**Construction:**
This model features a pre-fabricated wall panel made by Eden Insulation (excluding finishes). It is constructed from a pre-fabricated I-Joist timber panel filled with blown insulation.

**Materials:**
Materials used in this example panel are:
- Charred larch cladding on timber cladding battens
- Timber wall panel by Eden insulation consisting of:
  - Vapour open Breather Membrane: ‘Fronta Humida’ by Pro Clima
  - Rigid wood fibre board ‘Multiplex Top’ by Gutex
  - I-Joist frame: ‘Finnjoist’ by Metsa Wood
  - Blown Cellulose insulation by Warmcell
  - AVCL (airtight vapour control layer) structural racking board: ‘Smartply Propassiv’ by Medite
  - Timber service cavity battens
- Clay board / timber v-line boarding

**Performance:**
Typical U-Value = 0.13 W/m²K - 0.16 W/m²K  
*Varies. Based on thickness of materials shown

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Construction:
This model features a twin-wall timber frame wall panel. It is constructed from two timber frames connected via plywood gussets to create a thermal break, all filled with wood fibre insulation.

Materials:
Materials used in this example panel are:
- Untreated larch cladding on timber cladding battens
- Timber frame wall consisting of:
  - Rigid wood fibre: ‘Multitherm’ by Gutex
  - Vapour open racking board: ‘Populair’ by Spano Durelis
  - Twin-wall timber stud layers with plywood connecting gussets (note: gussets at closer centres to suit model)
  - Flexible wood fibre insulation batts: ‘Steico Flex’ by Steico
  - Vapour open AVCL (airtight vapour control layer) structural racking board: ‘Vapour Block’ by Spano Durelis
  - Timber service cavity battens
- Clay board - this could be finished with a clay or lime plaster

Performance:
Typical U-Value = 0.11 W/m²K *
* Varies. Based on thickness of materials shown

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This model is a pre-fabricated wall panel made by EcoCocon. It is constructed from pressed straw in a timber frame. It is typically used with a rigid wood fibre board and a lime render externally. Internally it provides an ideal surface for clay plaster, and it is also compatible with a variety of standard interior finishes.

Materials:
Materials used in this example panel are:
- Timber studs by EcoCocon
- Pressed straw by EcoCocon

Performance:
Typical U-Value = 0.123 W/m²K *

* Based on an average EcoCocon wall with 30 mm clay plaster, 400 mm timber-straw panel, and 60 mm wood fibre board.

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**Construction:**
This model features a timber frame wall with a Hempcrete block inner leaf. Externally a variety of finishes are possible, and internally the Hempcrete blocks can be finished with a lime plaster.

**Materials:**
Materials used in this example panel are:
- Untreated timber cladding on timber cladding battens
- Wood Fibre insulation board
- Timber frame wall consisting of:
  - Hemp batt insulation
  - Timber frame
- Hempcrete blocks

**Performance:**
Typical U-Value = 0.20 W/m²K *

*Varies. Based on thickness of materials shown*

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Construction:
This model features a timber frame wall with a Hempcrete fill. Hempcrete is made by wet-mixing hemp shiv with a lime binder. Externally a variety of finishes are possible, and internally the Hempcrete can be finished with a lime plaster.

Materials:
Materials used in this example panel are:
- Untreated timber cladding on timber cladding battens
- Vapour Open Breather Membrane
- Timber frame wall consisting of:
  - Hempcrete insulation
  - Timber frame
- Hempcrete blocks

Performance:
Typical U-Value = 0.27 W/m²K *

* Varies. Based on thickness of materials shown

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Construction:
This model features a sample of a CobBauge wall by Hudson Architects. It is constructed from two parts: an outer layer of light-straw mixed with clay slip, and an inner layer of cob, providing the structure and thermal mass. It is typically finished with a lime render externally. Internally the cob provides an ideal surface for clay plaster. This construction builds on the principles of traditional cob whilst introducing a unique double-layered composite wall that combines traditional cob with a light weight mixture, for a combination of strength and insulation.

