

# ***Building Control Guidance for Loft Conversions***

**1ST EDITION - AUGUST 2008**



## About this document

This document intends to provide education and guidance on how some of the technical design and construction requirements of the Building Regulations can be achieved and met where the loft space of an existing one or two storey dwelling is being converted into habitable accommodation to form an additional storey to the dwelling. Where the dwelling has three or more storeys before the loft is converted -please contact building control for further guidance.

Before commencing a loft conversion it is important to assess the feasibility of the project. This will involve inspection of the existing loft to assess the internal space and head room available, type of existing roof structure and general condition of the existing structure to support the new storey loadings. Construction methods for loft conversions can be very complex and you are advised to contact a suitably qualified and experienced property professional for details and specification for the most suitable form and method of construction and means of escape in the event of a fire for your project.

In all cases the design and construction of the proposed works is the responsibility of the designer, applicant and contractor and should be carried out to the relevant submitted and approved design. For further information reference should be made to the relevant Approved Document or standard as well as consulting a suitably qualified and experienced construction professional. A number of different propriety materials are listed in this document, this should not be taken as an endorsement or recommendation, as you can use alternative materials in your project as long as they comply with the requirements of the Regulations.

The Approved Documents, which also illustrate different ways of complying with the Building Regulations, are listed below and are available from libraries and can be viewed on the [www.communities.gov.uk](http://www.communities.gov.uk) and [www.planningportal.gov.uk](http://www.planningportal.gov.uk) web sites or purchased from TSO 0870 600 5522. However, the regulations can also be satisfied in other ways or non-standard ways by calculations, test details from a manufacturer or an approved 3rd party method of certification such as an Agreement certificate.

## Approved Documents and sections they cover

### Approved Documents;

- A:** Structure including TRADA span tables for solid timber members in floors, ceilings and roofs for dwellings\*;
- B1:** Fire safety in dwellings;
- C:** Site preparation and resistance to contaminants & moisture;
- D:** Toxic substances;
- E:** Resistance to the passage of sound;
- F:** Ventilation;
- G:** Hygiene;
- H:** Drainage and waste disposal;
- J:** Combustion appliances & fuel storage systems;
- K:** Protection from falling, collision and impact;
- L1B:** Conservation of fuel and power in existing dwellings;
- M:** Access to and use of buildings;
- N:** Glazing – Safety in relation to impact, opening and cleaning;
- P:** Electrical safety Regulation
- 7:** Materials and workmanship.

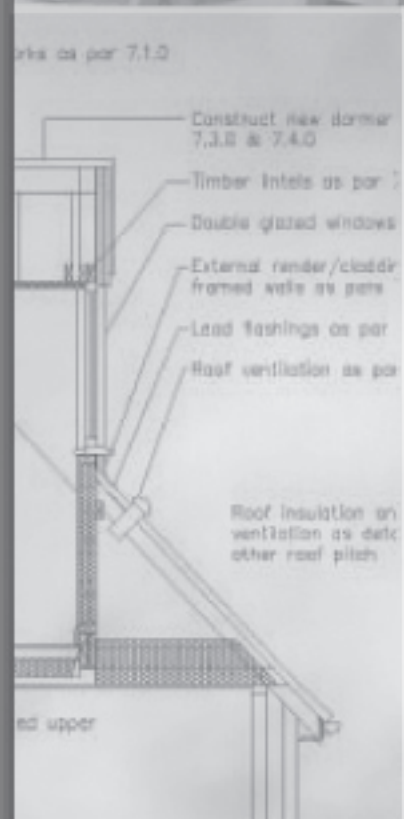
\*Please note that all span table extracts for solid timber members in floors, ceilings and roofs used in this document have been taken from the relevant sections in the TRADA Technology Design Aid DA 1/2004. These tables can be purchased from TRADA Technology; telephone 01494 569600.

## Typical section details are provided at the back of this document

Typical section details have been provided at the back of these guidance notes for the more common construction methods used in dwellings. These details are suggested methods of construction and are for guidance only. You are advised to contact a suitably qualified and experienced property professional for details and specification for the most suitable form and method of construction for your project.

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## 1.0 Introduction

Converting an existing loft space can be an easy and cost effective way of increasing living accommodation in most houses. This guide to loft conversions will provide useful guidance on how some of the technical design and construction requirements of the Building Regulations can be achieved where the loft space of an existing one or two storey dwelling is being converted into habitable accommodation to form an additional storey to the dwelling. Where the house has three or more storeys before the loft is converted -please contact building control for further guidance.

## 2.0 Assessing the feasibility of your loft conversion

Before commencing a loft conversion it is important to assess the feasibility of the project. This will involve inspection of the existing loft & dwelling to assess the following:

### 2.1 Roof structure & shape -

The overall form, construction and profile of the roof will have a major bearing on whether the roof is suitable for conversion to a usable space. Traditional cut timber pitched roofs with gable end walls (cavity walls or solid walls at least 250mm thick) and horizontal ridges are generally easier to convert and can normally support structural beams other than hipped roofs or roofs with intersecting pitches and valleys which may require more complicated structural designs. All existing timbers should be in a sound condition, any defective timber is to be replaced with new matching timbers in compliance with details and calculations carried out by a suitable qualified and experience property professional. Where necessary existing timbers are to be inspected and treated against insect and fungal attack by a suitable qualified and experience specialist.

Trussed rafter roofs constructed using a series of complex trusses should only be altered, modified and converted in compliance with details and calculations carried out by a suitable qualified and experience property professional.

### 2.2 Roof Coverings & roofing felt -

Should be in a sound and weather tight condition; any defective coverings/felt should be replaced with matching new/existing sound coverings and fixed as manufacturer's details.

### 2.3 Ceilings -

To the underside of the new storey floor should achieve 30 minutes fire resistance. Normally 13mm plaster board & skim or sound lath and plaster in older houses will achieve this, otherwise additional upgrading will be required.





## 2.4 Internal space available -

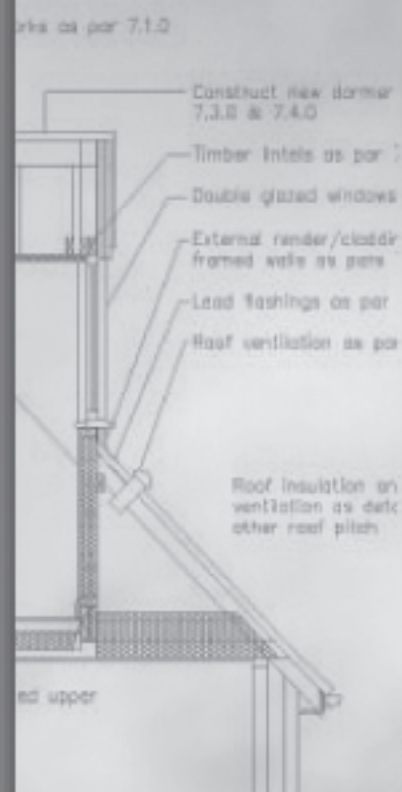
The roof space should not have any chimneys or services passing centrally through the loft space that cannot be easily moved, altered or modified by suitably experienced and qualified property professionals. Structural alterations/modifications should be in compliance with details and calculations carried out by a suitably qualified and experience property professional.



## 2.5 Head room available -

Is measured vertically from the top of the new floor (which typically can be 200mm above the existing ceiling joists) to the underside of the new horizontal/sloping ceilings (which can typically down stand 50 -75mm from the existing roof structure). A minimum headroom of 2.0m is required at the head of the stairs to comply with building regulations. A ceiling height of 2.2 to 2.3 is preferred in the centre of the roof in habitable rooms reducing to 0.800 to 1.2m for the side walls on sloping ceilings so low furniture can be placed in front of them.

The approximate internal dimensions of the roof space available for conversion can be assessed for suitability based on the guidance table overleaf.



	ROOF SPAN (M)				
ROOF PITCH (Degrees)	6.5	7.0	8.0	8.5	9.0
35					SUITABLE
40			SUITABLE	SUITABLE	SUITABLE
45	SUITABLE	SUITABLE	SUITABLE	SUITABLE	SUITABLE
50	SUITABLE	SUITABLE	SUITABLE	SUITABLE	SUITABLE

## 2.6 Means of escape -

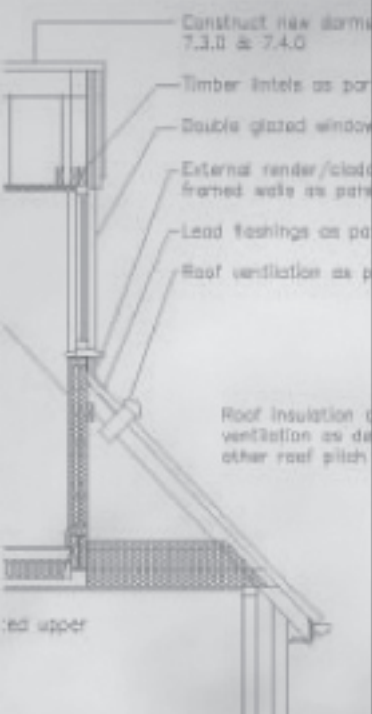
Three storey houses will require a protected stairs that connects to a hall and final exit at ground floor level or give access to at least two escape routes to final exits at ground level which will require separation by fire resisting construction and fire doors. Alternatively, the new top storey can be separated by fire resisting construction and provided with an alternative escape route (subject to planning permission), or a domestic sprinkler system can be designed by a fire engineer. The full means of escape and fire safety requirements are covered in detail later in this guidance.

## 3.0 Engaging a Property Professional

Loft Conversions are normally complex projects and unless you are experienced in construction you will need to get some professional advice from the following:

- 3.1** Appointing a suitably qualified and experienced property professional who will prepare drawings and designs for your proposal, obtain the necessary approvals and if required they will also help you to find a suitable builder and manage the project for you.
- 3.2** Appointing a specialist loft conversion company who can offer a one stop shop for loft conversions, they will prepare drawings and designs for your proposal, obtain the necessary approvals and carry out all the necessary construction works to complete the loft conversion.
- 3.3** Using an experienced builder: some builders have experience of loft conversions and may well be able to offer you a package similar to the loft conversion companies.

works as per 7.1.0



## 4.0 Obtaining Building Regulations approval

Loft conversions must comply with the Building Regulations.

There are two methods of making a Building Regulations application as follows:

### 4.1 Full Plans Application

This is often thought of as the traditional way of applying for Building Regulations Approval. The Building Designer will draw up detailed plans and supporting information for the proposed scheme and will send them to us together with an application form and the necessary fee. We will then check the details and following any necessary consultations and liaisons with the Building Designer a Building Regulations Approval will be issued

Work can start any time after the application has been received although it is wise to wait until the scheme has had its initial check under the Building Regulations, this usually takes between two and three weeks. Our team of surveyors will liaise with your builder and inspect the work as it progresses on site. When the project is satisfactorily completed a Building Regulations Completion Certificate will be issued showing that the project has been independently inspected and that it complied with the Building Regulations.

