

CTBUH Journal

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Tall buildings: design, construction and operation | 2012 Issue I

The Hansar, Bangkok

Developing Skyscraper Districts: La Défense

Hybrid Mass Dampers for Canton Tower

Greening the Urban Habitat: Singapore

Talking Tall: A Future for Tall Building History

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Case Study: The Hansar, Bangkok



“The concept of a tropical tall building as a naturally ventilated, perforated, indoor-outdoor, fully shaded fanny green tower is central to tropical living and is a necessary alternative to the temperate models of sealed, glazed curtain wall buildings being erected across tropical regions.”

High-rise, high-density living has been embraced in a capitalizing housing strategy for many nations in the tropics. In Bangkok, Thailand, the high-rise market has been growing steadily since the late 1990s. The Hansar is a prime example of this trend, being a 30-story, 100,000-sq-m residential building. The building is designed to be a naturally ventilated, perforated, indoor-outdoor, fully shaded fanny green tower. The building is designed to be a naturally ventilated, perforated, indoor-outdoor, fully shaded fanny green tower. The building is designed to be a naturally ventilated, perforated, indoor-outdoor, fully shaded fanny green tower.



Introduction and Context

The Hansar is a 30-story, 100,000-sq-m residential building located in the heart of Bangkok. The building is designed to be a naturally ventilated, perforated, indoor-outdoor, fully shaded fanny green tower. The building is designed to be a naturally ventilated, perforated, indoor-outdoor, fully shaded fanny green tower. The building is designed to be a naturally ventilated, perforated, indoor-outdoor, fully shaded fanny green tower.

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Developing Skyscraper Districts: La Défense



“The development of La Défense is based on infrastructural principles which are considered to have contributed significantly to shaping its singularity and its remarkable image.”

La Défense is a district in the north of Paris, France. It is a skyscraper district that has been developed over the last 30 years. The district is known for its modern architecture and its high density. The district is known for its modern architecture and its high density. The district is known for its modern architecture and its high density.



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Hybrid Mass Dampers for Canton Tower



“The Hybrid Mass Damper (HMD) system possesses multiple security measures, which can ensure the safety of HMD under major typhoons or earthquakes. The proposed HMD system is fail-safe, signifying its robustness.”

The paper presents an analysis of the design and application of the Hybrid Mass Damper (HMD) system for the Canton Tower in Guangzhou, China. The HMD system is a hybrid mass damper system that is designed to provide additional damping to the tower. The HMD system is a hybrid mass damper system that is designed to provide additional damping to the tower.



Introduction and Context

The Canton Tower is a 600-meter tall tower located in Guangzhou, China. It is a hybrid mass damper system that is designed to provide additional damping to the tower. The HMD system is a hybrid mass damper system that is designed to provide additional damping to the tower.

“The term ‘supertall’ (a building over 300 meters) is no longer adequate to describe the world’s tallest buildings of the future: we are entering the era of the ‘megatall.’ This term is now officially being used by the Council to describe buildings over 600 meters in height.”

Nathaniel Hollister & Antony Wood, page 44

Talking Tall: A Future for Tall Building History

Rehabilitation of Early 20th Century Skyscrapers



Raymond Hartshorne



Paul Alessandro

“We try to restore not just the image of the building, but more so the life inside the building through combining old qualities with new ones. As such we call these projects rehabilitation rather than restoration.”

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Raymond Hartshorne

Raymond Hartshorne is a partner and co-founder of HPA. Ray's practice spans over 25 years across a range of building types that include residential, commercial office, retail, healthcare, and hospitality. Among his portfolio of award-winning projects are Green Exchange, Focal Point Corporate Headquarters, the Florsheim Building Preservation, Medical Dental Arts City Apartments, and Uptown Square.

Ray is a recognized leader in multi-family housing, having led the design of more than 25,000 residential units that encompass the full spectrum of living environments, from single family homes to mixed-use projects, affordable units to luxury high-rise towers.

Ray has been an advocate and designer for historically significant buildings across the Midwest. He possesses a wealth of experience in historic preservation, renovation, and adaptive reuse projects. He is responsible for the revitalization of hundreds of existing vintage and historic properties and for placing numerous buildings on the National Register of Historic Places. He is also a specialist in LEED certified and sustainable historic renovation projects.

Paul Alessandro

Paul Alessandro is a partner at HPA. He has more than 25 years of experience in architectural design. Paul specializes in renovating, restoring, and adaptively reusing historic structures. He appreciates old buildings for the unique character they bestow to their communities, and he believes that renovating existing buildings is one of the most sustainable forms of architecture. Paul embraces the artistic challenge of discovering new purposes for old buildings, and the technical challenge of modernizing them for contemporary use.

Paul's Chicago portfolio of award-winning historic projects includes The Powerhouse, an adaptive re-use of an abandoned power station into a commercial and retail development; the Medical Dental Arts Building, and the transformation of the Sachs Building. He is currently overseeing the adaptive reuse of Randolph Tower, a landmark office tower that is being converted into a boutique residential building.

