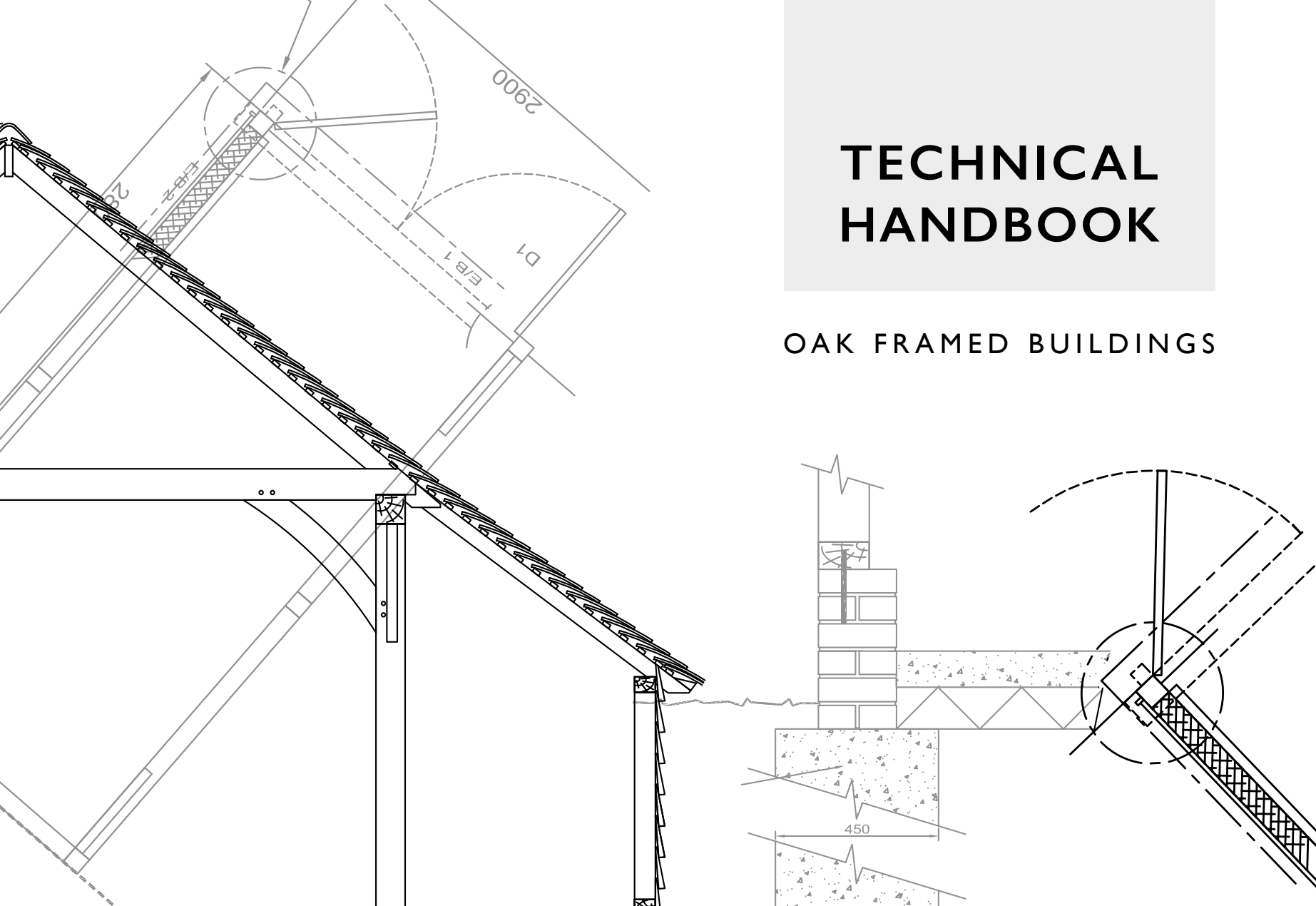


TECHNICAL HANDBOOK

OAK FRAMED BUILDINGS



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The information in this handbook is designed to provide advice and guidance and does not form part of any final contract. All information was correct at the time of print and we reserve the right to amend this at any time.

WHAT TO EXPECT

NO COMPROMISE ON QUALITY

Our frames are put through rigorous inspections before and after machining to ensure that they continue to meet our stringent quality levels throughout the process. Any pieces which fail quality control checks are immediately replaced.

FAST DELIVERY

Your frames can be made to order and can be delivered to your door within 6 – 8 weeks from sign off of production drawings.

ENGINEERED SOLUTIONS

We are able to supply frames with intricate joints giving a clean cut and a tight quality finish every time. This precision and consistency cannot be achieved by hand.

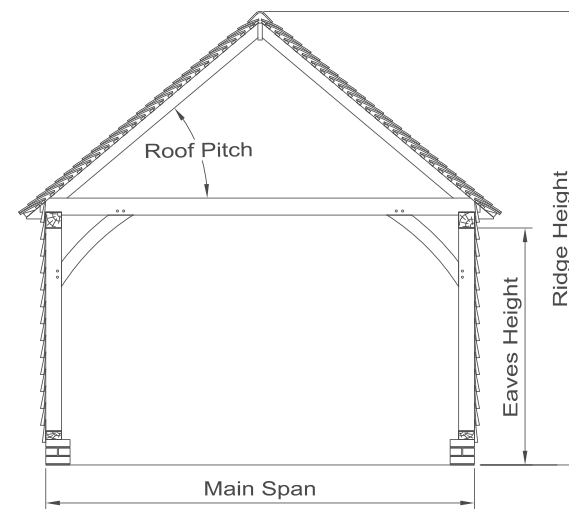
SUSTAINABLE RESOURCES

The carefully planned felling and replanting programme used by our mills guarantees the long-term availability of materials.

FRAME TYPES

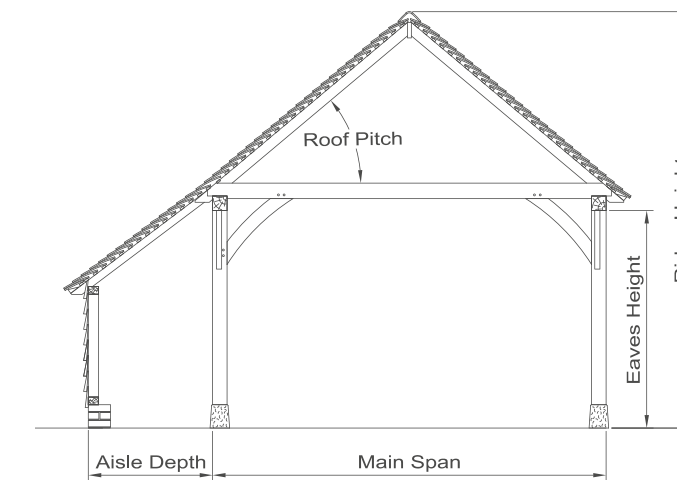
MAIN SPAN

This is where the building is the same height at the rear as at the front. We will normally go up to a maximum main span of 8m and any main span over 6m will need a truss roof construction.



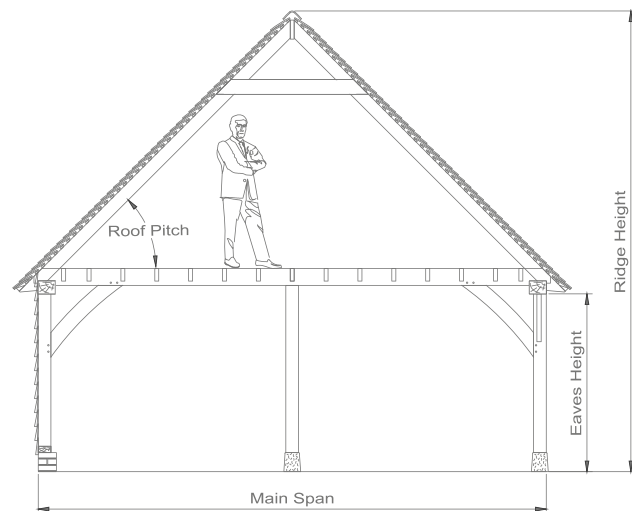
MAIN SPAN WITH REAR AISLE

This is where there is an aisle (Catslide) on the rear allowing you to get a greater depth of building but also keeping the ridge height down. The roof pitch on the aisle is usually slightly shallower than the main roof and it can be as deep as is practical. We will normally go up to a maximum main span of 8m and any main span over 6m will need a truss roof construction.



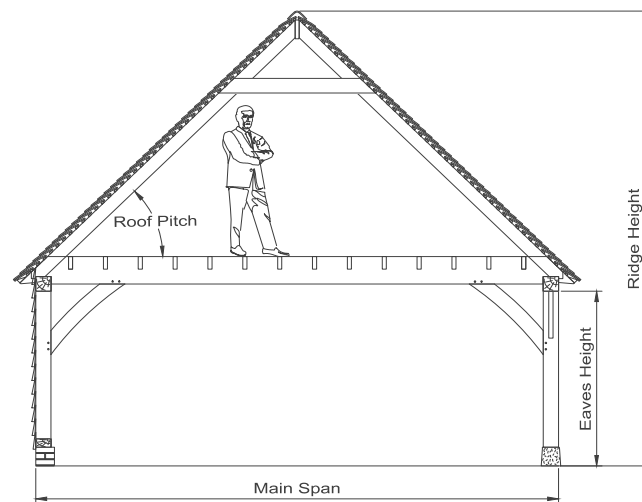
MAIN SPAN WITH FIRST FLOOR WITH CENTRAL POST

First floor options can be fitted into most buildings but the larger the main span and greater the roof pitch, the greater the useful area upstairs. There is a central post under the tie beam to help take the load of the floor. We will normally go up to a maximum main span of 8m.



