

Installation recommendations. July 2015

The Sky Glass product incorporates a structural interlayer. The structural interlayer currently used is SentryGlas (R) commonly known as “SGP”, developed and formerly manufactured by DuPont, who have in recent times sold their interlayer manufacturing business to Japanese based company Kuraray, a major global supplier of chemicals, resins, fibres and textiles.

The SGP structural interlayer has a world-wide reputation for its resistance to external weathering and exposed conditions that can cause other interlayers to break down and creep back from edges.

The product has been under prolonged exposed conditions at the former DuPont testing ground in Florida, USA and panels are now well past their 15th year of continuous exposure to outside conditions. They are regularly examined for any evidence of interlayer shrinkage or delamination. To date there have been none recorded. In addition the product has also been subject to rigorous accelerated weathering testing.

Whilst this is widely documented it must still be noted that whilst the SGP product is weather resistant, it is not waterproof.

If the product is glazed in such a way that water is actually allowed to pool around the interlayer for extended periods, the moisture will eventually leach into the interlayer which will then lose it's adhesion and eventually delaminate. This is typically identified by gradual white misty ingress from the bottom corners of the effected panels which seeps into the panel.

Where the Sky Glass product is channel glazed, the channel must be completely filled with an approved, compatible and non-moisture absorbing grout. Grout to glass surfaces must be sealed to ensure water is not able to enter the glazing pocket.

Where dry glazed systems are used, consideration must still be given to ensure that any water which enters the channel is able to drain away. If the laminates are sitting in water the potential of delamination is high.

Use of Cement based non shrink grouts.

The use of cement based grouts for external glazing of glass has been common practice in Australia for fixing of glass products, however there are several risks associated with cement based grouts which must be highlighted when installing any laminate product.

The SGP manufacturer, Kuraray is advising against the use of cement based grouts.

The following areas of concern have been identified

- Cement based products are caustic and can react when in contact with incompatible materials. (such as aluminium for example) There is little known long term testing available on cement based grouts and SGP laminates.
 - The importance of mixing correct grout quantities is crucial and the grade of grout also is a factor as some grouts actually shrink more than others. Once grouts shrink, their adhesion to the glass can be lost allowing hairline cracks along the glass/grout intersections for water to potentially penetrate.
 - Any movement of the panel, whilst grouts are curing can again cause internal cavities and cracks for moisture to enter.
 - Cement based grouts have a level of porosity and should be sealed against external moisture.
- We have had epoxy based products put forward as products which will not allow moisture to be absorbed. Details to be confirmed

Design guides for glazing methods:

Sky glass can be glazed using most conventional methods, including channel glazing along the base, or the use of point fixings and even stub posts (Spigots).

In the case of Sky glass balustrades, the top edge is basically modelled to withstand the required barrier loads as set out in the loading standard AS/NZS 1170.0, AS1170.1 and AS1170.2.

Panels under load will understandably have maximum stress applied around fixing points so logically it is an advantage to have the loads distributed across the panel as evenly as possible. In addition there is a more stringent limit on how many fixings are required across defined widths.

Where panels are cantilevered from their base, the taller the panel height the higher levels of deflection are likely under load and potentially the thicker the glass thickness may need to be to stay within this deflection limit.

All of the above is also influenced by the type of load being applied according to the differing occupancy loads as set out in table 3.3 of AS/NZS 1170.1-2002

The following guidelines are for external residential applications – All areas within or serving exclusively one dwelling including stairs, landings etc. Including external balconies and edges of roofs.

Note : must not be an area where people can congregate.

These guides and sizing of panels are a guide only for price estimation purposes.

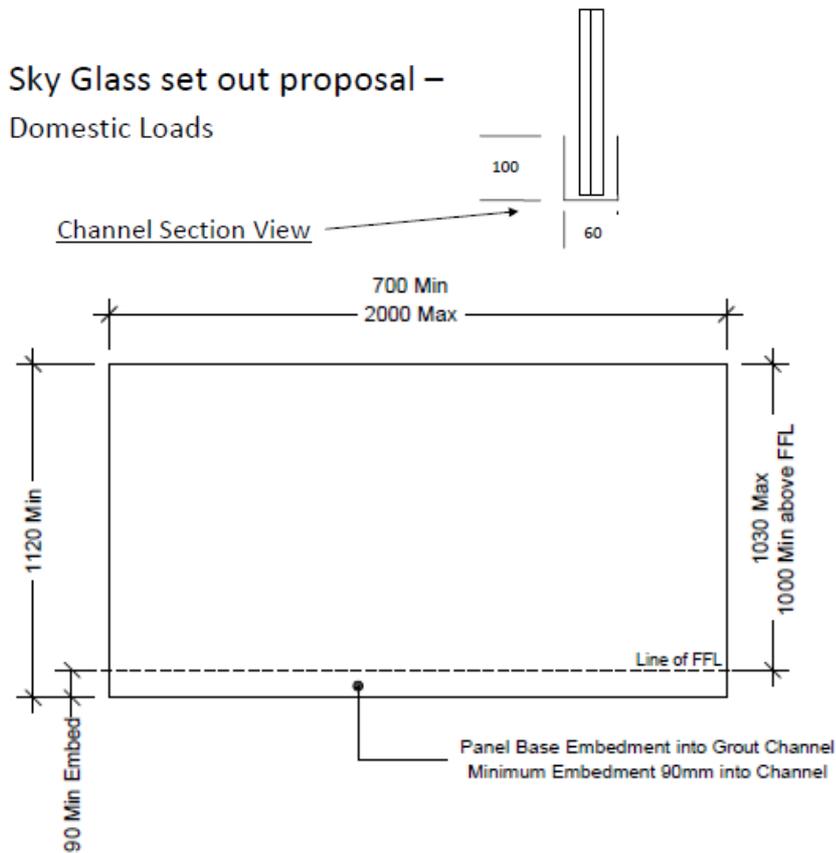
Handrail Free balustrades and NOT covered by AS1288 and MUST have a Certificate of Compliance from a Consulting Engineer as an ALTERNATIVE SOLUTION under the BCA.