### 4.2 Building Notice Application

This system is best suited to minor domestic work carried out by a competent builder. Under this scheme no formal Approval of plans is issued and work is approved on site as it progresses. To use the Building Notice process you or your agent will need to submit a Building Notice application form together with a site location plan and the required fee, work can commence 48 hours after the notice has been received.

When work commences one of our surveyors will meet with your builder to discuss your intentions, to agree how the work should be carried out, agree when the work will need to be inspected and to establish whether any further information will be required eg structural calculations or drawings. When the project is satisfactorily completed a Building Regulations Completion Certificate will be issued showing that the project has been independently inspected and that it complied with the Building Regulations. The Building Notice scheme is not recommended unless your builder and architect are very experienced in loft conversions.

The forms for making a Building Regulations application can be obtained by telephoning or calling into our offices or can be downloaded from our website [www.fdean.gov.uk](http://www.fdean.gov.uk)



## 5.0 Planning Permission, listed building & conservation area consents

Planning permission, listed building/conservation area consents may be required for your proposed development and no works should be commenced until approval has been given by the planning department. Please contact the FODDC duty planning officer on 01594 810000.

## 6.0 The Party Wall Act

If the loft conversion affects a party wall, you may be required to give your neighbour the required notice under the Party Wall Act. In the event of a disagreement, a Party Wall Surveyor may be required to resolve the dispute under the terms of The Party Wall Act.

Copies of the Party Wall Act can be obtained from the Council Offices or from the Department of Communities and Local Government

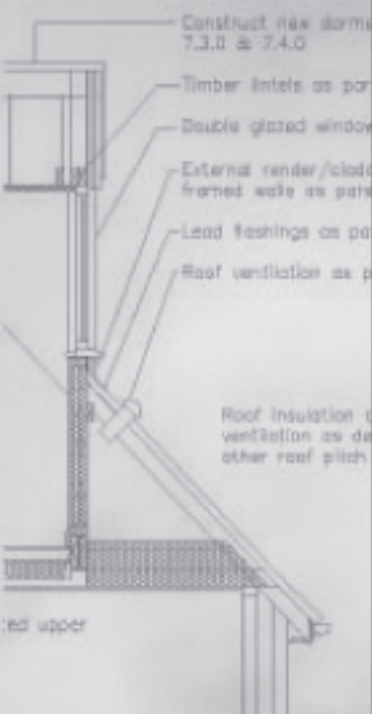
## 7.0 General technical & practical guidance for loft conversions

### 7.1.0 Preparation works

**7.1.1** Provide all necessary scaffolding, access ladders, material hoists, temporary protection and working platforms etc which are to be erected, maintained, certificated, dismantled and removed by suitably qualified and insured specialists.

**7.1.2** All plumbing, drainage, heating, electrical services etc including re-siting of heating appliances/ boilers/ flues /tanks etc to be altered /modified /adjusted as necessary by suitably qualified & experience specialists or registered competent persons, tested & appropriate certification issued where required in this specification.

works as per 7.1.0





- 7.1.3** Any asbestos is to be inspected by a specialist, removed and disposed off site by a specialist-licensed contractor.
- 7.1.4** Prior to and during works, the person carrying out the works is to liaise with and meet the requirements of the relevant Service Authorities, including the location and protection of all services as necessary.
- 7.1.5** Areas of the existing foundations, lintels and wall structure that will be built off or support the loads from the proposed works may need to be exposed at the discretion of the Building Control Surveyor to ensure that they are adequate and suitable - this may include opening up or excavating walls/floors (and making good to match the existing) to check internal foundations or walls. If they do not appear to be adequate to support the proposed works, details/justification of the proposed remedial works/alterations including necessary engineering calculations and details will need to be submitted for approval before works commence on site.
- 7.1.6** The builder is to allow for and maintain all temporary protection to the building to maintain weather tightness until completion of the works.
- 7.1.7** All structural timber is to be grade C24, stress graded to BS 4978 and sawn to BS 4471. All timber is to be protected on site to minimize moisture content which must not exceed 22%.

**7.2.0 Alteration, modification & strengthening of the existing roof/structure**

- 7.2.1** Over haul existing roof coverings and structural timbers as necessary, replace defective and missing tiles, treated timber battens, roofing felt, lead valleys, flashings, fascia boards, soffit/ barge boards and rainwater goods etc as necessary to match existing. Repoint/ rebuild defective masonry walls/ chimneys etc as necessary. Repair/ replace defective roof timbers as necessary. Existing timbers to be inspected, repaired, replaced and treated as necessary by a specialist with a warrant backed guarantee against insect & fungal attack.



**7.2.2** Note: structural members/walls etc should only be repaired/ replaced/ supported or removed in strict compliance with details and calculations received from a suitably qualified person. These details must be approved by building control before works commence on site.

**7.2.3** Alter/modify/strengthen the existing roof as necessary in compliance with details and calculations prepared by a suitably qualified and experienced person for the loft conversion. These details must be approved by building control before works commence on site.

### **7.3.0 Pitched roof coverings**

**7.3.1** Roof covering to consist of matching slate or tile and associated capping, verge/eaves details fixed in accordance with manufacturer's details suitable for pitch and exposure. Roff tiles/slates to be fixed to a minimum 25 x 50mm treated timber batten or to manufacturer's details and roof timbers to be overlaid with untearable breathable/non breathable roof felt underlay to BS 747 or relevant BBA certificate.

### **7.4.0 Pitched roof structure**

**7.4.1** Roof to be constructed using either manufactured roof trusses or a cut roof as follows:

#### **Roof trusses**

**7.4.2** Roof to be constructed using specialist designed and manufactured trusses (or Attic trusses where forming room in the roof) @ 600ctrs (max) to BS 5268:3 1985 A2 94. Trusses to be fixed and braced strictly in accordance with manufacturers details and mechanically fixed to 100 x 50mm sw treated wall plates via galvanised steel truss clips. Reinforced concrete pad stones required to support girder trusses to details and calculations by a suitably qualified person.

**The person carry out the building work is to check and confirm the actual roof pitch to the truss manufacturer prior to placing an order.**

**7.4.3** Details of trusses to be prepared by specialist designer/ manufacturer and submitted and approved by building control **prior** to commencing roof construction.





## Cut roof construction

- 7.4.4** Roof to be constructed using kiln dried –stress graded timber. Rafters, ceiling joists and purlins sizes as stated on tables 1, 2 & 3 below, suitable for the proposed clear spans and all properly fixed together using approved fixings.
- 7.4.5** Where the ceiling joists are raised above wall plate level they must be fixed within the bottom third of the rafter using 12mm diameter high tensile bolts and steel toothed connectors to connect each rafter and ceiling joist to prevent possible roof spread. Joists raised above this level are to be designed by a suitably qualified person and approved by building control before works commence.
- 7.4.6** Struts & braces to be 100 X 50mm, hips to be splayed rafter depth + 25mm (under 30 degree pitch the hips are to be designed by a suitably qualified person), layboards to be the splayed rafter depth + 25mm X 32mm thick, ridges to be splayed rafter depth + 25mm, all valley beams are to be designed by a suitably qualified person, wall plates to be 100 x 50 mm fixed to inner skin of cavity wall using galvanized strapping as detailed below.
- 7.4.7** Hip rafters to have 100 X 75mm angle ties connected across wall plates in housed joints at corners of roof & hip irons screwed to hip rafters.
- 7.4.8** Soffits, fascias and barge boards etc to match the existing or in UPVC to BS 4576, fixed in compliance with manufacturers details.

works as per 7.1.0





**7.4.9** Allow for all necessary alteration/modification of any existing adjoining roof as required to enable the proper completion of the works and in agreement with building control. Party walls to be fire stopped as detailed in above sections.

**7.4.10** Allow for building in as work proceeds or insertion of proprietary stepped/cavity tray dpc to follow line of new roof 150mm above all roof/wall abutments as necessary using code 5 lead flashings. Tie new roof into the existing, alter/modify/renew existing roof coverings and form a weather tight structure.

**7.4.11** Roof light to be installed into new openings and made weather tight as the manufacturers details with rafters and trimming joists doubled up to form new structural opening as necessary.



**7.4.12** Fix 12.5mm foil backed plasterboard (joints staggered) and 5mm skim coat of finishing plaster to the underside of all ceilings using galvanized plasterboard nails.

**Table 1: Spans for Common Domestic Timber Rafter Sizes at 400mm spacing (Strength Class C24)**

Size of Rafter Breadth X Depth mm) (mm)	Slope of Roof (degrees)		
	15-22	22-30	30-45
	Maximum clear span (m)		
47 100	2.52	2.58	2.66
47 125	3.15	3.22	3.32
47 150	3.76	3.85	3.97
47 170	4.36	4.45	4.57



**Table 2: Spans for Common Domestic Timber Ceiling Joist Sizes at 400mm spacing (Strength Class C24)**

Size of Ceiling Joist Breadth X Depth (mm) (mm)		Maximum clear span (m)
47	97	1.93
47	120	2.56
47	145	3.37
47	170	4.00
47	195	4.73
47	220	5.47

**Table 3: Spans for Common Domestic Timber Purlin Sizes (Strength Class C24)**

Size of Purlin Breadth X Depth (mm) (mm)		Slope of Roof (degrees)								
		15-22			22-30			30-45		
		Spacing of Purlins (mm)								
		1500	1800	2100	1500	1800	2100	1500	1800	2100
75	125	1.87	-	-	1.91	-	-	1.98	1.86	-
75	150	2.24	2.10	1.99	2.29	2.15	2.04	2.37	2.23	2.11
75	175	2.61	2.45	2.32	2.67	2.51	2.38	2.76	2.59	2.46
75	200	2.98	2.80	2.65	3.05	2.87	2.71	3.16	2.96	2.81
75	225	3.35	3.15	2.98	3.43	3.2	3.05	3.55	3.33	3.15

### 7.5.0 Structural Columns/Beams Etc.

Non proprietary structural beams/columns etc including pad stone to be fabricated and installed in compliance with details and structural calculations carried out by a suitably qualified and experienced person, which must be approved by building control before works commence on site. Dpc trays to be provided above all externally located beams.

### 7.6.0 Roof insulation

**7.6.1** Insulation to be fixed to manufactures details and must be continuous with the wall insulation but stopped back at eaves or at junctions with rafters to allow a 50mm air gap in ventilated cold roofs.