Materials:
Materials used in this example panel are:
- Light-straw mix
- Cob made from local soils

Performance:
Typical U-Value = 0.28 W/m²K *

* Depends on thickness of materials

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**Construction:**
This model features a suspended timber I-Joist floor with flexible insulation between the joists. There is also an additional layer of insulation between a batten space over the joists.

**Materials:**
Materials used in this example panel are:
- Engineered timber floor boards
- Timber battens with rigid wood fibre insulation between: ‘Pavatherm-Combi’ insulation by Pavatex
- Airtight board with taped joints: OSB
- Timber I-Joists
- Flexible insulation batts: ‘Hemp Flax Thermo Combi Jute’ by HempFlax
- Plywood

**Performance:**
Typical U-Value = 0.11 W/m²K *

* Varies. Based on thickness of materials shown

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**Construction:**
This model features an earth top coat over a suspended timber I-Joist floor with flexible insulation between the joists, and demonstrates that earth floor coverings are possible with a suspended floor structure.

**Materials:**
Materials used in this example panel are:
- Earth top coat
- OSB board
- Timber I-Joists
- Flexible insulation batts: ‘Thermafleece Cosywool’ by Thermafleece
- Rigid wood fibre insulation: ‘Pavatherm-Combi’ insulation by Pavatex

**Performance:**
Typical U-Value = 0.16 W/m²K  *

* Varies. Based on thickness of materials shown

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**Construction:**
This model features an earth top coat over a ground bearing floor construction.

**Materials:**
Materials used in this example panel are:
- Earth top coat
- OSB board
- Earth sub-base
- Geotextile membrane
- Loose fill insulating aggregate: ‘Cellular glass gravel’ by Glapor

**Performance:**
Typical U-Value = 0.19 W/m²K *

*Varies. Based on thickness of materials shown*

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Construction:
This model features a steep pitched roof construction with solid timber rafters and both flexible and rigid fibre insulations. The external finish is timber shakes, however a variety of cladding materials would be possible.

Materials:
Materials used in this example panel are:
- Untreated timber shakes on timber cladding battens and counter battens
- Rigid wood fibre sarking board: ‘Ultratherm’ by Gutex
- Timber frame roof consisting of:
  - Timber frame
  - Flexible wood fibre insulation batts: ‘Steico Flex’ by Steico
  - Variable diffusion AVCL (airtight vapour control layer) membrane: ‘Intello Plus’ by Pro Clima
  - Timber service cavity battens
- Recycled cellulose-based board: ‘Honext’ by Honext

Performance:
Typical U-Value = 0.14 W/m²K *

* Varies. Based on thickness of materials shown

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**ROOF: 10° PITCHED I-JOIST RAFTER GREEN ROOF**

**Construction:**
This model features a shallow pitched roof construction with I-Joist timber rafters and both flexible and rigid fibre insulations. The roof is finished with a sedum roof covering system by Bauder.

**Materials:**
Materials used in this example panel are:
- Sedum roof covering by Bauder consisting of:
  - Extensive sedum blanket by Bauder
  - Biodiverse substrate: growing medium also providing water drainage layer by Bauder
  - Reservoir board: filled with growing medium providing water retention layer by Bauder
  - Recycled Protection Layer: ‘FSM 600’ by Bauder
  - Recyclable Underlying Waterproofing Membrane: ‘Thermoplan FPO’ single ply membrane by Bauder
- Plywood deck
- Treated timber battens creating ventilated zone
- Vapour open Breather Membrane: ‘Solitex Plus’ by Pro Clima
- Rigid wood fibre sarking board: ‘Ultratherm’ by Gutex
- Vapour Open Racking board: ‘Panelvent DHF’ by Panel Agency
- Timber frame roof consisting of:
  - I-Joist frame: ‘Steico I-Joist’ by Steico
  - Recycled cotton / denim insulation ‘Inno-Therm’ by Le Relais
- Variable diffusion AVCL (airtight vapour control layer) membrane: ‘DB+’ by Pro Clima
- Timber service cavity battens
- Wood wool or clay board - either could be finished with a clay or lime plaster

**Performance:**
Typical U-Value = 0.14 W/m²K *
* Varies. Based on thickness of materials shown

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