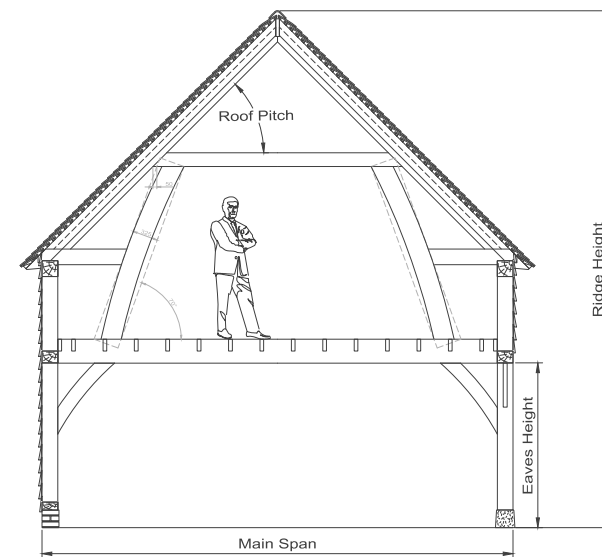
MAIN SPAN WITH FIRST FLOOR WITHOUT CENTRAL POST

This frame type gives you a first floor area without the need for a central post under the tie beam but the heights are reduced upstairs as the tie beam has to be a lot bigger to take the floor load. With this frame type you need to increase the post sizes as more forces are being transferred to the posts than if you had a central post. Max. main span for this frame type is about 6.4m.



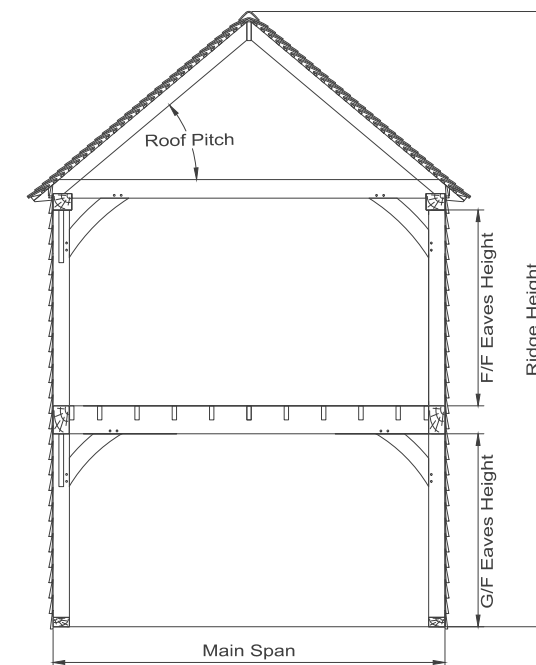
SLING BRACE

This design gives a 1½ storey building but you have the sling braces to incorporate into your space upstairs. The maximum main span on this design is about 6.4m. This frame type does not lend itself very well to go around corners in either an 'L' or 'T' shaped configuration as there are eaves beams at waist height.



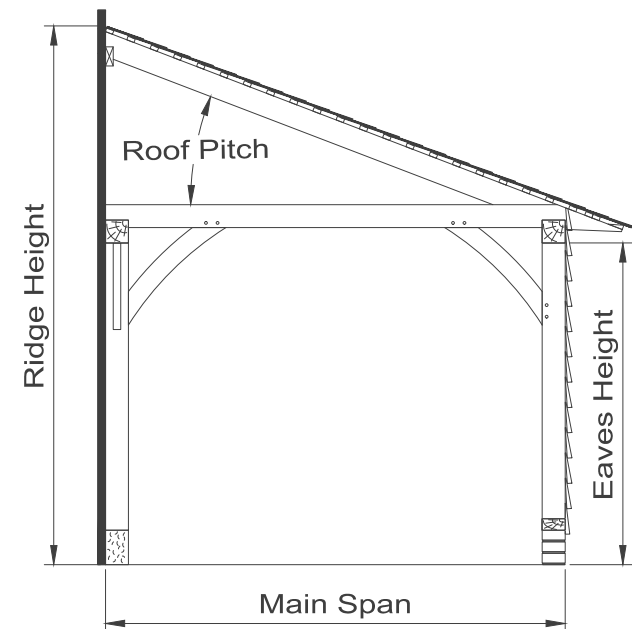
TWO STOREY

This is a normal two storey construction.



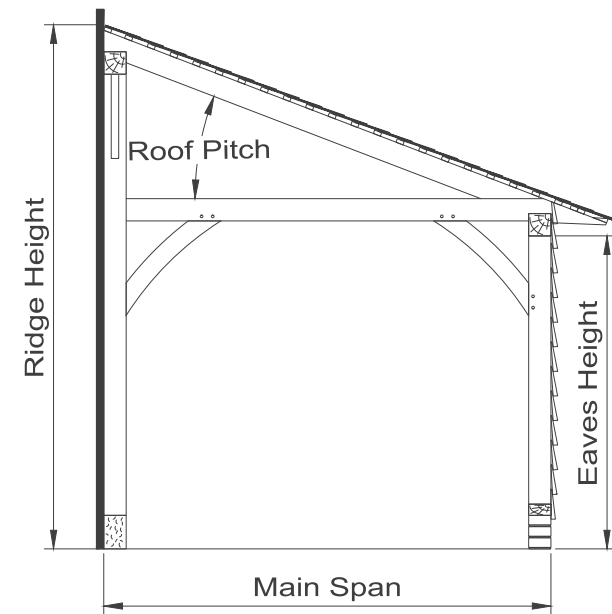
LEAN-TO

This is where there is a wall plate attached to an existing structure to pitch the roof on.



MONOPITCH

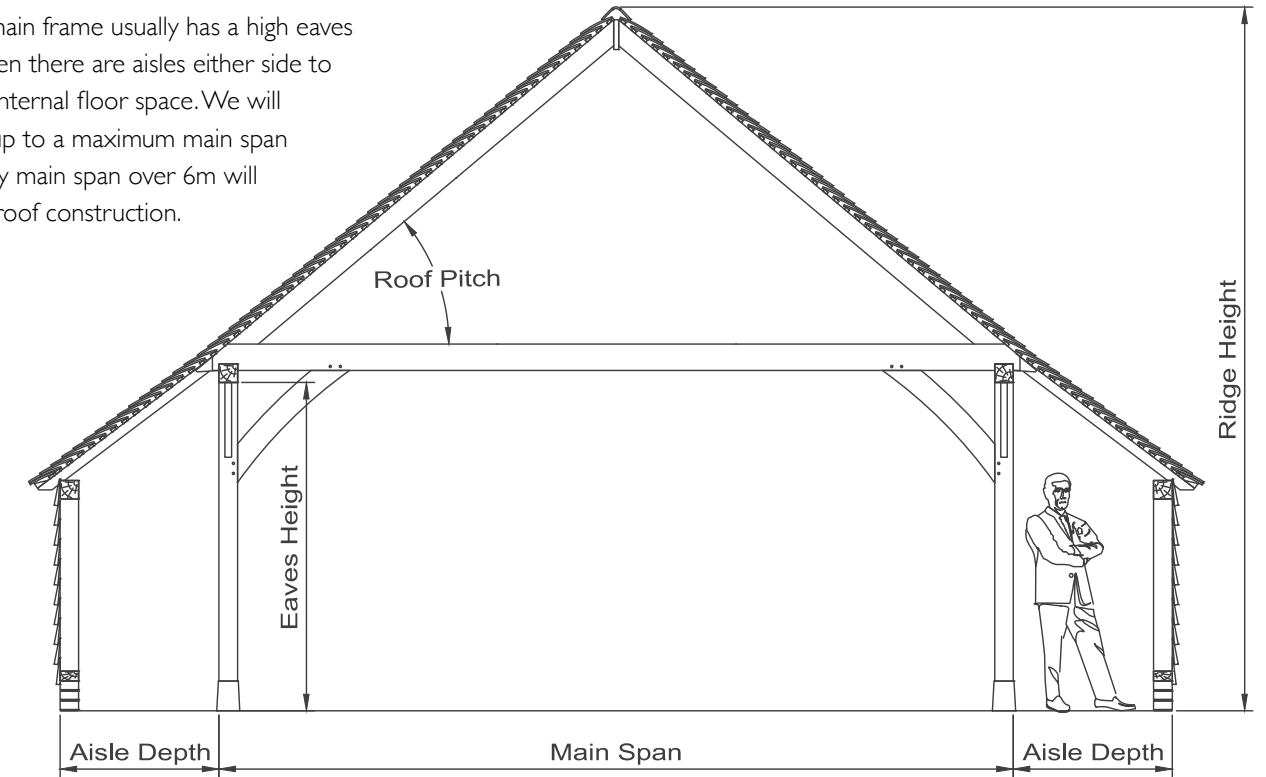
This is like the lean-to design except it is totally free standing and self-supporting.