**Table 4: Insulation laid horizontally between and over ceiling joists (Vented cold roof achieving a U value of 0.16W/m2k)**

Product	K -Value	Position in roof
Crown Wool & Rock-wool Roll	0.044	100mm between joists & 170mm laid over



**Table 5: Insulation fixed between/under rafters  
(Vented cold roof achieving a U value of 0.20W/m2k)**

Product	K -Value	Position in roof
Kingspan Kooltherm k7	0.023	75mm friction fixed between rafters & 50mm fixed under rafters*
Celotex RXR3000 & GA3000	0.023	100mm friction fixed between rafters & 40mm fixed under rafters*
Web Dynamics Thinsulex & Additional layer of Kingspan or Celotex	(R value 1.69) 0.023	1 layer of Thinulex fixed under rafters with plaster board fixed to 25mm deep counter battens to create air space & 80mm (70mm where using a breathable membrane) Kingspan or Celotex friction fixed between rafters* (as manf details)
Actis Triso-super 10 & Additional layer of Kingspan or Celotex Where required by building control		1 layer of Triso-super 10 fixed under rafters with plasterboard fixed to 25mm deep battens fixed across underside of rafters at 600mm ctrs to retain the insulation (as manf details).  Friction fix an additional 50mm Celotex/Kingspan insulation between rafters* where required by building control

**\* where rafters are only 100mm deep, battens should be provided to their underside to maintain a 50mm air gap above the insulation as necessary**



**Table 6: Insulation fixed over rafters  
(Warm roof achieving a U value of 0.20W/m2k)**

Product	K -Value	Position in roof
Kingspan Thermapitch	0.023	100mm fixed over rafters
Celotex GA3000	0.023	100mm fixed over rafters
Celotex GA3000	0.023	60mm over rafters & 50mm friction fixed between rafters
Web Dynamics Thinsulex (with additional insulation) & Actis Triso- super 10		Fixed over rafters strictly in compliance with the manufacturers details with an additional layer of insulation as above as manf details

### 7.7.0 Roof ventilation

**7.7.1** Roof insulation to be continuous with the wall insulation but stopped back at eaves or at junctions with rafters to allow a 50mm air gap. Cross ventilation to be provided by a proprietary eaves ventilation strip equivalent to a 25mm continuous gap at eaves level with insect grill.

**7.7.2** Alternatively, where cross ventilation not possible such as mono pitch, coved ceiling or room in the roof provide additional ridge/ high level ventilation equivalent to a 5mm gap in the form of proprietary vent tiles spaced in accordance with manufacturer's details.

**7.7.3** Ventilation to the roof space may be omitted, only if a proprietary BBA or similar approved breathable felt, with minimum 25mm thick treated vertical counter battens and proprietary eaves carrier system is used.

### 7.8.0 Flat roof construction

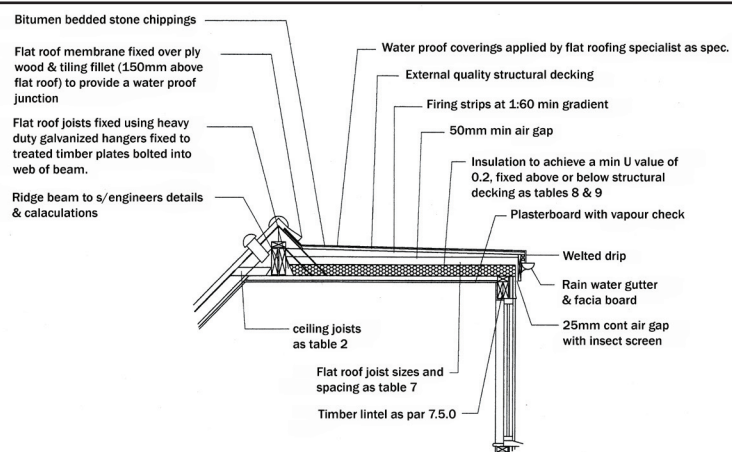
**7.8.1** Flat roof to be carried out as detailed on the drawings. Moisture content of timber should not exceed 20% and to be kiln dried & grade C24. Workmanship to comply to BS 8000:4. All fixings are to be approved stainless steel or galvanized mild steel.

**7.8.2** Waterproof covering to be either: 3 layers of high performance felt (hot bonded together with bitumen) to a current BBA Certificate in compliance with BS8217 or single layer system with a current BBA or WIMLAS Certificate fixed onto 22mm external quality plywood decking or similar approved laid to 1:60 minimum gradient, fixed onto timber flat roof joists constructed of kiln dried structural grade timber with sizes and spacing suitable for the proposed clear span as annotated on the drawing or in compliance with table 7 overleaf.



- 7.8.3** Flat roof to have a surface finish of bitumen bedded stone chippings covering the whole surface to a depth of 12.5mm to achieve a class AA fire rated designation for surface spread of flame.
- 7.8.4** Restrain flat roof to external walls by the provision of 30 x 5 x 1000mm lateral restraint straps at maximum 2000mm centres fixed to 100 x 50mm wall plates and internal wall faces
- 7.8.5** Flat roof insulation to be in compliance with tables 8 & 9 below. Flat roof insulation is to be continuous with the wall insulation but stepped back to allow a continuous 50mm air gap above the insulation in ventilated cold decks. Cross ventilation to be provided on opposing sides by a proprietary eaves ventilation strip equivalent to a 25mm continuous gap at eaves level with insect grill. Note: Warm roof applications ie insulation above the structural deck do not require ventilation.
- 7.8.6** The design, workmanship & selection of materials should comply with Model Specification Sheet P.L.1 Built-Up Roofing: Plywood Deck, published by The British Flat Roofing Council. Metallic roof trims to be of non-corrodible material & resistant to sunlight & not fixed through the water proof covering. All timber to be treated using CCA vacuum/pressure or O/S double vacuum to BS 5268:5, including all cut ends of timber etc within 300mm of any joint.
- 7.8.7** All flat roofing works to be carried out by a specialist flat roofing contractor and all materials etc to be fitted in compliance with manufacturer's details. Work should not be carried out during wet weather or when the deck has not fully dried out. A 500g vapour control barrier is required on the underside of the roof below the insulation level. Fix 12.5mm foil backed plasterboard (joints staggered) and 5mm skim coat of finishing plaster to the underside of all ceilings using galvanized plasterboard nails.

**SECTION DETAIL OF FLAT ROOF FORMED IN EXISTING ROOF see paragraph 7.8.0 & MAIN SECTION (not to scale)**





**Table 7: Spans for Common Flat Roof Joist Sizes (Strength Class C24)**

Size of joist Breadth X Depth (mm) (mm)	Spacing of joist (mm)		
	400 Maximum clear span (m)	450	600
47 x 97	2.02	1.99	1.90
47 x 120	2.65	2.61	2.48
47 x 145	3.36	3.29	3.12
47 x 170	3.36	3.29	3.12
47 x 195	4.07	3.98	3.66
47 x 225	4.78	4.61	4.19
	5.39	5.19	4.72

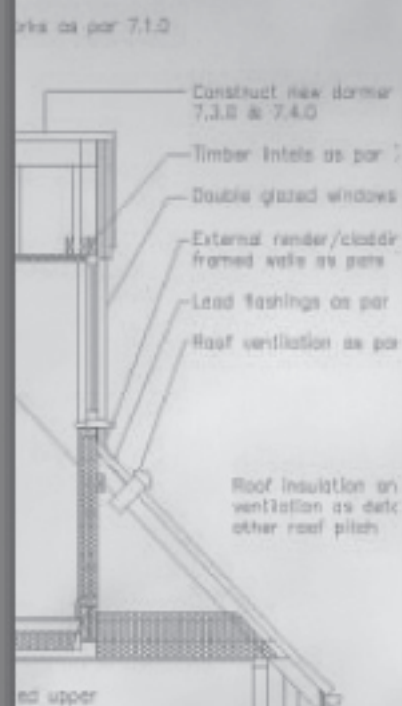
**Table 8: Insulation Fixed Between/Under Flat Roof Joists  
(Vented cold roof achieving a U value of 0.20W/m2k)**

Product	K -Value	Position in roof
Kingspan Thermapitch TP10	0.023	170mm friction fixed between joists or 130mm between joists and 20mm fixed under joists
Celotex RXR3000 & GA3000	0.023	100mm friction fixed between joists & 40mm fixed under joists
Celotex GA3000	0.023	180mm friction fixed between joists
Jablite Board	0.038	160mm friction fixed between joists and 50mm fixed under joists
Crown Frametherm Batt & Polyfoam Linerboard	0.035 0.029	140mm batts laid between joists and 50mm Polyfoam fixed under joists

**Note: The joist depth must be sufficient to maintain a 50mm air gap above the insulation for ventilation of the roof space.**

**Table 9: Insulation Fixed above Flat Roof Joists  
(Warm roof achieving a U value of 0.20W/m2k)**

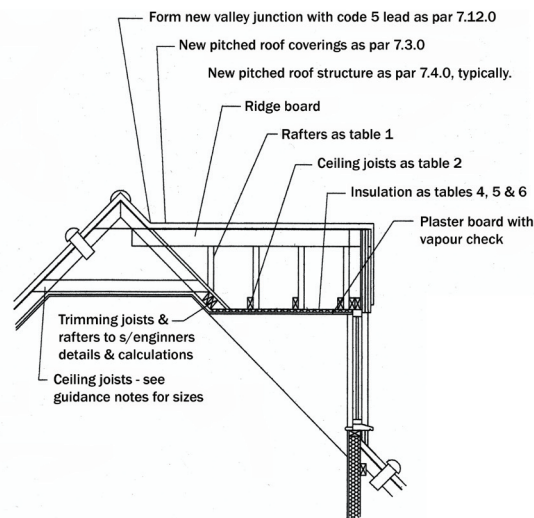
Product	K -Value	Position in roof
Kingspan Therमारoof TR31 (composite deck)	0.023	96mm plus 25mm friction fixed between joists
Celotex Extra-R XR3000	0.023	100mm
Celotex Tempcheck Deck (composite deck)	0.023	105mm for built up roofing and 115mm for single ply membranes
Jablite Jabdec	0.036	183mm (with mech fixings) 163mm (without mech fixings)
Knauf Krimpack rock fibre slab		175mm



## 7.9.0 External timber framed dormer/walls with cladding finish

To be constructed using either Upvc/treated timber weatherboarding/vertical wall tiling to match existing finishes or to comply with planning permission fixed onto 50 X 25mm treated battens/counter battens at 400mm ctrs on approved vapour permeable membrane suitable for timber framed walls with BBA or other approved certification & fixed as manufacturers details on to 12mm thick marine quality plywood sheathing or other approved sheeting (joints covered by dpc/battens), on 100/150mm X 50mm timber studs at 400mm ctrs with 100/150mm X 50mm timber head & sole plates & 2 rows noggins and diagonal bracing as S/Engineers details. Studs exceeding 2.5m high are to be designed by S/Engineer. Wall insulation to be friction fixed between studs as indicated in Table 10 overleaf. Fix 13mm vapour checked plaster board to internal face of studs and finished with 3mm skim coat of finishing plaster. All junctions to have a water tight construction. Seal all perimeter joints with tape internally and with silicon sealant externally.

