PROJECT PROFILE

Tiger and Sloth Bear Exhibit

Evaluation of Gunite Faux Rock Themework | Cleveland, OH

CLIENT

Van Auken Akins Architects, LLC

BACKGROUND

The tiger and sloth bear exhibit at the Cleveland Metroparks Zoo includes gunite faux rock walls that divide the exhibits and conceal elements such as the moat wall, animal holding facility, and access points. The tiger enclosure was constructed circa 1961 while the sloth bear enclosure was constructed as an addition.

Gunite is a pneumatically-applied concrete, also known as dry-method shotcrete.

In 2015, the zoo began a program to renovate and expand the exhibits. Preliminary plans called for the salvage, rehabilitation, and incorporation of much of the existing themework into the new exhibit. WJE was retained to perform a condition assessment of the existing gunite faux rock themework walls and develop conceptual repair options for consideration by the zoo and design team.

SOLUTION

Working closely with zoo staff to schedule the requisite isolation of the animals, WJE visually examined all readily discernable portions of the tiger and sloth bear exhibit from within the enclosures, noting and photographing typical and atypical cracks, spalls, efflorescence, and other distress to the gunite. WJE also used sounding techniques to identify imperceptible distress, such as internal delamination of gunite layers. Using existing breaches in the gunite, WJE was able to determine that the themework walls were typically hollow, constructed on a steel armature and without waterproofing at integral planters and pools.

Given the age and weather exposure of the gunite themework, the walls were generally in fair condition with localized areas of significant distress. WJE provided conceptual repair options (along with corresponding advantages and disadvantages) for localized repair of the themework or over-coating the existing themework with a new, reinforced layer of gunite.

Based on the findings and the overall project constraints, the zoo and design team elected to repair localized distress and overcoat the remaining themework to provide aesthetic uniformity between new and existing themework.

WJE ENGINEERS ARCHITECTS MATERIALS SCIENTISTS