

## BUILDING REGULATIONS NOTES

**GENERAL** All materials, fittings and workmanship must be to current British Standards and where applicable BBA Agreement Certificates and used in accordance with all relevant Code of Practice and manufacturers instructions. All components/products are to be fitted in a manner and location for which they are intended by the manufacturer. All work must be to the satisfaction of the Building Control Officer and Supervising agent.

**AIR TIGHTNESS** The construction will generally follow guidance in the 'Robust Details' to ensure continuity of insulation at roof/wall/floor junctions. Flexible sealant will be applied externally and internally between wall and window/door frames.

**AIR TEST Fully seal the barn and air test once windows fitted prior to plastering to achieve less than 5 m3/hr/m2@50Pa.**

**EXISTING BRICKWORK** Existing brickwork is to be repaired with all broken & spalled bricks replaced to match existing and repointed using matching lime mortar.

**STRUCTURAL DESIGN** Structural design is to be in accordance with structural engineers calculations and drawings and to Building Control approval.

**FOUNDATIONS** To Structural Engineers details taken down to loadbearing strata at foundation engineers and Building Control approval. Concrete lintels over drainage/dp positions where sleeved through walls.

**DAMP PROOFING TO STEELWORK** Bitumen seal paint finish to be applied to all dampwork below floor finish level for protection. Adequately seal the DPM around all steel posts and all other penetrations usingVisqueen DPM tape.

**FIRE STOPPING** Junctions and perimeter's of fire resistant constructions to be fire stopped in accordance with requirements of Building Regulations Part B. Fire safety, to approval of Building Inspector using e.g. incombustible mineral wool quilt or intumescent sealant.

**CAVITY FIRE CLOSING: ANY CAVITIES / VOIDS OF 20m OR MORE IN LENGTH ARE REQUIRED TO INCLUDE A SUITABLE FIRE CAVITY BARRIER.**

All cavities within the floors, walls and roof are to be a). Closed around their perimeter's, at junctions with each other, and around all openings within them. This is to include cavities behind external and internal cladding, service cavities and ducts, SVPs and pipework boxings, roof voids.

**DPCS & CAVITY TRAYS** High Performance DPC e.g. Visqueen Zedex (compatible with Damp Proof membrane) and cavity trays. DPCs to be inserted 150mm min. above external ground level to all new external walls. To be fully lapped with DPM (see external wall section detail) - taped and sealed in accordance with manufacturers instructions and proprietary tape products. Cavity trays over all openings and over periscopic air bricks.

**Abutment of new walls or door/window frame with existing wall:** Vertical strip of DPC to be cut into existing wall and folded back under frame or new wall under wall starter. Sealant to external joint.

**WEEPHOLES** Ryteweg proprietary weepholes at 450mm centres over all openings in cavity walls (at least 2 per opening) and over all cavity trays.

**THERMAL CAVITY CLOSERS** Thermabate or similar Part L approved thermal cavity closers at perimeter's of all new openings in cavity walls (including plinth cavity walls).

**TIMBER TREATMENT** MC to include for specialist to survey the existing building timbers for insect infestation, fungi and damp and carry out treatment as required.

**BOXING IN OF SOIL / WASTE PIPES** All soil stacks & waste pipes are to be boxed in using 2 layers of 15mm Soundblock plasterboard and all spaces within boxings infilled fully with Isowool acoustic quilt insulation. Where space allows, include 50mm of insulation around pipes. Boxings containing pipe with AAV (air admittance valve) require ventilated air gap to enable valve to operate, in accordance with manufacturers instructions. Boxings without AAV: Silicone seal gaps to maintain sound separation.

**LEADWORK** All leadwork to be strictly in accordance with current Lead Sheet Association details (www.leadsheet.co.uk) Apply paintation oil in all locations where water run off from lead is likely to stain surface below (refer to LSA for guidance on achieving protection). Code 4 lead flashings and soakers. Flashings to extend up wall face 150mm min and be dressed into brickwork joint (or be secured to timber studs) strictly in accordance with current LSA recommendations. Bottom of flashing to overlap top of flashing. All existing leadwork is to be inspected and repaired / replaced as appropriate to its condition.