### TYPICAL SECTION DETAIL OF DORMER ROOF FORMED IN EXISTING ROOF see paragraph 7.3.0 -7.4.0 & MAIN SECTION (not to scale)



## 7.10.0 External timber framed dormer/walls with render finish

**7.10.1** Render finish (to comply to BS 5262) - to match existing or to comply with planning permission to be applied in 3 coats at least 16mm – 20mm thick overall. first & second coats 1:3 (cement : sand with plasticizer). final coat 1:6 (cement : sand with plasticizer). proportions by volume. Render should be finished onto an approved durable render stop, angle beads or jointing sections- stainless steel or other approved using drilled or shot fired fixings only. All external junctions to be sealed with sealant to have a water tight construction.

- 7.10.2** Stainless steel render lath fixed (using stainless steel staples) to treated battens and through into vertical studs at 600mm max ctrs. Mesh to have laps wired together at 150mm ctrs. Mesh to be backed by a water resistant membrane.
- 7.10.3** Treated battens to be 25 x 38mm preservative treated fixed vertically through breathable membrane to form drained cavity and external plywood (see notes below) in to structural timber studs at max 600mm ctrs using 75mm long hot dipped galv or stainless steel annular ring nails.
- 7.10.4** Breathable membrane suitable for timber framed walls to current BBA certification, fixed to external quality plywood.
- 7.10.5** 12mm thick marine quality plywood sheathing or other approved (joints covered by dpc/battens), fixed to timber studs
- 7.10.6** 100/150mm X 50mm timber studs at 400mm ctrs with 100/150mm X 50mm timber head & sole plates & 2 rows noggins and diagonal bracing as S/Engineers details. Studs exceeding 2.5m high are to be designed by S/Engineer. Wall insulation to be friction fixed between studs as indicated in table 10 below.
- 7.10.7** Fix 13mm vapour checked plaster board to internal face of studs and finished with 3mm skim coat of finishing plaster. Seal all perimeter joints with tape internally and with silicon sealant externally.

**Table 10: Insulation requirements to timber framed walls to achieve a U value of 0.30w/m<sup>2</sup> °k.**

Insulation Type- fixed between studs	Insulation Thickness mm
Kingspan Thermawall TW55	80mm
Kingspan Kooltherm K12	70mm
Celotex XR3000	100mm

### 7.11.0 External cavity wall construction

- 7.11.1** Walls to consist of either approved 100mm tooled flush jointed brickwork or 2 coat rendered 100mm dense concrete blockwork external skin dependant upon exposure with a 100mm thick lightweight high performance 2.8N/mm<sup>2</sup> insulation block with either a 13mm lightweight plaster finish or 12.5mm plasterboard skimmed drylining.
- 7.11.2** Where required external stone facings to be tied to external blockwork with wall ties as detailed below and foundation widths increased by 150mm.



**7.11.3** Walls to be built with 1:1:6 cement mortar and tied with BBA approved stainless steel wall ties at maximum spacings of 750mm horizontal, 450mm vertical and 225mm at reveals, verges and closings for cavities up to 100mm wide.

**7.11.4** Cavity width and insulation details to be constructed as table 11 below to achieve a 'U' value of not more than **0.30w/m<sup>2</sup> °k**. Wall insulation to be continuous with roof insulation level and taken below floor insulation levels as manufacturer's details.

**7.11.5** New cavity walls to be built off a new continuous dpc tray & weep holes at 900mm cts where built off existing walls.

**Table 11: Insulation requirements for external cavity walls**

Clear Cavity Width Required	Insulation Type & Minimum Thickness	Overall Cavity Width Required	Internal Block Type 100 mm Thick
<b>Partial cavity fill</b>			
50 mm	40 mm Kingspan Thermawall TW50 or Kooltherm K8	90 mm	100 mm High Performance insulation block (k value 0.11 or lower)
50 mm	45 mm Celotex tuff-R CW3045	95 mm	100 mm High Performance Insulation block (k value 0.19 or lower)
50 mm	45 mm Kingspan Thermawall TW50 or Kooltherm K8	95 mm	100 mm dense conc block with insulated closers
50 mm	50 mm Celotex tuff-R CW3050	100 mm	100 mm dense conc block with insulated closers
<b>Full cavity fill</b>			
10mm	90mm Crown Dritherm	100 mm	100 mm High Performance Insulation block (k value 0.15 or lower)





## 7.12.0 Valleys and lead work

Lead work, flashing, soakers, valleys and gutters, etc, to be formed from Code 5 lead sheet and fully supported on treated valley boards, etc, and to have a minimum 150mm lap joints, dressed 200mm under tiles, etc, and not to be fixed in lengths exceeding 1.5m and to be fixed in accordance with the roof cladding manufacturers and the Lead Development Association recommendations.

## 7.13.0 Lofts hatches, doors & light wells to roof spaces

Rear of all hatches, doors and light wells in the roof space are to be insulated to the same standard as the roof, draft stripped and positively fixed.

## 7.14.0 Party wall construction

### Masonry party wall construction

**7.14.1** Party walls to be constructed of 2 skins of plastered 100mm dense concrete block with a clear 50mm cavity and BBA approved wall ties spaced as external walls up to the underside of the roof and fire stopped with mineral wool or an approved proprietary intumescent product. The party wall is to be bonded/tied to the inner leaf and the junction of cavities are to be fire stopped throughout its length with a proprietary acoustic/insulated fire stop cavity closer and all other vertical and horizontal cavities are to be closed in a similar manner.

### Timber frame party wall construction

**7.14.2** Two independent timber stud walls are to be constructed using 100 x 50mm soft wood studs with head and sole plates and intermediate noggins fixed at 600mm with a minimum distance between inside lining faces of 200mm. Important note: studs must be independent and not touching opposing studs.

**7.14.3** 9mm ply wood or Stirling board sheathing may be used in the cavity as necessary for structural reasons as required by a structural engineer or suitably qualified person.

**7.14.4** 50mm thick acoustic quilt with a minimum density of 10kg/m<sup>2</sup> to be fixed between studs on each frame side.

**7.14.5** Studs to be faced both sides using 15mm thick plasterboard linings each with a minimum mass 10kg/m<sup>2</sup> in two layers with staggered joints, filled, taped and finished with 3mm plaster.



**7.14.6** Party walls to be taken up to the underside of the roof and fire stopped with mineral wool or an approved proprietary intumescent product. The party wall is to be bonded/tied to the inner leaf and the junction of cavities are to be fire stopped throughout its length with a proprietary acoustic/insulated fire stop cavity closer and all other vertical and horizontal cavities are to be closed in a similar manner.

### **7.15.0 Sound insulation to walls within the dwelling**

Internal walls to bedrooms without doors and rooms containing a w/c are to be provided with sound insulation as described in the relevant internal wall section.

### **7.16.0 Internal load bearing partitions**

#### **Masonry**

Internal load bearing walls to be minimum 100mm thick 7N/mm<sup>2</sup> dense concrete blocks (actual wall thickness must not be less than the wall it supports above), built off suitable foundations (as detailed above), with pre-cast concrete/proprietary steel lintels over openings (in compliance with lintel manufacturers span tables) and walls bonded/tied to external or party walls using proprietary ties at each course and restrained by floor or ceiling joists/trusses.

#### **Timber Stud**

Load bearing timber stud partitions and non-proprietary lintels to be in compliance with details and calculations by a suitably qualified and experienced person, which must be approved by building control before works commence on site.

### **7.17.0 Internal masonry non-load bearing partitions**

Internal non-load bearing partitions to be constructed of 100mm 2.8/mm<sup>2</sup> dense concrete blocks built off a thickened floor slab and tied/block bonded to all internal and external walls at maximum 225 centres with either a plaster or dry lined finish as the external walls.

### **7.18.0 Internal timber studwork non-load bearing partitions**

Non-load bearing stud partitions are to be constructed of 100 x 50mm soft wood with head and sole plates and intermediate noggins fixed at 600mm with a minimum of 25 mm of 10Kg/m<sup>2</sup> proprietary sound insulation quilt suspended in the stud and finished with 15 mm plasterboard and skim both sides.

### **7.19.0 Wall Abutments**

Vertical junctions of new and old walls to be secured with proprietary profiled stainless steel metal crocodile type system with a continuous cavity fixed with DPC and pointed with flexible mastic as manufacturer's details.



As per 7.1.0



### 7.20.0 Lintels

Lintels are to be provided over all structural openings. The positions, types, sizes, end bearings etc of lintels must be in compliance with the lintel manufacturers standard tables or as annotated on the drawing. Stop end and dpc trays to be provided above all externally located lintels in compliance with lintel manufacturer's details.

### 7.21.0 Strapping and restraint

Walls to be restrained at intermediate floor and 1st floor ceiling and gable walls by the provision of 30 x 5 x 1000mm lateral restraint straps at maximum 2m centres carried across at least 3 joists or rafters, etc, with a minimum of 38mm wide x  $\frac{3}{4}$  depth noggins.

### 7.22.0 Dpc's

Horizontal Dpc's and Dpc trays with stop ends and weep holes to be provided 150mm above ground level continuous with the floor Dpm. Stepped and horizontal Dpc/cavity trays are to be provided over all openings, roof abutments/projections and over existing walls with different construction or materials. Install vertical dpc or proprietary insulated cavity closers at all closings, returns, abutments to cavity work and openings etc.

### 7.23.0 Cavity Closers

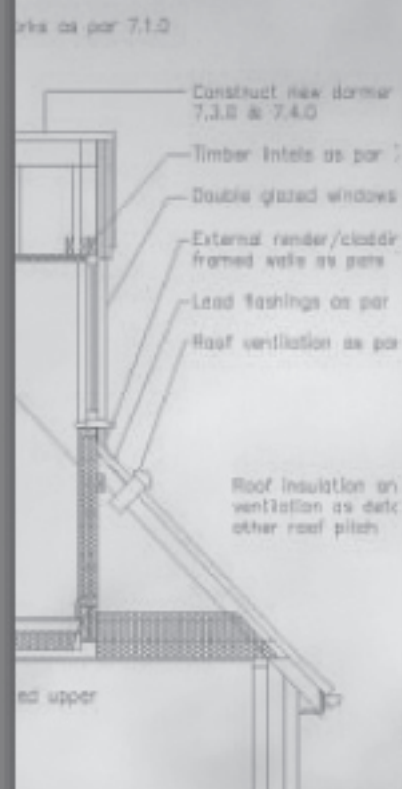
Proprietary acoustic/insulated fire stop cavity closers, or similar are to be provided to all cavity openings/closings, tops of walls and junctions with other properties.

