

CELCRETE BLOCK VENEER SYSTEM

General Description

An exterior veneer wall system utilising 75mm thick autoclaved aerated concrete blocks. It is supported off a timber or steel framed wall by standard brick veneer ties across a 40mm cavity. The external face is finished with a reinforced plaster system. It is suitable for the external veneer of both single and two storeyed residential and light commercial buildings. The system can be a direct alternative to clay brick or concrete block veneer. It is fully compatible with the **CELCRETE Panel Veneer System** and can be used in conjunction with the **CELCRETE** panels to form different parts of the building using the best attributes of both systems.

The solid AAC blocks are 600mm long and are available in both 200 - 400mm heights. They are laid in stretcher bond to form the wall and are fixed with **CELCRETE** thick or thin bed mortar

In particular, the cladding system can be utilised over the door and window openings by fixing the panels to 40mm vertical battens in lieu of the normal veneer lintels of mild steel flats or angles (see fig 1).

Material Properties

CELCRETE BLOCKS have the following material properties:

Dry Density:	500 kg/m ³
Compressive strength, f'c:	4.0 MPa
Modulus of Elasticity, E:	1500 MPa
Water absorption (by volume):	up to 24 – 35%
Thermal Conductivity:	0.1397 W/(mK)
Thermal Resistivity, R:	0.66 m ² K/W
Sound Transmission Class (75 mm bare block)	35
Fire Resistance (overseas testing)	more than 3 hours

Performance

CELCRETE BLOCK VENEER WALLS constructed in accordance with the requirements of NZS 3604: 1999, NZS 4210:1989 and the details and instructions following will meet the relevant

sections of the New Zealand Building Code (NZBC) including

- B1 – Structure
- B2 – Durability
- E2 – External Moisture
- F2 – Hazardous Building Materials

And will also contribute significantly towards the provisions of:

- H1 – Energy Efficiency

Structure:

The blocks and their fixings are able to withstand earthquake and wind loading in terms of NZS 3604: 1990.

Durability:

When constructed in accordance with this technical information as an exterior block veneer wall system, **CELCRETE BLOCK VENEER SYSTEM** will meet the requirements of NZBC Clause B2.3.1. NZBC requires a minimum life of 15 years for cladding walls. The life of **CELCRETE BLOCKS** will greatly exceed this time frame.

External Moisture:

Provided that the integrity of the external plaster system is maintained, the requirements of clause E2.3.3 relating to water penetration, are met by the system.

Maintenance: To ensure the integrity of the external plaster system is maintained, regular cleaning and inspections of the jointing and coating systems must be carried out and routine maintenance plaster system must be promptly repaired.

Hazardous Building Materials:

CELCRETE BLOCKS are non-hazardous in terms of F2 providing the safety precautions included in this literature are adhered to.

Mass:

The dry mass of 75mm thick **CELCRETE BLOCKS** without the coating system is 37.5 kg/m². With an external plaster coating of up to 14mm, the mass is within the range for *medium wall cladding* defined in NZS 3604:1999.

Thermal resistivity:

The thermal resistivity of the **CELCRETE BLOCK VENEER** increases the R value of a standard plasterboard lined, timber framed wall fitted with R1.8 fibreglass batts to a level of over R2.46 which is approx. 50% higher than required under NZBC E3/AS1 Clause 1.1.1 a).

This will result in lower heating and cooling costs at no additional construction costs.

Fire Resistance:

The fire resistance of over 3 hours is more than is required for any domestic or normal commercial exterior wall rating.

CELCRETE BLOCKS are 'non-combustible' and have an ignitability index of zero when considering the acceptable properties of external walls in terms of NZBC C3 Clause 4.9.2.

Sound Absorption and Insulation:

The aerated structure of **CELCRETE BLOCKS** provides superior sound absorption properties to that provided by concrete and higher sound insulation efficiency than concrete blocks or clay bricks.

Design Considerations:

General:

The technical information in this brochure is for installers and specifiers of the **CELCRETE BLOCK VENEER SYSTEM** as an exterior wall veneer for single and two storeyed steel or light timber framed buildings built to NZS 3604.

