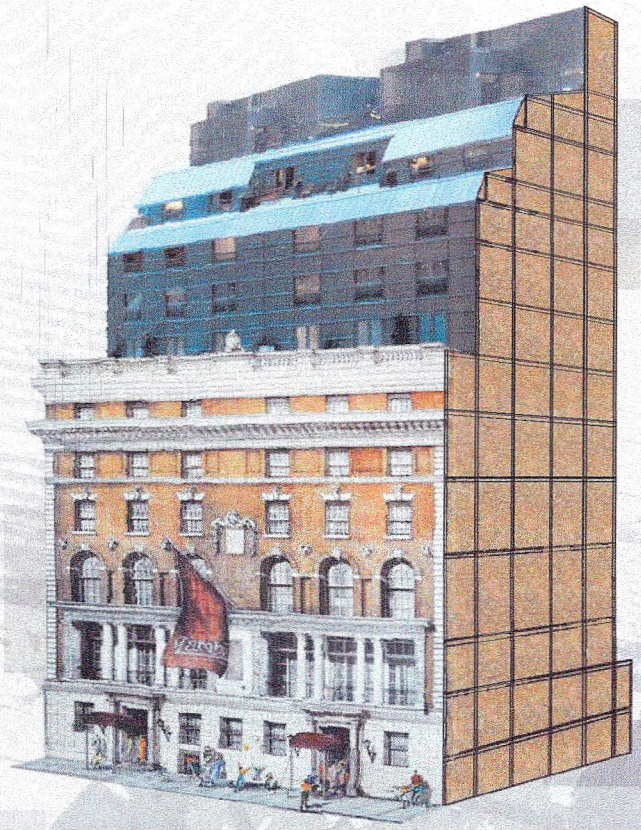
A STAR IS REBORN

ENGINEERING LEADERSHIP TRANSFORMS LANDMARKED LAMBS CLUB

Stanford White's Lambs Club building near Times Square was in disrepair when it was added to the National Register of Historic Places in 1982. To fund much-needed renovations, the owner offered Hampshire Hotels and Resorts, LLC, a proprietary interest in the building to convert it into a new hotel. Financial, landmark, and construction restrictions precluded erection of a new edifice behind the historic facade, inspiring engineers to retain much of the original structure.

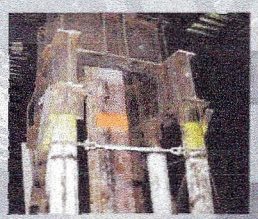


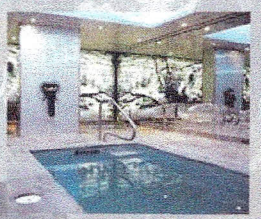
SETTING AN HISTORIC EXAMPLE To accommodate amenities that would allow the consortium to recoup its investment, four floors were added, the basement was deepened, columns were extended and supported with mini-piles, and superfluous basement structure was eliminated. Lighter floor systems enabled existing columns to support the new framing without reinforcement. New columns were added to fill the theater void.

NO DRAWINGS, LIMITED CRANES As no original drawings existed, unforeseeable conditions necessitated on-the-fly analysis and more than 200 revisions to the initial renovation plan. As crane permits were limited to a dozen per year and were for one day only, construction was phased so that a single crane permit was needed per floor to deliver and hoist the steel beams. Construction proceeded above and below grade simultaneously, requiring only small equipment.

AHEAD OF THE SUSTAINABILITY CURVE Absent new restoration strategies, public support for landmark preservation may wane. While gut renovation is lawful, utilizing existing structure leaves the smallest carbon footprint and can be a more sustainable and local solution than using reconstituted materials.

RARE ENGINEER-DRIVEN DESIGN-BUILD Exceeding owners' expectations of their role, the structural engineers became the de facto prime consultant, motivating the team to excel. The resulting design-build, driven by the engineer's recommendation to utilize existing structure and anticipate construction during initial design, saved owners more than $1 million.