### 7.24.0 Closing around window & door openings

Checked rebates should be constructed to window/door reveals or proprietary finned insulated closers should be used. Checked rebates are where the outer skin masonry/skin projects across the inner skin by at least 25mm, the cavity is closed by an insulated closer and the window or door is sealed around with mastic or similar externally.

### 7.25.0 Sealing Measures

All external door and window frames, service penetrations to walls, floors and ceilings, etc, should be sealed both internally and externally with proprietary sealing products such as proprietary waterproof mastic, expanding foam or mineral wool or tape to ensure air tightness.



## 7.26.0 Semi Exposed Walls

Semi exposed walls between heated spaces and unheated areas are to be constructed and insulated as external walls or constructed of 2.8/m<sup>2</sup> 100mm solid dense concrete blocks with 50 X 50mm timber battens or timber stud/ proprietary metal stud partition wall system with insulation friction fixed between vertical studs (as detailed in table 12 below), finished with 12.5mm vapour checked plaster board (or 500g polythene vapour check) to achieve a 'U' value of 0.30w/m<sup>2</sup> °k.

**Table 12 : Insulation requirements to semi exposed walls**

Insulation Type	Minimum Thickness
Kingspan Thermawall. Or Kingspan Kooltherm K8 Or Celotex tuff-R	75 mm

## 7.27.0 Upper floors

**7.27.1** Floor to be constructed of kiln dried structural grade timber joists with sizes and spacing suitable for the proposed clear span as annotated on the drawing or in compliance with table 13 overleaf. Joists to be supported by heavy-duty proprietary galvanized metal restraint joist hangers built into walls or fixed to treated timber wall plates (same sizes as joists) bolted/resin bolted to walls at 600mm centres using approved 16mm diameter stainless steel fixings. Alternatively, and where appropriate, joists can be built into walls using approved proprietary sealed joist caps.

**7.27.2** Where applicable new joists to be fixed between existing ceiling joists to maximize available headroom, allowing a 25mm minimum gap between top of existing ceilings and underside of new joists. Existing ceiling joists to be fixed and supported by new joists where necessary.

**7.27.2** Joists are to be doubled up and bolted together for trimmers, under partitions and baths. Floor void between joists to be insulated with a minimum thickness of 100 mm of 10Kg/m<sup>3</sup> proprietary sound insulation quilt, ceiling to be a minimum 15mm plasterboard and skim and floor joist covering to be a minimum of 20mm tongue and groove softwood boards or moisture resistant particle/chipboard to give overall 30 minutes fire resistance. Floor joists to be provided with 1 row of 38 x 3/4 depth solid strutting at ends between joist hangers, at mid span for 2.5 – 4.5m span and 2 rows at 1/3 points for spans over 4.5m.





**Table 13: Spans for Common Domestic Floor Joist Sizes (Strength Class C24)**

Size of joist		Spacing of joist (mm)		
Breadth X Depth (mm)	Depth (mm)	400	450	600
		Maximum clear span (m)		
47	97	2.12	2.01	1.75
47	120	2.70	2.59	2.34
47	145	3.25	3.13	2.84
47	170	3.81	3.66	3.32
47	195	4.36	4.19	3.81
47	220	4.84	4.70	4.29
75	220	5.41	5.26	4.91

### 7.28.0 Sound insulation to floors within the dwelling

Intermediate floors to bedrooms and rooms containing a w/c are to be provided with sound insulation as described in the relevant floor section.

### 7.29.0 Soil pipe boxing

Pipe boxing to consist of soft wood framing, 2 layers of 15mm plasterboard and skim (achieving 30 minutes fire resistance) and mineral wool sound insulation quilt. Boxing to be continuously carried up to roof space for soil and vent pipe and provided with air grills where an air admittance valve is used.

### 7.30.0 Exposed Intermediate upper floors

Semi exposed intermediate upper timber floors over unheated areas such as garages, porches, walkways, and canopies to be insulated with the following minimum thickness and types of insulation to achieve a 'U' value of 0.22w/m<sup>2</sup> °k as in table 14 below. Where the construction is open to the environment a vapour barrier and proprietary external mineral fibre or similar 30 minute fire and moisture resistant boarding is to be applied to the underside of the floor.

**Table 14: Insulation requirements to exposed intermediate floors**

Insulation Type	Minimum Thickness
Jablite Jabfloor 70	125 mm
Celotex & Kingspan	70 mm
Polyfoam	100 mm
Rockwool Rockfloor	120 mm



### 7.31.0 Renovation of existing thermal elements

Where renovation works are to be carried out to the existing thermal elements, ie to existing walls, roof, floor, windows and doors etc which are un- insulated below the threshold values in column (a) of table below and involves more than 25% of the element to be renovated then the thermal elements should be thermally upgraded to the U values in column (b) in table 15 below. (NOTE: This only applies where more than 25% of element is renovated and is technically and functionally achievable with a simple payback of 15 years +)

### 7.32.0 Retained thermal elements

Where the existing walls, roof, floor, windows or doors are to become part of the thermal envelope or subject to a material change of use and are un- insulated below the threshold values in column (a) of table 15 below then the thermal elements should be thermally upgraded to the U values in column (b) in table 15 below. (NOTE: This only applies where it is technically and functionally achievable with a simple payback of 15 years +)

**Table 15: Upgrading of existing thermal elements**

Element	Threshold U value (a)	Upgraded U value (b)
Cavity wall (where suitable For filling with insulation)	0.7	0.55
Other wall type	0.7	0.35
Floor	0.7	0.25
Pitched roof- insulation at ceiling level	0.35	0.16
Pitched roof- insulation between rafters	0.35	0.20
Flat roof or roof with integral insulation	0.35	0.25
<b>Note: insulation details and method of upgrading existing thermal elements to be agreed with the building control surveyor before works commence</b>		

### 7.33.0 Ventilation & windows

#### 7.33.1 Purge ventilation

Windows to be of size, style and position as indicated on the drawings but window opening areas to habitable rooms and toilets to be a minimum of 5% of the room they serve (increased to 10% where the window opens less than 30 degrees) and typically 1.75m above floor level. Other rooms, for example kitchens, utility rooms, bathrooms etc to have opening windows or doors for rapid ventilation.



**7.33.2** Note: the area of external windows, roof windows & doors should not exceed 25% of the usable internal floor area otherwise SAP calculations may be required from a suitably qualified person to confirm design flexibility where area of external windows, roof windows & doors exceed 25% of the usable floor area

**7.33.3** Background/trickle ventilation to be provided to all rooms via hit and miss or 2 stage catches to windows equivalent to 8000mm<sup>2</sup>.

**7.33.4** Mechanical ventilation is to be provided to the rooms listed below directly ducted to the outside air equivalent to the following rates.

Kitchen	30 litres per second over hob or 60 litres elsewhere
Utility room	30 litres per second
Bathroom	15 litres per second
Toilet	6 litres per second per W/C

**7.33.5** Mechanical ventilation to rooms without openable windows to be linked to light operation and have 15 minutes overrun and a 10mm gap under the door for air supply.

### 7.34.0 Safety glass and glazing

Doors and adjacent sidelights/windows in critical locations within 1500mm of ground and floor level, and 300mm of doors and windows within 800mm of floor/ground to be safety glazed to BS 6206.

### 7.35.0 Double-glazing

All external doors, windows, roof lights to be draft stripped and glazed to the following minimum standards as in table 16 below.

**Table 16: U Values for external windows & doors including roof windows (minimum U value required 1.8W/m<sup>2</sup>k)**

Type of Glazing Unit	Type of frame		Metal with Thermal break	
	Wood or Upvc			
	12mm gap	16mm gap	12mm gap or more	16mm gap or more
Double glazed, low-E coating & air filled	-	1.8	-	-
Double glazed, low-E coating & Argon filled	1.8	1.7	-	-
Triple glazed, low-E coating & air filled	1.5	1.4	-	1.8



### 7.36.0 Sanitary appliances and waste pipes

All W/Cs to have trapped outlet connected to 100mm diameter pipes, and to be provided, with a wash hand basin with hot and cold running water. Sanitary appliances such as wash hand basin, baths, showers, sinks etc, to be provided with 50mm diameter waste pipes laid to falls and 75mm deep seal traps. Where waste pipe runs exceed 4m BBA approved air admittance valves are to be fitted above appliance spill over level. Waste pipes to either discharge below trapped gully grating or into soil and vent pipes via proprietary waste manifolds or bossed junctions. Internally all waste and drainage pipes to have rodding access/eyes at changes of direction and be adequately clipped/supported and provided with 30 minutes fire protection where passing through floors.



### 7.37.0 Foul, Rainwater & Storm water drainage systems

**7.37.1** Both storm and foul drainage to consist of 100mm diameter UPVC proprietary underground drainage laid at a minimum gradient of 1:40 surrounded in pea gravel a minimum of 900mm deep in drives and roads and 400mm elsewhere, unless provided with a 100mm reinforced concrete slab with compressible material under and 300mm min bearing on original ground .

**7.37.2** Proprietary UPVC 450mm diameter inspection chambers to be provided at all changes of direction or at 45m maximum spacings in straight runs up to 1.2m in depth. All gullies to be trapped and have rodding access where serving branches. Inspection chamber covers to be mechanically fixed and suitable for vehicular loads in drives and roads and double sealed in buildings.



