Sessile Oak

Quality Traditional Green Oak
Timber Framed Buildings, Roofs,
Extensions & Conservatories

Bespoke Wood Carvings
& Sculpture

Hand made to order by a small rural business based on
the northern border of the English Lake District in Cumbria.
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“Sessile Oak – Green Oak Framing & Bespoke Carving” Edition 3c, © K J Gibson BSc (hons) PDip, July 2009

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Welcome to Sessile Oak

Sessile Oak is a small rural business based in Cumbria, near the northern border of the English Lake District National Park. We specialise in making quality traditional green oak timber framed buildings, roofs, floors, extensions and conservatories to order. We also make bespoke hand-made wood and slate carvings and sculpture.

The name "Sessile Oak" is that of the most commonly found native species of oak in the UK, *Quercus petraea*. "Sessile" denotes solidity and permanence. Set in the rural county of Cumbria, we are ideally placed to provide a service throughout the area and further afield. Carlisle (10 miles), Penrith (14 miles), Keswick (15 miles) and Cockermouth (17 miles), as well as the Scottish Borders, are all within easy reach.

Whether you want a custom crafted small carved wood or slate gift for a loved one, an internal feature of your home (such as a newel post or balustrade) carved in situ, or a solid oak conservatory, extension, roof, floor or outbuilding built (either as an assisted self-build project or a complete commissioned frame), we offer a skilled, affordable, friendly and flexible service.

In addition to providing value, you can be sure our materials are either reclaimed or sourced from sustainable supplies (local, whenever possible).

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Chapter 1: Green Oak Framing

An Introduction to Green Oak Framing

Green oak framed construction is a well tested and extremely adaptable building technology. It is a method of construction which has been widely used in the UK and throughout Europe for many centuries. Whilst known to have been practised by the Romans, it is most commonly associated with mediaeval buildings and has been in more or less continuous use from that time.

The twentieth century saw the adoption of different technologies and materials which increasingly threatened to replace traditional oak framed construction. Traditional lime-wash gave way to concrete rendering and the use of multiple small-section nailed roof trusses instead of large section traditional jointed trusses became the norm throughout the UK – and, indeed, remains so.

In the last thirty years or so, however, there has been an increasing momentum towards the use of more traditional building techniques. Greater attention to detail is evident in the masonry of many new dwellings and public buildings. The same, though less widely, is true for the use of wood.

Many new innovative buildings have incorporated green oak both as a component part and as a basis for their entire structure. As a modular material, it is almost unique in being able to sit visually and structurally within both traditional and modern contexts. The range of materials and settings that it can be made to complement is limited only by the imagination.

In addition to its suitability to a wide range of applications, green oak is renowned for its environmental credentials. Selecting timbers from sustainably managed and certified woodlands through reputable suppliers promotes the continued survival and management of oak and mixed broadleaved woodlands and their associated habitats.

Once more, this sustainable material is being appreciated for its strength, adaptability and beauty, and a hitherto dying science and art is now undergoing a quiet and welcome revival.
Commissioning an Oak Frame - Overview

Design & Consultation
Whether you require a roof frame, conservatory, porch or complete outbuilding, it is customary that there be at least one site visit to establish or confirm the site dimensions as well as the suitability of materials. Whilst the primary objective of any design is to create a sound structure, there are a variety of frame styles that can be applied to almost any given site. The chosen style, be it closed trussed, cruck framed or a simple lean-to, will be as much in keeping with your preferences as practicable. To facilitate this, we will consult closely with you (or your architect or project manager) throughout the design process, presenting as wide a variety of options as possible through a combination of concept drawings and detailed plans.

Commissioning a Frame
Having decided upon a design, a quotation is given which will include details of cost, deposit (typically 30% of the total quoted price) and timescale. Upon payment of the deposit, the necessary timbers are then purchased in preparation for the fabrication stage of the project. The balance will be due upon completion of the installation, though larger commissions may require an additional interim payment. A flow-chart detailing the commissioning process is shown in the appendix (page 21).