**NEW INSULATED CONCRETE GROUND FLOOR THROUGHOUT** U-VALUE 0.12 W/m2K

Contractor is to set out level of floor to suit thickness of floor finish. Floor finishes to clients requirements suitable for underfloor heating. 75mm thick sand cement screed with fibre reinforcement with Uponor underfloor heating pipes installed in accordance with manufacturers instructions. Movement joints at at door thresholds, along line of floor differentiation/abutment and between underfloor zones. Schluter Ditra decoupling membrane & flexible adhesives (for ufloor heating) to receive tiled floor finish.

500 gauge polythene separating layer over the entire area of the floor insulation including upstand between screed and perimeter insulation. 150mm thick Recticel Eurothane GP insulation, with 50mm insulated perimeter. All joints foil taped. Min 2000 gauge polythene DPM fully taped and lapped to DPC (see detail, wrapped around block at external wall).

Structural concrete floor to structural engineers details and as agreed with Building Inspector.

## WET ROOM SHOWER FLOORS SET TO FALLS

MC to specify and install. BWP tanking linc with tiled finish. Dallner wet room shower drain, Marmox Shogley wet room tray cut to falls to drain effectively to outlet. Mapei Mapesul drain to all edges and sealed to Aquapanel wall linings in accordance with manufacturers instructions.

**NEW FIRST FLOOR TO STORAGE LIFT OVER WC / COATS**

Fire rated 30 min, with all walls / floors fire sealed at all junctions. 22mm Weyroc Protect P5 flooring grade chipboard floor system glued with Weyroc D4 adhesive and fixed to Weyroc ceiling joists. Screw fix at 300mm centres to floor structure. Floor structure: Timber floor structure all to structural engineers details. Insulation between joists: 100mm Isowool Acoustic roll APR 1200 (density 12kg/m3). Ceiling to underside of joists: 15mm thick Gypsum Soundblock plasterboard & skim to ceiling below. Skim plaster.

Plasterboard layer provides required 30 min fire protection to the floor structure. Contractor to ensure all elements of structure are protected via the ceiling or plasterboard layers to provide fire protection. Ensure all recessed lights are fire rated units to maintain integrity of ceiling.

## NEW INTERNAL STUD WALLS

Non Loadbearing and where up to 2.4m height :- British Gypsum system reference A026012 (Achieves 41 Rw dB, exceeding requirement of Building Regulations Document E Table 02 for new internal walls within dwelling houses). British Gypsum system reference A026012 Achieves 41 Rw dB, exceeding requirement of Building Regulations Document E Table 02 for new internal walls within dwelling houses). 15mm British Gypsum Soundblock plasterboard and One coat Gypsum Thistle skim finish plaster each side of sw studwork (stud size as below) with 100mm Isover Acoustic Partition Roll (APR 1200) in the cavity. Stud size to 2.4m height, 100 x 50mm sw studs at 400mm centres. Higher than this 150 x 50mm sw studs at 400mm centres. Noggins and Ply lining to stud walls where indicated by structural engineer and where required for fixtures/fittings, i.e. bathrooms, wc, kitchens. Plasterboard to bathrooms and en suites to be as above but moisture resistant version. Downers to be lined with aquapanel cement based screed. New studwork partitions to be built off concrete structural floor (on strip of DPC lapped with DPM in floor, with perimeter insulation and separating membrane), extended up to underside of rafters and be 30 minutes fire stopped.

**BIO ETHANOL STOVES**

**2 No. 2 sided fire standing stoves TO STUDY & LIVING** 3 kW output. Electrical supply required. To include fake fire internally pipe colour black up to underside of sloped ceiling. Bioethanol stove and all associated control components to form an operational installation are to be supplied and installed by the contractor. Bioethanol stoves require oxygen to burn, therefore the rooms in which they are installed should be supplied with a generous amount of background ventilation as provided by trickle ventilators in the windows & doors to ensure a comfortable environment. Background (trickle) ventilation to the windows will comply with Building Control requirements (refer to drawings WD12 & WD13 Windows & Doors for details). Stoves to be installed on raised stone hearth. Stove to Living to be housed in built in unit. Allow 150mm gap between side of multi fuel burner and side walls. Allow 150mm from front of stove to front edge of hearth.

