



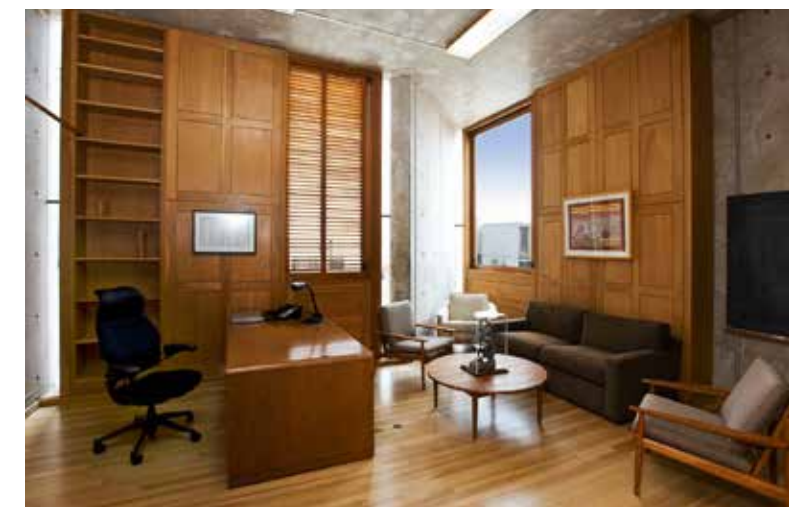
Project team carrying out a preliminary condition survey of the teak window walls.

THE SALK INSTITUTE CONSERVATION PROJECT

Completed in 1965, the Salk Institute for Biological Studies in La Jolla, California is one of architect Louis Kahn's finest works and is widely considered to be a masterpiece of modern architecture with international significance. Kahn was commissioned by Dr. Jonas Salk, developer of the polio vaccine, to design an inspiring campus for his new scientific research institute on a coastal bluff over-looking the Pacific Ocean. Kahn worked closely with Salk on the design, which consists of two nearly identical wings of laboratory, study, and office space mirroring each other on either side of a paved central plaza. A key design feature of the Salk Institute is the physical separation of the private study spaces—which Kahn referred to as the "architecture of the oak table and rug,"—from the collective workspace of the laboratories with their "architecture of air cleanliness and area adjustability."¹

The innovative teak-clad "window wall" assemblies, set within the monolithic concrete walls of the studies and offices, are significant components of the building. The use of individual window walls constructed with teak, softwood framing, and interior oak paneling, for the studies, in contrast to the large expanses of stainless steel-framed window walls of the laboratories, helps to differentiate the private study spaces. The focus on the individual in the studies is further expressed by the functionality of the various sliding components that allow occupants to modulate light and ventilation within their work spaces.

The design of these window walls expand upon a language of custom exterior millwork established in Kahn's office and used in projects from the Fisher House outside of Philadelphia to the Library at Phillips Exeter Academy. Though the window walls are prefabricated units—often thought of as an industrialized process—Kahn innovatively synthesized industry and craft through the customization of the units to fit many different openings in the concrete and the detailing of the teak wood by carpenters. The very use of wood together with concrete, "often conceived of as materials of opposite character,"² results in a contrasting but complementary





Above: View of the Institute's iconic central plaza looking out towards the Pacific Ocean. Photo courtesy of the Salk Institute for Biological Studies

Opposite page: As part of the project mock-up phase, different finishes were trialed on sample panels of existing weathered (left) and new teak

Previous page: View of the study interiors, with their oak paneling and floors and exposed concrete walls and ceilings. Sliding louvers and glazed window sashes allow occupants to modulate light and air. Photo courtesy of the Salk Institute for Biological Studies

effect, with the fine-grained detailing of the window walls with their narrow vertical tongue-and-groove boards and horizontal trims set in multiple planes, contrasting with the larger expanses of relatively flat concrete walls.

Teak was selected for the exterior wood as it was thought to be a durable, relatively maintenance-free material. Its weathered gray appearance was also thought to be compatible with the color of the adjacent concrete. However, teak is a natural material and weathers differentially depending on orientation and exposure to the environment. Thus, uniformity in this gray appearance could never be achieved across the building if the weathering process were left to occur naturally, due to the different exposures.

Most of the components of the window wall assemblies remain unchanged from the time of their original construction and retain a high degree of integrity. However, due to decades of exposure to a marine environment, the deterioration of the window walls is cause for concern. As expected, they have weathered to a non-uniform appearance, further exacerbated by surface erosion, fungal growth, and past cleaning practices. Surface finishes, intended to protect and improve the appearance of the teak, have differentially weathered, resulting in extreme color variations, while water infiltration and termite infestations

have damaged some of the internal wood framing. In 2013, the Salk Institute partnered with the Getty Conservation Institute (GCI) to develop a conservation program for the window wall assemblies.