While **CELCRETE BLOCKS** can be readily cut to sizes to suit, maximum efficiency and speed of erection is gained where wall lengths and window and door openings are set out to a 600mm module. This is best established at the design stage, with due allowance being made for the corner details.

Footings:

CELCRETE BLOCK VENEER walls are to be seated on footings as detailed in NZS 3604:1999 in a minimum 50mm deep rebate (**see fig 2**).

This rebate is to receive three coats of bituminous paint or equivalent damp proof course before laying the blocks.

Framing:

Timber framing shall be in accordance with NZS 3604:1999 Section 8, unless specifically designed.

Cavities:

The cavity between the **CELCRETE BLOCK VENEER** walls and the timber framing shall be generally sized, drained and ventilated in accordance with NZS 3604:1999 Cl 11.7.4.

As **CELCRETE** recommends an **External Plaster** that is specially formulated to be vapour permeable, allowing the walls to "breathe" but remain resistant to moisture movement, only 30mm weepholes are required at the base of the walls between each block (**see fig 1**).

Sheathing:

As required by NZS 3604 Cl 11.4 a breather-type building paper must be fixed to the exterior wall framing before the **CELCRETE BLOCKS** are installed.

Ties:

As required by NZS 3604 Cl 11.7.5, wall ties are to be placed as nominated in NZS 4210. This requires ties at maximum 600mm horizontally and 400mm vertically. This means ties are to be fixed to every stud (at 600mm centres) and at 400mm vertically. For the top course, the ties need to be placed in the vertical mortar joints between blocks and fixed to a 50x25mm batten fixed to studs for top course ties (**see figs 1&2**). (Optional)

Bracing:

Timber framed walls shall be braced in accordance with NZS 3604:1999 Section 5.

Thermal Insulation:

To meet the requirements of NZBC E3 Clause 1.1.1 a) fibreglass batts or their equivalent to a minimum of R1.3 must be installed in the timber wall framing. To meet the requirements of NZBC H1 the overall building insulation is required to be considered including that of the floor and the ceilings.

Control Joints:

Generally, vertical control joints must be provided every 6 – 8 metres. These joints require 8mm gaps between blocks which are filled with expandable foam and an anti-fracture waterproofing membrane applied over the control joint. These joints should be located away from external corners and in line with window and door openings (see fig 1).

Control joints must be provided at the interface between the block veneer and any panel cladding to allow for any movement due to the differential behaviour of the timber framing and the block veneer (see fig 2).

Lintel Options:

- Mild steel angles in accordance with Table 11.4 of NZS 3604:1999 can be provided over all openings (see figs 1&2).
- The **CELCRETE 75mm PANELS** can be cut down and utilised over the door and window openings by fixing the panels to 40mm vertical battens (see fig 1). Panels are screwed at 600mm centres, with two screws in each batten 75mm in from panel top and bottom.
- Reinforced panels can be cut down to form the required depth above the windows. These form a precast lintel, which will span 2.4m and will seat on to existing block wall (see fig 1).

Components (Supplied by Celcrete International)

Brick Ties

Mortar Glue:

CELCRETE Mortar Glue is supplied by **CELCRETE INTERNATIONAL** for use in the jointing and stopping of **CELCRETE BLOCKS**. This mortar is mixed on site and applied with the aid of a spreader trowel that is available from **CELCRETE INTERNATIONAL**.

Control Joint Sealant:

Expandable foam and anti-fracture waterproof membrane supplied by **CELCRETE INTERNATIONAL** for use in control joints of **CELCRETE BLOCKS**.

Installation

General:

CELCRETE BLOCK VENEER SYSTEM should be constructed or supervised by experienced builders to ensure quality of workmanship.

Handling & storage:

CELCRETE BLOCKS 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:

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 blocks 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 & Health (OSH) division of the Labour Department.

Tools:

Tools that will be required to install **CELCRETE BLOCKS** include:

- § Power drill with Hex head drive
- § Power saw with metal cutting blade.
- § Safety glasses & dust mask
- § Mortar mixer & bucket
- § 75mm spreader trowel
- § Stopping blade & sanding float

Construction Method:

1. Lay down damp proof course or three coats of bituminous paint before laying the blocks.
2. The blocks are then laid in stretcher bond on thick bed mortar, to a straight and level line.
3. Subsequent block work will be laid on either thin or thick bed mortar glue.
4. Brick ties are fixed every 600mm horizontally and every 400mm vertically (see fig 1).
5. 50 x 25mm horizontal batten (optional) is fixed to studs for top course ties.

