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GENERAL

> Purpose of Document

This guide will help correctly specify and install CNYD Composite wall Panels for use in low-rise buildings.

> Skills Required

This guide is suitable for use by licensed building practitioners (or deemed practitioners) licensed to the relevant class.

> For More Help

Technical assistance is available at www.cnydhousing.com

CNYD COMPOSITE WALL PANELS

DESCRIPTION

CNYD Composite Wall Panels are lightweight, timber-framed panels. The panels are constructed from plasterboard, glass wool insulation, LVL framing, and fibre cement board. They can be anchored to a floor system or concrete foundation using splices. The tops of the panels are connected to a ring beam with wooden screws to join to the wall panels together. The corner columns and connector are connected to the panels using screws at the corner position.

CNYD Composite wall panels are designed to be used (where required) in conjunction with standard timber framed walls. The scope of Codemark certification excludes standard timber framing. The panels timber frame comprises of vertical framing and studs of 90 mm x 45 mm or 140 mm x 45 mm LVL timber with base plate of 90 mm x 60 mm or 140 mm x 45 mm LVL timber.

The timber frame has:

- 9 mm thick fibre cement board fixed to the framing for the exterior of the panel and
- 16 mm thick plasterboard fixed to the interior of the panel.

The panel is filled with glass wool insulation with a density of 24 kg/m³. Panels are 1206 mm wide x 2806 mm high, 115 mm or 165 mm thick.

SCOPE & LIMITATIONS OF USE

Wall panels are intended for use within the following scope:

- up to an including high wind zone as defined in NZS 3604:2011
- up to a maximum building height of 3 m (single level building only)
- with a maximum roof loaded dimension (DIM) of 3 m
- maximum eave width of 600 mm
- maximum roof pitch of 40°
- maximum roof rafter/truss spacing of 600 mm.
> Specify use of panel

CNVD Composite Wall Panels can be used:
- as internal wall frames
- as external wall frames

> Specify design of foundation

The foundation must be designed:
- in accordance with NZS 3604:2011 subject to good ground
- where outside the definition of good ground SED is required.

> Determine loads

Ensure that the loads apply to the building for wind, snow, weight of roof, seismic, dead and live loads.

> Select panel size

The panel size is based on the loading requirements.

The standard CNVD Composite Wall Panels are:
- 2806 mm high x 1206 mm wide and
- 115 mm thick and 165 mm thick.

> Specify floor connection details

Details are provided for ground floor connections. Refer to details Fig 1.

> Specify panel to panel connections

Details are provided for panel to panel connections. Refer to details Fig 2.

> Specify panel to standard wall frame connections

Details are provided for panel to standard wall frame connections. Refer to details Fig 3-5.

> Specify panel to roof connection

Details are provided for panel to roof framing connections. Refer to details Fig 6-7.

> Determine bracing requirements

Calculate the wall bracing requirements for EQ and Wind.

Use the design criteria for earthquake and wind as defined in sec 5, NZS 3604: 2011.

Refer to CNVD Composite Wall Panel wall bracing table for specified bracing unit (BU) values. Fig 9.

> Check fire requirements

The fire rating for the CNVD Composite Wall Panel are:
- standard 115 mm thick CNVD Composite Wall Panel – FRR 30/30/30 (Load 25KN/m)
- standard 165 mm CNVD Composite Wall Panel – FRR 30/30/30 (Load 8KN/m).

Fire resistance rating (FRR) different from those above require specific fire engineering design.

> Confirm all design requirements are met

Confirm the CNVD Composite Wall Panels meets all relevant design requirements.

> Specify cladding

Where panels are to be used to construct external walls, specify the flexible wall wrap and external wall cladding to be used. The external wall cladding system and its components must be in accordance with all relevant provisions of the NZ Building Code.

> Specify finishes

Ensure the building consent plans and specifications clearly define panels and relevant details.

> Documentation

Ensure the building consent plans and specifications clearly define all:
- thickness of the panel
- relevant details
- where standard wall framing is to be used.

The installer will be relying on these documents, along with this guide, to install the CNVD Composite Wall Panels correctly and in accordance with the building consent.
CONSTRUCTION

PREPARATION

> Health & Safety

Take all necessary steps to ensure your safety and the safety of others:
• ensure adequate ventilation or mechanical dust extraction when cutting or drilling
• use appropriate safety equipment, clothing and footwear
• use all tools in accordance with relevant instruction manuals
• plan and monitor a safe approach for working at height, select and use the right equipment
• clear the work area of any obstructions before work starts.

For further information refer to:

These documents are available at www.worksafe.govt.nz.

> Storage & Handling

Correct handling and storage of CNYD Composite Wall Panels is critical for best performance, ease of use and warranty adherence.

CNYD Composite Wall Panels are packaged by goods shelf, with panels placed on two layers of the shelf and each layer bundled and fixed by plastic-steel packing strips.

Once the goods shelves are unloaded on site, the panels should be stored in a dry, ventilated area, where the panels can be kept dry.

Panels must be handled with care and need to be protected from damage and moisture. Prolonged exposure to sun must be avoided.

> Key Documents

Building consent
• building consent plans and specifications
• this guide.

> Tools Required

• trestle ladder
• ladder or mobile scaffold
• laser level (able to be used vertically)
• crowbar
• hand power drill
• measuring tape
• spirit level.

> Components Needed

• CNYD Composite Wall Panels
• floor connection plates – connectors manufactured from bent 3 mm galvanised steel sheet
• timber raising plates
• corner columns
• Hilti CP 606 Flexible firestop sealant
• mid floor cover flashing
• standard timber framing (where required): SG8, H1.2 Hazard class.

