

Job Reference

Major Refurbishment
Turns Back Time on
Monash Uni's 'Ming Wing'



Concrete Repair

and

Protection Solutions

Project:

Robert Menzies Building
Refurbishment

Client:

Monash University

Location:

Melbourne, Victoria

Completed:

2007

Products:

Barrafer® A

Barra® Mortar HL with MCI

Emaco® S88C with MCI

Protectosil CIT

Masterseal® 160D



The Chemical Company

Project Background

When it was constructed in the early 1960s, Monash University's Robert Menzies Building was considered to be an excellent example of 'cutting edge' architecture and construction. Indeed, it is one of the few buildings remaining in Melbourne to have been constructed using the 'lost form precast' method of construction, where precast concrete panels are bolted to a steel frame and then used as the 'formwork' for poured insitu concrete. Affectionately dubbed the 'Ming Wing' (after the late Sir Robert Menzies' not-so-kind nickname 'Ming the Merciless') the 12-storey main building has been home to the University's Arts faculty for over 45 years. Unfortunately, over those years, the building's façade has succumbed to the passage of time and outdated construction practices and was suffering significant damage and deterioration - predominately as a result of corrosion within the steel reinforcement.



The Challenge

The building's façade was suffering from chloride attack and as a result there was a significant amount of damage to the spandrel panels – both in terms of spalling, and delamination of the green surface layer. In addition, a number of the longitudinal mullions were also showing signs of deterioration and damage caused by corrosion of the cast-in-place lifting ferrules.

The project delivered a number of challenges, including:

- Repairing the damaged spandrel panels and mullions
- Protecting the façade to minimise further damage
- Matching the building façade's original dark green colour
- Enduring that the majority of the building remained 'fully operational' during the repair and protection works



The Solution

The solution to this repair and protection challenge incorporated a 'three-phase' process using a range of high-performance concrete repair and protection products from BASF Construction Chemicals.

Phase One

Once the loose concrete was removed from the damaged sections, the exposed reinforcing steel was coated with **Barrafer® A**, a passivating primer that provides permanent protection for reinforcing steel against corrosion. Depending on the extent and/or type of damage, the damaged areas were then repaired using either **Barra® Mortar HL with MCI** (a cementitious, trowel-applied, lightweight polymer modified repair mortar for high build applications) or **Emaco® S88C with MCI**, a cementitious, trowel-applied, shrinkage compensated structural repair mortar. Both repair mortars also contained an added Migrating Corrosion Inhibitor to further protect against corrosion.

Phase Two

With the physical repairs complete, the precast spandrel panels were sprayed with a coating of **Protectosil CIT**, a silane-based hydrophobic impregnant with an integrated corrosion inhibitor. Sprayed directly onto the surface of steel reinforced concrete structures, **Protectosil CIT** combines a penetrative silane treatment for the control of moisture and chloride ion ingress with advanced organofunctional corrosion inhibition in a single product, thereby significantly reducing application costs.

Phase Three

The final phase of the repair works involved the application of BASF's **Masterseal® 160D** to the façade's spandrel panels. Specifically developed to provide protection for concrete, mortar, masonry, natural stone or wood against aggressive environmental attack from carbon dioxide and chloride ions, **Masterseal® 160D** delivers the ideal combination of protection and aesthetics. In keeping with the heritage order requirements for the Robert Menzies Building refurbishment, the **Masterseal® 160D** used on the project has been colour-matched to the building façade's original dark green colour.

The Result

BASF's high-performance concrete repair and protection products delivered the ideal solution for the Robert Menzies Building façade refurbishment. As well as helping to extend the life of the building and restoring the façade to its former glory, these products will also help to minimise future damage caused by corrosion of the reinforcing steel and/or lifting ferrules.