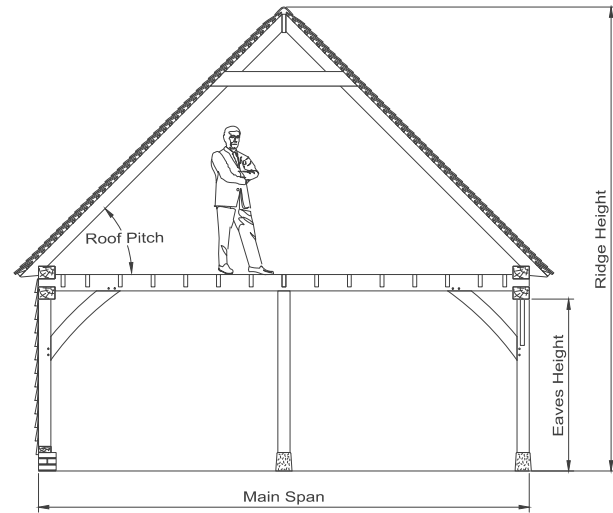
AISLED BARN

The central main frame usually has a high eaves height and then there are aisles either side to increase the internal floor space. We will normally go up to a maximum main span of 8m and any main span over 6m will need a truss roof construction.



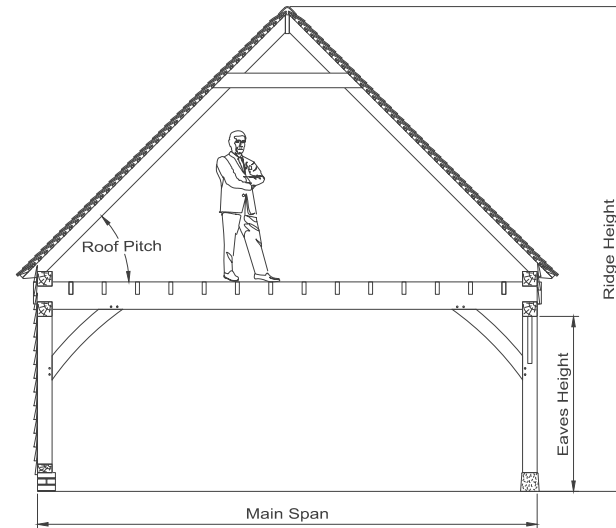
RAISED PLATE WITH CENTRAL POST

This design gives you a little extra room in the roof compared with the Main Span with First Floor. There is a central post under the tie beam to help take the load of the floor. We will normally go up to a maximum main span of 8m.



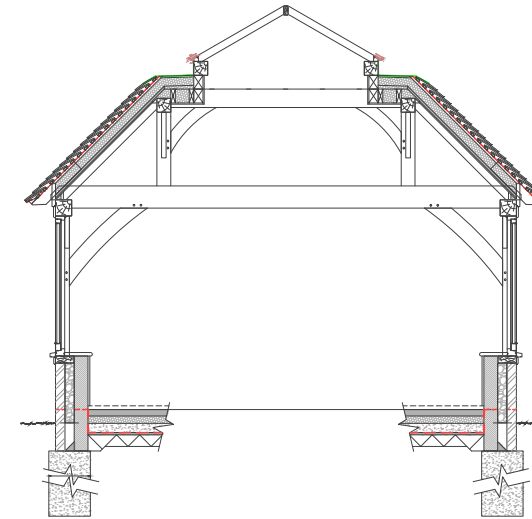
RAISED PLATE WITHOUT CENTRAL POST

This design gives you a little extra room in the roof compared with the Main Span with First Floor. The maximum main span for this frame type is about 6.4m.



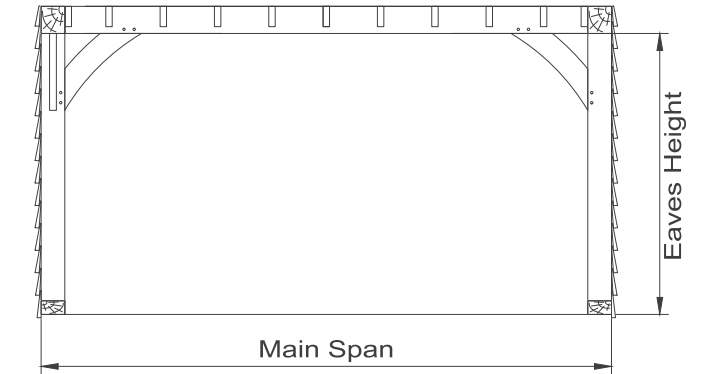
PITCHED ROOF WITH FLAT ROOF


This is where a pitched roof is cut off with a flat top and is used if you have low height restrictions or you still want a view from an existing upstairs window. It is often used with glazed lanterns on top to give light inside.



FLAT ROOF

This is a standard flat roof design and is used if you have low height restrictions. It is often used with glazed lanterns on top to give light inside.





ROOF
OPTIONS



CATSLIDES

A catslide roof is a roof that continues down below the main eaves height and allows you to have a greater depth of building without increasing your ridge height.



LANTERNS

Our oak lanterns are green oak rafters to match the frame that then have glass on top and secured from outside with powder coated aluminium cappings which makes it virtually maintenance free.



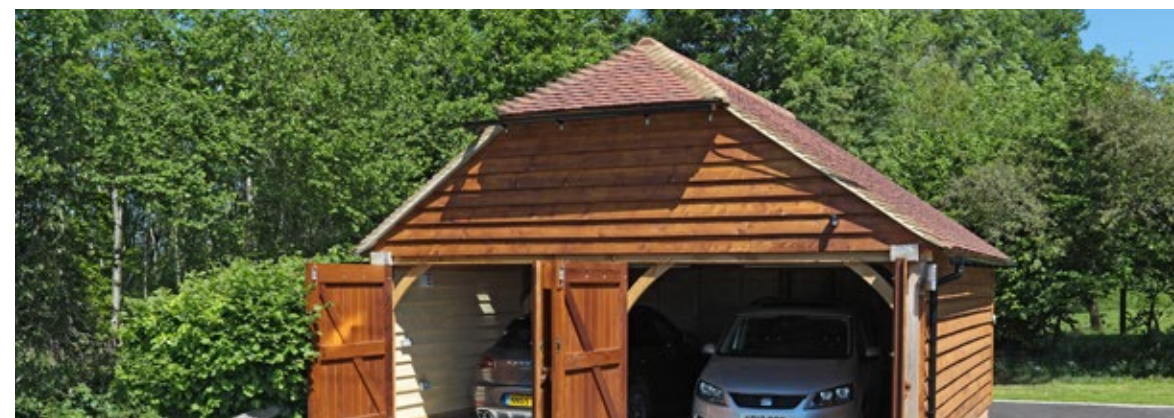
ROOF ENDS - GABLE

The term Gable end usually also includes the triangle of wall beneath the roof covering.



ROOF ENDS - FULL HIP

A hip is where the end of the roof is sloped from the eaves level up to the ridge.



ROOF ENDS - BARN HIP

A barn hip can also be called a half hip, clipped gable or Dutch hip. This is where the top portion of the gable is replaced with a small hip.



ROOFING MATERIAL OPTIONS

MACHINE MADE TILES

Machine made clay tiles are the cheaper of the two options and give a very uniform finish to the roof. There are a lot of manufacturers and most machine made plain clay tiles will be suitable down to a roof pitch of 35° and up to a vertical 90°. Marley Eternit also have an Acme Single Camber Clay Plain Tile that will go down to 30°.

PEG TILES

The peg tile gets its name from the method of fixing the tiles to the battens with small round wooden pegs driven through square holes which are punched into the tile at the moulding stage. Some peg tiles can be smaller than a standard plain tile at 250mm x 150mm but there are differences between manufacturers and some second-hand peg tiles are even smaller.

HANDMADE TILES

Handmade tiles provide slight random irregularities which gives the roof a bit more character than machine made tiles. The minimum roof pitch this type of tile can go on varies by manufacturer. Some can go down to 35° and others can only go down to 40°.

INTERLOCKING

Interlocking tiles give the external look of plain tiles but are designed to be able to go down to a minimum roof pitch of 22.5°.

PANTILES

Pantiles are large roof tiles, S-shaped in section. They are side lapping and the ends only overlap the course immediately below, unlike plain tiles which lap two courses. There are many different pantiles and the minimum roof pitch of them ranges from 22.5° to 30° so you need to check you are getting the right ones if you are on a shallow pitch. Also note that the headlap for the tiles is greater the lower the pitch which means you will need more tiles per m² for the lowest roof pitches.

SHINGLES / SHAKES

Wood shakes and shingles are manufactured from western red cedar, cypress, pine and redwood trees. Shakes are split from logs and then reshaped and are usually thicker at the butt end as compared with shingles. Shingles are sawn both sides and have an even taper and uniform thickness. Both shakes and shingles are available pressure treated but only Western Red Cedar products are available with a fire-proof pressurised treatment.