An interview with Raymond Hartshorne and Paul Alessandro (Hartshorne Plunkard Architecture) by Jan Klerks, CTBUH Journal Editor

Looking at the skylines of Chicago and New York, one looks at over a century of skyscrapers. One feature that sets apart the first skyscraper cities from the more recent ones is of course the rich history of tall building architecture. These first cities are now facing the issue of what to do with vintage skyscrapers. What older tall buildings lack in modern structure and facility, they make up for in history and character. The value that these qualities represent lies in the fact that they are irreplaceable. In recent years, some abandoned office buildings built in the early 20th century have been converted to residential buildings, attracting those who seek these qualities in a high-rise urban environment. Rehabilitating those buildings allows a city to preserve its architectural heritage.

In this edition of Talking Tall, we interview Raymond Hartshorne and Paul Alessandro of Hartshorne Plunkard Architecture (HPA), who have an expertise designing the transformation projects of many of Chicago's early loft warehouses and vintage skyscrapers. Their latest and tallest project involves the 141-meter (463-foot) tall Randolph Tower, which is located in the central business district of downtown Chicago, better known as The Loop (see Figure 1).

Like many buildings designed in the early 20th century, the 45-story Randolph Tower consists of an office block with a tower built on top of it. The 17-story tower section has three setbacks articulated by flying buttresses. The tower space was originally used to house a club for German Americans. Opened in 1929 as the Steuben Club Building, the late-gothic tower was originally designed by architect Karl M. Vitzthum. It is currently being transformed into a luxury apartment building by the Village Green Companies (see Figure 2).

How did you get involved in Chicago's biggest rehabilitation projects?

We grew into it. HPA started 24 years ago. As a four person firm we were involved in the rehabilitation of small vintage buildings. Through the years our projects grew in size, and so did our company.

In the 1990s, a need for housing and a good economy caused a boom in loft development. Many old warehouses near the city center were converted to residential use. We were one of the architectural firms leading this movement. In 1999 we completed the Randolph Place project, which converted the 18-story Butler Brothers warehouse, designed by Daniel Burnham, into a 342-unit mixed-use loft condominium. At 305,000 square meters (1 million square feet), it was one of the largest loft projects in the USA.

During the late 1990s, the Loop became more desirable for residential development due in part to Mayor Richard Daley's efforts and the creation of a theater district. Our clients took advantage of opportunities in the Loop by purchasing obsolete vintage office towers and converting them into residential use.



Figure 1. Historic Chicago Business District circa 1935 © HPA

Most recently we have been working with Michigan based developer the Village Green Companies on the conversion of two vintage towers, the now completed MDA City Apartments project and the Randolph Tower City Apartments. For decades, Village Green has been dedicated to the revitalization of historic buildings in Chicago, Minneapolis, St.

Louis, and other cities in the Midwest by creating luxury apartment communities.

What's your approach to architectural renovation?

Like cities, buildings are entities that change and develop in time. In the course of their

existence, the exterior and especially the interior of older buildings have been altered according to the needs and preferences of a given user.

We begin this effort by looking for original architectural details and materials. When original historic material has been destroyed and cannot be replaced, we create an infill design to satisfy the new use. The Randolph Tower lobby for example was no longer intact, so we designed a new space with modern and sustainable finishes.

We try to restore not just the image of the building, but more so the life inside the building through combining old qualities with new ones. As such we call these projects rehabilitation rather than restoration.

What historical elements will be preserved in the Randolph Tower project?

The terracotta façade of Randolph Tower will be brought back to its former glory. Terracotta (meaning *baked earth* in Italian) is a signature building material of the early 20th century skyscrapers. One of the most familiar ones in Chicago is the Wrigley Building on Michigan

Avenue. After the Mather Tower (159 meters/521 feet, 1928), Randolph Tower is the second tallest building in Chicago with a terracotta façade (see Figures 3 and 4).

Preserving the façade involves repairing and replacing damaged terracotta pieces. Included will be the fabrication of new terracotta pieces created from molds of existing pieces in areas that were removed.

Rooms which were a part of the original Steuben Club will be rehabilitated as amenities for the residents. The ball ⚾



Figure 2. Randolph Tower, Chicago – past,present, and future © HPA/Jan Klerks



Figure 3. Rendering of Randolph Tower's restored terracotta façade © HPA



Figure 4. Existing terracotta piece © Jan Klerks

room will be repurposed as a fitness center. Also the existing pool will remain and be updated (see Figures 5 and 6).

What difficulties do you run into when converting an old office tower into a new residential building?

There are a good number of challenges that can be expected when working on an adaptive reuse project mainly due to understanding existing conditions and accommodating the new use. In preparation,

we begin with extensive historic and on-site research by studying blue prints, photos, building permits and other available information. Often times a laser survey of the existing building is performed to create digital floor plans and occasionally we resort to x-ray analysis to uncover hidden conditions.

Inevitably, original documents have gone missing or are incomplete. Sometimes it feels like we are investigating a crime scene where we have very few clues with which to recreate the crime. It helps that we have the experience, but no two buildings are identical.

How about the “intestines” of the building, like the structure, wiring, plumbing, etc.?