## \*EXTERNAL FIRE PROTECTION OF TIMBER CLAD EXTERNAL WALLS:

We have specified external fire protection to the timber clad external walls as advisory good practice for fire protection. External fire protection for this situation is prescribed by The Building Regulations, but it may help with / be a requirement of the building insurance. This may therefore be a client choice item and the client may wish to omit this as a cost saving. The external fire protection is comprised of 'Fire treatment to weatherboard cladding and cladding battens and 'Fire Board'. Tenders to include all fire treatment as specified.

**EXTERNAL TIMBER CLADDING AND BATTENS TO EXTERNAL WALLS** \*Fire treatment to cladding, cladding battens (and counter battens where present): Prior to installation, all faces of timber including all cut edges are to receive Rawlins Paints Zerofume Fire Retardant Treatment Reference ZPF400168 (achieves surface spread of flame EuroClass B), applied in strict accordance with manufacturers instructions, so as to achieve manufacturers certificate.

**Contractor is to liaise direct with supplier, obtain fire certification and issue to Architect & Client.** https://www.rawlinspaints.com/home/fire-retardant-paints/plasterboard/128-zerofume-fire-retardant-treatment.html \*Fire treated External weatherboarded finish: New pressure treated softwood weatherboarding, traditional feather edge profile, size 175 x 24 / 6mm (cover 125mm). Fixed with 65 x 3.35mm stainless steel round head nails. Nails a third of distance up board in a neat single row. Painted finish using 2 coats Bedec Barn paint applied prior to installation and 1 coat of Bedec Barn paint applied post installation. Colour: Black **Note: Paint needs to be confirmed as compatible with the fire treatment by supplier/ manufacturer.**

\*Fire treated Cladding battens: 50mm wide x 38mm thick pressure treated sw vertical battens (ventilation zone) at max 600mm horizontal c/c fixed using heat treated steel Timberlock screws through breather membrane and fire board into counter battens.

**Continuous black insect mesh & 10mm ventilation gap** to bottom and head of ventilation battens.

**THERMAL UPGRADE TO EXISTING EXTERNAL TIMBER FRAMED WALLS** U value 0.14W/m2K

**External weatherboard cladding and battens** as described above. \* See note above concerning timber fire protection.

**Breather membrane:** Proctors Frameshield 100 or similar approved to outside of insulation. Min 150mm laps. All joints taped. Installed in accordance with manufacturers instructions.

\* Fire Board: 9mm Enviroboards Fire protection board installed over all exposed sides of the insulation board (vertical face, top & bottom edges) with joints fire sealed using external use composite noggins replacements and where additional components are required. Using Timberlock screws through the insulation into the timber frame.

**External insulation:** 150mm Recticel Eurothane GP insulation (thermal conductivity 0.022W/mK) continuous as wall sheathing with spray foam to all edges and foil tape to all joints. All joints to close closely abutted (no gaps). Mechanically fixed using stainless steel screws through entire wall section battens and plywood into timber frame.

**Vapour control layer:** 1000 gauge black polythene continuous as vapour barrier & air tightness membrane to outside of service zone battens. All fully lapped and double sided taped. Use Dafa vapour barrier tape or similar approved. Lap under sole plate and lap with vapour barrier at roof and tape.

**Service battens:** 38 x 50mm sw pressure treated battens fixed with 50 mm ss screws through plywood to existing studs beyond. This creates a service void for electric cables and pipe ducts as required.

**Sheathing board & plasterboard:** 12mm WBP plywood / 11mm thick OSB board sheathing as structural engineers details overlaid and fixed through 12.5mm thick plasterboard (subject to structural engineers details) into existing timber framing, screwed to frame at 300mm centres generally and 150mm centres to perimeter as structural engineers details.

