

RICHMOND HIGH SCHOOL BINI DOME

Richmond, Australia



SYSTEM **ARDEX**
PREMIUM PERFORMANCE

An iconic 1977 concrete Bini Dome affectionately called MAC, it is the hub of a regional high school has been given a technology-enriched makeover that will give it long-term protection from the elements yet is water based and low in VOCs (Volatile Organic Compounds).



Richmond High School attracted much local attention in 1977 when Italian architect, Dr Dante Bini, supervised the erection of his radical and cutting-edge approach to cost-effective design for public buildings – the Bini Dome.

Created by inflating a circular layer of 300 tonnes of concrete and reinforcing steel between two membranes, the Bini Dome was erected on the school grounds to house a 'multi purpose centre' acting as assembly hall, function centre and sporting facility.

Measuring 36 metres in diameter and standing 11 metres high, the Dome was kept inflated for the first 36 hours after erection while the concrete cured.

And while the building is considered a much loved icon of the school community, the external membrane had deteriorated and degraded to the point where water seepage had caused widespread rotting of the polyurethane foam substrate (which acted as an insulation layer) and severe bubbling and staining of the external membrane.

An additional problem was the water that had penetrated the foam insulation could not escape and so had accumulated and worked its way down to the ground, causing further mould and rot.

Ardex Australia was selected as key supplier of materials for the project, including primer application, waterproof membrane and facade membrane.

Roicorp Services, specialists in the area of upgrades and general asset management, was appointed to carry out the repair and repainting of the external membrane of the Bini Dome, which included removing sections of existing membrane together with all foam rot in the polyurethane substrate.

All voids, some of which were created by the removal of the existing membrane in the substrate, were filled with an acrylic patching mortar before being smooth-wiped with a sponge to create an even surface. The entire dome was then pressure washed prior to primer application.

The original membrane at the base of the dome showed extreme deterioration – due to general weathering and rising damp – so a trench was dug to expose the footings. Ardex WPM320 bitumen emulsion waterproofing membrane was applied to the face of the footings and up to and over the flange of the dome. And while the surface was extremely damp, this product is recognised for its excellent adhesion to both damp and dry substrates. Roia reported the WPM320 was easy to apply, low in odour and had excellent adherence. It contains root inhibitors that repel most root growth without killing the plants.

Ardex **WPM 270** was applied to the retaining wall and the entire exterior of the building. Roicorp found the **WPM270** Sheltercoat Solvent Based Primer – a clear primer designed to lock particles on the substrate to achieve maximum adhesion for subsequent coatings – impregnated the substrate perfectly and established an excellent key for the application of Ardex **WPM 330** Façade Membrane. The Primer was applied by spray gun to ensure all nooks and undulations were adequately covered.

The external membrane selected was the **WPM 330** (Sheltercoat Façade Membrane) that is an external anti-carbonation, semi-permeable membrane that slows down the penetration of pollutants while allowing any entrapped moisture to evaporate (while preventing any moisture from entering). It has excellent resistance to dirt, with the membrane actually enabling the building to self-clean after rain. Additional benefits of the **WPM 330** Façade Membrane are that it is water based, safe to use and low in VOCs.

PROJECT REFERENCE – WATERPROOFING