- 7.37.3** Foul water to be discharged to new or existing facilities as shown on plans/specification and storm water from individual down pipes to be piped 5m away from buildings and to be disposed in a minimum 1m<sup>3</sup> clean filled rubble soakaways covered with polythene and top soil or to other methods as shown on the drawing/specification.
- 7.37.4** Foul drainage systems to low lying buildings or basements which carry storm water or other vulnerable drainage systems should be provided with anti flood protection such as one way valves, etc, to prevent flooding and sewerage entering the building.
- 7.37.5** Rainwater gutters and down pipe sizes and number to be suitable for roof area to be drained and fixed in compliance with manufactures details.
- 7.38.0 Space and hot water heat producing appliances**
- 7.38.1** Space and hot water heating method as detailed on the plans/ specification. Heating to be supplied from new or extended gas/LPG/oil fired wall mounted condensing balanced flue boiler with the flue discharging 600mm away from openings into the building and protected with a wire basket.
- 7.38.2** Boilers to have a SEDBUK efficiency above 88% to comply with Building Regulations as amended in April 2006 for gas/ LPG/oil and must be provided with separate controls for heating and hot water with a boiler interlock, timer, and thermostat radiator valves to each room.
- 7.38.3** Hot water vessels to be insulated with 35mm of PU foam and both heating and water pipes to be insulated with proprietary foam covers equal to their outside diameter within 1m of the vessel and in unheated areas.
- 7.38.4** Gas installations to be installed and comply with BS 5440, BS 5546, BS 5864, BS5871, BS 6172, BS 6173 and BS 6798.
- 7.38.5** Oil installations to be installed and comply with BS 5410, BS 799.
- 7.38.6** All space and hot water systems must be commissioned, calibrated and certified by a suitably qualified person and details supplied to Building Control and the owner along with the operating manuals, etc. or a registered competent person



## 7.39.0 Electrical Installations

- 7.39.1** New or works to existing electrical circuits or systems must be designed, installed, tested and certified to comply with the current editions of BS 7671 or the IEE regulations by a competent person.
- 7.39.2** A competent electrician or a member of a competent person scheme must test and certify all such works. The electrician must provide signed copies of an electrical installation certificate conforming to BS 7671 for the owner of the property and a copy must be forwarded to the Building Control surveyor for approval at completion, so the Building Control completion certificate can be issued.
- 7.39.3** All switches and sockets including the consumer unit should be fixed between 450-1200mm above floor level. Accessible consumer units should be fitted with a child proof cover or installed in a lockable cupboard.

## 7.40.0 Energy efficient lighting

- 7.40.1** Fixed internal energy efficient lighting to be provided at the rate of 1 per 25m<sup>2</sup> floor area, or 1 per 4 fixed light fittings with a luminous efficiency greater than 40 lumens per circuit-watt
- 7.40.2** Fixed external energy efficient lighting to have 150 watts maximum per light and fitted with a PIR or only used with fittings that can only take luminous efficiency greater than 40 lumens per circuit-watt

## 7.41.0 Stairs, landings and changes in level of 600mm or more (including external steps)

- 7.41.1** Stairs to be constructed (and finished) in materials to clients choice to BS 5395 & BS 585 as detailed below:- (Spiral & helical stairs to be designed to BS 5395: Part 2)

**The person carrying out the work is to check and confirm the actual stair design details and sizes to the stair manufacturer prior to placing an order or prior to constructing the stairs.**

- 7.41.2** Stair pitch not to exceed 42° and design to be based upon dimensions taken from site and drawing.

Rise and going to be level and equal to all steps and to fall within the following separate classes:-



Any rise between 155mm-220mm used with any going between 245mm- 260mm, or

Any rise between 165mm-200mm used with any going between 223mm- 300mm.

**7.41.3** Stair to have a minimum headroom of 2000mm above stair pitch line this can be reduced to 1.9m at the centre of the stairs reducing to 1.8 m at the side of the stairs. Landings to be provided clear of any door swing at the top and bottom of the stairs equal in length to the width of the stairs. If doors open across a bottom of a landing a clear 400mm space must be maintained.

**7.41.4** Guarding/handrails must be provided 900-1000mm above floor/nosing levels and continuous throughout their length. All guarding is to be provided with non climbable vertical balustrading, not to allow the passage of a 100mm sphere, at least 900mm high to internal stairs and able to resist a force of 0.36kn/m. All open treads etc should not allow the passage of a 100mm sphere.

**7.41.5** Typical staircase construction details: side strings ex. 230 X 35mm, capping ex. 32 X 63mm, treads 25mm thick, risers in 13mm thick plywood, newel posts ex. 75 X 75mm, handrails ex. 75 X 63mm, balustrades ex. 32 X 32mm at 125mm ctrs fixed into proprietary timber head & base rebated capping.

### **7.42.0 Guarding to balconies, flat roofs, and low level window openings**

Guarding to external stepped access/openings/balconies to be at least 1100mm high provided with non climbable vertical balustrading, not to allow the passage of a 100mm sphere and able to resist a horizontal force of 0.74kn/m. All open treads etc should not allow the passage of a 100mm sphere.

Also opening windows above ground floor within 800mm of floor level to be provided with containment/guarding/proprietary catches as above, which should be removable (child proof) in the event of a fire where provided to a means of escape window. All guarding and open treads etc should not allow the passage of a 100mm sphere.

### **7.43.0 Existing septic tank & effluent drainage**

Where additional drainage effluent is to be connected to the existing septic tank/treatment system, it should be checked by a specialist and sizes/condition of tank/system to be confirmed suitable for treatment of additional effluent.





#### **7.44.0 Fire safety and smoke alarms in loft conversions to form a new 1st floor only in bungalows**

**7.44.1** The conversion of bungalows or similar single storey building to form a new first floor do not require a protected hall, landing or fire doors, but the supporting floor must still be provided with 30 minute fire resisting construction.

**7.44.2** The stair may be positioned in a ground floor room such as living room, provided there is an external door that opens directly to the outside for means of escape.

**7.44.3** All rooms or bedrooms on the first floor (except bathrooms or toilets) must be directly accessible off the stair landing.

**7.44.4** Smoke detection must be installed as detailed overleaf, with an additional interlinked heat detector at ceiling level in kitchens which are open to the stairs at ground level.





**7.44.5** Means of escape windows or top hung escape roof lights with clear minimum opening casement dimensions of 0.33m<sup>2</sup> and 450mm within 800-1100mm of floor level are to be provided to all bedrooms and habitable rooms at 1st floor levels and any new inner habitable rooms on the ground floor created by the works.

The escape windows should be positioned to allow rescue by a ladder from ground level. Note: Where escape windows are not possible, the stairs can be protected as detailed in section below.

Doors between garages and dwellings to have 100mm high fire resisting threshold step down into the garage, FD30 fire door & frame fitted with an approved mechanical self closing device, intumescent strips and cold smoke seals.

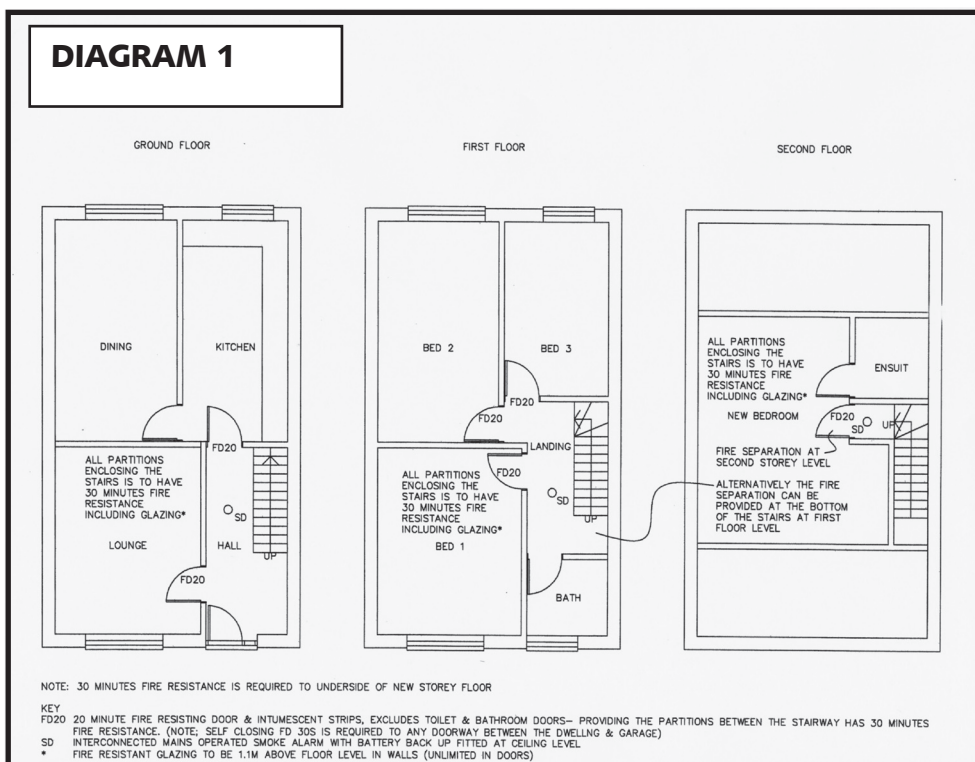
## 7.45.0 Loft conversion in existing two storey dwelling houses forming a 3rd storey

### 7.45.1 Means of escape from the new 3rd storey

4 options are available:

#### Option 1: Protected stairway

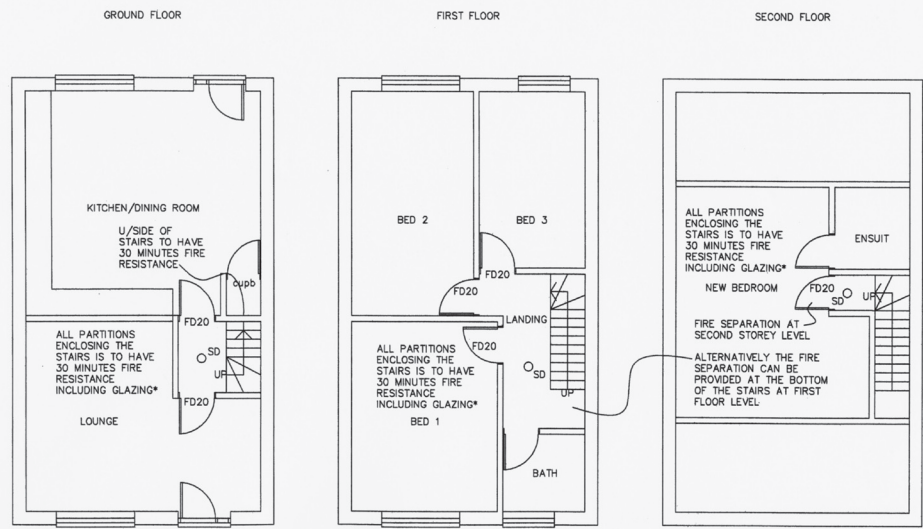
The new and existing stairs, landings and hallway from the new 3rd storey down to the ground floor must be protected and enclosed in 30-minute fire resisting construction and the protected stairs must discharge directly to an external door as diagram 1.



## Option 2: Protected stairway with alternative exits at ground floor level

The new and existing stairs, landings and hallway from the new 3rd storey down to the ground floor must be protected and enclosed in 30-minute fire resisting construction and the protected stairs must give access to 2 or more FD20 fire doors on the ground floor that discharge into different rooms which are separated from each other by 30 minute fire resisting construction both of each must have external doors for escape as diagram 2.

