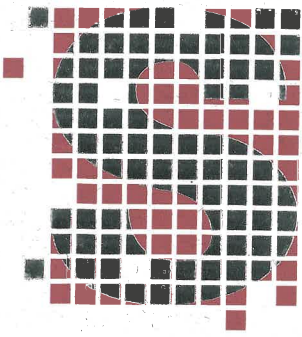


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**SHEEHY &  
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PTY LIMITED  
CONSULTING ENGINEERS  
STRUCTURAL AND CIVIL  
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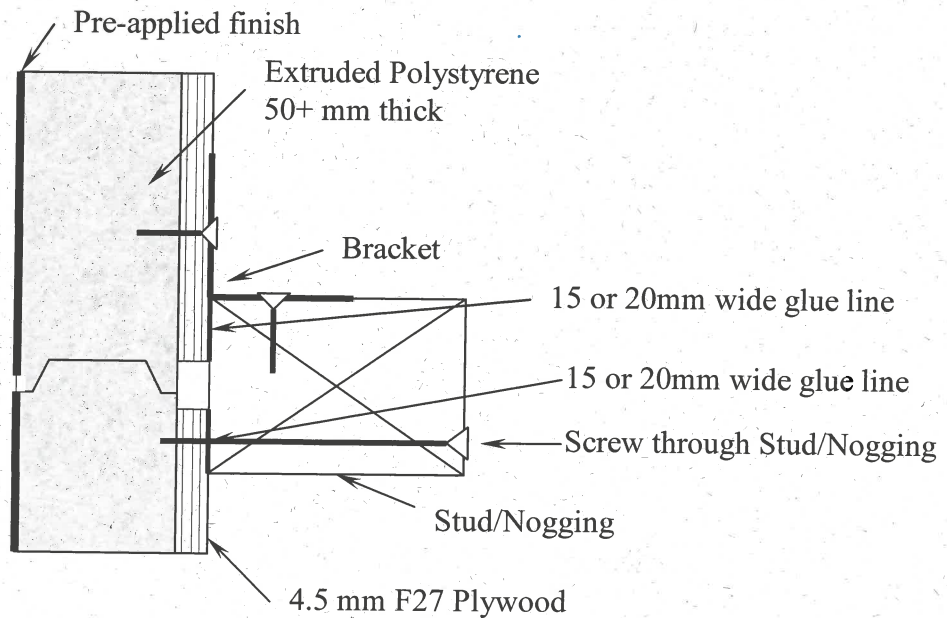
**TO WHOM IT MAY CONCERN**

**POLYTEK WALL PANEL  
NON-CYCLONIC WIND REGIONS**

This is to certify that Sheehy & Partners have designed the fixing system for the wall panel known as "Polytek Enviro Panel" for use:

1. As residential wall bracing in accordance with AS1684.2-1999, and
2. As a cladding panel in accordance with AS 1170-2:-2002 and AS 1720.1-1997.

**POLYTEK WALL PANEL GEOMETRY**



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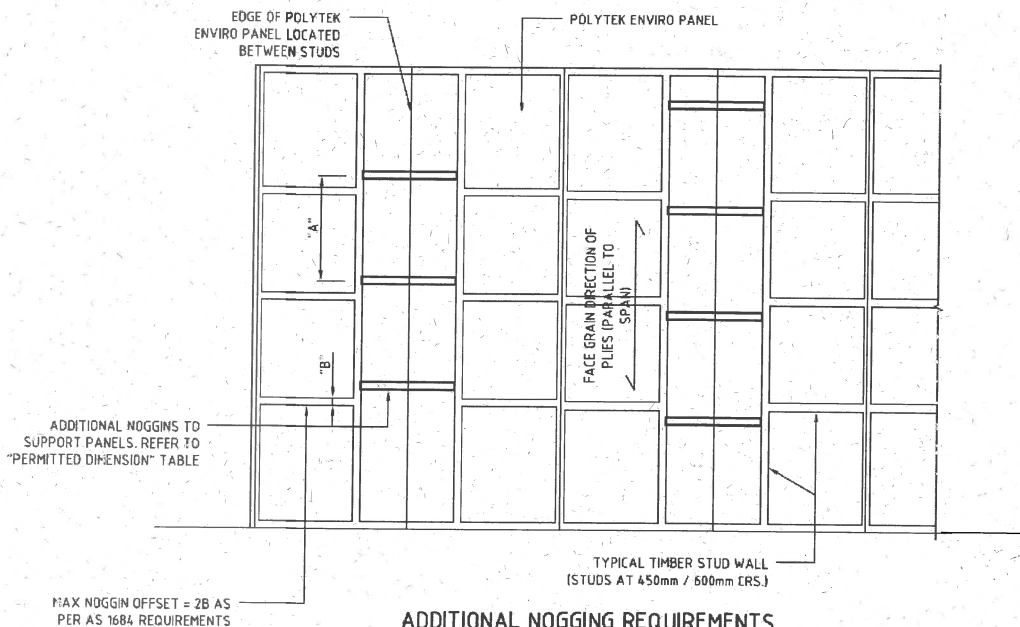
The Polytek Enviro Panel parameters and design capacities are summarised below.

