BASIC ENGINEERING INFORMATION
The BRIKIT System

The information contained within this page was written many years ago and was designed to assist with basic engineering details for recladding existing timber framed homes.
In the case of recladding, we recommend that the home be checked to ensure it is strong enough to support the additional weight of approx. 50kg per m²

If you have any specific installation questions, please email us stating the application you are thinking of and we will answer you promptly.
All we ask is that you provide us with as much detail as you can..

The BRIKIT WALLING SYSTEM
ENGINEERING GUIDELINES

1.0 INTRODUCTION
The BRIKIT Walling System consists of a 25mm thick brick facing that has been cut from a normal brick and has been grooved on the top edge to allow it to be locked into a corrosion resistant metal course rail. The course rails are fixed to stud framework and the brick facings are mounted onto these rails and mortared into position.

The system allows for the recladding and upgrading of normal timber or steel framed homes, as well as the cladding of new buildings.

The following report is a structural assessment of the systems in accordance with the relevant codes and briefly describes the suitable construction techniques to be adopted. The report should be read in conjunction with the Builders Installation Guide.

2.0 DESIGN ASSUMPTIONS
2.1 Criteria
For stud walls with normal ceiling heights of 2400mm, stud framing which consists of 100 x 50 F5 studs @ 450 centres with 1 row of noggings can be acceptable within the requirements of these guidelines.

For walls up to a maximum ceiling height of 2800mm, framing shall consist of 100 x 50 F7 studs @ 600mm centres maximum with 2 rows of noggings at equal one third spacing. The stud frame is clad with plasterboard sheeting or equivalent shear membrane on the interior and with the BRIKIT Walling System on the exterior.
The classification of timber used in the joint design is Group J4.

The BRIKIT Walling System is to consist of 25mm thick face bricks which contribute an additional 0.489 KPa per m² of facade dead load.

The basic design Wind Speed is assumed to be 41 m/sec. with a Terrain Category 2 for Regions A & B for a structure height of less than 10 m.

2.2 System Components
The starting rail consists of a steel 'L' angle with a back height of 86mm and a bottom width of 25mm. The gauge for this rail is usually 0.4mm.

The course rail consists of a roll formed steel plate with an overall height of 87mm nominally, top and bottom flange widths of 5mm and 15mm respectively and bottom tab height of 17mm. Course rail gauge is set at 0.465mm for stud spacings at 600mm maximum. These rails are fixed to the substrate by one of the following methods: flat headed cadmium coated nails or similar screw fixing.

2.3 Relevant Codes

The design checks are in accordance with the following design codes:

AS 1170.2 - 1989 SAA Loading Code
Part 2: Wind Load
AS 1720 - 1975 SAA Timber Engineering Code

3.0 INVESTIGATION

3.1 Stud Support of Additional Dead Load

The 100 x 50 F5 studs at 600mm centres with two middle noggings will support the additional dead load of the brick veneer system provided the studs are restrained in position and direction at the floor and at roof level for a height or length of 2800mm maximum. i.e. the maximum floor to ceiling height is to be 2800mm for each storey.

3.2 Resistance of the BRIKIT Veneer to Wind Loading

The brick veneer panel would support an outward pressure of 0.820 KPa which is considered to be satisfactory under most critical wind loadings in accordance with the required codes. The recommended number of 35 fixings of 75mm long 2.5mm gauge nails per m^2 is considered adequate to resist the outward loads. This is based on the permissible withdrawal load of 3.3 n per mm of penetration of 2.5 mm gauge nails for a minimum penetration of 35mm.

3.3 Transfer of the Vertical Brick Veneer Load to Stud Framework

The transfer of the vertical brick veneer load to the stud framework is through the shear force in the nails at the back of the course rail. The shear force per fixing is determined as approximately 0.03 KN and the allowable load per 2.5mm gauge nail with a minimum penetration of 35mm is 0.175 KN. Therefore the recommended nail is considered adequate.

3.4 The Structural Capacity of the Course Rails

The course rails and the face bricks being nailed and grouted to the studwork could be assumed to act as a composite structural element (once grouted) and would therefore be adequate to support both the vertical and horizontal loads.

4.0 DURABILITY

It is considered that the BRIKIT course and starter rail being of Galvanised or Zincalume steel offers an acceptable level of durability to the weather elements. Note that any sarking joints should not be located directly behind the joints in the rails. It is strongly recommended that all fixings should be of a durability rating equivalent to or better than Galvanised steel.

Silicon sealing the finished BRIKIT wall system can be carried out as suitable added protection for preventing water ingress in particularly aggressive environments, however this is not considered to be a mandatory requirement.

Sarking behind wall battens is recommended on all new construction and should be regarded as standard practice.

5.0 GENERAL COMMENTS

When an existing structure is to be veneered with BRIKIT, it should be inspected and the structural elements should be checked to determine their structural capacity to support the additional load.

All nails should be tightly secured to the substrate framework and should be fully engaged to prevent those fixings undergoing combined bending and shear forces. Where battens are required, the batten should be restricted to a maximum of 38mm thick and it should be adequately fixed to the stud if 50mm wide battens are to be adopted. A reduced penetration of the nail to the stud is acceptable, however the number of fixings should be increased to 50 per m^2 or the nails increased in length to 100mm long.

The ant caps and ant prevention strips should be installed correctly and periodic inspections should be carried out to alleviate risk of vermin infestation.

The brickwork joints should also be inspected periodically for any signs of cracks in order to prevent water ingress to the substrate.

6.0 SUMMARY

The BRIKIT Veneering Systems have been assessed for their structural adequacy in compliance with the following:

1. The stud framing should be at least 100 x 50 F7 studs @ 600mm centres with 2 rows of equally spaced noggings for a wall height 2800mm at any one level and 100 x 50 F5 studs at 450mm centres with 1 row of noggings for a wall height of 2400mm.

2. Nails should be 2.5mm minimum diameter x 75mm long, cadmium plated nails, fully driven home. Where battens are required, the battens should be, (max), 38mm thickness and the battens should be adequately fixed to the studs with the number of fixings being increased to 50 per m^2 or the nails increased to 100mm long.