



SPECIFICATION

Enviro™

AAC Floor Panel System



CODEMARK™
CMA-CM40041

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PRODUCT DESCRIPTION

Enviro Floor System comprises of autoclaved aerated concrete panels 75 mm thick and reinforced with corrosion protected steel wires fixed to a light timber framed or light steel framed flooring system. It is suitable for residential and light commercial buildings.

Enviro Floor System is the innovative relationship between a well proven lightweight concrete material with New Zealands lightweight timber or steel framing construction systems.

The panels are fixed to the floor framing of the building using galvanised bugle for timber framing or dual grip hexhead screws for steel framing. The panels are 600 mm wide, with a dry density of 520 kg/m³, about 1/5th that of concrete.

Enviro 75 mm floor panels are available in standard length of 2200 mm and upon request can be sourced in 1800 mm panels.

Enviro Floor Panels have the following material properties:

Dry Density	525 kg/m ³
In Service Density	600 kg/m ³
Compressive Strength	4.0 MPA
Bending Strength	780N → 1000N or above
Dry Shrinkage Value	0.8mm/m → 0.03%-0.05% or 0.3-0.5mm/m
Water absorption (by volume)	Up to 30-35%
Thermal conductivity	0.12 w/mk → 0.13 w/mk
Thermal resistivity	0.56 m ² K/W
Sound Transmission Loss	35dB for 1000 Hz
Fire Resistance	1.5 hours → 2 hours

This manual has been prepared in conjunction with Enviro design consultants.



PERFORMANCE

Enviro Floor Systems are constructed in accordance with the details and instructions in this Technical Manual and will meet the relevant sections of the New Zealand Building Code (NZBC) including:

Structure

Enviro Floor Systems are constructed in accordance with this manual and can support a maximum uniformly distributed load of 2.5 kPa, or a concentrated live load of 2.7kN with joists at 600 mm maximum centred (550mm centres suggested).

Mass

The dry mass of 75 mm Enviro Floor Systems is 39 kg/m². The panels are available in two sizes, 1800 mm x 600 mm (upon special request) (dry weight per panel is 42 kg) and 2200 mm x 600 mm (dry weight per panel is 51 kg). The in-service mass of 75 mm Enviro Floor Panel is 45 kg/m². The designer should use the in service mass for the design of the support system.

DESIGN CONSIDERATIONS

General

Enviro Floor Panels shall be laid generally in full panels wherever possible. The panels shall be laid in half stretcher bond. Enviro Floor Panels can be readily cut to size and to suit floor layout requirements and openings.

Framing

Enviro Floor Panels may be supported on either a light timber reamed system or a light steel framed system. The light timber framed system may comprise timber joists, ply webbed joists, trussed joists, laminated timber joists, timber and steel beams or any combination of the above.

The floor framing system should be designed for the appropriate live load plus the in service mass of the Enviro Floor Panels. For framing designed to NZS3604 "Timber Framed Buildings" compensation needs to be made for the extra weight of the Enviro Floor Panels. Framing sizes should be selected from the appropriate table for a live load of the Design Live Load plus 0.5 kPa for the Enviro Floor Panel.

For example, for normal domestic loading the floor joists should be chosen from the 2.0 kPa live load tables (1.5 kPa + 0.5 kPa). Similarly for normal domestic decks the deck joists should be chosen from the 3.0 Pa (2.0 kPa + 0.5 kPa) live load tables.

Concentrated Loads

Enviro Floor Panels have been designed to support a concentrated live load of 21.7 kN applied over a 0.3 m x 0.3 m area. Concentrated loads from load bearing walls or point loads shall be supported by additional framing such as joists or blocking. The bearing stress in the Enviro Floor Panels shall be limited to 1.0 MPa.

Penetrations

Isolated penetrations up to 80 mm diameter may be made in the Enviro Floor Panel without reducing their overall structural performance. Larger penetrations or clusters of penetrations shall be trimmed by framing members. Penetrations should be sealed using an appropriate flexible polyurethane sealant or proprietary collar.