SLATES

NATURAL: Slate is a good roofing material because it has an extremely low water absorption index of less than 0.4%. This low tendency to absorb water also makes it very resistant to frost damage and breakage due to freezing. If properly installed, a slate roof will provide a long-lasting weather tight roof with a typical lifespan of around 80-100 years.

MAN-MADE: There are fibre cement slates on the market and these are considerably cheaper than natural slate but lack the long lifespan and character of natural slate.



There are many roofing products available that will be suitable for your new oak-framed building. To achieve planning permission, some planners may well insist you choose a solution that is in keeping with the immediate or surrounding area.

INSULATION OPTIONS

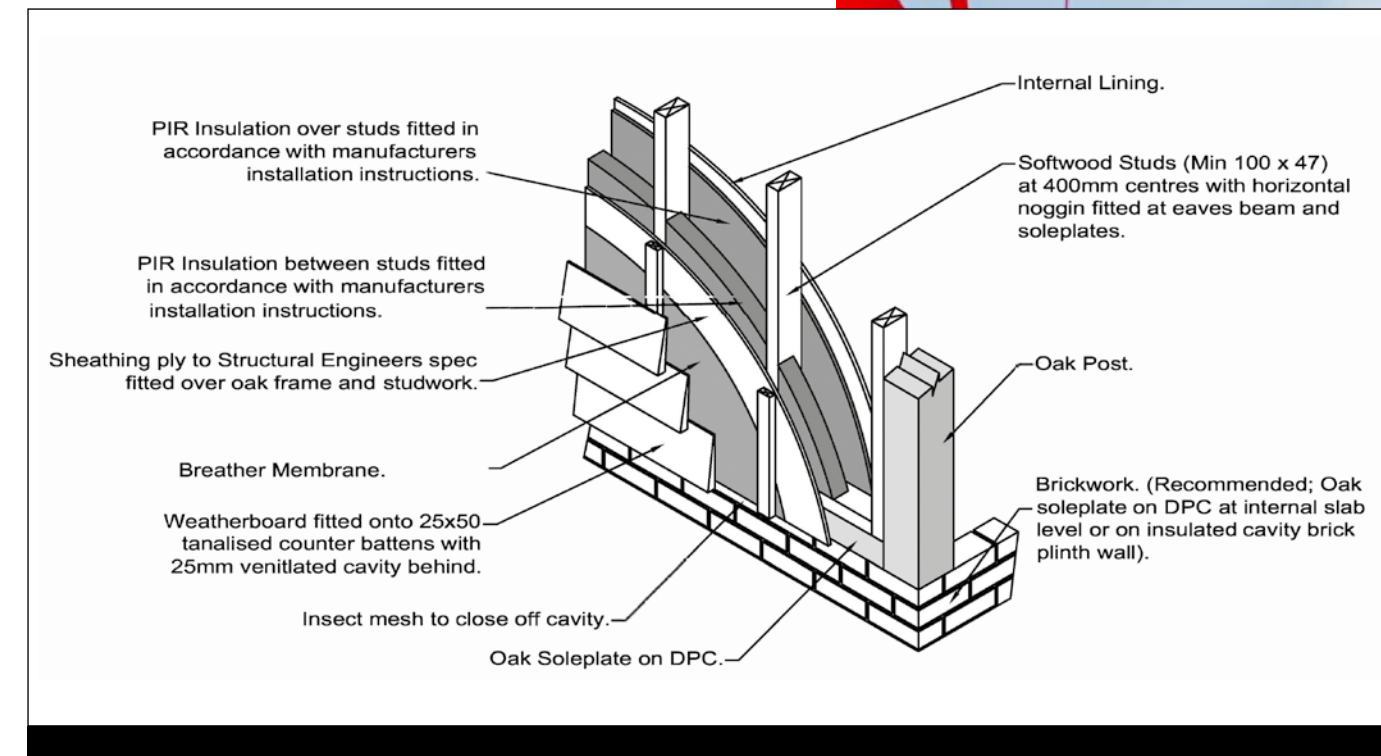
There are a number of different insulation options and many different materials available. You will need to decide what level of insulation you would like or need to pass Building Regulations.

If you are having a small unheated workshop or summerhouse in your garden then you may just want some insulation to take the chill off.

The most cost effective way of doing this is with a quilt insulation, usually 100mm thick, which can be put between the rafters and studwork. You will need to make sure you put a breathable membrane on both the roof and the walls.

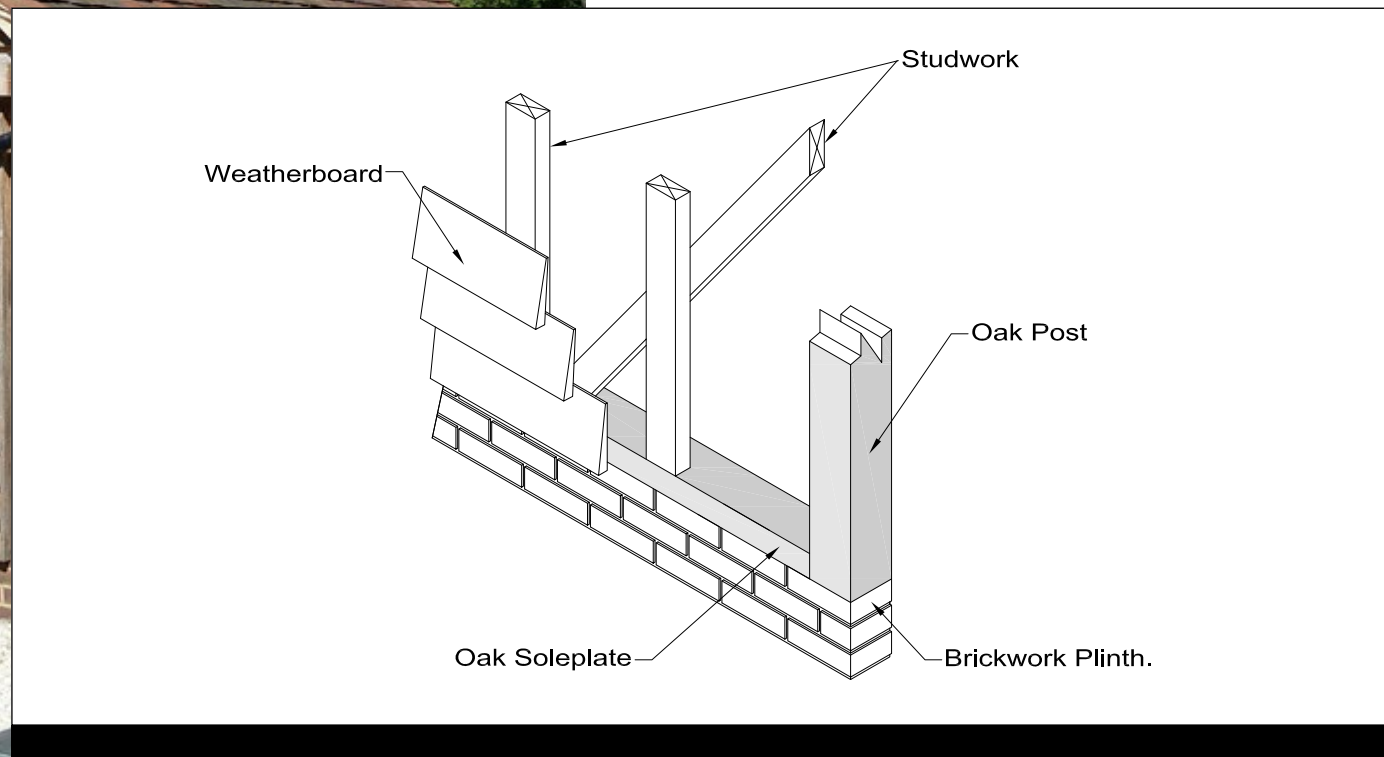
As soon as you start attaching to your existing property or want to heat your building then you need to up the insulation values. Building Regulations stipulate minimum values for floors, walls and roofs but you may want to improve on these values to help reduce future heating and energy costs. You also need to take into account things like heat loss, thermal bridging and condensation risk analysis. These things are especially important when using a green oak frame because the oak will shrink over time and you need to minimise the effect of the shrinkage.