**Skim plaster:** between framing to inner face of plasterboard.

If structural engineer requires the sheathing board to be fixed direct to the timber frame, the plasterboard is to be installed between the timber framing, fixed to 38 x 38mm treated sw battens, with the battens screwed into the sides of the timber framing.

**Existing structural timber frame** retained (exposed internally), added to / altered as structural engineers details & where required for fixings. Inspect with CA & Structural Engineer and identify components needing replacement, and where additional components are required.

Existing frame left unfinished / painted, as client choice. **NOTE:** Plasterboard linings provide fire protection to the structural timber frame & rigid insulation from the inside, therefore all junctions and perimeter's are to be adequately sealed and all gps fire stopped in accordance with requirements of Building Regulations Part B. Fire safety, to approval of Building Inspector using e.g. incombustible mineral wool quilt or intumescent sealant.

**THERMAL UPGRADE TO EXISTING PLINTH WALLS** U VALUE 0.14W/m2K

Existing solid brickwork plinths to be converted to cavity plinth wall by addition of an insulated cavity and new outer brickwork skin.

**Inner skin:** Existing brickwork plinths generally retained as inner skin where sound, with brickwork carefully cleaned and repaired where required. Existing render / cement coatings to be removed. Structural Engineer is to inspect plinths and advise where rebuilding is required structurally. Defective brick / blockwork / concrete to be rebuilt in max 1m lengths at a time by locally shoring up sole plate. Bricks: Michelmersh Hampshire Stock Downs Blend.

**Brickwork to remain exposed internally, or may be plastered using 2 coat gypsum plaster where required.**

**150mm cavity:** Cavity insulation below DPC / Cavity tray:140mm thick Recticel Eurowall + cavity insulation.

**Cavity wall ties:** Ancon remedial Teplo or stainless steel wall ties to suit 100mm cavity, spaced maximum 450mm c/c's vertically and 750mm c/c's horizontally. Refer to Structural Engineers details for whether base of cavity is required to be filled with concrete. Refer to Structural Engineers details for whether base of cavity is required to be filled with concrete. **New outer skin:** 103mm facing brickwork. F/2/2 grade bricks to be used below DPC & to 2 courses below ground level. 100mm thick 7Nm/m2 compressive strength blockwork suitable for use below DPC below this, as Theralite Hi-Strength 7 or similar. **Mortar mix:** DPC to be 3:1 (Sand:Cement) class ii. Mortar mix above DPC to be 4.5:1 (sand:cement) class III as NHC table 6. Use Snowcrete white cement mortar for all walls, to imitate lime mortar.

Code 4 lead flashing to top of plinth brickwork.

**Foundations:** Existing foundations extended to support new outer skin to structural engineers details.

## EXISTING SOLID WALLS TO SNUG WITH EXTERNAL INSULATION AND TIMBER CLADDING

Existing solid brickwork walls, with insulation and timber cladding added externally.

DPC: Include for injected DPC 150mm above external ground level.

**External weatherboard cladding and battens** as described above. \* See note above concerning External Fire protection.

**Cladding battens:** 50mm wide x 38mm thick pressure treated sw vertical battens (ventilation zone) at max 600mm horizontal c/c fixed using heat treated steel Timberlock screws through breather, fire board and outer insulation to the battens (min 50mm embedment).

**Black insect mesh continuous & 10mm gap** to bottom and head of ventilation battens.

**Breather membrane:** Proctors Frameshield 100 or similar approved to outside of insulation. Min 150mm laps. All joints taped. Installed in accordance with manufacturers instructions.

**Fire Board:** 9mm Enviroboards Fire protection board installed over all exposed sides of the insulation board (vertical face, top & bottom edges) with joints fire sealed using external use intumescent sealant to manufacturers details. Fire board fixed securely through the outer insulation layer into sw battens to manufacturers details.

