed using easily compressible filler with the last 10mm of sealant.



Fibre Mesh Reinforcement 3

> To reduce the risk of the facade cracking on new build construction, it is recommended that any likely stress point areas, for example, around windows and doors receive a 2m2 sheet Parex TV10 fibre glass mesh.

In extreme cases, where the block is uneven and out of level, more commonly on renovation work, it may be advisable to apply Parmurex base coat and completely mesh the entire facade. No mechanical fixing is used.



2 Wall ties should be provided on either side of the movement joint at a maximum distance of 225mm to provide increased structural stability and to be installed at 300mm maximum intervals vertically. Ensure slip ties are installed vertically at 225mm centres as per design requirements.



4 Bed reinforcement should be installed and extend 600mm beyond the openings as per working drawings and the design. Joints may need to be raked out to evidence that reinforcement is in place to dimensions as per drawings.

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BRICKWORK SUPERSTRUCTURE

om	CHECKLIST (to be completed by site m apany:	anage	r/sup	ervisor)
ite:				
lot:	Site manager/supervisor:			
lef.	Item	Yes	No	Inspected
	Is separating wall cavity at least 100mm?	3	3	(initials & date)
	Is external (flanking) wall cavity at least 50mm?	H	H	
	Are separating wall blocks aircrete (600 to 800 kg/m/)?	H	H	
	Is cavity free from droppings and debris?	H	H	
	Are separating wall ties to Approved Document E "Tie type A" (see Appendix A)? For thin joint, are wall ties Ancon Statics HRT4 or Clan PWT4 installed no more than 2.5 ties per source meter?	Ы		
	Are cavity stops installed where specified in the Robust Detail?			
	Are joints fully filled?	H	님	
	Is blue Supafit [®] Party Wall installed to a maximum density of 25 kg/m ⁹ , and was it by an approved installer?	Н		
	Are all injection holes drilled through the mortar joints, and made good by fully filling with mortar?			
0.	Are voids around floor joists, chases, etc. fully filled/sealed?			
1.	Where there is a separating floor (e.g. flats/apartments) has the resilient flanking strip been installed?			
2.	Are all junctions of wall and ceiling boards sealed with tape or caulked with sealant?			
3.	Is separating wall satisfactorily complete?			
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Party walls and floors are to be built in accordance with the site specific robust details and have the robust details checklist completed throughout the build process (England and Wales). Ensure that robust details and checklist are available or please contact your local BU Technical department.

Arcrete blocks - standard and thin joints = Anauf Suparil Party Wall blown mineral wool insulation = Bypsum-based board = Board and an analysis of the standard and thin joints = Bypsum-based board = Board and analysis of the standard and thin joints = Board analysis of the standard and thin joints = Board analysis of the standard and thin joints = Board analysis of the standard and thin joints = Board analysis of the standard and thin joints = Board analysis of the standard and thin joints = Board analysis of the standard and thin joints = Board analysis of the standard and thin joints = Board analysis of the standard and thin joints = Board analysis of the standard and thin joints = Board analysis of the standard and thin joints = Board analysis of the standard and thin joints = Board analysis of the standard and thin joints = Board analysis of the standard analysi

2 Ensure that the specific robust details are followed including correct type and spacing of wall ties. For example, too many or dirty ties on a party wall can lead to noise transference.

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DPCS & TRAYS



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1 Check DPC's are turned up at each end. Check correct type of weep hole and ensure they are installed to their correct specification.



- 2 Weep holes are typically above windows and doors at every second brick / 450mm centres. At base level, weep holes may be required at every fourth brick / 900mm centres.
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Ensure a double DPC is installed (if requested by manufacturer) and is clean with the ends being turned up to allow a weep hole to be installed. Note: Where double trays are provided please ensure potential cold spot is addressed by hand packing insulation.



3 Voussoirs heads require a BBA certificate and must be installed to manufacturers' instructions.



4 Cavity trays are often installed using a template to gauge positioning. For abutments, proprietary stepped trays **must** be used with a stop end tray at the bottom and a weep hole.