EXAMPLE OF INSULATED WALL CONSTRUCTION

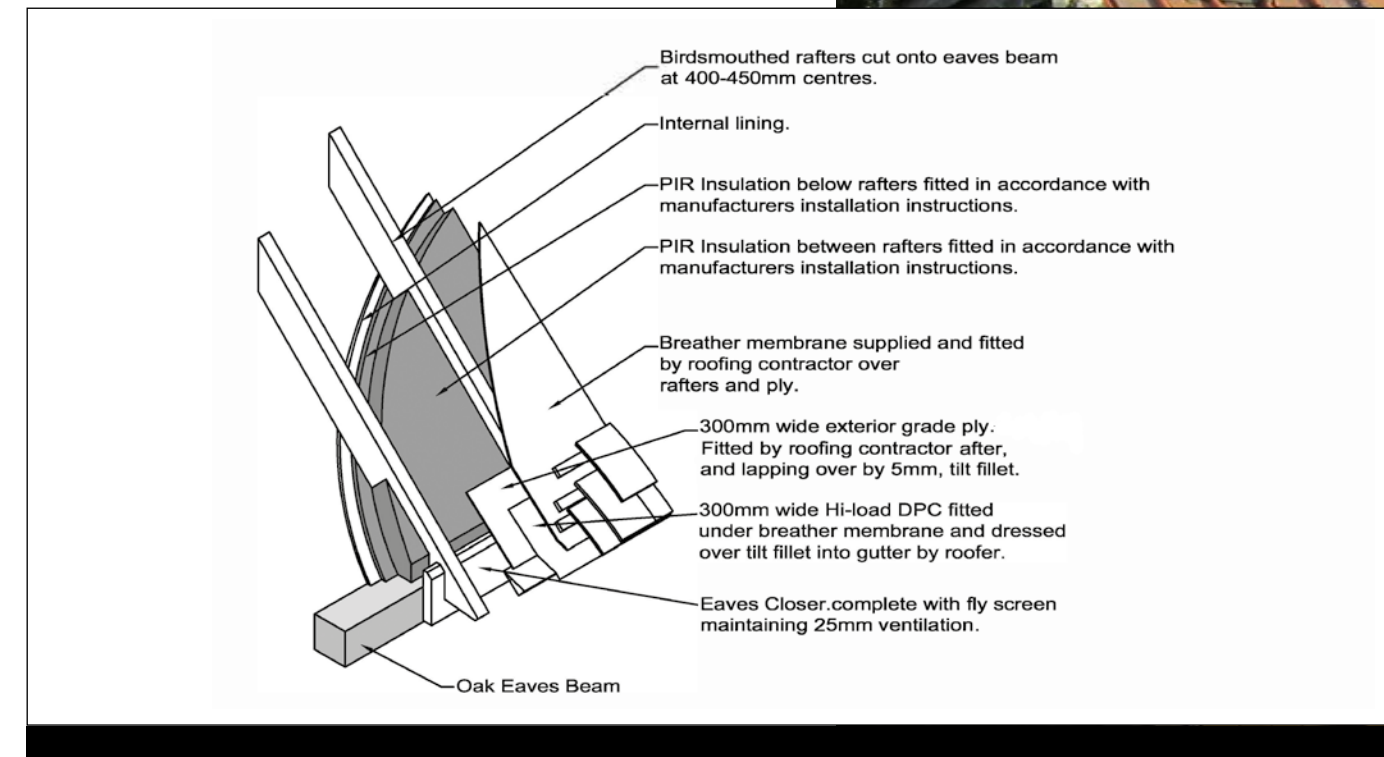




EXAMPLE OF UNINSULATED WALL CONSTRUCTION

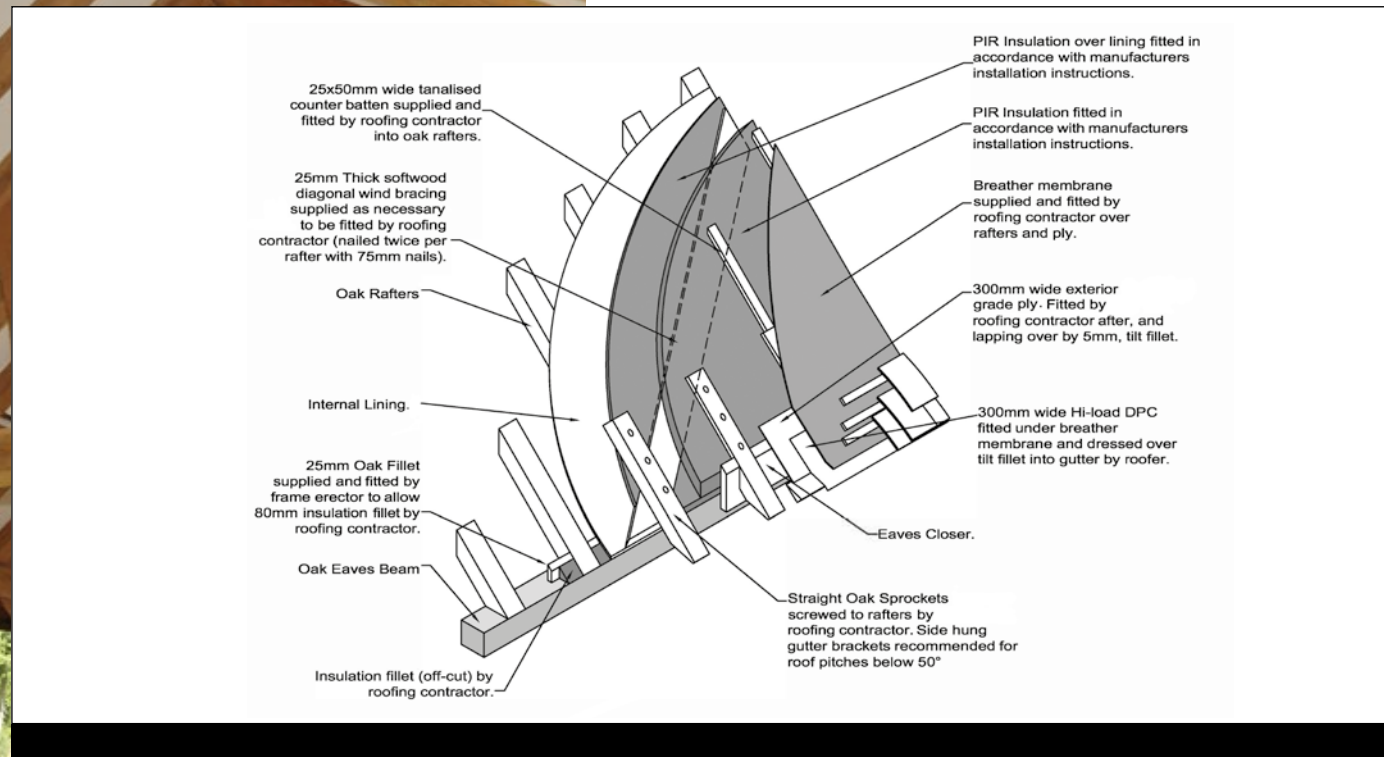


EXAMPLE OF VENTILATED COLD ROOF DETAIL

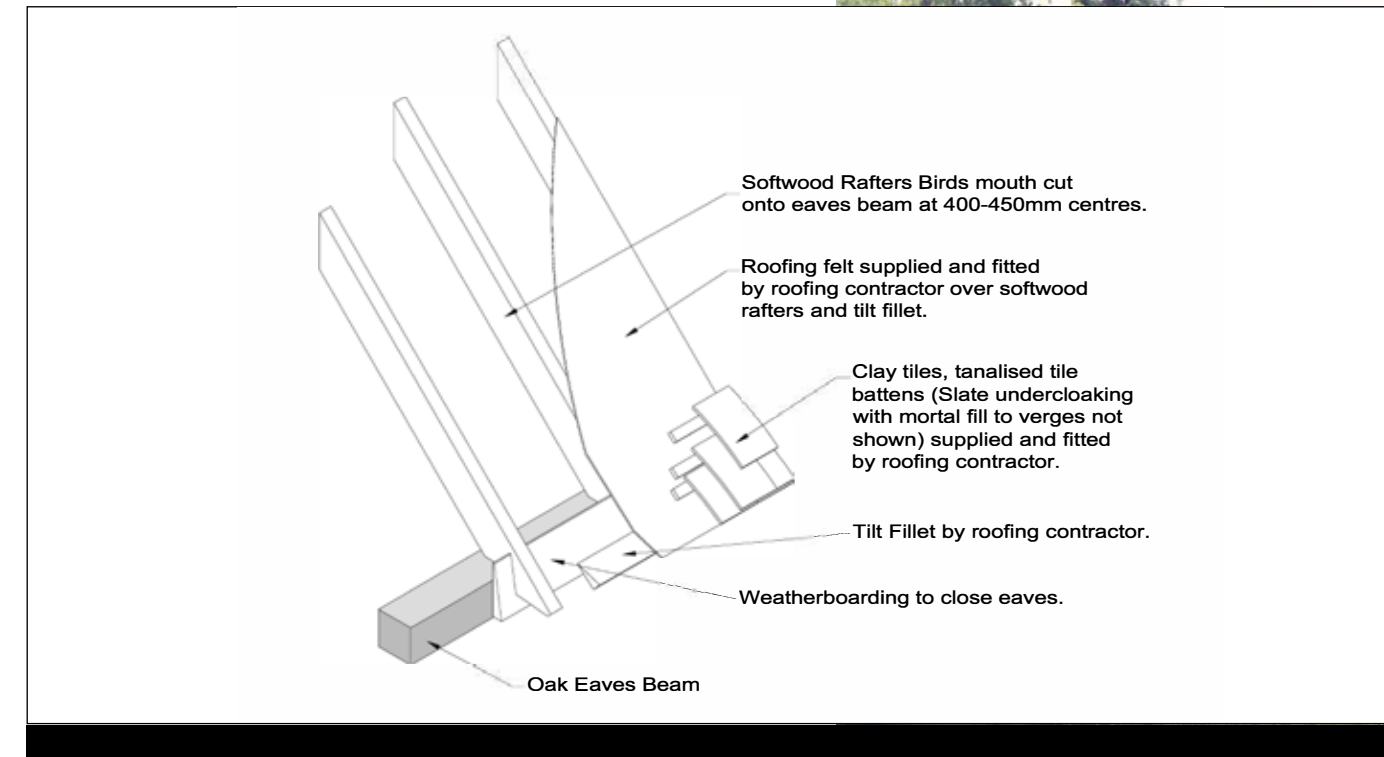




EXAMPLE OF WARM ROOF DETAIL



EXAMPLE OF UNINSULATED ROOF DETAIL



GROUNDWORK OPTIONS

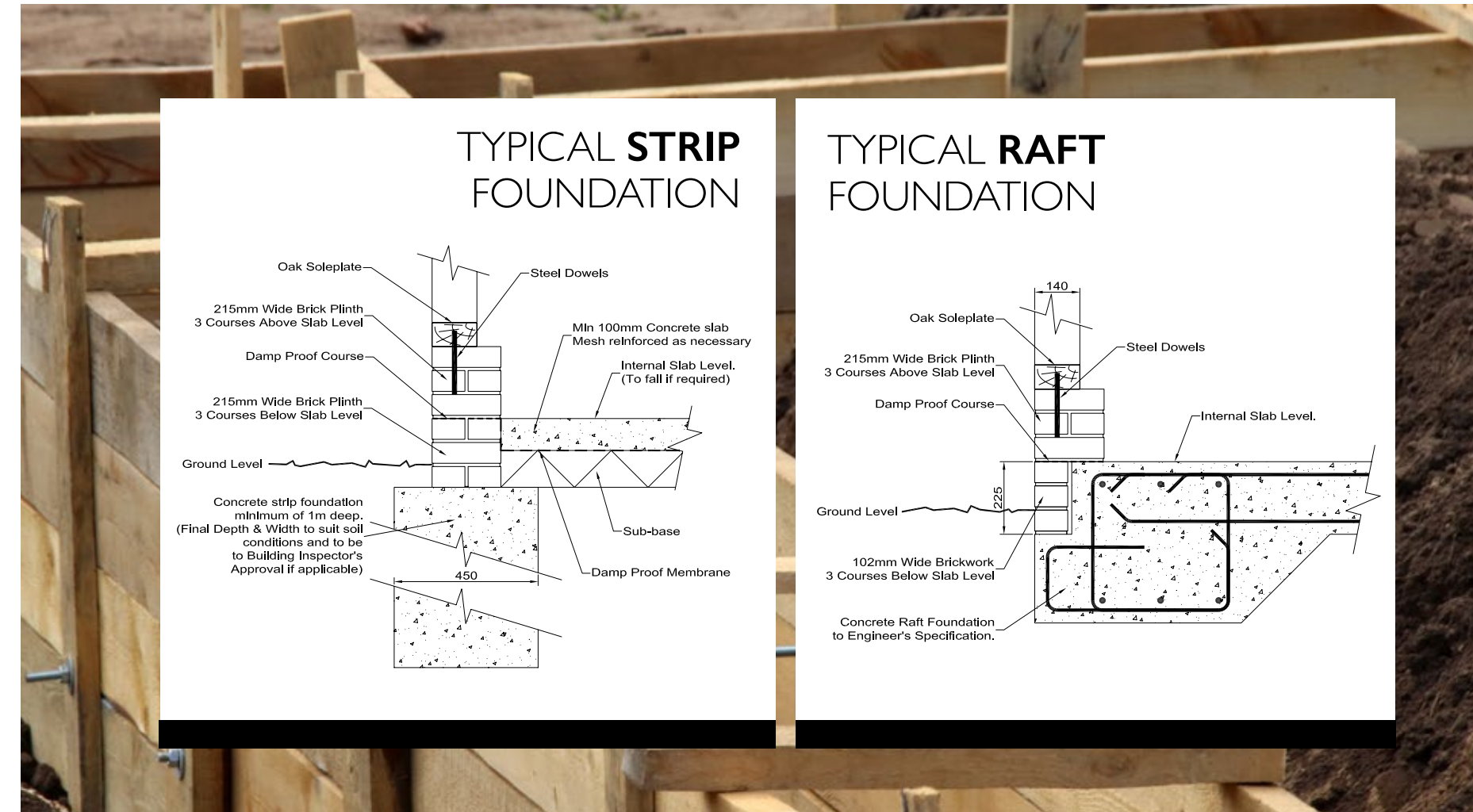
FOUNDATIONS are the supporting layer of the construction and are generally divided into two categories: **Shallow foundations** and **Deep foundations**.

SHALLOW FOUNDATIONS

PAD foundations are generally used to support a single column or post and are square or rectangular holes that are then filled with concrete. A staddle stone would normally be used to sit the post on. Our staddle stones come in two types – tapered and flat. Flat stones would be used against existing buildings or where garage doors are fitted. Tapered stones would be used elsewhere. These staddle stones are made of reconstituted stone. We do not recommend sandstone as we have found that sandstone soaks up moisture and when it freezes the stones are liable to split or chunks fall off. If a client would like a different type of staddle stone then they can arrange their own and we will be happy to fit our building onto them.

STRIP foundations are the most common and are used to support the walls that the oak frame sits on. The width of the footing is dependent on the width of the wall going on top of it. There should be a minimum of 75mm of footing showing each side of the wall that sits on it. The depth of the footing will depend on the load bearing ability of the soil you are going into. The building control officer dealing with your job will agree the depth you have to go and may advise a different type of foundation if they feel it more appropriate.

RAFT foundations are used to spread the load from the structure over the whole area of the structure. They are often needed on soft or loose soils with low bearing capacity. This type of foundation must be designed by a structural engineer and is specific to your site.



DEEP FOUNDATIONS

Deep foundations are used to transfer the load of the structure down through weak layers of soil to stronger layers below. This is usually at depths of over 3m. An example of this is a Piled foundation.

PILED foundations are relatively long slender members that transmit foundation loads through low load bearing capacity soil to deeper soil or rock strata that has a high bearing capacity. These foundations are usually carried out by specialist contractors.

INSULATED FLOOR


If the ground floor of your building is to be insulated then you will need the floor to be insulated as well. It is the same makeup as the Uninsulated Floor but on top of the concrete you put a layer of insulation then a sand and cement screed. On top of this goes the floor covering. If required underfloor heating can also be incorporated within the screed layer. The thickness of the insulation will depend on the U-Value you require for the floor.