LAMBS CLUB TRANSFORMATION
NEW YORK, NY

HAMPSHIRE HOTELS AND RESORTS, LLC
NEW YORK, NY

WEIDLINGER ASSOCIATES, INC.
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Lambs Club Transformation Wins ACEC Engineering Excellence New York Gold Award

Weidlinger's decision to salvage most of the original structure left the smallest carbon footprint and reduced the expense of repurposing it into the five-star Chatwal New York Hotel.

New York, NY–March 28, 2011–Weidlinger Associates received an Engineering Excellence Gold Award from the American Council of Engineering Companies (ACEC) New York for the transformation of the historic Lambs Club building near Times Square into the five-star Chatwal New York Hotel. The award was presented at the organization's annual gala in New York on March 26, 2011, in the Grand Ballroom of the Waldorf-Astoria hotel.

The Lambs Club building at 130 West 44th Street in Manhattan, a six-story neo-Georgian structure designed by acclaimed architect Stanford White, was designated a landmark by the New York City Landmarks Preservation Commission in 1974 and added to the National Register of Historic Places in 1982. In 2006 the building's owner, the Church of the Nazarene, offered Hampshire Hotels and Resorts a proprietary interest in the property, to fund much-needed renovations by transforming the aging landmark into a hotel. Weidlinger Associates, with architects William Q. Brothers and Thierry Despont, was retained to implement the transformation.

Standard procedure would have been to demolish the building and preserve only the historic façade. However, a combination of financial, landmark, and construction restrictions precluded the erection of a completely new edifice, and Weidlinger opted to reuse as much of the original structure as possible, to accommodate the required renovations and support a four-story vertical addition. To qualify the project as a worthwhile investment, the basement was cleared of structure and deepened to accommodate a spa and swimming pool, luxury amenities that enhanced the hotel's value and increased its potential revenues.

Weidlinger Associates employed this creative solution–preserving structure, digging deeper to create space for amenities, and avoiding demolition–to rescue a building that might otherwise have been permitted to languish. The firm's recommendation resulted in construction cost savings of more than $1 million.

"Weidlinger is honored to receive this award, and proud to have played a role in the preservation of this important historic building," said Principal-in-Charge Tian-Fang Jing, "Our approach to this renovation demonstrates that erecting a new structure is not always the most economical or constructible solution, and this may help save other valuable buildings in the future."

As buildings age and functions change, historic preservation becomes more difficult to execute. Without the application of such cost-effective strategies, saving landmarks might not be deemed

investment-worthy. Moreover, while preserving a facade and gutting the interior is lawful, preserving an existing structure, landmarked or not, leaves the smallest carbon footprint.

The hotel's proximity to Times Square was part of the problem: Crane permits were limited to one dozen per year, and each permit was limited to one day in duration. As a result, construction was phased so that only a single crane permit was required for each floor. Further complicating matters, the original structural drawings had been lost. Unforeseeable conditions necessitated on-the-fly analysis, resulting in hundreds of revisions to the original renovation plan.

The four-story vertical addition was stepped back to satisfy landmark regulations requiring that additional floors be invisible from the street. Lighter floor systems were installed, enabling existing columns to support the new framing, and new columns were added to fill in the void once occupied by the two-story theater. Mechanical and electrical systems were transferred from the basement to the new roof.

The original Lambs Club building housed a lobby, grille room, banquet hall, a small theater, offices, and sleeping quarters. For much of its existence, it had been occupied by the Lambs, America's oldest theatrical club, whose past member-residents have included Mark Twain, Fred Astaire, John Wayne, and the building's designer, Stanford White. Historically, the Lambs are renowned for playing a role in the nurturance and development of new plays and theatrical partnerships. Preserved structural elements, design accents, and artwork throughout the hotel pay homage to the building's noteworthy former residents.

The ACEC New York is the leading advocate in New York State for consulting engineers. The ACEC Engineering Excellence Award Program celebrates engineering achievements that demonstrate ingenuity and significant technical, economic, and social advancement. Entries are judged on five criteria: original or innovative application of new and existing techniques; future value to the engineering profession; social, economic, and sustainable design considerations; complexity; and exceeding client needs.