Openings:

Head flashings must be fitted and sealant applied around the entire opening prior to the coating application (see fig 2).

External Plaster System

General:

Rendertek Plaster is the only approved plaster system to be applied over **CELCRETE**. It is a specially formulated mineral plaster system with a fibreglass mesh reinforcement trowelled into the first coat.

Mineral plasters are vapour permeable, allowing the walls to "breathe" by allowing the free movement of water vapour through the wall to maintain the internal equilibrium of the building.

Preparation:

Full and thorough preparation of the **CELCRETE BLOCKS** must be carried out prior to the application of the recommended **External Plaster**.

All joints and fixings holes must be filled with Mortar Glue and sanded to a smooth surface.

Any damage to blocks must be repaired with Mortar Glue, flush finished and sanded.

All required flashings and sealants around window and door openings must be in place.

All control joints must be filled with an approved expandable foam and sealed with an anti-fracture waterproofing membrane strictly in accordance with the manufacturer's instructions.

All dust and loose particles removed from the prepared surfaces.

Application:

The **External Plaster** system should only be applied by an applicator approved by **CELCRETE INTERNATIONAL**.

Before commencing application the applicator must ensure that all required preparation has been carried out and that the **CELCRETE BLOCKS** are suitably dry and ready for the application.

Apply the base coat of plaster with the reinforcing mesh trowelled in. Apply a second coat to bring the plaster to a flat and level finish.

Allow the plaster to dry before applying a further finishing coat of plaster if a decorative finish is required.

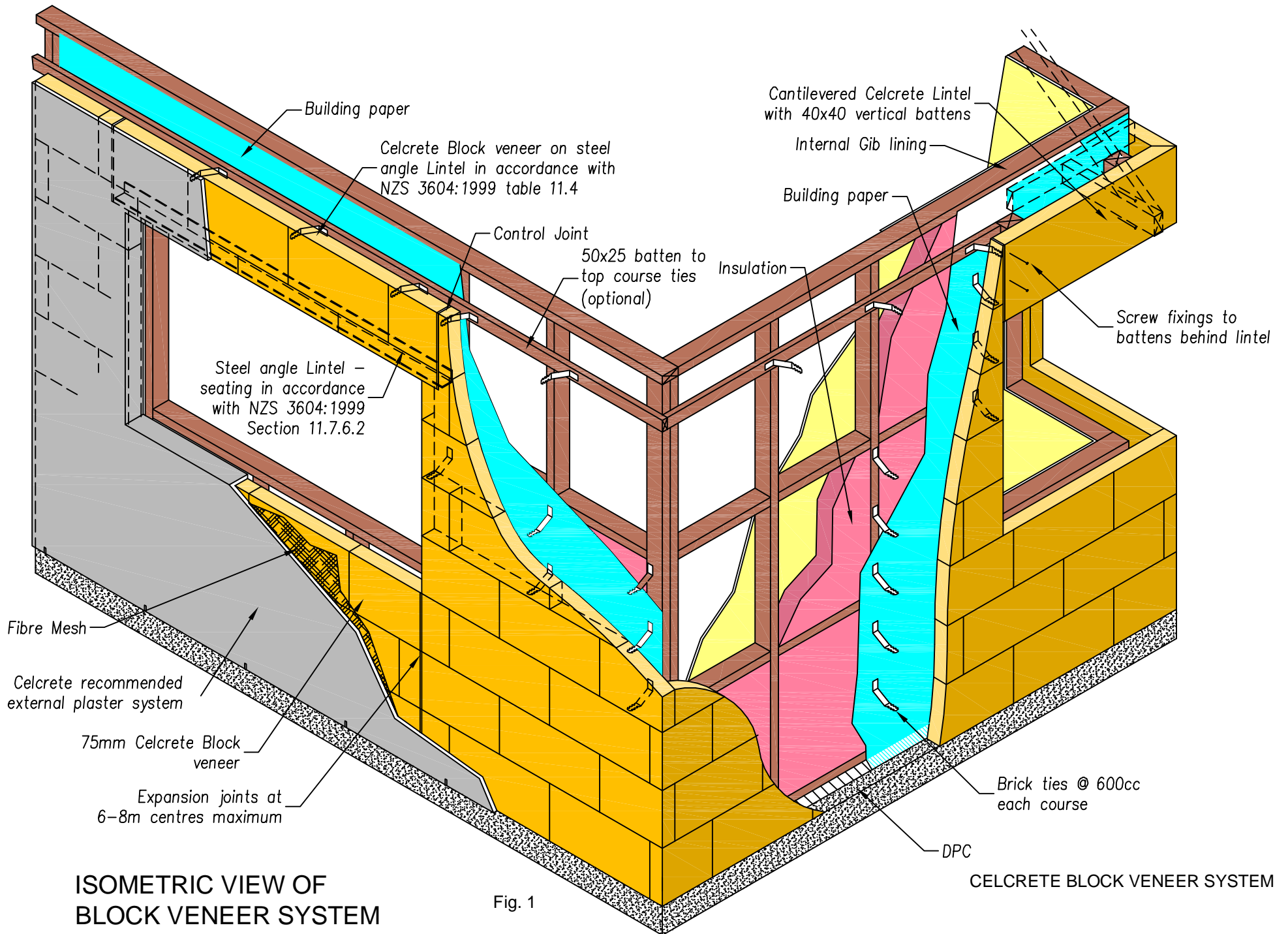
After application of the plaster, a protective coating of breathable paint is required to provide colour and water protection.