Fabrication
Typically, the bulk of the carpentry work is carried out in the workshop using mainly traditional specialist hand tools in addition to modern machinery where applicable. There, the constituent frames of the structure (walls, trusses, etc.) are laid out so that the timbers can be oriented and worked to best allow for the effects of maturing, as the building ages once installed. All the joints throughout the frames are carefully fitted, making use of classic pegged mortise and tenon joints of a range of shapes and types. This method of construction has been tried and tested over many hundreds of years and is known to be both strong and durable.
Construction
On site, the various planes of the building created in the workshop are erected on the pre-prepared foundations or masonry. As it is mainly a matter of reassembling and pegging the constituent frames created in the workshop, this process usually takes place very rapidly causing a minimum of noise and disruption. However, depending on the scale of the project, provision for vehicle and plant access may be required. Once the frame is in place, it should be made proof against the weather as soon as possible. To this end, it is recommended that arrangements should be made for the next stage of the project (cladding, slating, glazing, etc.) to be carried out without delay.

After We Leave
As the frame begins to dry, surface cracks may start to appear on many of the timbers. By its very nature, these are perfectly normal and do not affect the structural strength of the frame. Indeed, it is generally held that they add much to the aesthetic appeal of the material. Where timbers may be exposed to the elements, it is advised that they be treated periodically with a clear wood preservative.
Designing Your Oak Frame

It is likely that you will have a good idea of what kind of structure you would like built by the time you initiate enquiries regarding its manufacture. Indeed, you may have a detailed architect’s or engineer’s plan of the frame to be constructed. This being so, there will be little need to dwell on anything other than preferences of visible joint details and the like before the workshop stage of the project can commence. However, there will always be the need for an initial site visit to confirm dimensions and “laying out” points as well as to inspect site conditions and access prior to the submission of any estimate or quote prior to commissioning.

This, though, may not always be the case. It is equally likely that, whilst you may have a general idea of what you would like, the outline dimensions, position and design will need to be established, as will the position of any structures or features in proximity to it. Again, this requires at least one detailed site visit at the outset. This done, the process of detailed design can start.

The designs of timber frames are as many and varied as their applications and clients preferences. Any one of a number of truss designs (king-post, queen-post, sling braced, arch-braced, lean-to or cruck, for example) might be applied to a given roof space, though it is fair to say that the simplest solution is invariably the best. Whilst keeping a view to the structural characteristics of the material...
(for example, capacity to withstand loads and resistance to wind shear) and remaining within the bounds of local planning and building control requirements, it is always best to approach timber frame design with an open mind. As the design progresses, it is also important to liaise with those involved with the other aspects of the development, such as stone-masons, roofers, glaziers and fitters. This can often be best achieved by “bouncing” ideas via a succession of rough plans and concept drawings to arrive at a series of detailed plans, elevations and artist’s impressions. These are then sent to an independent structural engineer for analysis and certification.

This process will aim to produce a final approved design that is strong, durable, practical and economic, as well as in keeping with its surroundings and pleasing to the eye.
Fabricating the Oak Frame in the Workshop

The Raw Materials
Following the completion of the frame design and the payment of the deposit, the timber for the frame is placed on order. It is worth noting that there is usually a three to four week waiting time (commonly referred to as “lead time”) before it is delivered to the workshop. Upon arrival, the timber is sorted according to use and inspected for quality.

The Carpentry
With the timbers selected, oriented and laid out for working on trestles, the job of carpentry can begin. From the outset, a familiarity with the way in which the individual planes of the structure to be built interact with one another is crucial - it may be on the plan, but it must also be in the “mind’s eye”. A minor unnoticed error in the workshop can cause unwelcome complications when erecting the frame on site.

As important as the design, is the selection of the appropriate types of joints. Whilst largely established during the design stage, their finer details are often decided upon in response to the features of each individual timber. During marking, it is vital to make best use of the particular strengths of every piece of wood - positioning, sizing and shaping accordingly.
Therein lies the skill of the carpenter. Green oak, by its very nature, is a dynamic material and, as such, is not suited to large scale mechanised manufacturing of the type used in the mass-production of standardised doors and window frames. Its use demands a high standard of craftsmanship and a thorough understanding of the material and its characteristics over time and under load.