Panel thicknesses, spigot or anchor locations may vary according to the installation environment. Variables taken into account include internal or external, residential or commercial, heights and lengths, wind loads and crowd loads. These variables will be stated on your certification which is mandatory with each Skyglass installation.

These drawings are provided courtesy of Wirrawonga Consulting Pty. Ltd. ©2015

Channel Glazing for domestic/residential activities:

Notwithstanding the advice earlier above in respect to water exposure, from a design and support perspective, our recommendation for cantilevered channel applications is to have a minimum of 90mm embedment of the panel at its base. Practically this translates as a 100mm internal depth to allow for a 10mm packing block.

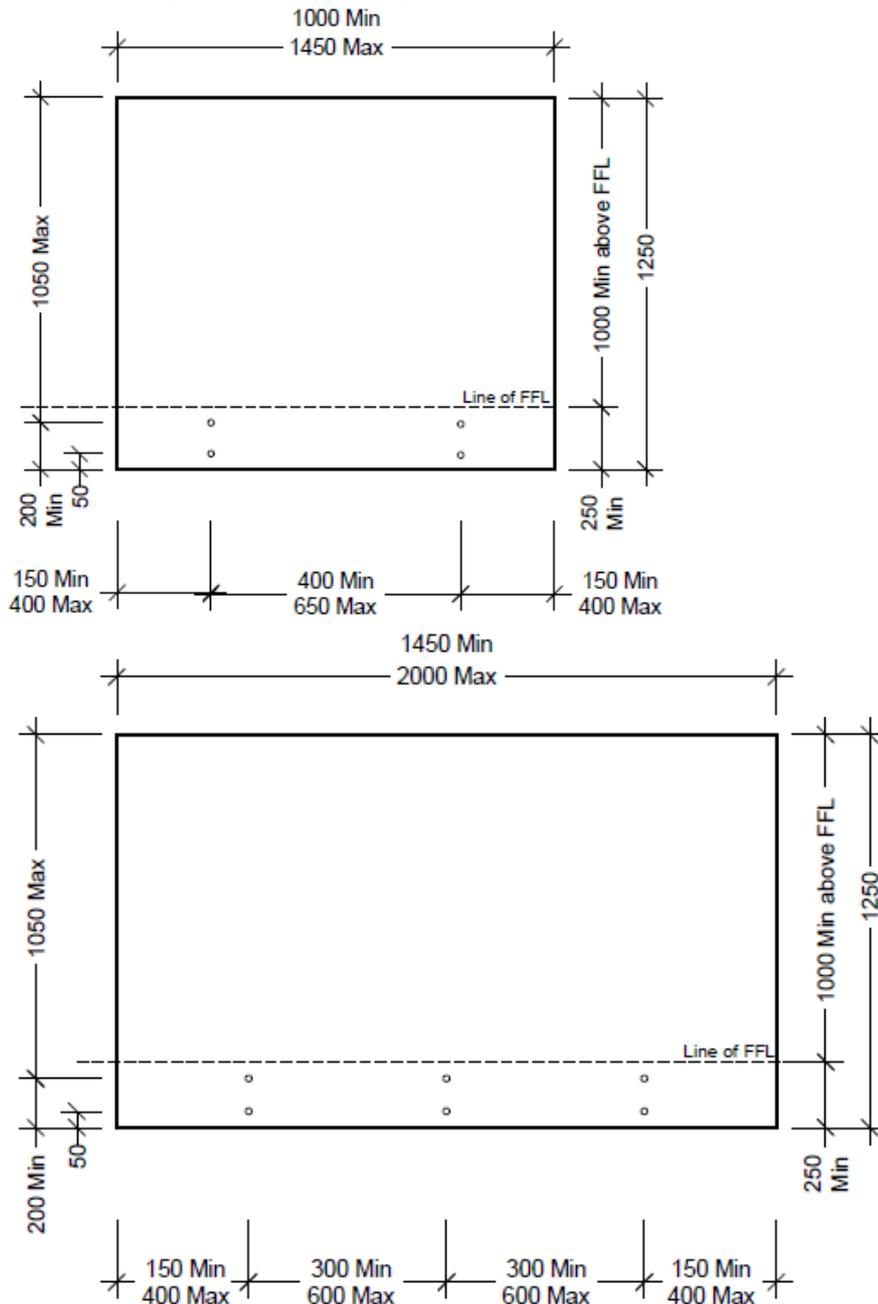


- **Pin Fixing for domestic/residential activities:**

Fixings need to be a minimum radius of 50mm.