Maintenance:

The coating system must be maintained in accordance with a schedule supplied by **CELCRETE INTERNATIONAL** and any damage repaired as soon as is practicable.

For additional technical information and advice on construction methods please phone; 0508 CELCRETE (0508 235 2 7383) or your local distributor.

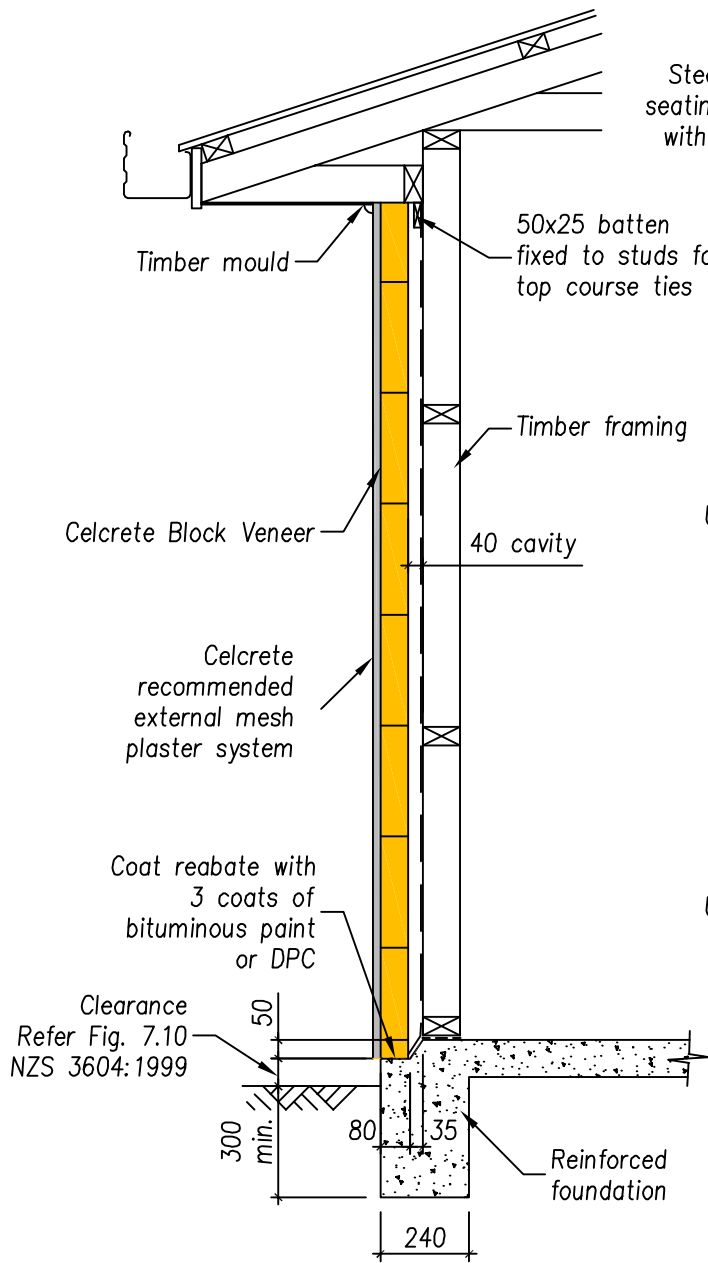
Copyright © 2001 Celcrete International Ltd