**DIAGRAM 2**



NOTE: 30 MINUTES FIRE RESISTANCE IS REQUIRED TO UNDERSIDE OF NEW STOREY FLOOR

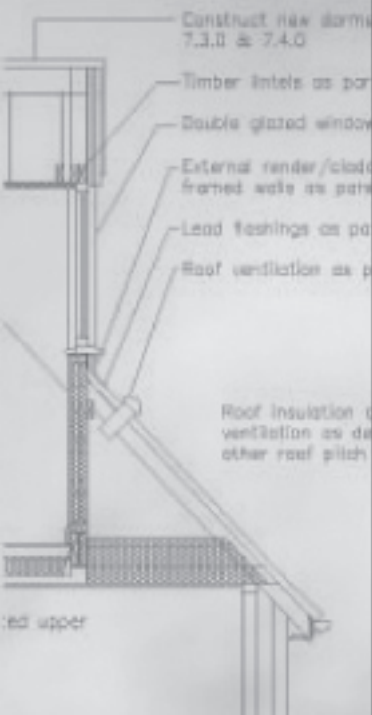
**KEY**

FD20 20 MINUTE FIRE RESISTING DOOR & INTUMESCENT STRIPS, EXCLUDES TOILET & BATHROOM DOORS- PROVIDING THE PARTITIONS BETWEEN THE STAIRWAY HAS 30 MINUTES FIRE RESISTANCE (NOTE: SELF CLOSING FD 30S IS REQUIRED TO ANY DOORWAY BETWEEN THE DWELLING & GARAGE)

SD INTERCONNECTED MAINS OPERATED SMOKE ALARM WITH BATTERY BACK UP FITTED AT CEILING LEVEL

\* FIRE RESISTANT GLAZING TO BE 1.1M ABOVE FLOOR LEVEL IN WALLS (UNLIMITED IN DOORS)

as per 7.1.0



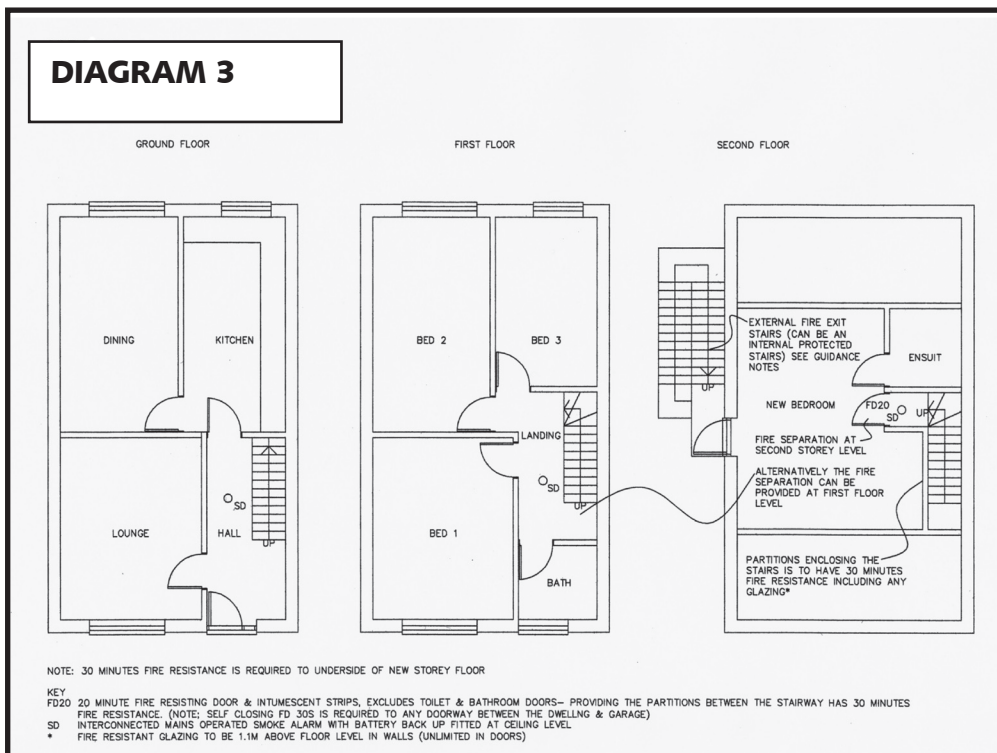
### Option 3: Fire separated 3rd storey with alternative external/internal fire exit

The new top 3rd storey should be separated from the lower storeys by 30 minute fire resisting construction and provided with an alternative escape route leading to its own final exit as diagram 3.

The external stairs must not be within 1.8m of any unprotected opening at the side of the stairs, and no openings are permitted below the stairs- unless the opening is fitted with 30 minute fire resisting glass and proprietary bead system and is permanently sealed shut subject to adequate ventilation.

The external stairs is subject to obtaining planning permission etc where necessary before the works commence on site. (Please contact the FODDC planning department for further information).

The alternative fire exit can also be formed internally as a protected stairway.



## Option 4: Residential sprinkler systems for means of escape

Where fire safety requirements of the building regulations cannot be met for loft conversions, proposals for fire engineered solutions may be allowed against the requirements of Approved Document B where a risk assessment has been carried out and approved by building control before works commence on site and residential sprinkler system is designed and installed to BS 9251:2005 incorporating BAFSA technical guidance note no.1 June 2008 by a suitably qualified specialist- which must be approved by Building Control before works commence on site. Contact: The British Automatic Sprinkler Association (BAFSA)- Sprinklers for Safety: Use and Benefits of Incorporating Sprinklers in Buildings and Structures (2006) ISBN: 0 95526 280 1. See also: [www.bafsa.org.uk](http://www.bafsa.org.uk) ISBN 0-9552628-3-6 technical guidance note no.1 see also [www.firesprinklers.org.uk](http://www.firesprinklers.org.uk)

**IMPORTANT NOTE:** The above 4 options need not be followed if the dwelling house has more than one internal stairway, which will afford effective alternative means of escape and are physically separated from each other.

### 7.45.2 Fire doors

All rooms onto the protected stairs (except bathrooms or toilets providing the enclosing walls have 30 minutes fire resistance) are to be provided with FD20 fire doors with intumescent strips. Any glazing within the fire door or stairway enclosure is to have 30 minutes fire resistance including the beading.

Existing solid/hardwood doors may achieve the required 20 minutes fire resistance or can be upgraded with proprietary intumescent products applied as manufacturers details to achieve 20 minutes fire resistance, as agreed with building control before works commence on site. Contact Cotswold Intumescent Products on: 01453 731006. A copy of the purchase invoice will be required by building control on completion to confirm product used.

Doors between garages and dwellings to have 100mm high fire resisting threshold step down into the garage, FD30 fire door & frame fitted with an approved mechanical self closing device, intumescent strips and cold smoke seals.





### 7.45.3 Smoke alarms

All floors to be provided with mains operated interconnected fire detection and fire alarm system in accordance with the relevant recommendations of BS 5839 – 6: 2004 to at least a Grade D Category LD3 standard.

Self contained mains operated smoke alarms with battery back up are to be fixed at ceiling level in all circulation areas at each storey level, within 7.5m of all doors to habitable rooms.

### 7.45.4 Fire resistance to new storey floor

The new 3rd storey floor storey should be separated from the remainder of the house by 30 minute fire resisting construction e.g. a minimum of 12.5 mm plasterboard and skim (if existing or 15mm if renewed) to ceilings and sides of stud walls and provided with a 20 minute fire door with intumescent strips at either the bottom or top of the new stair leading to the loft conversion.

**IMPORTANT NOTE: Means of escape windows – are not required where the stairs is protected as detailed in section 7.44 above**

### 7.46.0 Materials and workmanship

All materials must comply with the following:

- British Standards or European Standards
- Product Certification Schemes (Kite marks)
- Quality Assurance Schemes
- British Board of Agreement Certificates (BBA)
- Construction Product Directives (CE Marks)
- Local Authority National Type Approvals (System Approval Certification)

All materials must be fixed in strict accordance with manufacturers printed details and workmanship must be in strict accordance with BS 8000: Workmanship on Building Sites: Parts: 1 to 16.

Where materials, products and workmanship are not fully specified or described, they are to be:

- Suitable for the purpose stated or inferred
- In accordance with recognised good practice



### 7.47.0 Building Regulations

All work must comply with the 2000 Building Regulations and the technical design and constructional requirements of the current Approved Documents A to P and Regulation - 7 Materials and Workmanship.

The person carrying out the building works is to liaise with and meet the requirements of the LA Building Control/ Certifying Body, giving required notices of stages of works as required by the Building Regulations including:

- Inspection of existing foundations/lintels where required to check suitability to support new storey loadings
- Foundation excavations before any concrete is laid
- Over site covering to ground floors before any concrete is laid
- Foul & surface water drainage before any pipes are covered over
- Structural timbers (upper storey floor joists/beams and roof structure before any coverings are fixed
- Completion of building-prior to occupation

### 7.48.0 Construction (Design and Management) Regulations (Cdm) And Health and Safety at Work Act

All domestic developments including new build and or refurbishment (excluding self build) and any demolition works are to be managed in accordance with the requirements of the current Construction (Design and Management) Regulations (CDM), and current Health and Safety at Work Act.