> Setting Out

Mark out the required internal and external wall layout on the foundation, using a laser. The layout should mark both the outer and inner edges of the panel. If wall length adjustment is required, make the adjustment to the solid timber frame sections, not the panels.
CONSTRUCTION

INSTALLATION

> **Waterproofing**

Waterproof the foundation as specified in the building consent, in accordance with the requirements of the waterproofing supplier.

Install polythene below the topping floor slab. Ensure a damp-proof course (DPC) is applied between the CNYD Composite Wall Panels and the foundation slab.

> **Install floor connection plates**

The floor connection plate is to be placed on the outer edge of the panel marking. The vertical edge must be placed with a 3 mm overhang over the outer edge of the floor slab.

For external walls, a raised bottom plate is bolted to the floor slab with M12 Epoxy Epcon bolts, ChemSet at 900 mm centres.

Position the 3 mm galvanized steel angle on the top of the raised plate with 4.8 mm x 60 mm screws at 300 mm centres.

Check floor connection plates are horizontal (level) and use spacers where necessary.

> **Install wall panels**

Hoist the panel into position, placing the panel on the floor connection plates, with the fibre cement side of the panel against the floor connection plate.

Secure the panel to the plate using 6 mm x 70 mm sinkhead screws at 300 mm centres.

Check panel alignment and adjust if necessary. Apply Hilti CP 606 Flexible firestop sealant to panel mullion 20 mm from edge and close panels together.

Refer to the CNYD details when joining CNYD composite wall Panels to standard wall frames.

> **Install raising plates**

Secure panels by installing the timber raising plate as specified (90 mm or 140 mm x 45 mm) to the top of the panels. Fasten the raising plate using 6 x 100 mm sinkhead screws, placed 200 mm apart in a staggered arrangement.

> **Install corner columns**

Place bottom connector of corner column on the foundation and corner column on the bottom connector. Fasten to the corner studs using 6.0 mm x 100 mm hexagonal screws. Fasten at the bottom plate with 6.0 mm x 70 mm sinkhead screws.

> **Treat joints**

Apply masking tape to panel edges at joins. Insert Hilti CP 606 Flexible firestop sealant to the gap between the edges of the panels, uniformly and, free from bubbles. Remove masking tape. See Fig 8.

> **Finish**

Install specified waterproofing to external panels. Waterproof DPC material must be used for waterproofing above the ground floor to ensure there is no moisture transfer.

Install flexible tape protection to joinery openings and fit joinery in accordance with the building consent documentation.

Install external cladding as specified.

Seal all penetrations with an approved sealant, cover flange or flashing.

Finish using specified external coating system in accordance with supplier's specifications and recommendations.

> **Quality check**

Complete a visual check to ensure all installation requirements have been met.
CONSTRUCTION DETAILS

Fig 1: Wall Panel to Concrete Base Connection

- 9mm Fiber cement board
- 6x70 countersunk screw @ 300 crs
- 2/4.8x60 Screws @ 300 Crs
- 2/90x45 S88 Bottom Plate
- ChemSet M12 Epoxy Epcon C6 Bolts with 50x50x3 washers @900 Crs
- 16mm Fire rated plasterboard
- Insulation
- LVL 90x60 (or LVL 140x60)
- DPC between all concrete & timber surfaces
- Galvanized steel angle to connect wall panel
- 20mm max deep cut to fit washers

Fig 2: Top Plate Fixing Details

- 90x45 extra top plate
- SN50L (6kN) Jointing in-line
- Top plate
- Timber framing
- Composite wall panel
- 2xSN50L (6kN) Jointing in-line
- Top plate
- Stud
- Composite wall panel
- Fireproof adhesive flattened
- Sealant

Cover (To be designed separately)
- Hexagonal head woodscrew 4.8x70
- Corner pillar predrilled LVL 100*100 or 150*150
- Bottom connectors of corner pillar
- 6mm fabricate steel plate predrilled
- Hexagonal head wood screw 6*70 4 at each side
- Fireproof adhesive flattened 6x100@150mm staggered at both sides

Composite wall panel
CONSTRUCTION DETAILS

Fig 3: Wall Panel to Timber Framing Joint

Fig 4: Wall Panel to Timber Framing External Corner

Fig 5: Wall Panel to Timber Framing Internal Corner
CONSTRUCTION DETAILS

Fig 6: Timber Truss to Top Plate Fixing Detail

Fig 7: Gable End Wall to Top Plate Fixing Detail

Fig 8: Treating Joints

Cleaning

Adding sealant

Apply paper tape

Remove paper tape
CNYD Composite wall panels require very little maintenance because the outer face of the panel is protected with a wall cladding system and the internal face is required to be sealed and painted.

Simple regular inspection and maintenance of the building is required to ensure the panels remain protected.

Check external claddings regularly, in particular areas of the cladding where there are flashings, penetrations or protective sealant to ensure the weathertightness of the external envelope is maintained.

Check internal linings in wet areas regularly to ensure the integrity of the lining. Careful attention should be paid to joins to ensure sealants and fixings are in place. Excessive exposure to moisture will reduce the internal plasterboard performance. Ensure all protective coatings are maintained. Scrap and sand any damaged areas and apply another coating application.

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<th>Configuration</th>
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<th>Rating per metre (BU/m)</th>
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</thead>
<tbody>
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<td>Wind</td>
<td>Earthquake</td>
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<td>2.4 m 140 mm</td>
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