In the shaping of each part of every joint (mortises, tenons, shoulders, haunches, tusks, dovetails, etc.) precision is of the utmost importance. The carpenter must be comfortable with, and have complete control over, whatever tool is required to carry out the task at hand.

A loose fitting joint has the potential to shift the stresses it has been designed to withstand onto another part of the frame not necessarily designed to take it. Again, the quality of the design is only as good as the quality of the carpentry in its execution.

Even an apparently simple chore, such as drilling peg holes, can hide its own complexities. When marking and drilling a hole, account has to be taken of the way in which the joint will close and how best to pull the tenon into the mortise to ensure a tight fit at the joint’s shoulders.
The pegs, themselves, are an often over-looked part of the oak frame. Even a relatively small conservatory can require as many as a hundred individually shaped oak pegs. Larger projects can demand several hundred.

Carpenter’s marks are shown as Roman numerals and ensure the correct positioning of every individual component part of the frame. They are essential, as no two pieces are ever the same.

**Tools of the Trade**

Whilst it may be considered fair to say, “a bad workman blames his tools”, the need for well maintained tools of the right sort cannot be overstated. Those in common use in the framers’ workshop range from traditional hand tools (with origins almost too ancient to trace) through to the most modern state of the art power tools.

**Ready To Go**

When all the timbers have been shaped and marked, they are readied for transport to site for assembly as soon as practicable. They are carefully stacked to ensure their stability against warping and bowing.
**Installation - The Build**

**Arrival on Site**
Having inspected the site on at least one occasion during the design and fabrication stages of the project, points of access for timbers and equipment will already have been established. The timbers are unloaded and stacked ready for use as close as practicable to the build area and a clear marshalling area set aside for organising and assembling the frame. Where timbers are to be manoeuvred by crane, there will need to be a zone set aside for the crane to gain access and operate within reach of both the marshalling and build areas.

**Site Preparation**
Depending on the nature of the project, the masonry or foundations must be surveyed and marked for levels, setting out points and tying in points. This done, a damp-proof course (DPC) is laid out where necessary, prior to the initial positioning of the first layer of timbers.

**Erecting the Frame**
The first parts of the frame to be put into position are usually the sole plates (where a series of walls are to sit upon foundations, for example) or wall plates (where a roof frame sits upon pre-existing walls). They will be set out in predetermined positions relative to the established setting out points.

When the sole plates are level and square the posts can be put into position along with their braces in readiness for the next layer of timbers. In this respect, there is always a strict sequence which must be followed.
As the build progresses, the frame rapidly takes shape. In a relatively short period of time the series of timbers placed along the top of the masonry give rise to a fully formed structure. At this point, most of the joints are held in place by podgers (temporary steel pins) instead of oak pegs. Even without any of the pegs in place, the frame is completely rigid and self-supporting.

Whilst it is true that the vast majority of the carpentry work is performed in the workshop, there are always a few minor tasks to be carried out on site throughout the build. They vary according to the nature of the project, though invariably include the drilling of fixing points between frame and masonry. With this in mind, it is important to have access to a nearby electricity supply to provide power to essential site tools such as drills, saws and the kettle.
**Finishing**

Before too long, the frame is up, pegged and ready for the next stage of the development. It is strongly recommended that the frame be made secure against the elements as soon as possible. To this end, arrangements should be made for the relevant trades to move onto the site immediately to install such items as roofing, cladding, glazing, fittings, plastering and so forth.

It should be noted at this point that the oak frame timbers will require sand-blasting to clean off any milling and tooling marks. Such marks are an unavoidable result of a chemical reaction between the ferrous metal of the tools and the tannic acid within the oak itself. The greener the oak is, the greater this reaction. The result is a gun-metal surface mark at the point of contact which will disappear completely when sand-blasted.

However, it is worth noting further that a similar reaction has been known to occur when wet plaster comes into contact with green oak. Two options are presented: either the oak is protected from the wet plaster subsequent to the blasting (typically with polythene sheeting); or the plaster is applied beforehand and is itself protected from the effects of the blasting. Largely, both options are equally valid.