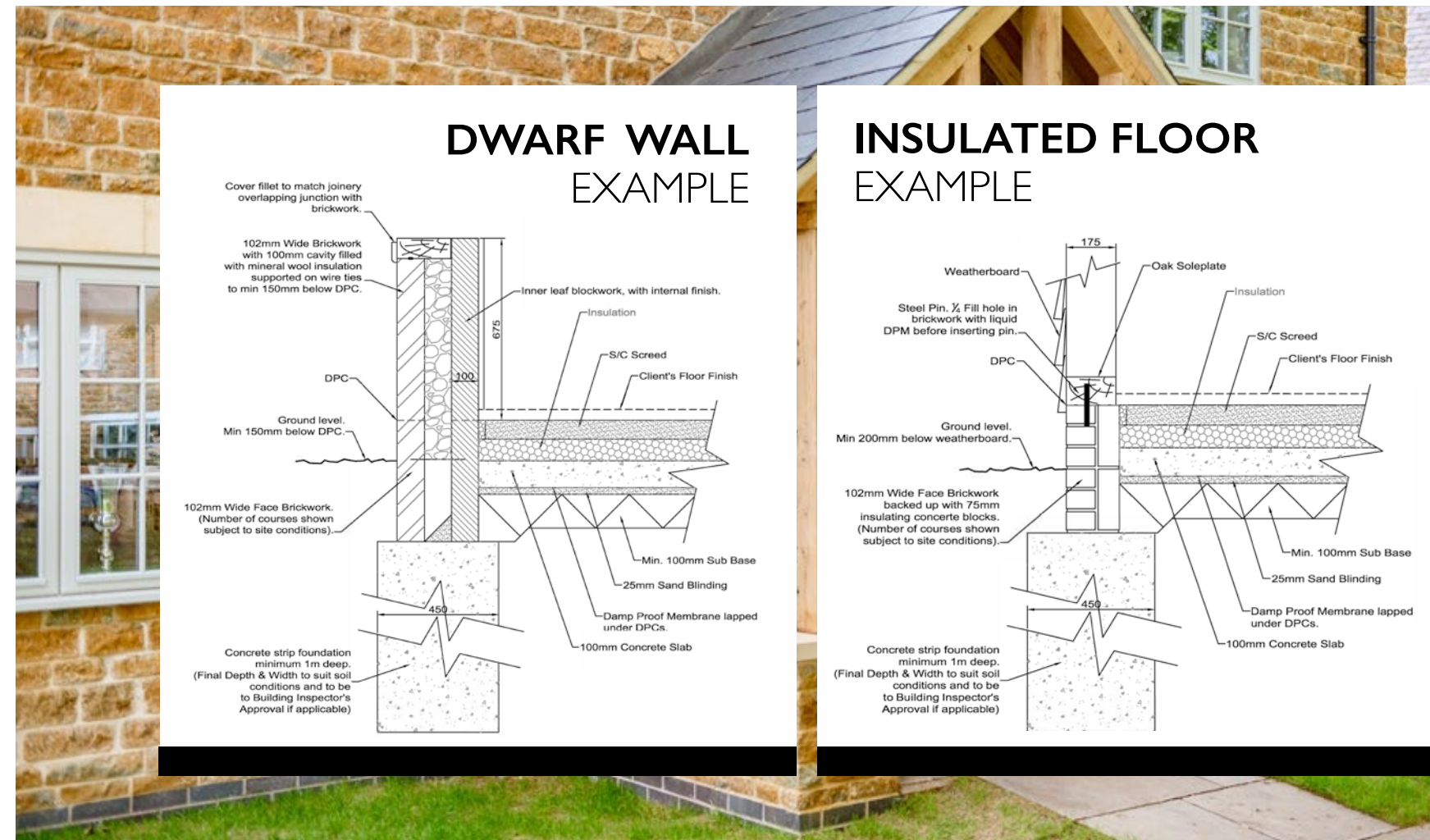
DWARF WALL

This is a low cavity wall which is usually used in a Garden Room for the frame and joinery to sit on. There is a soleplate that sits on the outside brick skin which is used to distribute the weight of the building along the whole wall and not just the points where the posts sit.

SOLEPLATE AT FFL

This is our preferred method especially for larger span buildings as the frame can easily be fastened to the oversite for structural purposes. The plinth wall is built up higher than the concrete level by the thickness of the insulation plus the thickness of the screed (usually about 150mm).

 Groundworks may be subject to building control approval.





PLANNING PERMISSION ADVICE

You've decided on a new oak frame building, but before you get into the detail of the design and structure the most important consideration is the feasibility of the project. Consent is generally required for any addition to a property and our advice is to seek approval through your Local Authority for any development. The most common forms of consent are Planning Permission, Listed Building Consent and Certificate of Lawful Use (for Permitted Development).

Initial considerations for the feasibility of your project:

- What type of land the building will be placed on. Is it, for example, on designated land such as an Area of Outstanding Natural Beauty, or within the Green Belt?
- Whether the building will be subservient to the main house.
- The position of the building in relation to the main house.
- Whether the building is within a residential curtilage. It can be very difficult, for example, to build an outbuilding for leisure use on agricultural land.
- How visible the building will be to neighbours and/or any main roads.

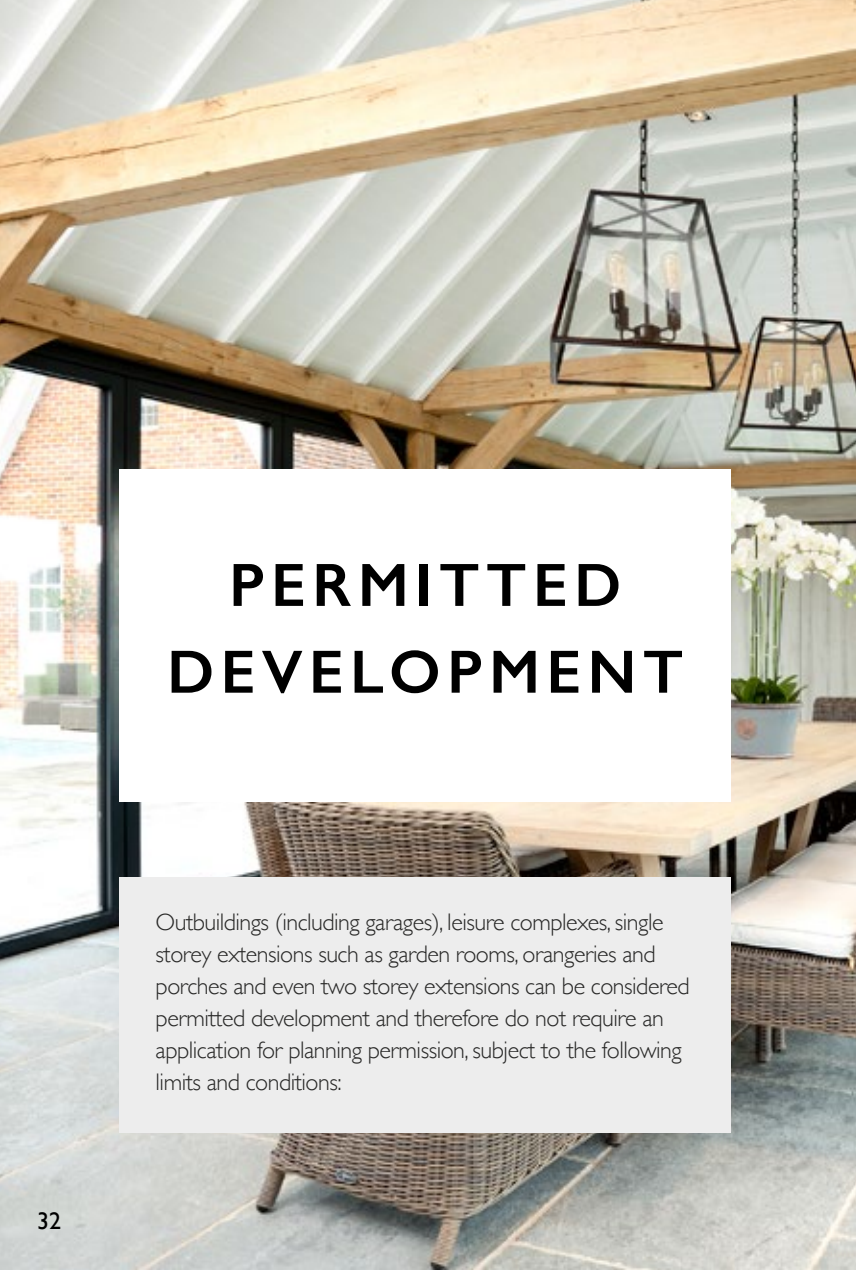
As a general guide you will require Planning Permission if:

- **Your property is a Listed Building and your proposal affects this or is to be built within its grounds.** Careful consideration will need to be given to the design and location of the proposal and the aim should be to minimise alterations to the historic fabric of the property. Outbuildings within the curtilage of a Listed Building or extensions to Listed Buildings will generally require Listed Building Consent and Planning Permission.
- **Your project lies on designated land and the new building is to the side or front of the house.** Properties within designated land including National Parks and The Broads, Areas of Outstanding Natural Beauty, Conservation Areas and World Heritage Sites and have stricter policies to adhere to.
- **Your intended development is closer than the nearest part of the original house to the highway.** (The term original house means the house as it was first built or as it stood on 1 July 1948.)
- **Your proposed ridge height will be higher than four metres.**
- **Your project lies within an area where planning permission is required for an agricultural building.**

Extensions or outbuildings within the residential (garden) curtilage of the site can be submitted under a Householder Planning Application. Any development outside the residential curtilage or those applications for a new dwelling will need to be submitted under a Full Planning Application.

Planning Appeals Process

If your application isn't successful, don't give up, you have the right to appeal. In addition, you can submit a revised proposal, incorporating the concerns raised during the course of the original planning application. This can be done within 12 months of receiving the decision without incurring further costs to the Local Authority, so long as the principle of the proposal does not change.



PERMITTED DEVELOPMENT

Outbuildings (including garages), leisure complexes, single storey extensions such as garden rooms, orangeries and porches and even two storey extensions can be considered permitted development and therefore do not require an application for planning permission, subject to the following limits and conditions:

SINGLE STOREY EXTENSIONS

- Extensions (including previous extensions) and other buildings must not exceed 50% of the total area of land around the original house. (Including sheds and other outbuildings).
- Extensions forward of the principal elevation of a house are not permitted development.
- On designated land side extensions are not permitted development.
- Materials used in exterior work to be similar in appearance to those of the existing house.
- Width of side extension must not have a width greater than half the width of the original house.
- If extension is within two metres of a boundary, maximum eaves height should be no higher than three metres to be permitted development.
- Single storey extension must not extend beyond the rear of the original house by more than 3m if an attached house or by 4m if a detached house. Increased limits may be permissible under the neighbour consultation scheme.
- Single storey rear extensions must not exceed a height of four metres.
- Maximum eaves and ridge height of extension no higher than existing house.

i Permitted development rights allow householders to improve and extend their homes without the need to apply for planning permission. Permitted Development is a permission granted not by the Local Authority but by Parliament (General Permitted Development) (England) Order 2015 for which a Certificate for a Lawful Proposed Use or Development can be obtained.

TWO STOREY REAR EXTENSIONS

- Criteria similar to single storey extensions except:-
- Extensions of more than one storey must not extend beyond the rear wall of original house by more than three metres or be within seven metres of any boundary opposite the rear wall of the house.
- Roof pitch of extensions higher than one storey to match that of the existing house, as far as is practicable.
- Any upper floor window in a wall or roof slope in a side elevation must be obscure glazed and non-opening unless the parts which can be opened are more than 1.7 metres above the floor level of the room in which it is installed.
- No balconies or verandas are permitted development.