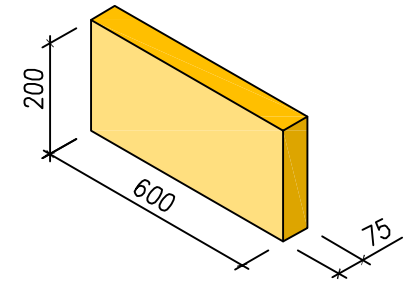
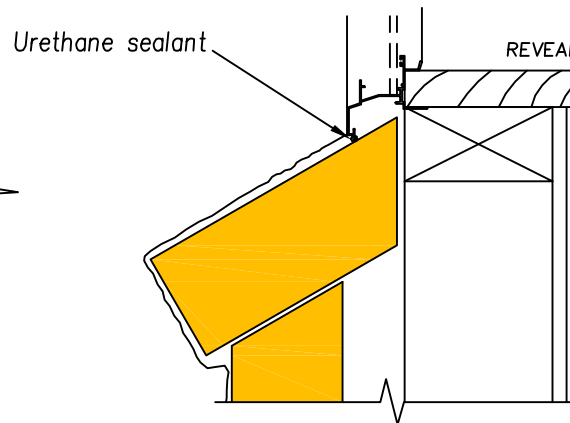
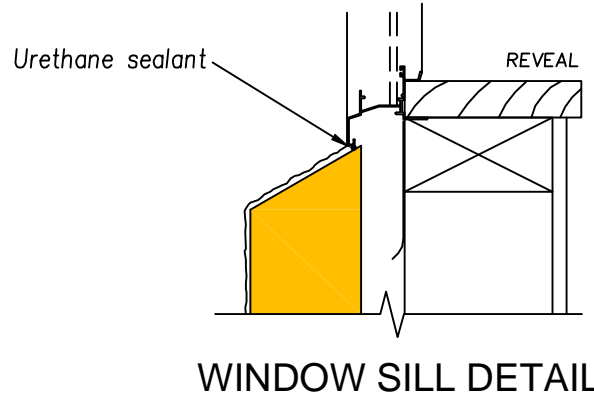
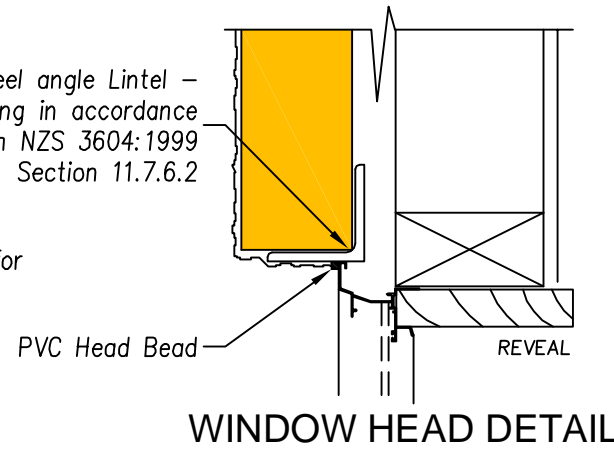
ISOMETRIC VIEW OF
BLOCK VENEER SYSTEM

Fig. 1

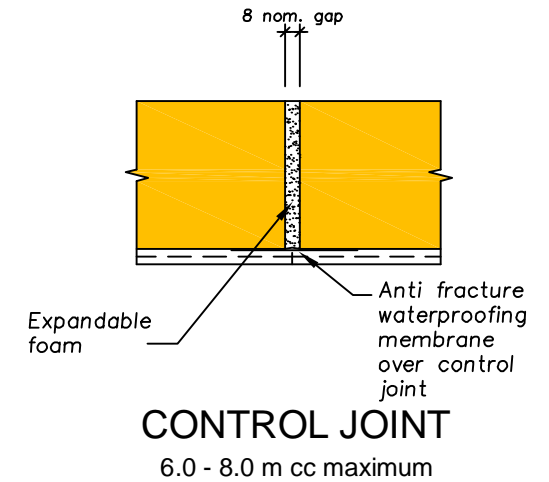
CELCRETE BLOCK VENEER SYSTEM



SECTION OF CELCRETE BLOCK VENEER WALL.