**7 layer External Insulation:** Outer layer: 100mm thick Recticel Eurothane GP insulation board with spray foam to all edges and foil tape to all joints. All joints to be closely abutted (no gaps), mechanically fixed using proprietary thermally decoupled heavy duty insulation fixings (50mm min embedment) into sw battens.

**Under layer insulation between battens:** 50mm thick Recticel Eurothane GP insulation board installed to a tight fit between battens, with no gaps. 50mm wide x 100mm thick treated sw battens fixed to brickwork wall at spacings to suit insulation board (note insulation board must be installed to a tight fit between battens, with no gaps).

**Internal face of wall:** Existing wall to be painted brickwork (min 50mm embedment) as copy instruction.

**Selcted steel reinforcement mesh:** 9mm diamond pattern mesh to BS 1369 as Expanret or similar to be fixed to wall at 300mm centres to provide a background for plastering.

**Plaster:** 13mm thick 2 coat plaster as British Gypsum Thistle Hardwall undercoat and Thistle Multifinish or equivalent, applied all as manufacturers instructions. Include also for dubbing out to achieve a level surface.

**Painted finish.**

## NEW BRICKWORK CAVITY WALLS WITH EXTERNAL TIMBER CLADDING (EXTENSION WALLS)

U value 0.18W/m2K above dpc, 0.14 W/m2K below dpc.

**External weatherboard cladding & battens** as above. \* See note above re: External Fire protection.

**Outer Skin above DPC:** 100mm thick 3.8Nm/m2 compressive strength blockwork as Theralite Shield or similar (thermal conductivity 0.15 W/mK).

**Outer skin below DPC:** 103mm thick facing brickwork. Bricks: Michelmersh Hampshire Stock Downs Blend. Strecher board. Bucket handle joints. Bricks: colour red to match existing main plan plinth brickwork, bricks to be agreed with CA / Client. F/2/2 grade bricks to be used below DPC & to 2 courses below ground level. 100mm thick 7Nm/m2 compressive strength blockwork suitable for use below DPC below this, as Theralite Hi-Strength 7 or similar.

**Mortar mix** below DPC to be 3:1 (Sand:Cement) class ii. Mortar mix above DPC to be 4.5:1 (sand:cement) class iii. All as NHC table 6. Use Snowcrete white cement mortar for all walls, to imitate lime mortar.

**150mm cavity:** Above dpc cavity fully filled with 150mm thick KnafT DriTru 32 Ultimate cavity insulation (thermal conductivity 0.032 W/mK). Bottom of insulation supported on wall ties.

**Cavity insulation below DPC:** Cavity tray:140mm thick Recticel Eurowall + cavity insulation.

**Wall ties:**Ancon Teplo or stainless steel wall ties to suit 150mm cavity, spaced maximum 450mm c/c's vertically and 750mm c/c's horizontally. Refer to Structural Engineers details for whether base of cavity is required to be filled with concrete.

**Inner skin:** 100mm thick 7Nm/m2 compressive strength blockwork (thermal conductivity 0.18 W/mK) as Theralite Hi-Strength 7 or similar.

**Plaster:** 13mm thick 2 coat plaster as British Gypsum Thistle Hardwall undercoat and Thistle Multifinish or equivalent, applied all as manufacturers instructions.

**Foundations:** To structural engineers details.

## NEW EXTERNAL TIMBER FRAMED WALL TO UPPER PART OF GABLE WALL ABOVE OPENING (EXTENSION)

U value 0.17W/m2K **External weatherboard cladding and battens** as described above.

\* See previous note concerning External Fire protection.

**Breather membrane:** Proctors Frameshield 100 or similar approved to outside of fire board. Min 150mm laps. All joints taped. Installed in accordance with manufacturers instructions.

\* Fire Board: 9mm Enviroboards Fire protection board installed over all exposed sides of the insulation board (vertical face, top & bottom edges) with joints fire sealed using external use intumescent sealant to manufacturers details. Fire board fixed to sw counter battens to manufacturers details.

**Counter battens:** 50mm wide x 50mm thick pressure treated sw horizontal battens at max 600mm horizontal c/c fixed through sheathing board into timber frame (min 50mm embedment into studs).