Maximum sizes for two pairs of fixings are 1400mm, with fixings to be positioned at quarter points.

In respect to arresting the cantilever, ideally a minimum on 150mm between fixing pairs is recommended, without having to defer to thicker products. A minimum panel width is around 600mm however thin panels can be supported with a connection at the top to aid support.

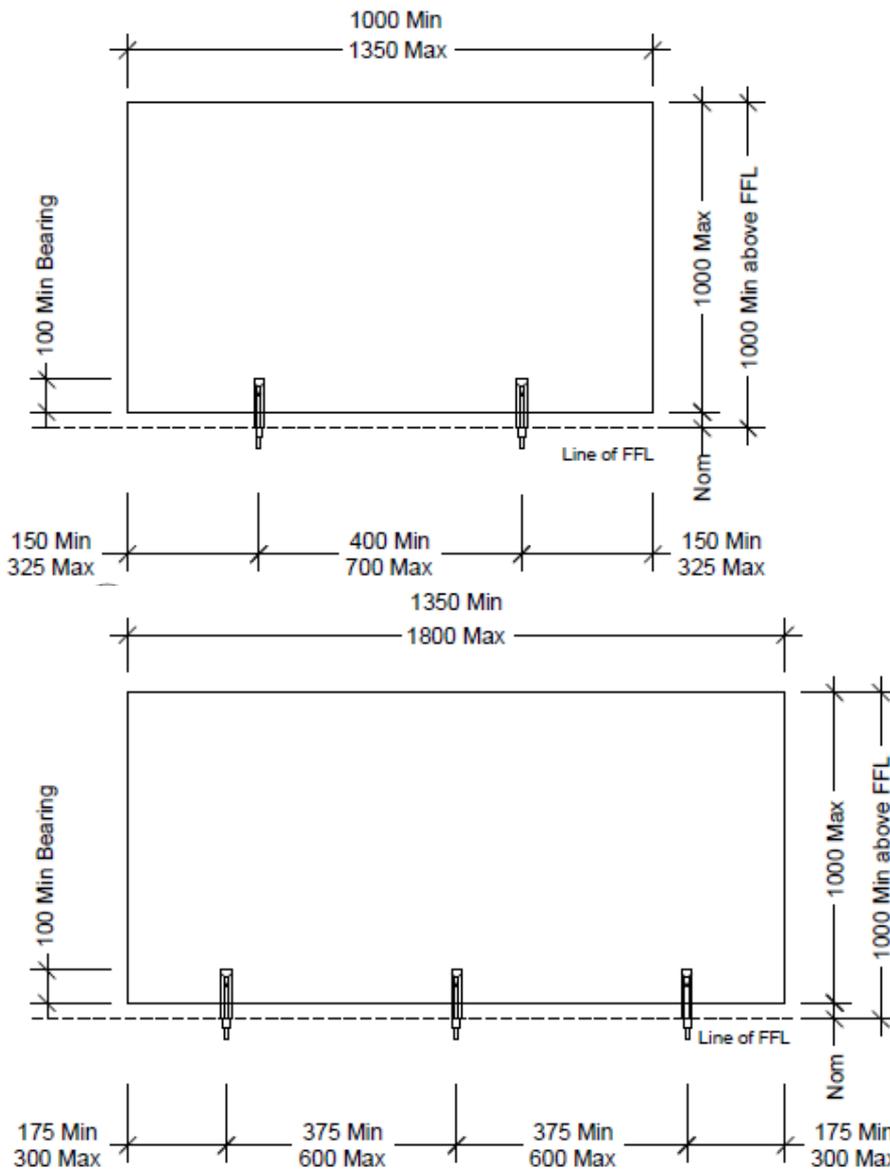


Note : Final fixing positions to engineers specification

Mini Post fixings for domestic/residential activities

Due to the variety of spigots in the market, it is important that any considered are covered with appropriate load testing. Calculations made below are assuming a minimum bearing of 100mm onto the glass. Specific fixings can be modelled.

Maximum recommended sizes for 2 spigots is 1350mm in widths and maximum height of 1000mm... In a similar requirement to point fixed projects, minimum width generally no narrower than 800mm



Note : Final fixing positions to engineers specification



This information is offered as a general guide only and we confirm that all projects require site specific assessments.

This guidance does not preclude the use of other methods, materials or equipment, however the user should undertake careful evaluation and make suitable enquiries on the suitability of alternative methods, materials or equipment, before using them.

Kind regards

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