

KEIM



Photo taken by: Magda Ehlers

KEIM SOUTHERN AFRICA CASE STUDY: ZEITZ MOCAA, CAPE TOWN

▼ KEIM CONCRETAL FOR REPAIR & DECORATIONS



▲ BEFORE

▼ AFTER

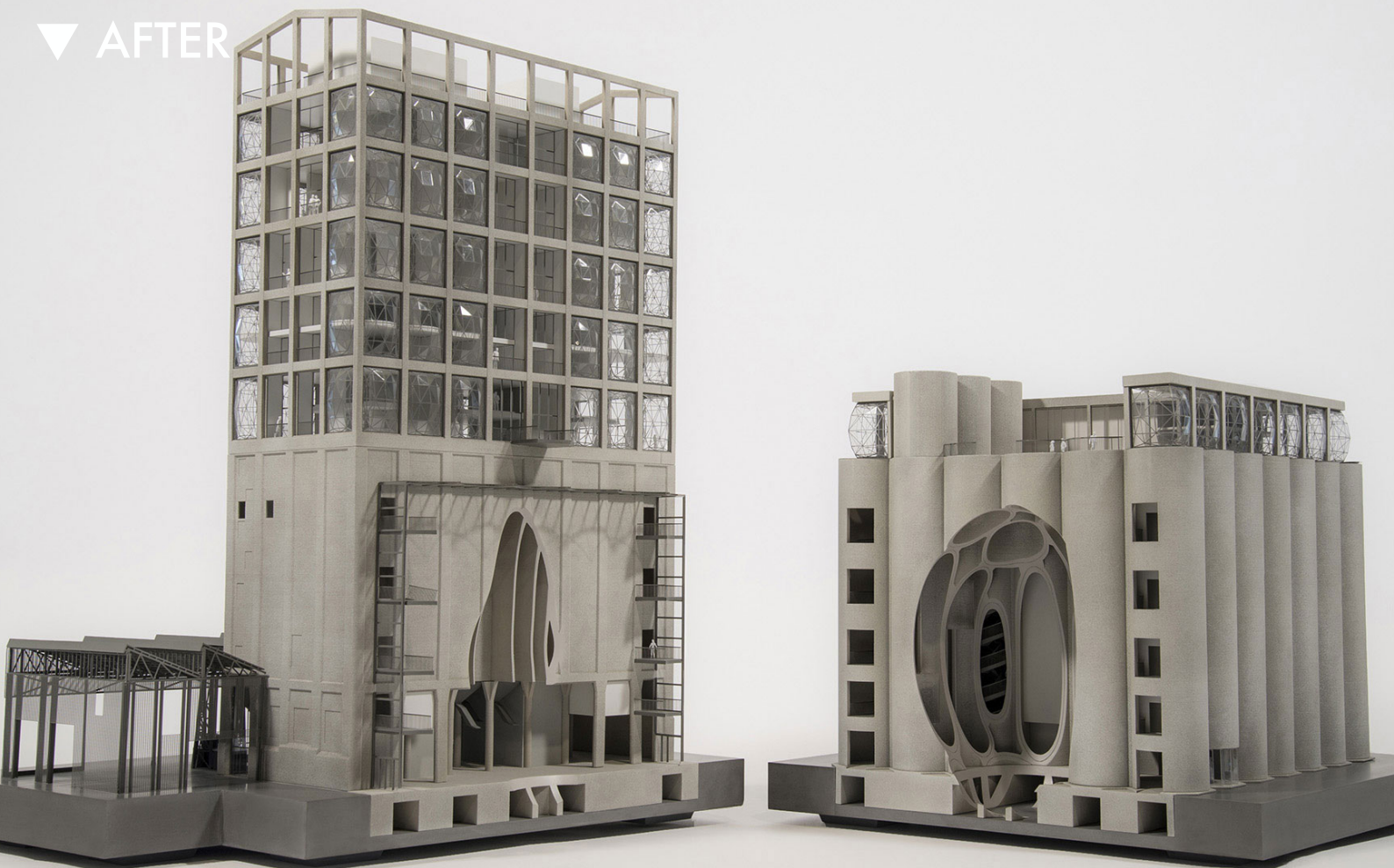


Image from: Heatherwick Studio



ZEITZ MUSEUM OF CONTEMPORARY AFRICAN ART

In Cape Town, a historic grain silo has been ingeniously converted into a museum dedicated to contemporary African art. The architects at Heatherwick Studio skilfully carved open the concrete walls of the granaries, creating an atrium that exudes a cathedral-like ambiance. Subsequently, new concrete was reinforced to adhere to the stringent requirements established by the planners. This reinforcement was accomplished through the application of KEIM-Concretal-System, ensuring the structural integrity of the silo.