OUTBUILDINGS

- They do not project in front of any wall that forms part of the principle elevation.
- They are of single storey construction, with a maximum eaves height of 2.5 metres and are no more than 4 metres high at the ridge if they have a dual pitch roof or 3 metres if they have any other form of roof.
- Any building, enclosure or container within 2 metres of the boundary is a maximum of 2.5 metres high.
- There are no raised platforms, balconies, or verandas.
- At least half the area surrounding the 'original house' remains uncovered by other buildings or additions. Sheds, all outbuildings and extensions must be included when calculating this 50% limit.
- Any new outbuilding must not itself be separate self-contained living accommodation and must not have a microwave antenna.
- On designated land (National Parks, the Broads, Areas of Outstanding Natural Beauty and World Heritage Sites) any outbuilding sited more than 20 metres from any wall of the house is limited to 10 square metres.
- On designated land planning permission is required for buildings, enclosures, containers and pools to the side of a property.
- Within the curtilage of a listed building planning permission is required for any outbuilding.



TIMBER SPECIFICATIONS

i It is essential that timber is properly specified, inspected and graded before being used in oak frame construction to ensure the structural integrity of the building.

We take pride in supplying the highest quality oak frame kits. We do this by supplying our customers Q-Marked products which are independently certified by BMTRADA. The Q-Mark testifies that your frame's manufacturing process meets approved standards – 22 standards to be exact. For you, the customer, this gives you peace of mind and reassurance that the product we have supplied is approved by one of the leading authorities in timber. Knots, grain and other natural characteristics of timber all add to the beauty and charm of an oak frame building. However, there are too few manufacturers who fully understand when one of these natural characteristics on an individual piece of timber can actually impact upon the structural integrity of the oak frame. It is not acceptable for manufacturers to pass off a piece of timber within your building as “charming” and “beautiful” without understanding the structural impact and being able to confirm to you that the combination of all of its natural characteristics fall within the tolerances of the engineer's strength grading within the frames structural calculations!

In order to ensure that your oak frame is structurally sound, it is essential that all timbers are properly specified and the manufacturer fully understands the requirements to meet the engineer's specified strength grading levels for each individual piece of timber within the oak frame. To achieve this, the manufacturer's timber graders must be able to identify and understand the individual characteristics of each piece of timber and the impact upon strength grading of various features such as:

- **Size and position of knots**
- **Slope of grain**
- **Amount of distortion and bow**

These items are all natural characteristics of timber which must be measured within specified tolerances to ensure that the oak frame meets structural calculations and will stand the test of time when assembled. Our manufacturer's timber graders fully understand when a piece of timber does not meet the required structural standards and must be rejected before being allowed to pass through to the manufacturing process however “charming” and “beautiful” it may look! In this way, we can maintain the charm and beauty of a piece of timber with these natural characteristics whilst knowing when it cannot be used if it falls outside certain strength grading parameters. In addition to strength grading, our manufacturer's timber graders also have aesthetic standards for timbers to make sure that the visual impact of your frame is not spoilt by an unsightly natural feature within the timber even though it may fall within strength grading tolerances.





GARAGE DOORS

Our garage doors are available in Softwood, Iroko and Oak, within the Penhurst and Darwell ranges.

Suitable Buildings: Garages and Garages with upper floor

Size Options: Standard size: 2600 wide x 2100mm high. *Non-standard sizes available, max. 2900mm. Contact us to discuss your requirements.*





SINGLE DOORS

Our single doors include solid, half glazed, fully glazed and stable. Available in Softwood, Iroko and Oak, within the Penhurst and Darwell ranges.

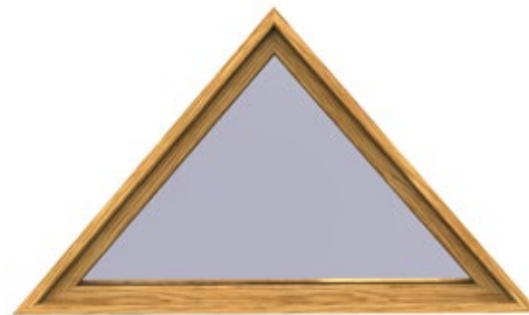
Suitable Buildings: Garages, workshops, commercial buildings, extensions, leisure buildings, complexes, houses.

Size Options: Standard size: 990mm wide x 2100mm high (including frame).



WINDOWS

Our casement windows are available as single pane, two pane, three pane, four pane, with or without mullions. All are available in Softwood, Iroko and Oak, within the Penhurst and Darwell ranges. Also available are glazed gables and lanterns.





STAIRCASES

Enhance the beauty of your oak frame with a Green Oak cut string staircase with air dried oak handrails.

Suitable Buildings: Leisure buildings, complexes, commercial buildings, garages with rooms above.

Size Options: Contact us to discuss your requirements.

TIMBER SPECIFICATIONS

Softwood: Softwood is renowned for its strength and versatility. It can be used across a broad range of internal and external applications, which is why the timber is particularly suitable for joinery. It is advised that the material is treated straight away and maintained throughout the duration of its life.

Iroko: An African hardwood, best known for its rich reddish brown tone. The close grain of the timber means it is less prone to warping and movement.

Penhurst Oak: The natural longevity of Penhurst Oak makes this a firm favourite amongst customers. This FSC-certified European Oak is a sustainable choice that will retain its good looks when treated.

Darwell Oak: Darwell Oak is a robust, aesthetically-pleasing material that oozes strength and stability. It is also FSC-certified for added peace of mind amongst environmentally-conscious customers.

DOOR & WINDOW RANGES

Joinery comes available in two different ranges:

Penhurst Oak Range: Includes a host of joinery options made to an exceptionally-high specification, including semi storm-proof windows and friction stays.

Darwell Oak Range: Available in oak, softwood or Iroko, the Darwell Oak Range offers a complete range of joinery options including garage doors, single doors, bi-folds and windows.





Ironmongery is available in several styles and finishes to match the theme of your new building and will ensure it is kept safe and secure. From hinges and handles, through to multi-locking systems, we have a host of popular options from which to choose.





FREQUENTLY ASKED QUESTIONS

FRAME AND ASSEMBLY

What items can I expect to receive in my oak frame kit?

Your kit will come complete with main posts, soleplates, eaves beams and the curved braces (all in green oak), together with rafters and studwork in treated softwood. The price also includes all necessary softwood weatherboard, staddle stones, DPC for lying under the soleplate and a fixings pack. This pack contains enough nails, timber plugs, pegs, pins and coach screws to fully assemble the frame and weatherboard. You will also be provided with a full set of easy-to-follow assembly instructions.

Will I be able to erect the frame myself?

If you have a joinery or carpentry background, then this would be a straightforward project. Lifting equipment is essential, due to the weight of the oak beams.

How long will it take to erect the frame?

An experienced oak frame assembly team would take between 1 and 4 days to assemble the frame depending upon the style of frame and experience of the team. On average, you could expect to spend 1 day per bay without joinery.

Would I need structural calculations for my building?

Yes, if Building Control are involved. We will supply these for your building upon request with your order at no extra cost.

What other costs may I need to incur on the building?

Planning & Building Control

If required, you may have local authority fees to pay for planning and Building Control and/or consultants fees if you engage a third party to provide these services.

Groundworks

You will need to engage a Groundworker to prepare foundations and brickwork to accept the building.

Assembly & Decoration

If you do not assemble or decorate the frame yourself, you will need to engage a local carpenter and decorator to do this for you.

Roofing

You will need to engage a roofer to install a roof covering (normally felt, battens and either tiles, slates or shingles).

TIMBER

What treatment has been applied to the softwood weatherboard?

Our softwood weatherboard is Vac-Vac treated using a clear Val-Sol preservative (which is a water-based pressure treatment). Once your frame has been erected, we would advise you to stain your weatherboard as soon as possible with a colour of your choice. This will stop water penetration and will give your board an even colouring.

What will happen if I don't treat my weatherboard?

If left unstained, the timber will weather unevenly and go a patchy grey colour in appearance. Untreated boarding will also absorb moisture leaving the inside face damp during long periods of inclement weather.

Will I need to treat joinery also?

All joinery should be treated as soon as possible after installation (within 4 weeks) on both sides and all edges.

Are other types of weatherboard available?

You may choose from oak or larch. Please contact us for prices.

What are the black marks on my frame and how do I remove them?

Due to the natural moisture content of Green Oak, you may notice natural tannins (black marks) on your oak. These marks will disappear with time, but if you wish to remove them straight away, you can use a product called oxalic acid. We recommend using Rubio Monocoat's Tannin Remover – a ready-to-use product that removes the black stains and spots on wood caused by a reaction to acid and water. Tannin Remover can be purchased via www.monocoat.co.uk.

Once I have placed the order is it possible to change the design and will there be additional charges?

There may be additional charges to pay if any materials have been purchased for your original design and/or production of your original design has already started. You will also have to pay any additional costs if your new design is more expensive than your original.