Where the timbers of the frame are likely to remain in any way exposed to the weather, periodic treatment with a clear wood preservative is advised.
The Complete Transformation
With the oak frame installed, the area it occupies is totally transformed both inside and out, to become a beautiful and functional living space that will last a lifetime - and many more besides.
Chapter 2: Bespoke Carving

An Introduction to Wood and Slate Carving at Sessile Oak

Unlike structural green oak framing, carving and sculpture are almost entirely decorative. Whilst it is true that a piece can perform a practical purpose, form is complemented by function, rather than being strictly contingent upon it. With this in mind, it is always a welcome challenge to explore the design possibilities presented by the creation of a bespoke work of art.

Although largely unhindered by prescriptive boundaries, such works often derive, at least in part, from the diverse and immeasurably ancient history of the art worldwide. Indeed, many have their origins in the various Celtic and related cultures vernacular to the area, with traditional forms incorporated into novel designs.

The aim is a work of art to suit the individual for whom it has been commissioned, whether the emphasis has been placed upon complexity of detail, naturalistic authenticity or simplicity within a balance of proportion.

As with the timbers used for our green oak frames, the materials used for our carvings are sourced from sustainably managed and certified woodlands through reputable suppliers, ensuring the conservation of broadleaved woodlands and their wildlife. Where possible, this ethos of environmental sensitivity is furthered by the use of high quality reclaimed materials.
Commissioning a Carving

Design & Consultation
The process by which a carving is commissioned is similar, if generally far simpler, than that for a timber framed building. At the outset, it is likely that you will have at least a rough idea of what you would like to have carved. Indeed, you may well have a complete and detailed template on which the carving is to be based – in which case, its fabrication can get under way without delay. More usually though, it is necessary to arrive at a design by means of research and consultation through a series of sketches that are refined to create a detailed template.

Certain types of design are suited to different kinds of wood. The material for each design is best selected on its own particular merit, be it colour, texture or density. As a rule, the finer the carving, the closer grained the chosen wood should be. On this basis, oak (being relatively open-grained) might best lend itself to larger scale pieces of work. Equally, holly is more close-grained and so may be better for fine work. In practical terms, however, there exists a degree of variance in the density of all types of wood and so, providing the correct pieces can be found, there is much scope for creativity.

Where different materials are to be combined, their individual characteristics are accounted for as much as possible to ensure the piece’s stability and visual impact.

Commissioning
Having decided upon a design, a quotation is given which will include details of cost, deposit (typically 30% of the total quoted price) and timescale. Upon payment of the deposit, the selected materials are made ready for the work ahead, with the balance due upon completion.
The Carving Process

Whilst the carving work is carried out in the workshop using traditional specialist hand tools, it is sometimes necessary to use modern machinery during the initial preparation. Very occasionally, there may also be the need to cross-laminate the wood to provide additional stability to protruding parts of the design. Once the fine carving work is under way, however, there is little place for anything other than traditional carving chisels and gouges (many of which are treasured antiques in their own right) together with a great deal of patience.

The first stage is that of “roughing out”. An outline of the template is marked on the surface of the wood, which is then either sawn or chiseled to match. At this stage, it is most important to position the template upon the wood to best allow the grain to accommodate and complement the design.

Next comes the “fining down”. This usually represents the overwhelming bulk of the work on any project. It is the stage where the carver’s judgment as to the size and shape of each element of the design’s finer details comes into play. Invariably, as the excess wood is cut away, that which remains has to be approached in a particular manner and
with an understanding of, and feeling for, how it will respond to the action of the tool applied to it. Gradually, the design ceases to be a series of lines on the surface and starts to take on a unique life of its own – emerging, little by little, from the heart of the wood.

*Custom made serving tray shaped from a single piece of oak with complex carved Celtic knot-work.*

*One of a pair of pectoral crosses in the form of a Cross of St Thomas with a Canterbury Cross in the centre, complete with blue velvet presentation pouch.*
Finishing
Eventually, the final stage of the commission - the “finishing” - is reached. This is when the character of the wood or slate is allowed to emerge to the full, through a process of repeated smoothing and polishing. With the careful selection and application of a variety of waxes and oils, a depth of patina is produced to give prominence to the material and design together.

The end result is a beautifully crafted and highly individual piece to treasure for a lifetime.