**Sheathing board:** 11mm thick OSB sheathing board to structural engineers details fixed to outside of timber framing screwed to frame all as structural engineers details.

**Timber frame structural wall** (140mm) in accordance with structural engineers design & fixing details. Sole & head plates all as structural engineers details. Sole plate installed on (and fixed through) strip of DPC into blockwork all as structural engineers details.

**Insulation between studs:** 140mm thick Knaf Earthwool 32 Framethem roll insulation (thermal conductivity 0.032 W/mK) friction fitted to infill all spaces between studs / timber framing with no gaps.

**Internal insulation:** 50mm thick Recticel Eurothane GP insulation as internal lining.

**Vapour control layer:** Dupont Airguard reflective vapour control layer / airtight barrier to entire wall. All fully lapped and double sided taped. Lapped with and taped with vapour barrier at roof and with separation layer at perimeter floor insulation upstand.

Ensure continuity of airtight barrier by sealing at all junctions. Use Dafa tapes or similar approved. **Service battens:** 50mm wide x 25mm thick sw battens.

**Plywood** (where required for fixtures etc): 9mm WBP ply sheathing (or 12 / 18mm thick depending on fixing or floor structure).

**Plasterboard:** 12.5mm Gypsum wallboard and skim finish internally (continuous with lining to plinth wall below). Use moisture resistant plasterboard and aquapanel cement based boards to bathrooms / en suites.

**NOTE:** Plasterboard linings provide fire protection to the structural timber frame & rigid insulation from the inside, therefore all junctions and perimeter's are to be adequately sealed and all gps fire stopped in accordance with requirements of Building Regulations Part B. Fire safety, to approval of Building Inspector using e.g. incombustible mineral wool quilt or intumescent sealant.

## UPGRADE TO EXISTING DUO PITCHED ROOFS - PLAIN CLAY TILE FINISH

U value 0.13W/m2K Insulation all above the roof structure. Pitch: Roof pitch as existing.

**Tiles:** New Marley Acme Double Camber Clay plain tiles, colour Smooth Brindle, fixed and installed in strict accordance with manufacturers instructions. Min headlap 100mm. Headlap / gauge to comply with manufacturers instructions.

**NOTE:** Installation of all roof tiling is to be strictly in accordance with the current version of BS5534, and BS 8000: Part 6; the British Standard Code of practice for workmanship on building sites. All single lap tiles mechanically clipped or nailed (in certain areas both clipped and nailed), and all ridge, hip, valley, perimeter and verge tiles mechanically fixed and mortar bedded.

**Vapour barrier:** Min 1000 gauge black polythene vapour barrier continuous below insulation layer, lapped min 100mm and taped to form principal VCL and to ensure airtight construction. Lap and tape to wall vapour membrane. Take particular care to achieve a completely airtight construction. Use Dafa or similar approved vapour barrier tapes. Any penetrations to membrane to be fitted with air tight collars and sealed.

**Sloping ceiling:** 12.5mm plasterboard fixed through insulation and vcl into roof structure, faced with skim plaster.

**Fascias, soffits & gable verge bargeboards:** Pressure treated sw. Fixed to roof structure using stainless steel fixings. Fixings to be evenly spaced in straight lines.

**Finish:** Painted with Bedec Barn paint: 2 no. coats applied prior to installation. Fill all screw holes after installation and apply 1 no top coat of Bedec Barn paint as manufacturers instructions.

**Eaves Fascias & soffits:** 150 x 32mm (contractor to check measurement on site) fascia with 10mm chamfer to bottom edge to form drip. To be stainless steel screwed (min 50mm embedment) to each rafter behind. 25mm thick soffit boards.

**Ventilated Eaves:** Continuous over fascia ventilators to provide 25,000sqm/m ventilation to roof ventilation zone (Glidevale FV250 or similar). 50mm ventilation zone to be maintained above the insulation.