Weidlinger Associates®, Inc., is a 300-person structural engineering firm that designs and rehabilitates buildings, bridges, and infrastructure and provides special services in applied science, forensics, and physical security. The firm, which celebrated its 60th year in 2009, is recognized worldwide for its innovative and practical design solutions and for its long-term commitment to advancing the state of the art in engineering. Headquartered in New York City, the firm has branch offices in the United States and the United Kingdom. For more information, please see www.wai.com.

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Lambs Club Transformation

ACEC New York 2011 EEA Competition (Project Description)

The Lambs Club building at 130 West 44th Street in Manhattan was in a state of disrepair when it was added to the National Register of Historic Buildings in 1974. It was then sold to the Church of the Nazarene, who offered Hampshire Hotels and Resorts a proprietary interest to fund renovations for a new hotel on the site.

The original six-story neo-Georgian brick, marble, and terra cotta building, ornamented with six rams' heads and two rams' profiles, was designed by Stanford White. For much of its existence, it was occupied by the Lambs, America's oldest theatrical club, whose member-residents at one time included Mark Twain, Fred Astaire, John Wayne, and White himself. A lobby, grille room, and banquet hall filled the first two levels, a small theater part of the third (and eventually the fourth), and offices and sleeping quarters the floors above. A 1915 copycat expansion to the west by George Freeman established the current footprint of 76 by 96 feet.

From April 2007 to August 2010, Weidlinger Associates, with architects William Q. Brothers and Thierry Despont, transformed the deteriorated building into The Chatwal New York hotel. There was nothing routine or straightforward about the restoration. As structural engineer, Weidlinger Associates took a leadership role, because various restrictions affected drastically what could be achieved efficiently and economically. The location was a major problem: Only a dozen single-day crane permits per year are obtainable for that street.

Meeting and Exceeding Client Needs: Initial plans were for a 150-room hotel and seven-story rear addition, but due to zoning and landmark restrictions, the owners had to completely reshape their plans and upgrade the hotel's quality to satisfy the banks and recoup their investment. Reconfiguring the interiors and adding square footage was a challenge on the tight urban site, but it meant that Hampshire could add an attractive Times Square hotel to its portfolio and take credit for preserving a city landmark, increasing its stature as a brand.

The Chatwal's advertising cleverly stresses the mid-century Empire Art Deco details that recall the Lambs Club's golden era. More to the point historically and economically (though hardly the subject for hotel publicity) is that almost the entire existing structure was salvaged to support the vertical addition and shore up construction. The stepped-back four-story vertical addition was scaled large enough to provide the necessary rooms but small enough to obey landmark rules that it be invisible from street level. The basement was cleared of structure and deepened four feet and M/E systems moved to the roof to make room for five-star amenities. Construction was phased so that only a single-day crane permit was required for each floor.

Weidlinger expanded its role to become more of a prime consultant, while supporting the designers and contractors in doing their best work. Weidlinger's recommendation to save the structure along with the historic facade resulted in construction cost savings of more than $1 million, which almost compensated for the basement reconfigurations, not part of the original budget, and design

modifications, inevitable because the original drawings had been lost. The final $45 million budget exceeded the projected one by only $2 million, and the opening in August 2010 was only four months later than planned.

Complexity: The painstaking surgery required to create a new 10-story hotel in a century-old landmark was facilitated by copious structural analyses. While extensive pre-construction probes contributed to the design, without original drawings, many additional analyses were needed to accommodate unexpected field conditions, so that design could be tweaked quickly and construction continue unimpeded. (It turned out, for instance, that the original structure and the addition were not attached.)