Naturally we do thorough structural research as well. Wherever needed, we repair and strengthen the structure of the building. By doing so, we add another 75 years to the life of the tower.

When it comes to mechanical systems (MEP), one needs to realize that most old skyscrapers were built as office buildings. When we plan to convert a former office space into 313 apartments, like we do for the Randolph Tower, we are adding at least that same number of kitchens, bathrooms, and all the items needing electrical wiring and plumbing, which were not part of the original plan. Virtually all new MEP systems and services must be retrofitted into the existing structure.

Luckily there are good software programs available to help us with this effort. On projects we designed over ten years ago, coordination was more difficult. With Building Information Modeling (BIM) technology in combination with using Global Positioning System (GPS), much of that uncertainty can be ruled out as we can digitally map the existing condition exactly as it is on site.

How do old skyscrapers compare to modern buildings when it comes to sustainability?

Actually quite good. Because older buildings usually have a thicker façade with smaller

... fat and heavy

“When I visited Christchurch to study their buildings’ earthquake-resistance, I found that Japanese structures had about twice as much strength... In terms of design, Japanese buildings appear fat and heavy, because we give them more strength by maximizing the numbers of walls and pillars. Western building designs look pretty, but for us they make quite a scary impression.”

Professor Yoshiaki Nakano, a quake engineering specialist at Tokyo University, commenting on the Japanese earthquake-proofing building standards. From “Structural Damage Limited by Lessons Past,” The Australian, March 26, 2011

windows, they are generally better insulated compared to modern glass high-rises.

Also, the fact that we are recycling the entire building makes the project sustainable from an embodied energy point of view. Elements will be replaced using modern materials, such as new insulated windows. This contributes to better energy efficiency. In addition, skyscrapers tend to be located near mass transit. In all, the Randolph Tower building will be able to obtain a LEED certification.

Looking at the total costs of rehabilitation, would you say it is cheaper to restore a vintage skyscraper or to demolish it and built a new one?

Strictly looking at the direct costs involved, it would be cheaper to demolish and construct a new building. It would also be the less difficult thing to do. For example, when it comes to designing floor plans, we must work within the framework of the existing space. Being eligible for historic tax credits requires us to maintain any valuable historic material, including the corridors. It can be difficult to plan new apartments around an existing floor space and make them fit properly.

One good selling point for restoring the structure is that by converting the existing office use into apartments, we can offer 3-meter (10-foot) high ceilings, which would be very expensive to achieve in modern construction.

Is there public support for the project?

Rehabilitating Randolph Tower contributes to an incredible skyline and helps to maintain Chicago's stature as one of the greatest architecture cities in the world. The City of Chicago, which likes to brand itself as a city of architecture, is well aware of these qualities, and the project received plenty of cooperation, such as Tax Increment Financing (TIF), due to this indirect benefit and others that are more direct, like job creation and affordable housing. The project also received historic tax credits from the federal government's Department of Interior, whose role is to preserve natural heritage and it also maintains the National Register of Historic Places to recognize significant buildings and places.

The rehabilitation of Randolph Tower would not be feasible without political support and public financial incentives.

Some older industrial and now declining cities in America have vintage skyscrapers as well. What are their chances to ever get rehabilitated?

Given its size, Chicago obviously has a bigger market potential compared to cities like St Louis, Cleveland, and Detroit, where positive development is occurring, albeit slowly. But looking back, cities witness periods of growth and decline all the time. Fulfilling the market potential of skyscraper redevelopment will require a renaissance of each industrial city, combining economic prosperity with strong civic leadership and financial incentives for developers.

As architects, we can aid this process by demonstrating the virtue of rehabilitating and reimagining skyscrapers which create a framework for the revitalization of city centers. City centers are proving to be the most sustainable places to live and due to the green movement, a renewed interest in living downtown has occurred across the USA. ■

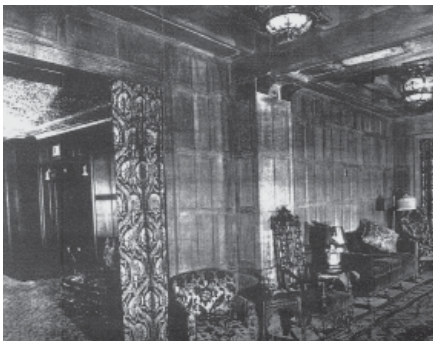


Figure 5. Randolph Tower formerly known as the Steuben Building – interiors in 1929 © HPA

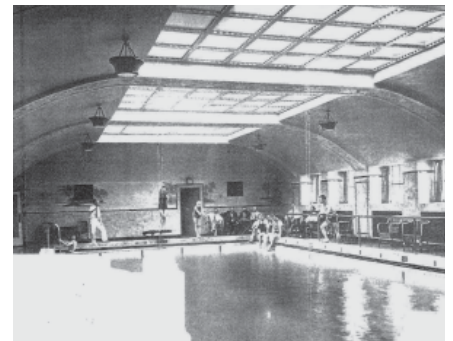


Figure 6. Randolph Tower proposed interiors © HPA