DPCS & TRAYS

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1 DPC should be of the correct grade to be installed as a cavity tray, in a specific location and for its intended use. The cavity tray should be installed as per the working drawings and sandwiched in mortar. Cavity trays are required in any location where **there is any breach in the cavity.**



- cavity tray
- 2 Occasionally, DPCs will be required vertically, typically around and over bay windows. Horizontal cavity trays with stop ends should be used above any horizontal bay roof abutments. The trays should link with vertical DPCs to the window reveals or any stepped trays below.

NHBC technical guidance has info on this.

3 Occasionally DPC's will be required vertically, typically around and over bay windows.

450mm centres.

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The working detail must be followed. Service meter boxes are to be installed during the construction of the superstructure. Lintels and cavity trays must be installed above meter boxes with a minimum of 2 weep vents at

WIND POSTS



Wind posts are structural items used in the design and construction of masonry walls to increase lateral wall stability and protect against damage from horizontal forces. Ensure wind posts are installed as per the technical details. Ensure that wind post details (if applicable) are available prior to commencement. Windposts and steels positioned within an external cavity require factory applied galvanization as per NHBC standards.

LINTEL BEAMS & OTHER STRUCTURAL ELEMENTS



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1 Window formers must be the correct type and size in line with site / plot specifications. Ensure formers are free from damage and NEW built in plumb and level with brickwork carefully gauged to create a tight finish to the underside of the lintel.

LINTEL POSITION WITHIN A CAVITY WALL



- 2 A) Lintel should be centred in the cavity, unless otherwise stated, and the distance between the lintel upstand and masonry must not be exceed 8.5mm.
 - B) Masonry should not overhang any flange by more than 25mm.

The lintel should be as per design and be on the correct size for the opening and be placed on a level bed of mortar on a full block with adequate bearing. Please refer to lintel schedule.



3 Heavy duty structural lintels / beams should be built and positioned on a double DPC slip plane as per design.



4 Most lintel manufacturers recommend propping, timber is often used to prop up lintels and support speed of construction. It's placed on the underside of the lintel and secure with fixings at a max of 1200mm centres.

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INTERMEDIATE FLOOR STRUCTURE





Joist design must meet the required plot dimensions and storey heights with no damage or defects before proceeding. The use of temporary bracing or blocking of the joists is to be as per the manufacturers design.



4 The perimeter must maintain a minimum of a 10mm gap.



1 To reduce microcracking, a line of horizontal I-joist blocking pieces should be laid as per the I-joist layout detail. Please ensure a 5mm gap is maintained at either side. This 'ladder blocking' would be fixed from above before the deck is installed by gluing the blocking to the joist bottom flange and screwing to hold them in position. One row of blocking is required for joist spans of between 3m to 4m, and two rows of blocking spaced equidistant when spans are greater than 4m. Please refer to joist layouts for micro cracking fixing detail and maximum gaps permitted between blocking piece and joist web.



2 Joists should be cut to prevent overhanging into the cavity - no more than 10mm. If joists have a slight camber then these should be laid curve up.



3 All noggins are to be cut tight against each flange as per manufacturers design. For non-load bearing walls, noggings should be installed at 600mm centres using Z-clips. Refer to specific drawings and details for nogging centres.



- 4 Timber 'I' joists should have a minimum bearing of 90mm. A minimum of 45mm bearing is acceptable where the joist is not providing restraint to the wall.
 - Note Staircraft joists come with end blocking piece factory fitted to web of joists in lieu of site fitted end caps.

SUPERSTRUCTURE

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Upon application of D4 glue, use in excess along the tongue, groove and shoulder of each board and joint to ensure adequate bonding and stop moisture ingress.
Mechanical fixings should be applied as per TW Egger fixings instructions.



