

Detailed Design and Testing of Series 8 TITAN Window Systems

Patrick Mann & Associates (PMA) performed the detailed design of two curtain wall window systems for Pensher Skytech. The requirements for each window comprised:

Window 1: Blast & Forced Entry Rated Window

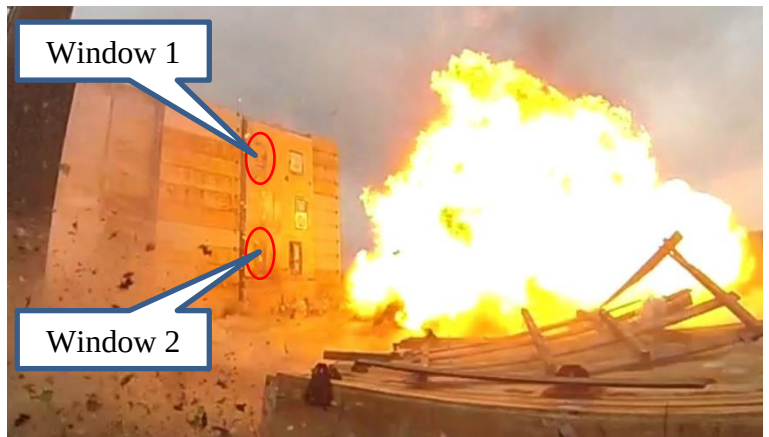
To design enhancements to an existing forced-entry window system that achieved a Class 5 response to ASTM F1233-08, to withstand a 250kg NEQ TNT explosion at 15m.

Window 2: Blast & Ballistic Window

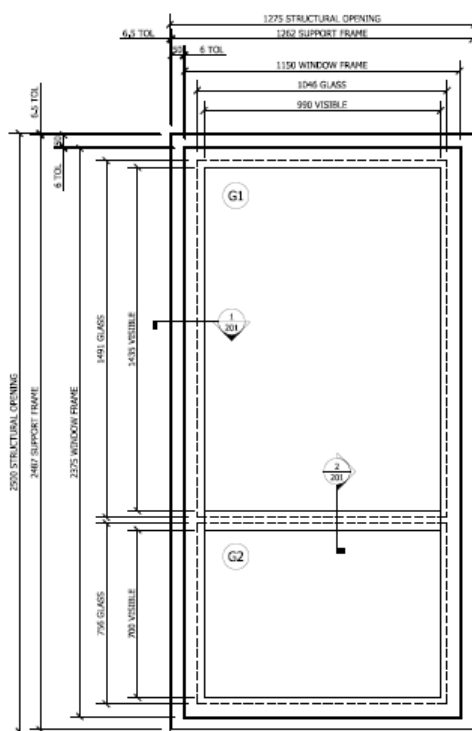
To design a new window system to achieve a blast withstand of 250kg NEQ TNT at 15m and a ballistic withstand of BR7 to EN 1063, and also incorporate an opening vent.

The two windows were tested in GL Spadeadam's Large Test Facility between the 30 September and 3 October 2013. The test programme conducted 3 successive explosions at 50kg, 100kg and 250kg levels. Both windows achieved a hazard rating B response, to ISO 16933:2007, for the 250kg level explosion.

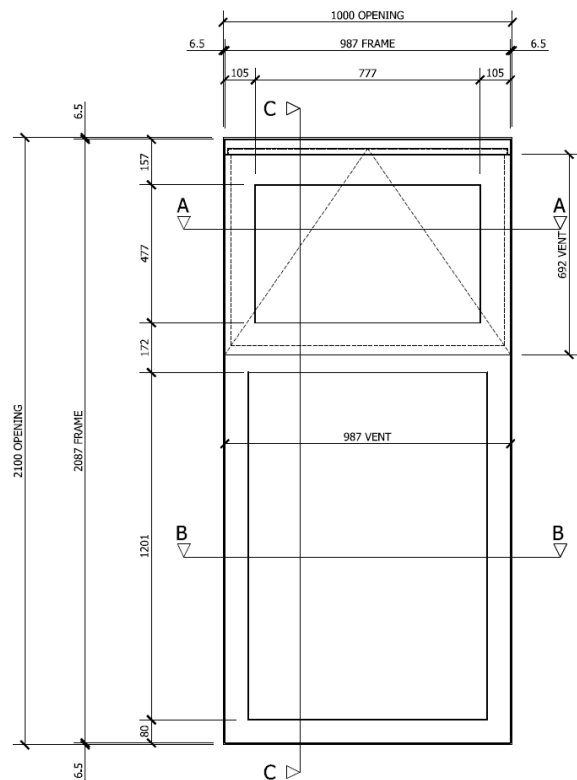
The peak recorded demands were:



Window	Peak Pressure (kPa)	Peak Impulse (kPa-ms)
1	500	1580
2	750	2240



Window 1



Window 2