**Eaves tray:** Redland or similar approved black eaves tray fitted to top of fascia ventilator and dressed up roof with a min of 200mm underlap to breather membrane.

**Gable Verge:** Fibre cement board ss nailed to top of gable timbers. Verge tiles to overhang 25mm from bargeboard and to be both mortar bedded using 1:3 mortar mix, and mechanically fixed to each rafter behind. 25mm thick soffit boards.

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## UPGRADE TO EXISTING MONO PITCHED ROOFS - SLATE FINISH

U-VALUE 0.17W/m2K Insulation between and under the rafters. Ventilated roof. Pitch: as existing.

**State tiles:** New Redland Cambrian interlocking slates. BBA certified recycled natural slate. Colour: Slate Grey Pre-Weathered. Fixed and installed in strict accordance with manufacturers instructions. Min headlap 75mm. Headlap / gauge to comply with manufacturers instructions to suit pitch.

**NOTE:** Installation of all roof tiling is to be strictly in accordance with the current version of BS5534, and BS 8000: Part 6; the British Standard Code of practice for workmanship on building sites. All single lap tiles mechanically clipped or nailed (in certain areas both clipped and nailed), and all perimeter and verge tiles mechanically fixed and mortar bedded.

**Tiling battens:** 50 x 25mm pressure treated sw tiling battens to comply with BS 5534, fixed with galvanized or stainless steel nails to rafters (min 50mm embedment).

**Breather Membrane:** Proctors Roofshield or similar approved breather membrane installed as manufacturers instructions to entire roof. Min 150mm vertical laps and 300mm horizontal laps. To lap over ridge min 150mm over sheet other side. To lap eaves trays by 150mm and taped.

**Counter battens:** 50 x 25mm pressure treated sw tiling battens to comply with BS 5534, fixed with galvanized or stainless steel nails to rafters (min 50mm embedment).

**50mm clear ventilation zone** to be maintained above insulation and below breather membrane.

**Roof structure:** Existing timber roof structure retained where structural sound and added to / altered all as structural engineers details.

**Roof bracing** if required structurally on top of rafters is to be METAL STRAPPING type (due to insulation located between rafters) all to Structural Engineers details. Alternatively, sheathing board may be fixed to the underside of the rafters.

3mm Galvanised holding down straps over wall plates @ max 1m centres all in accordance with structural engineers details.

Gable walls should be strapped to roofs as shown in Diagram 16(a) and (b) of Building Regulation Approved Document A with galvanised tension straps at no more than 2m centres. Noggins or packers should be provided between minimum 3 number rafters/trusses to ensure adequate fixing. All as per structural engineers requirements. Further bracing and fixing to roof structure all in accordance with engineers details.

**New eaves rafter sprockets:** 150 x 50mm x 1800mm long pressure treated C16 sw cut into insulation zone. Fix each sprocket in place using Headlock screws (top and bottom) to rafter below all to Structural Engineers details. Each sprocket to have cut end as shown, and 21mm depth removed from top face for last 300mm at eaves end and allow for 21 x 150mm pressure treated sw soffit boards to be nailed in place. Black polythene fitted over the top as inner roof structure. Spray foam around each sprocket, cut back neatly and foil tape over the top. Exposed rafter sprocket ends to be painted to match fascias.

**Fascias, soffit boards & gable verge bargeboards:** Pressure treated softwood, fixed using stainless steel fixings and nailed with Bedec Barn paint: 2 no. coats applied prior to installation. Fill all screw holes after installation and apply 1 no top coat of Bedec Barn paint as manufacturers instructions.

**Fascias:** 200 x 32mm thick with 10mm chamfer to bottom edge to form drip. To be stainless steel screwed (60mm) to each rafter sprocket behind. Redland or similar approved black eaves tray fitted to top of fascia and dressed up roof with a min of 200mm underlap to breather membrane.

**Gable Verge:** At verge install 150 x 50mm x 1800mm long sw pressure treated C16 gable ladder sprockets cut into insulation zone. Fix each sprocket in place using Headlock screws (top and bottom) to roof structure below all to Structural Engineers details.