

AQUAPLEX

Engineering Summary

Design Basis & System Methodology

1. Purpose

This document outlines the structural design philosophy and load transfer methodology of Aquaplex Pool Window Systems. It defines the engineering basis governing panel performance, joint behaviour, and concrete interface preparation. This document does not replace project-specific engineering certification where required.

2. System Description

Aquaplex Pool Windows are monolithic cast acrylic panels integrated into reinforced concrete pool shells via a bonded structural seal assembly. Systems include Horizon (3-Sided), Wall View (4-Sided Vertical), and Floor View (4-Sided Horizontal). Each system is based on controlled concrete geometry and a fully bonded structural silicone joint designed to resist hydrostatic loading.

3. Design Load Basis

Design assumptions consider full water height with static hydrostatic pressure increasing linearly with depth. Maximum pressure occurs at the base of the panel under sustained residential load conditions.

4. Panel Material

Panels are manufactured from cast acrylic selected for optical clarity, long-term water stability, known modulus of elasticity, controlled allowable stress limits, and predictable creep behaviour under sustained load. Panel thickness is determined relative to span, water height, and system configuration.

5. Structural Load Transfer

Horizon — 3-Sided: Base and side edges bonded; top edge unrestrained at waterline.
Wall View — 4-Sided Vertical: Full perimeter restraint distributing hydrostatic load. Floor View — 4-Sided Horizontal: Full hydrostatic load resisted through bonded perimeter joint.

6. Joint Assembly & Movement Management

The joint assembly comprises prepared concrete substrate, structural grout bedding (Sika HES), and DOWSIL 795 structural silicone. The silicone transfers hydrostatic load, maintains watertight performance, and accommodates differential movement between acrylic and concrete within elastic limits.

7. Concrete Interface Preparation

Rebate trued with HB80 cementitious render. Substrate sealed with epoxy membrane. Dimensional tolerances confirmed prior to installation. Structural performance depends on correct preparation and sequencing.

8. Verification

Post-installation hydrostatic testing is required to verify watertight performance prior to pool commissioning. Testing procedures are defined within the Aquaplex Installation Guide.

9. Scope & Limitations

This Engineering Summary defines Aquaplex system methodology and does not replace project-specific engineering certification. It must be read in conjunction with rebate detail drawings and installation documentation. Applies only to Aquaplex-specified materials and joint configurations.