ART OVER GRAINS

The Zeitz Museum of Contemporary African Art (MOCAA) has quickly become a significant attraction, drawing 70,000 visitors in its first month of operation. Named after former Puma manager Jochen Zeitz, the museum showcases his private collection of several thousand works by 21st-century African artists. In a departure from the trend of such works being taken overseas, Zeitz is committed to keeping them on the continent and exhibiting them locally, offering free admission to local residents.

Reflecting its importance, the museum stands prominently above the surrounding buildings near Cape Town's harbour. It is located in a historic silo building, originally constructed between 1921 and 1924 for temporary corn storage before global shipment. This 57-meter-tall structure is a notable landmark on Cape Town's skyline and has been a listed building for several years. Renowned architect Thomas Heatherwick and his London-based team were tasked with transforming the silo into a museum. The challenge lay in adapting the building's 42 vertical silo tubes, whose circular walls are not ideal for displaying paintings, humorously referred to as "flatware" in curatorial terms.

THE ARCHITECTS DEVELOPED A DUAL STRATEGY

A significant portion of the building has been meticulously renovated to accommodate 80 functional rectangular exhibition halls, showcasing paintings, sculptures and video art. In contrast, the other section retains the original structure of the concrete silos, transforming them into a striking atrium. As a homage to the building's history, the architects enlarged the form of a corn grain a thousandfold and carved this volume from the concrete structure, resulting in a unique space with an organic shape.

Remnants of the silos' original function are still evident, yet they are seamlessly integrated into the new design.

The roof has been enclosed with glass, allowing natural light to filter through the 30-meter-high tubes. Visitors entering at street level are drawn to gaze upward, evoking the grandeur of a Gothic cathedral with elements reaching skyward.

In two of the side tubes, cylindrical elevators ascend and descend, while spiral staircases in other tubes provide access to the exhibition halls.

THE CHALLENGE OF EXPOSED CONCRETE

The silos were deemed insufficiently stable with a wall thickness of only 17 centimetres following the sawing process.

Consequently, the architects opted to reinforce them internally with an additional layer of reinforced concrete measuring 42 centimetres in thickness.

The concreting process presented significant challenges. Firstly, installing the formwork within the narrow silos was a complex task. Secondly, the expertise in concrete work akin to that of Tadao Ando, as well as the renowned precision concreting skills of Swiss contractors, were unavailable in Cape Town.

KEIM CONCRETAL FOR REPAIR AND DECORATIONS

Unsurprisingly, the concrete surfaces required rework upon removal of the formwork. They exhibited numerous defects, including instances where cement glue had leaked, creating pockets of gravel. Additionally, slight slippage of the formwork panels resulted in wall surfaces with projections and recesses ranging from 10 to 40 millimeters. Given that the silo tubes are consistently illuminated by oblique light from above, these irregularities produced pronounced shadows, making them particularly noticeable.

Furthermore, the varying surface qualities of the concrete did not meet the architects' specifications; in some areas, it appeared matte or slightly glossy and it displayed different colour tones in other locations. There were also typical construction marks, such as pencil or chalk lines, oily stains from the formwork and vertical dirt streaks

GRADUALLY CORRECTED

The issues were addressed with the use of the KEIM mineral product range, as recommended by the architects. Initially, the surface irregularities were corrected by removing projections, filling recesses, gravel pockets and smaller cavities and levelling defects exceeding four millimetres to create flat surfaces.

Next, the inconsistent material appearance with varying gloss levels was managed. The walls were pre-wetted and any residues from release agents or oily stains were eliminated.

Finally, a coating was designed to fulfil conflicting requirements: it needed to harmonise with the diverse colours of the individual surfaces while preserving the concrete's stone character, preventing it from being obscured by a paint layer.

KEIM CONCRETAL-LASUR EXHIBITS ITS VERSATILITY

The "KEIM Concretal-Lasur," a thin-layer glaze also known as a mineral stain, demonstrated its advantages in this application. As a mineral coating, it maintains the visible, open-pored structure of the concrete by not forming a surface film. To achieve an appearance as close as possible to untreated concrete, various sample surfaces were tested.

KEIM Concretal-Lasur can be diluted in any ratio to achieve the optimal match with the original concrete colour.

"We experimented with different types of glaze, using varying strengths and dilutions. For pigmentation, we tested several shades of grey," explains Wolfgang Höger, Managing Director of KEIM's sales representatives in South Africa.

"Ultimately, we developed a custom mixture of shades 9546 and 9550 in ratios ranging from 1:15 to 1:30.