To solve the crane problem, steel beams were delivered and hoisted to each floor in one day per floor, after which smaller equipment sufficed. But the structural solution was still a puzzle that needed to be solved, complicated by structure that was often absent where it was needed and intrusive where it was not. There was a two-level, column-free void for the theater on the south side, whereas the new hotel required a void for the north-side lobby on the first two levels (steel columns and pick-up girders were inserted to create a one-floor-deep pick-up truss at the third floor). In contrast, there were more than two feet of thick, heavy brick-bearing walls under the first floor centerline between the original structure and the early addition, which had to be removed. In addition, the floor systems in the two wings were not the same.

Innovative Application of New and Existing Techniques: Weidlinger engineers utilized all existing columns and the majority of the beams to support the vertical addition. They investigated many options to reinforce the existing columns and then designed the construction process and sequence to account for the presence of so much existing structure, setting an example for rehabilitations in tight urban settings where cranes are unwelcome. Restoring and bracing the facade, and then building new structure behind it, is the more common approach, because even if it is more costly, it is easier to construct, but not with limited space and unobtainable crane permits.

The existing interior steel WF columns were strengthened to shore up construction and support the new structure. The existing terra cotta and concrete floor systems were replaced with 3¼-inch-thick lightweight concrete on two-inch-composite metal deck, reducing their weight by half and enabling columns to support the new framing without reinforcement. Extra columns were added to fill the two-level auditorium void. The new and existing columns and steel bond beams at the building's perimeter supported the addition; the new columns of the addition transferred their loads to an existing seven-foot-deep girder. Deepening the foundation by four feet increased headroom from eight to 10 feet on both basement levels; clearing out unneeded structure created room for the pool and other amenities. The existing mechanical and electrical systems in the basement were transferred to the new roof.

Construction took place in two zones simultaneously. All existing interior walls were removed from the first floor down to the subcellar, and the existing columns were shored up with 8.625-inch-

diameter steel-encased mini-piles, driven through the existing footings as close to the columns as possible. After critical, time-consuming excavation in weathered rock, new concrete footings were placed under these columns. Then steel grillage was added at the top, which transferred the upper floor loads to the new pile foundation. The mini-piles that served as shoring were removed after the footings and extensions were established, but the mini-piles that were welded directly to the columns as extensions remained in place to reinforce the columns and become the pile foundation.

At the same time, the existing slabs, except for their steel framing, were removed at the second, fourth, sixth, and roof levels, and new floor systems were installed, identical to the one on the first floor. This sequence was repeated on the third and fifth floors. Then, some deep existing girders were trimmed to create higher ceilings, a bond beam was built under the seventh floor, and the new floors were built above it.

Future Value to the Engineering Profession: Business as usual – demolishing the building and preserving the facade – was not an option. The subtle interplay of financial, landmark, and construction limits required innovative thinking. Intricate rehabilitations often languish in the land of "projects that only an engineer can understand and appreciate." But even engineers need to be reminded that building a new structure is not always the best approach; nor is it the most economical or constructible solution. Appreciation of the benefits of saving existing structure may help save valuable buildings in the future.

The project also represents the still-rare occurrence of an engineer-driven design-build. It was not simply that construction took place before design was complete (the absence of drawings guaranteed that), but that without engineering leadership, the design could not have been conceived or implemented. Weidlinger took a holistic approach toward the rehabilitation's many different aspects, from filling in the auditorium void to deepening the foundation. No problem was considered in isolation, probably the best approach to any building project.

Social, Economic, and Sustainable Design Considerations: Historic preservation is a relatively new concept and will become more challenging to defend as buildings age and functions change. There is a trend, for instance, to repurpose existing buildings, even jails, to provide hotels, much needed in big cities. A landmark building is perfectly suited to this culturally, but hardly ever structurally. If we do not develop new strategies for saving landmarks, we risk losing public support for landmark regulations.

Historic restorations that are more than skin-deep marry the need for preservation to the need for sustainability. While gut renovation is lawful, utilizing existing structure leaves the smallest carbon footprint and is a more sustainable and local solution than using reconstituted materials: You can't get more local for materials than the site itself. If the USGBC LEED system does not reward this strategy now, it will in the near future, as other countries' systems do.