

Summary of Decisions of the Structural Engineering Committee
SEC Meeting 8/2016 held on 6.9.2016

Case 22/2016

Issue: Use of proprietary R-CAST[®] monolithic acrylic panel for construction of a side wall at an outdoor swimming pool

Recommendation: To accept the use of proprietary R-CAST[®] monolithic acrylic panel for construction of a side wall at an outdoor swimming pool on the following conditions:-

- (i) The maximum permissible flexural stress of the acrylic panel is adopted as 4.826N/mm^2 (700 psi) and increase by 25% under wind effect.
- (ii) An extra 15mm thick material of acrylic should be provided to allow for the need of removal of weathering layer (7.5mm for dry-side and 7.5mm for wet-side) in future.
- (iii) To ensure proper maintenance of the acrylic panel throughout its design life, a maintenance manual will be compiled by the RSE. To ensure the owner of the swimming pool is aware of the maintenance requirements of the acrylic panel and will follow the maintenance requirements as specified in the maintenance manual properly. RSE undertakes to ensure the maintenance requirements will form part of the maintenance manual as attached to the owner's manual.
- (iv) Destructive tensile tests will be carried out on samples cut out from the acrylic panels after the casting at the mill to ASTM D638 in this particular case.

Decision: Having noted the background information, the clarifications made by the RSE and his consultant team, members endorsed the recommendations on a case-by-case basis subject to the following additional conditions:

- (a) Upon completion of the works, RSE should submit the Maintenance and Inspection Manual to the satisfactory of the Buildings Department. The Maintenance and Inspection Manual should include information of (i) those harmful substances that would cause severe damage to acrylic panels; and (ii) acceptable cleaners/biocides/polishes. Reference should be made to the Mandatory Appendix V of ASME PVHO-2-2012 – Safety Standard for Pressure Vessels

for Human Occupancy: In-Service Guidelines. Approval drawings should also be included in the Manual for the owner's reference.

- (b) Material testing should cover destructive flexural test and shear test in accordance with ASTM D790 and ASTM D732 respectively as well and the relevant test reports (all tensile tests, flexural tests and shear tests) should be appended with a statement signed by the RSE to confirm the structural and material adequacy of the acrylic panel in accordance with those shown in the approved plans and submitted to the BD for acceptance.
- (c) The maximum thickness of weathered layer of acrylic material removed within any 10 years period should not exceed 1.5mm on either face of the panel.
- (d) Details of the registration of the Maintenance and Inspection Manual in the Land Registry was submitted to the satisfactory of the BD.