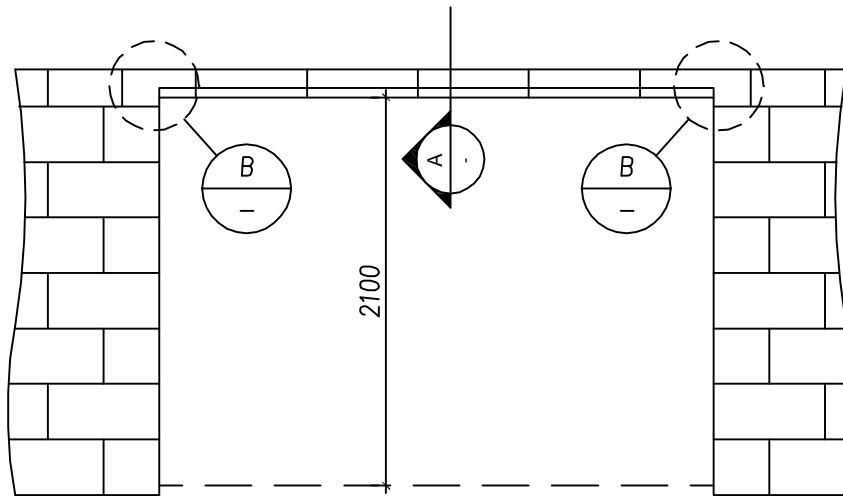


TYPICAL 600 VENEER BLOCK

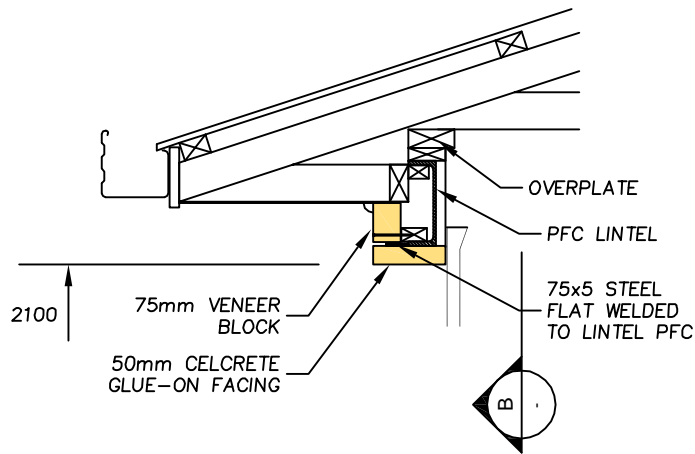


CELCRETE BLOCK VENEER SYSTEM

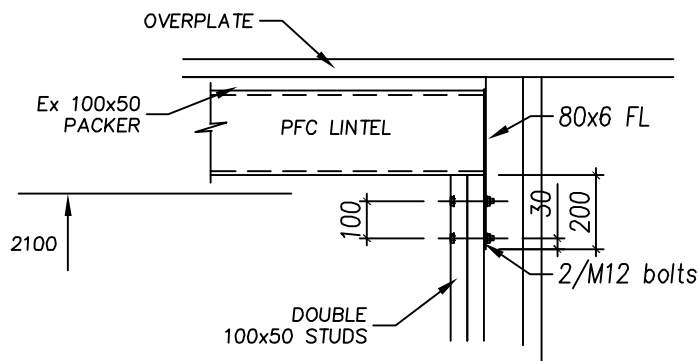
Fig. 2



**GARAGE DOOR
LINTEL ELEVATION**



A
-
LINTEL SECTION
1:20



B
-
LINTEL SEATING
1:20

Fig. 3