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2019 Modular Building Specification

Structural Design

The structure is designed and constructed in accordance with the following standards and technical references:

- BS 5268-2:2002 - 'Structural Use of Timber'
- BS 5950-2:2001 - 'Structural use of steelwork in building. Specification for materials, fabrication and erection - Rolled and welded sections'
- BS 5950-5:1998 - 'Structural use of steelwork in building. Code of practice for design of cold formed thin gauge sections'
- BS 6399-1:1996 - 'Loading for buildings. Code of practice for dead and imposed loads '
- BS 6399-2:1997 - 'Loading for buildings. Code of practice for wind loads '
- BS 6399-3:1988 - 'Loading for buildings. Code of practice for imposed roof loads '
- BS 648:1964 - 'Schedule of weights of building materials '
- Timber Designers Manual 'Ozelton & Baird'

Imposed Loadings

Floor - 3.0 kN/m^2
Roof - 0.75 kN/m^2

Design Wind Speed

Calculated in accordance with BS 6399: Part 2

Fire Rating

- External face of walls have a Class 0 surface spread of flame.
- Internal face of walls and ceiling have a Class 0 surface spread of flame.
- Minimum 30 min insulation, integrity and stability protection from inside to out.

Insulation U-Values

Walls - 0.35 w/m^2k
Roof - 0.25 w/m^2k
Floor - 0.25 w/m^2k

Internal Ceiling Height - 2400 mm

Floor Structure - 'U' Value - 0.25 w/m^2 K

Steel floor frame

150 x 75 x 10 mm C-Section Hot Rolled Steel Channel perimeter beams with 125 x 50 x 3 mm PFC Galvanized steel floor joists at 406 mm centres welded between.

Floor Deck:

18 mm V313 Flooring grade moisture resistant T & G Chipboard glued and nailed to timber joist packing battens.

Insulation:

Double layer of `Ecobright' foil insulation membrane laid over galvanized. Steel floor joists with airspace above to underside of Chipboard deck.

External Walls 'U' Value - 0.35 w/m^2 K

Timber Framing:

Ex 95 x 35 mm top and bottom rails with ex 95 x 35 mm vertical studding at 400 mm centres, with horizontal cross mid rails.

Cladding:

9 mm WBP Exterior grade plywood glued and nailed to studding timber to form a stressed skin construction.

Insulation:

90 mm glass fibre min slab insulation quilt fitted in between vertical timber studding.

Vapour Barrier:

Single layer of `Ecobrite' foil insulation membrane is fitted directly onto internal side of walls studs.

Packer Battens:

44 mm timber packing battens are fitted on top of `Ecobrite' insulation to create air cap behind plasterboard internal lining.

Internal Lining:

12.5 mm white vinyl faced plasterboard fixed onto timber packer battens, board joints finished with two part white PVC H-section. All skirting are 45 x 10 mm two part PVC in white.

Wall Bay to Bay

Joint Cover Strips - 12.5 mm white vinyl faced infill piece for internal flush finished walls.

Roof Structure - (Warm Deck) 'U' Value - 0.25 w/m^2 K

Steel Roof Beams and frame:

Engineered steel lattice edge beams duo-pitch with steel angle tie bars. Roof beams connect to 80 x 80 x 4 mm RHS cold formed full height corner posts, which are connected to the floor perimeter beams at the bottom, creating a rigid steel frame construction. Roof and ceiling are created separately with an air space in between.

Roof Deck and Covering:

Single layer rubberised roof blanket is bonded onto 12 mm plywood which is nailed onto timber roof joists 125 x 38 mm @ 400 mm centres.

Ceiling Joists and Lining:

12.5 mm foil backed plasterboard fixed onto 125 x 38 mm timber ceiling joists @ 400 mm centres.

Insulation:

Two layers of 90 mm glass fibre min slab quilt to roof space between roof joists held in place with a reflective foil membrane fixed to the underside of the of the roof joists.

Roof Ventilation:

Warm Deck roof system, none required.

Rainwater Goods:

Rainwater is discharged directly from the roof into full length white PVC square line gutter along each end of the bays. The gutter discharges via PVC square fall pipes to ground level.

Ceiling Bay to Bay Joint Cover Strip:

Joint concealed by 12 mm thick twice rounded MDF strip finished with laminated white vinyl to match wallboards, mounted on timber laths.

Fascia detail:

Fascia is built onto the ends of the steel columns, and clad with 9 mm WBP plywood. The finish is as per the external wall finish.

External Doors:

White uPVC 2xgg pattern in double glazed in clear laminated safety glass.

Windows:

U value 1.8 w/m2 K

Double glazed white uPVC framed, top opening vent, windows glazed in K glass with neoprene glazing gaskets, trickle vents, and opening restrictors. Glazing in compliance with Part N of the building regulations.

Window linings are 6 mm PVC window board complete with 45 x 6 mm square surround.

External Cladding:

Feature 0.5 mm plastisol steel cladding bonded to 9 mm external grade plywood which is attached to a 0.5 mm steel balance sheet.

External Corner Trims - Preformed plastisol steel flashings

Bay Joint Trims - Preformed plastisol steel flashings

External Plinth Trim - 400 mm deep timber plinth / perimeter skirt trim is supplied.

Installation - Each module is factory fitted with lighting, power and heating. All electrics are protected by MCBs (miniature circuit breakers) within the consumer unit.

Certification:

All modules are electrically pre-tested to comply with current regulations and issued with a NICEIC certificate.