



cob building



what is it?

Cob is an ancient earth building technique using a combination of clayey subsoil, sand, straw and water, which are mixed together manually, by stomping / dancing on the mix on tarps, or by machinery. The mix is then formed into lumps or cobs and compressed together to form the walls of a building. The mix can also be compressed in moveable wooden forms into wet blocks, which are integrated into the wall. This is known as 'box cob'. The cob building process is rather like building a giant clay pot.

Cob has been used for centuries by many cultures. Yemen is particularly famous for its cob buildings – with 14-storey examples that have existed in seismically-active areas for hundreds of years. In the UK, there are many thousands of old, still occupied cob buildings – especially in the South-West, Scotland, parts of East Anglia and Wales – some over 500 years old. The Industrial Revolution marked a move to the use of more standardised products and materials, and thus more local, natural building materials were abandoned. There has been a recent resurgence in cob building however, especially along the west coast of the US, due to over-logging and the need to reduce the amount of timber used in builds – but also because of its novelty, and the popularity of its durable and sustainable nature.

what are the benefits?

- around 1/3 of the world's land mass contains soil suitable for cob building, so the material can usually be found on or near to the site - costs and emissions associated with processing and transport of materials are reduced or eliminated
- reclaimed materials and products can easily be incorporated into the design – cob can be



a modern cob home with living roof, in the US



building a cob wall, mud-pie style

- moulded around them
- typically uses 60% less timber than a stud-frame house
- the flexibility and fluidity of cob allows for curvilinear shapes that enclose space more efficiently, reducing the size of building required
- cob is biodegradable – abandon cob walls and they will become incorporated back into nature without a trace very quickly
- cob has very low embodied energy, is non-toxic, and can be recycled
- as cob is breathable and flexible, it works well with other natural materials such as timber, stone, straw bales, slate, lime etc, as part of a natural home
- your building material is free (although you will need a digger to get it out of the ground and dumped next to your proposed building); however, a cob building will only be cheaper than a conventional building if you do it yourself, as it's very labour intensive
- high thermal mass / good humidity regulation means stable temperatures and good air quality
- airtightness in houses is costly to achieve, and has contributed to the huge rise in cases of asthma in children over the last 50 years; a cob house is more eco-friendly than an airtight one – keep it small, build with natural, local materials and heat it with passive solar and wood
- the nature of the material and the sculptural / mud-pie style of building is inclusive, and can bring together people with differing abilities
- cob has compressive and tensile strength, so your building will be very solid – but it's flexible, and so won't crack if there is any movement
- it's easy to repair – just patch it with more cob



- cob buildings are beautiful and unique – they are ‘of the earth’ and have a feel that a bricks and mortar building can never achieve

what can I do?

regulations

Planning permission is sought in the same way as for more conventional housing. Problems may be encountered around location of the building, access, design and finishes, not specifically with the building material itself.

Have a look at Planning Policy Guidance Notes PPG12 and PPG15, which deal with sympathetic design and preservation of the historic environment. PPG1 covers the government’s push to promote sustainable development, so could be used to your advantage.

Building Regulations compliance shouldn’t be a problem provided the officer is given sufficient detail. Give them as much detail as you can; impress them. You can send a soil sample to the Centre for Earthen Architecture in Plymouth, and get a technical data sheet to show a building inspector. New cob structures with full building regs approval include the RIBA-award-winning ‘Cobtun’ house and Kevin McCabe’s new houses in Ottery St. Mary and Keppel Gate in Devon.

location

When considering a cob build, ensure there’s water, and suitable clayey subsoil on site or in the local vicinity. It is also important to consider access onto your site due to the heavy nature of the materials, especially in relation to the precise location of your building – you don’t want to be barrowing all your materials uphill. If you are in a flood plain, then maybe cob isn’t the best option.

the build

Cob building is labour-intensive and seasonal (Apr-Nov for the cob part), so start with a small design that can be added to later. This will give you more confidence before moving on to a larger structure.

Cob always needs a good ‘hat and boots’ – i.e. solid, dry foundations, and a roof with a good overhang (at least 30cm). Foundations can be a rubble and gravel-filled trench with a perforated land drain to a soakaway to remove excess water. Cob walls can take driving rain, as long as they have a chance to dry out. Outer walls can have a



traditional thatched cob cottages in the south-west of England

layer of lime render for protection, or an earth plaster that is re-applied every few years. Earth plaster is a finer version of the cob – sieved earth, finely-chopped straw, plastering sand and flour paste (which acts as a plasticizer and improves flexibility). Cement renders must never be used, as they destroy breathability and flexibility.

Cob does not have good insulation properties, but it has good thermal mass. Foundations can be insulated with pumice or vermiculite mixed with clay slip and rammed into cavities in the foundations. Floors can also be insulated with vermiculite, and ceilings can be insulated with recycled newspaper or sheep’s wool insulation.

resources

- LILI run cob-building courses – see website
- these books (and more) available from LILI:
- Becky Bee, *the Cob Builder’s Handbook*
- Adam Weissman & Katie Bryce, *Building with Cob: a step-by-step guide*
- Evans, Smith & Smiley, *the Hand-Sculpted House*
- eartharchitecture.org – huge resource on earth building around the world
- devonearthbuilding.com – Devon Earth Building Association: promoting cob in the South-West
- plymouth.ac.uk/pages/view.asp?page=10226 – Centre for Earthen Architecture: info, soil analyses
- earthedworld.co.uk – Earthed: builders, information, photo gallery

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