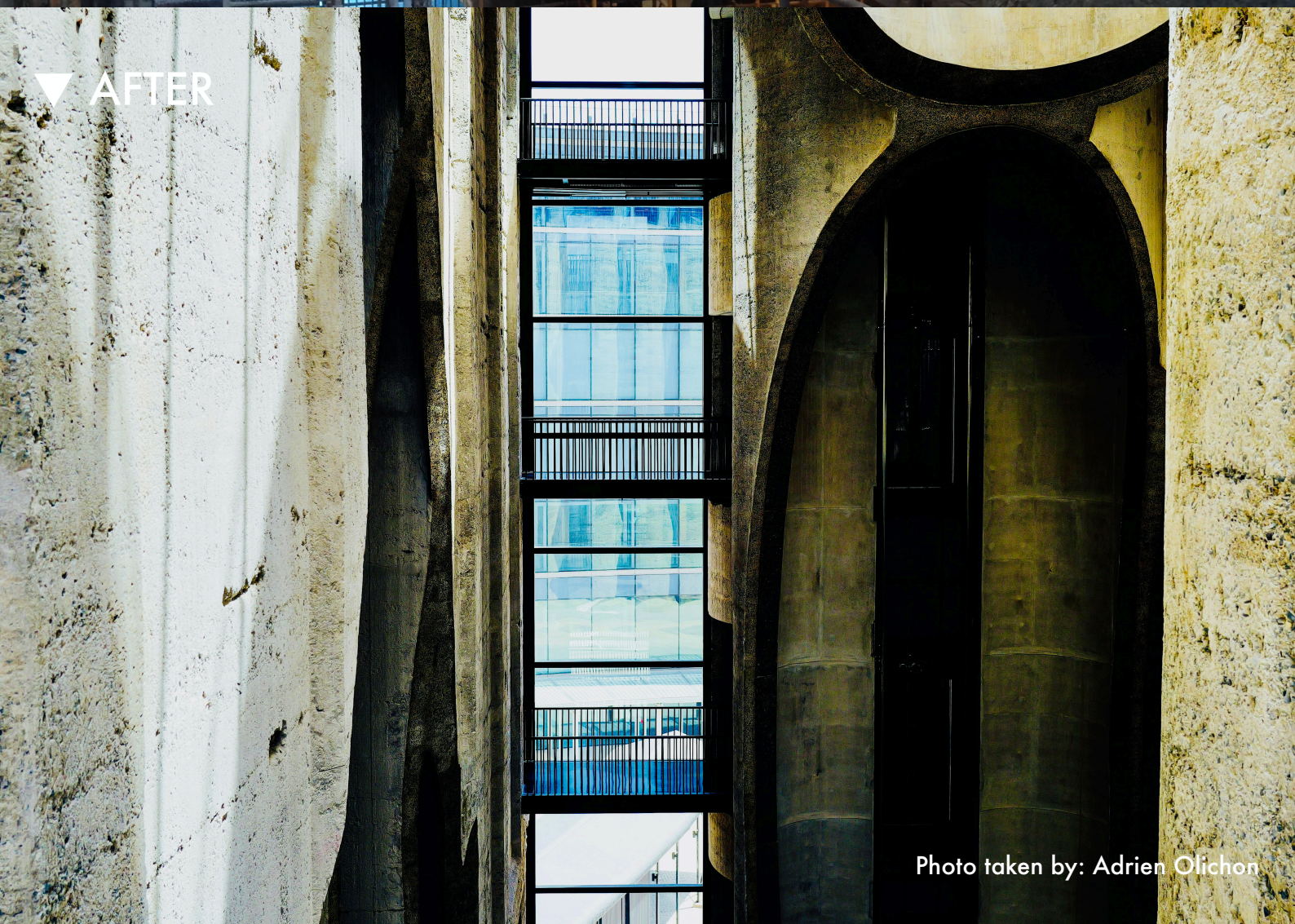
For most surfaces, two coats of Concretal-Lasur were adequate. Only the most significant discolouration in the concrete required multiple coats by the painter."

In total, 4,500 square meters were treated in this manner. Today, museum visitors are unaware of the extensive, almost restorative after-treatment of the silo tubes.

The concrete appears completely natural and uniform, as if it had emerged directly from the formwork. Consequently, the architects' vision for this space, which relies on the visual impact of raw concrete, can be fully realised without interruption.



▲ BEFORE



▼ AFTER

Photo taken by: Adrien Olichon



▲ BEFORE



▼ AFTER

▼ PRODUCTS USED AND CREDITS

PRODUCTS USED:

- ▼ KEIM Betonschnellreiniger (Concrete cleaner)
- ▼ KEIM Concretal-MKH
- ▼ KEIM Concretal-Feinspachtel (Fine filler)
- ▼ KEIM Concretal Mörtel-R (Mortar)
- ▼ KEIM Concretal-Lasur
- ▼ KEIM Concretal-Base resp.
- ▼ KEIM Concretal-Fixativ (Dilutions)

KEY FEATURES & BENEFITS:

- ▼ Best suited for concrete
- ▼ Specialised for concrete repair, decorations and enhancement
- ▼ Flexible application
- ▼ Colour matching
- ▼ Natural and even look

ARCHITECT:

Thomas Heatherwick

BUILDER:

Victoria & Alfred Waterfront Holdings (Pty)

PHOTOGRAPHERS:

- ▼ KEIM SA
- ▼ Magda Ehlers
- ▼ Adrien Olichon

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