“The Salk Institute is an architectural icon, and the Getty was privileged to be invited by the Salk to work with them on the building’s long term preservation. Our access to the site, its archives, and the Institute’s staff, some of whom have worked there since the early years has been extraordinary,” said Tim Whalen, director of the GCI. “The methodology developed by the GCI will serve as a roadmap for future conservation projects at the Salk Institute, as well as a model for other Louis Kahn buildings and buildings with similar conservation issues.”

As a first step, the GCI engaged in historical research, including visits to the Khan archives and the collection of oral histories in order to better understand the significance of the window walls and Kahn’s original vision for the site. It also explored the extent of damage to the window walls, and performed physical and laboratory analysis to identify the materials used and the various causes of damage and deterioration. Possible treatments for the wood and wood replacement options were also researched, as well as design modifications to improve the overall performance of the assemblies. Finally, the GCI, along with the architectural and engineering firm Wiss, Janney, Elstner Associates, Inc. (WJE), which



served as the historic preservation consultant to the Salk Institute, developed a series of on-site trial mock-ups to evaluate different repair approaches and conservation treatments and identify the best way to move forward.

“We sought to address issues on a long-term basis while preserving cultural significance and addressing the needs of those managing the site,” said Sara Lardinois, project specialist at the GCI. “Our aim was to help the Salk Institute incorporate a conservation approach into its overall site management at a critical point in the building’s history—the fifty-year mark often coincides with the need for a first major repair in modern buildings.”

Drawing upon the results of the GCI’s earlier research and the trial mock-ups, WJE has fully developed the repair and conservation treatment of the window walls, with interventions ranging from in situ cleaning and treatment, to selective repairs, and replacement of deteriorated elements using like for like materials. Construction work is currently underway and is estimated to be completed in spring 2017. Work is also nearing completion on a comprehensive conservation management plan for long-term care of the site, funded by a grant from the Getty Foundation’s Keeping It Modern initiative.

“As stewards of this designated historic architectural landmark which attracts visitors from around the world, we needed a long-term conservation plan to preserve the integrity of the Salk Institute for years to come,” said Tim Ball, Salk’s senior director of facility services. “The thorough insights and expertise provided by the GCI are invaluable for helping us move forward in repairing and maintaining these remarkable buildings.”

¹ Kahn, Louis I. *Form and design*. 1961. *Architectural Design* 31 (April): 151.

² Brownlee, David B. and David G. De Long. *Louis I. Kahn: In the Realm of Architecture*. 1997. Grand Rapids: Universe, p. 100

CONSERVATION PLANNING AND CONCRETE CONSERVATION WORKSHOPS

In late July, the GCI with the Getty Foundation and the United Kingdom-based Twentieth Century Society held two workshops in London for grantees of the Foundation’s Keeping It Modern initiative, which is dedicated to the conservation of twentieth-century architecture around the world. The workshops—supported with a Getty Foundation grant to the Twentieth Century Society—brought together owners and professionals currently working on projects exemplifying a range of conservation challenges of twentieth-century built heritage to exchange knowledge and learn new skills.

The first workshop, on conservation management plans, involved more than thirty participants and fifteen outstanding works of modern architecture, including the recently listed World Heritage Site, L’appartement-atelier de Le Corbusier in Paris; Pierre Jeanneret’s Gandhi Bhawan building in Chandigarh, India; the Salk Institute for Biological Studies in La Jolla, California; and the Arthur Neiva Pavilion in Rio de Janeiro, Brazil. While conservation management plans are a fundamental tool in conservation practice, they have not been universally applied to modern heritage. The workshop provided the opportunity for practitioners to discuss a range of challenges specific to modern heritage, establish a network of colleagues, exchange ideas, and expand their understanding of this important methodology. The workshop included site visits to the National Theatre and the Barbican Centre and the opportunity to meet British colleagues engaged in this area of work.

The second workshop, which convened some ten projects dedicated to the conservation of concrete, included sites such as the Sydney Opera House, the Miami Marine Stadium, Frank Lloyd Wright’s Unity Temple, and Charles Rennie Mackintosh’s Hill House in Scotland. Given the growing number of listed concrete buildings and their conservation challenges, this subject is of increasing importance to the field. Participants shared information on diagnostic and investigative tools and methods, and colleagues from Historic England and the Laboratoire de Recherche des Monuments Historiques in France presented their advisory and research work. A number of site visits to recent concrete conservation projects provided an opportunity for participants to observe recent approaches in this challenging area of conservation.