### DESIGN ASSUMPTIONS

The design has been based on the following panel characteristics as agreed with Polytek:

- The plywood backing is a 4.5 mm thick 3-layered F27 Plywood sheet (manufactured to AS2269.0:2008) glued to a Polystyrene sheet (of 50mm minimum thickness). It is assumed that the flexural strength/stiffness of the Polystyrene sheet is enough to prevent the Plywood sheet from buckling when in-plane shear is applied to the plywood sheet.
- Bond between the panel and wall framing is achieved using the Fuller Toolbox adhesive sealant (or approved equivalent) for structural applications, with a continuous 15mm wide glue line on each stud.
- The minimum shear strength between a grade F5 wall stud and the F27 plywood sheeting when using the glue is in excess of 0.21 N/mm<sup>2</sup> (based on a 15 mm wide glue line).
- The minimum tensile strength between a grade F5 wall nogging and the F27 plywood sheeting when using the glue is in excess of 130N/mm<sup>2</sup> (based on a 15mm wide glue line).
- The structural capacity of the glue when used with the above mentioned pieces of timber is guaranteed by the glue manufacturer to achieve the above minimum shear and tensile strengths.
- The long-term integrity and bond of the glue is guaranteed by the manufacturer.
- The minimum continuous glue line width between a panel and the stud wall is 15 mm for all wall studs and noggings.
- Maximum building height is 10m
- The building is not adversely affected by local topography and is not situated on a hill, ridge or escarpment i.e.  $M_t$  as defined in AS 1170:2 is equal to unity.
- When used as a combined wall bracing and cladding panel,
  - A wall stud is placed at every vertical joint between panels and each panel edge is glued to the stud with a minimum 15 mm wide glue interface.
  - Wall nogging is placed along the full length of every horizontal joint between panels and each panel edge is glued to the nogging with a minimum 15 mm wide glue interface.
  - If the panel is placed vertically, additional noggings will be required as per the table below to suit the wind region of the building location.
  - The wall framing is constructed in accordance with Table 8.18 (g) of AS1684.2-1999 except that the required plywood sheeting and the gluing of the sheet to the studs is as described above in lieu of the plywood sheet thickness and fixing requirements of AS1684.2-1999.

- When used as a cladding panel only,
  - When the panels are placed horizontally, the maximum panel overhang past a vertical stud is 300mm
  - When the panels are placed vertically, additional noggings are to be placed between studs as noted in the table below to suit the wind region of the building location.



PERMITTED DIMENSIONS		
WIND CLASSIFICATION	MIN GLUE LINE WIDTH PER STUD/NOGGIN (mm)	MAX. NOGGIN SPACING "A" (mm)
N1	15	775
N2	2 X 15	775
N3	2 X 15	675
N4	2 X 20	600

### **CONSTRUCTION METHOD**

The capacity of the walls, when loaded in shear or tension, is reliant on the quality of the glue interface between the panels and the studs and is therefore directly correlated to the quality of workmanship by the builder.

In order to ensure that the wall panel and the studs or noggings are properly pulled together after glue is applied, the use of a number of mechanical fixings is necessary.

The aim of the construction method is to ensure that after the glue bead is placed and the two members are pulled together the resulting minimum glue line width of 15 or 20 mm is achieved. It is important that the glue is placed immediately before the joining of the members to ensure that the glue achieves its full bond capacity. The glue shall also be placed as per the manufacturer's specifications.

The total number of mechanical fixings needed, will vary depending on the alignment of the plywood sheet and the arrangement of studs and noggings and it will be the responsibility of the builder to provide an adequate number of mechanical fixings to ensure proper contact between the wall studs, noggings and the plywood sheet however there shall be a minimum of 4 mechanical fixings per panel (one at each corner) and mechanical fixings shall be placed at no more than 1.5 m apart. Mechanical fixings may be either brackets or screws.

### **CERTIFICATION**

#### **Bracing Capacity**

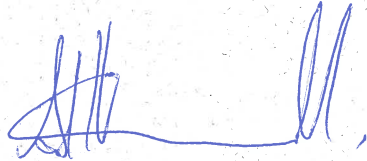
Provided that the above design assumptions and construction method are adhered to we hereby certify that the structural capacity of the Polytek Enviro Panel is equivalent to nailed ply bracing walls in accordance with section 8.3.6 and Table 8.18 (g) of AS1684.2-1999 with a capacity of 3.4 kN/m (limit state capacity).

#### **Cladding Capacity**

Provided the above design assumptions and construction method are adhered to, we hereby certify that the Polytek Enviro Panel is suitable for use as a cladding panel, subject to wind loadings in accordance with AS 1170:2 – 2002.

The undersigned is a Registered Practising Engineer in Queensland (RPEQ No. 8023)

Yours faithfully



S McDonald  
for and on behalf of  
**SHEEHY & PARTNERS PTY LTD**  
Consulting Engineers