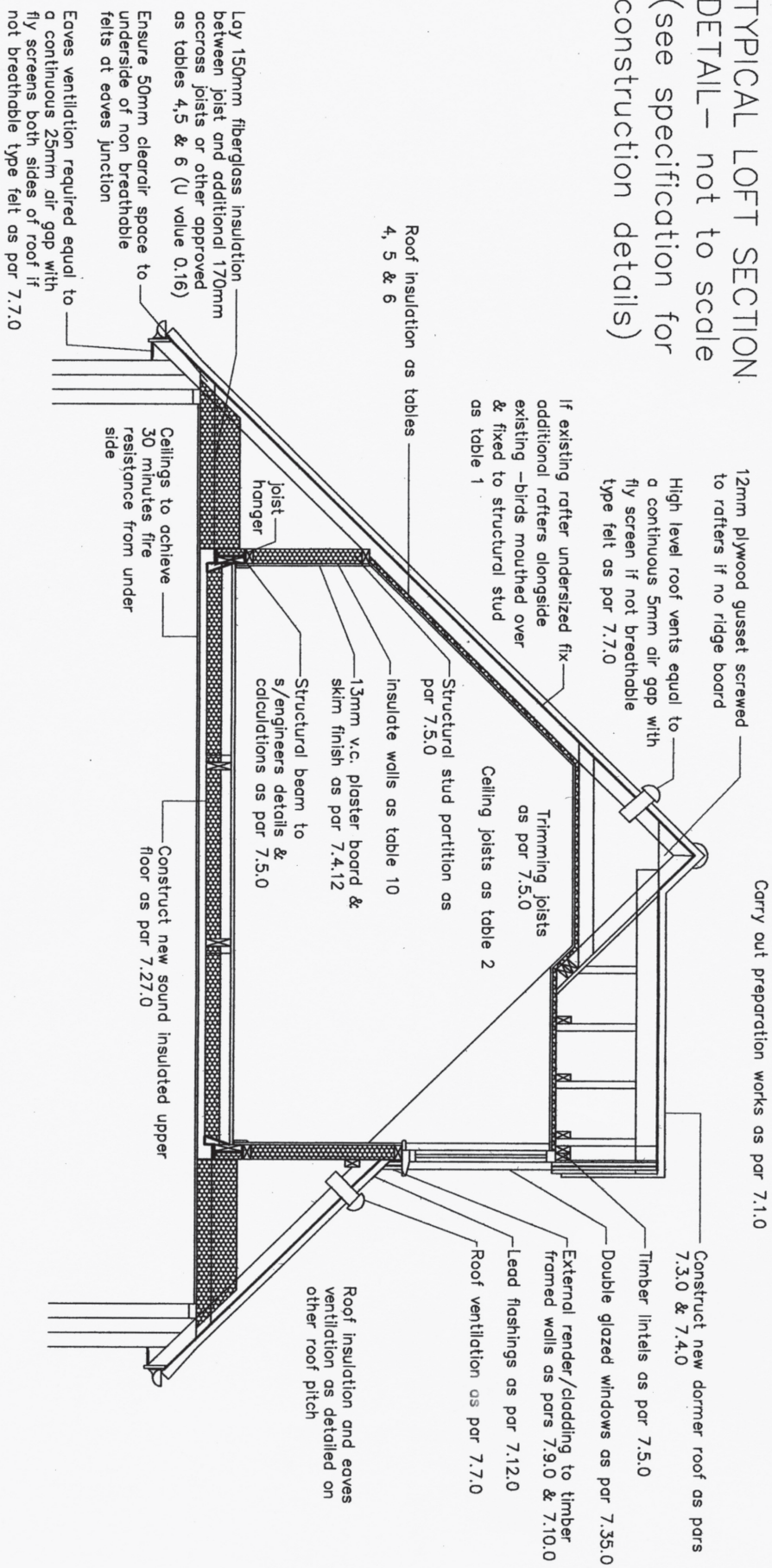
Materials heavier than 20kg must not be manually lifted, and must be transported/lifted/positioned etc by mechanical plant/equipment suitable for the operation.

#### **IMPORTANT NOTE:**

**It should be made clear that whilst every care has been taken in compiling this publication, and the statements it contains, no party or individual involved in this publication can accept any responsibilities for any inaccuracies.**

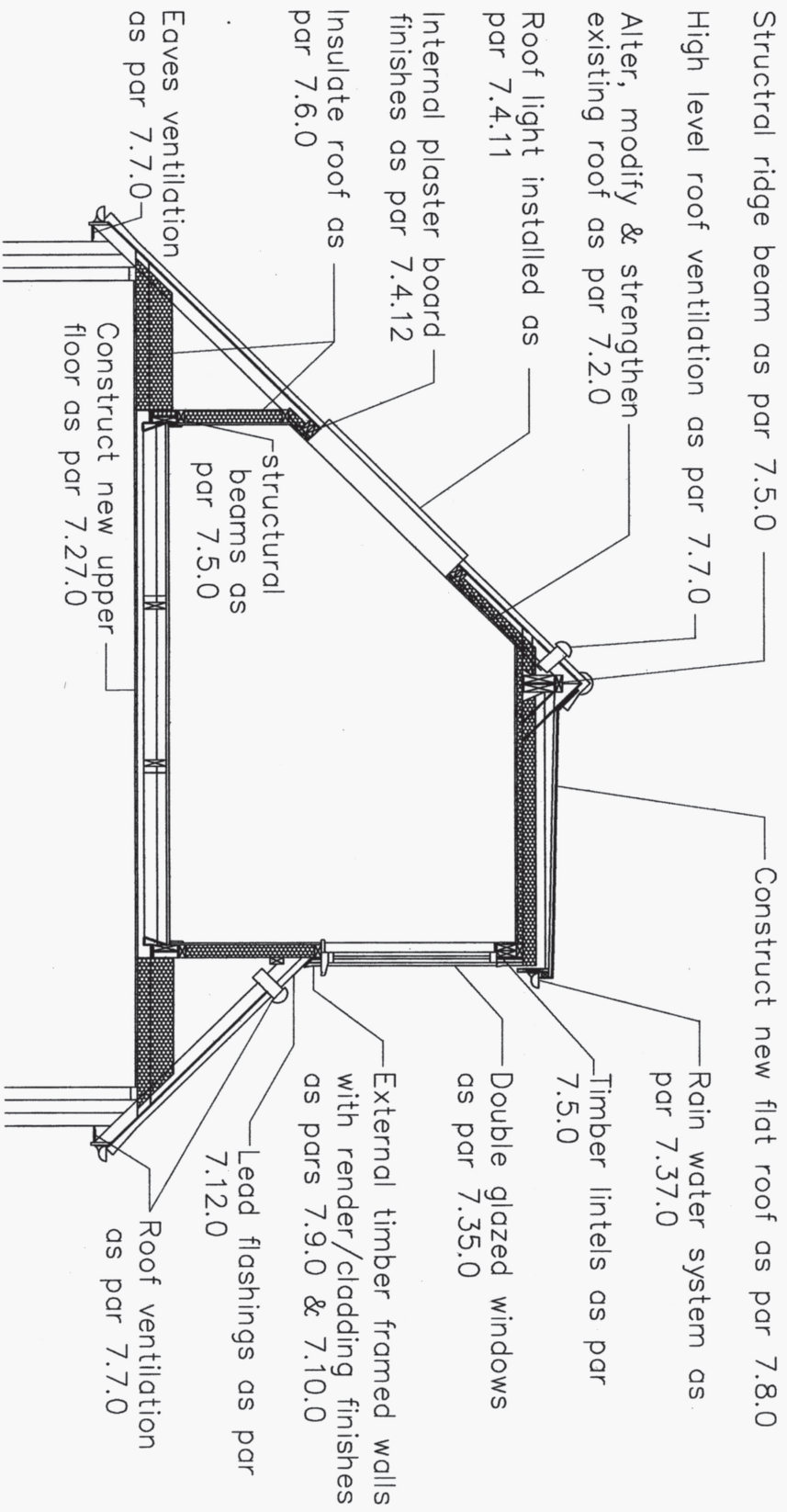
Copy right: A L Gwynne.

**TYPICAL LOFT SECTION  
DETAIL— not to scale**  
(see specification for  
construction details)



# SECTION DETAIL OF LOFT CONVERSION WITH NEW FLAT ROOF (not to scale)

Carry out preparation works as par 7.1.0





**NOTES:**

**NOTES:**

For further advice on Building Regulation issues in Gloucestershire please contact your local Building Control Service.



Cheltenham Borough Council  
Built Environment,  
Municipal Offices, Promenade, Cheltenham,  
Glos, GL50 1PP  
Tel: 01242 264321 Fax: 01242 227323  
Email: [buildingcontrol@cheltenham.gov.uk](mailto:buildingcontrol@cheltenham.gov.uk)



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Trinity Road, Cirencester, Glos, GL7 1PX  
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Building Standards & Control,  
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Gloucester, GL1 2EQ  
Tel: 01452 396771 Fax: 01452 396763  
Email: [buildingcontrol@gloucester.gov.uk](mailto:buildingcontrol@gloucester.gov.uk)



Stroud District Council  
Building Control Services,  
Ebley Mill, Westward Road, Stroud, Glos, GL5 4UB  
Tel: 01453 754518 Fax: 01453 754511  
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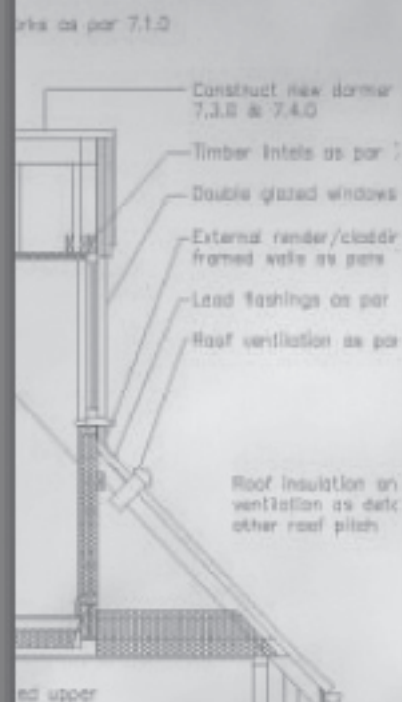


Tewkesbury Borough Council  
Building Control Services,  
Council Offices, Gloucester Road, Tewkesbury,  
Glos, GL20 5TT  
Tel: 01684 272084 Fax: 01684 272227  
Email: [buildingcontrol@tewkesbury.gov.uk](mailto:buildingcontrol@tewkesbury.gov.uk)

### Acknowledgements:

Thank you for the kind use of the photographs to: JS Lofts Ltd., Tel: 01594 841225

Thank you for the fire sprinkler information to Nationwide Fire Sprinklers. Tel: 0800 028 9911



## OTHER USEFUL COUNCIL NUMBERS

### FOREST OF DEAN DISTRICT COUNCIL

Planning & Development Control	01594 810000
Conservation Section	01594 812339
Pollution & Noise Complaints	01594 812404
Land Drainage/Flooding	01594 812263
Food Safety	01594 812418
Health & Safety	01594 812418
Pest Control	01594 812443

### GLOUCESTERSHIRE COUNTY COUNCIL

General Enquiries	01452 425000
Gloucestershire Highways Forest of Dean Area	01594 860777
Gloucestershire Fire & Rescue Service	01452 753333

### USEFUL NUMBERS OF OTHER AGENCIES OR COMPANIES

Forestry Commission	01594 833057
Highways Agency	0845 9 55 65 75
Sewage & Water Suppliers	
Severn Trent Water	0800 783 4444
Welsh Water/Dwr Cymru	0800 085 3968
Environment Agency	08708 506 506
Emergency Pollution Hot Line	0800 80 70 60
Transco Gas Emergencies	0800 111 999
Health & Safety Executive	01179 88 60 00

This document can be made available on audiotape, in Braille, large print, a range of languages and in other formats if required. For further information please contact us on 01594 810000



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