2 Having excess glue coming through boards / floors is often a tell that there's sufficient adhesive.



3 Apply joint and joist adhesive directly to the groove and shoulder of the profile joint, continuing down the length of each board to ensure that the entire joint is bonded once the boards are butted tightly together. Adhesive should foam out of the board joints, this will enhance the protection of the joint. Excess adhesive should be left to dry.



5 Seal any exposed mechanical fixings, perimeter edges, cut edges and stairwells using the adhesive as per manufacturers guidance.



4 Apply joint and joist adhesive along the next row of joists and stagger the next row of panels by approximately half a board to form a brick bond laying pattern. Ensure mechanical fixings are installed as per manufacturers guidance. guidance and nail heads should be sealed with D4 glue to prevent moisture penetration. Repeat steps (excl. Step 2) and note that care should be taken when walking on newly laid boards.

SUPERSTRUCTURE

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1 Check the positioning and fixing of specified joist restraint straps against the specific house type joist layout. Usually, restraint straps are required at maximum centres of 2m however, these should be fitted as per design. These are to be fixed to solid noggins with a minimum of four fixings, either steel screws or 75mm x 4mm (8 SWG) round nails, one of which should be in the third rafter and must be done before brickwork recommences.



Wall plate must be installed 24 hours before roof installation. Wall plate joint must be half lapped prior to bedding. Each should be bedded to line and level, fixed as per the fixing detail and should be a minimum of 3m or extended over 3 joists / rafters or trusses. Check specific structural design where wall plate is working in conjunction with spandrel panels.



3 The SiteM should check the wall plate is correctly bedded with the holding down straps. If required, check wall plate joints are correctly constructed, also check wall plate straps are correctly positioned and fixed. Locations as per the working drawings and fixings as per manufacturer's recommendations.

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1 Shoes / hangers are typically placed timber to timber or to masonry. This should be inline with manufacturers guidance.



2 Timber blockers are put in place to act as structural supports for joists, preventing twisting and warping of the timber. Also, they provide a base for lateral straps to be attached to. At the ends where the joists meet the wall, ensure these are fully mortared and secure. Please refer to joist manufacturer house type specific drawings to determine where the blocking infills are required.



3 Check trimming details, temporary joists position and dimensions of stairwell opening. Joists in red represent sacrificial timber that act as temporary support during floor construction, which is then taken out later to make way for stairs.



4 The GM system was developed by the manufacturer with TW as none of the current stairwell systems fitted our needs.
This system can serve the majority of house types however, sacrificial joists will still be required for openings beyond 1089mm wide and 3430mm long.

FIRE-STOPPING & CAVITY BARRIER LOCATIONS

Fire barriers have an become increasingly important topic with the fire at the Grenfell Tower and the subsequent release of government guidance Ministry of Housing, Communities & Local Government (MHCLG) 13 and 14. Our customer's safety is paramount and we must ensure that customers feel safe in their own homes.

TW use ARC fire barrier products and are installed in a full and partial filled cavity with traditional masonry construction and timber frame construction. The SiteM should ensure that fire stops and barriers are fitted in accordance with design.



USEFUL LINKS

http://www.arcbuildingsolutions.co.uk/video.php

MASONRY CONSTRUCTION WITH FULLY FILLED CAVITY – ENGLAND AND WALES

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SUPERSTRUCTURE

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SAFETY

CRITICAL

FIRE-STOPPING & CAVITY BARRIER

MASONRY CONSTRUCTION WITH FULLY FILLED CAVITY – ENGLAND AND WALES





FIRE-STOPPING & CAVITY BARRIER

MASONRY CONSTRUCTION WITH PARTIALLY FILLED CAVITY - ENGLAND AND WALES



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SUPERSTRUCTURE

MASONRY CONSTRUCTION WITH PARTIALLY FILLED CAVITY – ENGLAND AND WALES

FIRE-STOPPING & CAVITY BARRIER

TIMBER FRAME CONSTRUCTION - ENGLAND AND WALES

SUPERSTRUCTURE

TIMBER FRAME CONSTRUCTION – ENGLAND AND WALES

