



STRUCTGLASS
RAILING BALUSTRADE

DESTRUCTIVE TESTING DEMONSTRATION STRUCTGLASS



**ARCHITECTURAL
METALWORKS
AUSTRALIA**



>> DESTRUCTIVE TESTING DEMONSTRATION - STRUCTGLASS

AIM:

To demonstrate the point at which the new structural glass balustrade system from AMA fails at

Note:

Testing was for demonstration purposes only.

For official testing and data reports, refer to NATA engineering testing downloads at www.structglass.com.au

METHOD:

We used three methods to demonstrate the integrity of the balustrade

1. Sledgehammer swung into the glass panel (Emulating Metal Impact)
2. Shotbag swung into the glass panel (Emulating Human Impact)
3. Acrow Prop applying consistent pressure to a piece of angle sitting on top of the glass panel (Emulating Crowd Loading)

Safety is the most important consideration for us with this product as it is being used in high rise applications.

We already know that the product exceeds the building code of Australia's requirements. We know it exceeds International Standards but we wanted to demonstrate the strength of the glass panels when used in the StructGlass system.

You will see that in comparison to standard monolithic glass balustrade, StructGlass does not evacuate leaving an opening for potential fall / injury risk. This is due to the glass specification and clamping mechanism designed by Architectural Metalworks Australia.

The end result shows that the standard monolithic glass panel being shattered with the first hit of the sledgehammer. But StructGlass went through the sledgehammer test, then the shotbag impact test, then the distributed load test before the glass even started to deflect. Standard balustrades are required to withstand up to 750N of distributed load, StructGlass achieved over 6000N before the testing apparatus slipped off.

Previous testing shown post failure at approx 7300N (almost 10x the required strength in the Australian Standards)

This demonstrates the combination of the structural glass combined with the clamping mechanism of the StructGlass Balustrade system creates the strongest, fail-safe structural glass balustrade system available today.

For more information about StructGlass visit www.structglass.com.au

These photos show the testing process



Standard Glass balustrade panel being tested with the Sledgehammer

Result: FAIL



StructGlass being impacted with the Sledgehammer

Result: PASS



StructGlass being tested with shotbag swung from forklift

Result: PASS



We invited the audience to try and kick the glass through the opening but it did not break away.

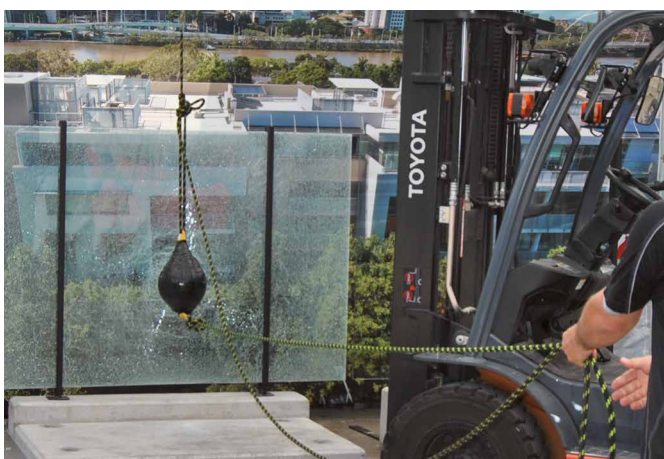


We leant on the shattered glass panel to test its integrity even at its weakest point but it still did not break.

Result: PASS



So we set up the shotbag to test it again by letting the ball fall into the glass at the exact point where the sledgehammer impacted.



The ball and chain smashed into the glass panel but again did not fall through

Result: PASS



The Structural integrity was again inspected and pushed via manual movement and couldn't be pushed through.



STRUCTGLASS
RAILING BALUSTRADE



Lastly we set up the distributed load test. The pink prop was wound out by hand into the aluminium angle that was placed on top of the glass panel.



Initially the winding wasn't too hard but as we crept over the 3000N (3kN) mark the test staff required assistance



2x Test Staff took it in turns to wind the post into the panel, applying a distributed force.

At 6000N (6kN) the testing apparatus slipped off the top of the glass. The StructGlass panel sprung back to its original position still providing protection from fall.