Bracing Walls

Where bracing walls occur on top of the Enviro Floor Panel additional framing shall be incorporated in the floor framing as follows:

For bracing walls parallel with the floor joists the bracing wall shall either be over a joist or be supported by solid blocking. Blocking shall have a minimum width of 45 mm.

Wet Areas

A waterproof membrane installed in accordance with the manufacturer's recommendations shall be applied to Enviro Floor Panels in all wet areas.



COMPONENTS

NB: Only components specified by Enviro are to be used in the Enviro Floor System and all references to components in the CAD details are for these products. All components can be supplied to trained installers of Licensed Masons Distributors.

Panels

600 x 1800 x 75 mm (upon request) and 600 x 2200 x 75 mm autoclaved aerated concrete panels that are reinforced with corrosion protected steel wires.

Screws

14 to 10 x 100 mm bugle head galvanised steel screws are used for fixing the 75 mm panels to the timber flooring system for steel frame use 100 mm hex head self drilling dual grip floor screw.

Mortar Glue

Enviro Mortar Glue is available through Masons for use in the jointing and stopping of Enviro Panels. This mortar is to be mixed on site and applied with the aid of a trowel.

Sealants

Low expandable polyurethane foam that complies with AAMA 812-04 and moisture compatible flexible sealant for use in penetrations of Enviro Floor Panels.

Zinc Primer

Zinc primer complying with AS/MZS 2311:2000, is to be applied to all exposed reinforcing steel.

Adhesive

Enviro Floor Panels shall be laid on a continuous 5 mm bed of a solvent based construction adhesive applied to the floor joist before laying the Enviro Floor Panel.

INSTALLATION

General

Enviro Floor System must be constructed by an LBP skilled in the field (ie Builder or Plasterer).

Handling and Storage

Enviro Floor Panels should be stored on site on the pallets provided and kept dry until required. Care is required in handling the product and edges and corners must be protected from damage.

Safety Precautions

Autoclaved Aerated Concrete (AAC) dust contains crystalline silica in common with the dust from other concrete products including fibre cement products.

This dust is irritating to the eyes, skin and respiratory system and inhalation may cause irreversible damage to health. Avoid breathing the dust and contact with eyes and skin. Wear suitable protective clothing and gloves. When cutting, grinding or drilling panel do so in the open air or in well ventilated spaces and wear approved safety glasses and dust mask.

All aspects of cutting, grinding or drilling must comply with the latest regulations of the Occupational Safety and Health (OSH) Division of the Labour Department.

Tools

Tools that will be required to install Enviro Floor Panels include:

- Power drill and square drive
- Power saw with metal or diamond blade
- Power planer
- Safety glasses and dust mask
- Mortar mixer and bucket
- 50 mm spreader trowel
- Stopping blade and sanding float



CONSTRUCTION DETAILS

Method

Step 1

Check with a straight edge to ensure floor framing is straight and level.

Step 2

Measure 600 mm in from boundary joist at both ends of the floor, then mark a line parallel to the boundary joist. Repeat this method at 600 mm intervals across the building.

Step 3

Spread a continuous 5 mm bead of construction adhesive along the joists under the first panel and starting from a corner, place the first Enviro Floor Panel onto the construction adhesive. Ensure the panel is parallel with the boundary joist.

Two screws are required in each panel at each joist. Screws in the end edge of the panel may be skewed to achieve the 50 mm end distance requirement. The screws must be wound into the panel until the head is 2 mm to 3 mm below the panel surface.

Panels must be supported on a minimum of two joists.

Step 4

Spread Enviro mortar glue 2-3 mm thick along the vertical edge of the panel and then repeat step 4 abutting the next panel hard against the fixed panel. Ensure this panel is parallel with the boundary joist and screw to floor joists as before. This procedure is repeated along one side of the building.

Step 5

Spread Enviro mortar glue approximately 2-3 mm thick along the rebated vertical edge of the first panel for the second row of panels. Spread a continuous 5 mm bead of construction adhesive along the joists under the first panel. Lay the new row of panels with a half stretcher bond, then screw panels to the floor joists as before.

Step 6

Panels must be cut to size so that wherever possible no reinforcing steel is exposed to openings or corners. The last row of panels may be cut lengthwise to fit the floor width. Where exposed it must be treated with zinc primer.