

The Sheraton Lincoln Harbor Hotel, owned by Hartz Mountain Industries, recently underwent a renovation of the guestrooms and corridors as part of a LEED for Commercial Interiors project. The hotel is located in Weehawken, NJ on the Hudson River across from NYC and is well-served by mass transit. As well, many restaurants and shops are within walking distance to the hotel. Renovations began on August 2009 and were completed in October 2010.



Sheraton Lincoln Harbor Weehawken, NJ

"I believe one of the most unique and bold moves of this project was its implementation of low-flow plumbing fixtures in guest rooms. Many hospitality establishments are nervous to decrease water flow to toilets (for maintenance issues) and showers (for guest comfort issues), but this project shows that great performance can also be achieved with fixtures that use significantly less water." - Jeremy Kuhre, Sustainable Solutions Corporation



AFTER

Location of Project: Weehawken, NJ

Owner: Hartz Mountain Industries

Overview

The Sheraton Lincoln Harbor Hotel, owned by Hartz Mountain Industries, recently underwent a renovation of the guestrooms and corridors as part of a LEED for Commercial Interiors project. There are 2 wings of the building; Main Wing (MW) and West Wing (WW). The MW was built in 1990 and the WW was added in 1998, both wings are 10 stories. The hotel is located in Weehawken, NJ on the Hudson River across from NYC and is well-served by mass transit. As well, many restaurants and shops are within walking distance to the hotel. Sustainable Solutions Corporation (SSC) served as the sustainability consultants for the project. Renovations began on August 2009 and were completed in October 2010.

The renovation to the Hotel has reduced lighting density by over 20% below ASHRAE 90.1 standards by using low wattage compact fluorescent lamps for all lighting in the guest rooms. Water use was also significantly reduced by selecting dual flush toilets, low flow (1.75 gpm) showerheads, and low flow faucets. Considering the nature of a hotel with significant usage of water, it was important to the project team to reduce water consumption as much as possible without compromising the guests' comfort or needs.

Although there was no new HVAC equipment included in the scope-of-work for this project, PTAC units configured to provide increased ventilation were replaced one year prior (in 2008). The project also specified sustainable materials including locally manufactured and FSC certified wood furniture, low VOC paints and adhesives, and materials with high recycled content. Low-VOC materials incorporated into the project include Carpet and Rug Institute Green Label Plus carpet and carpet pad; paints and coatings; and adhesives and sealants. Additionally, all millwork used for furniture and cabinets had no added urea-formaldehyde. A construction Indoor Air Quality management plan was implemented that included such measures as covering HVAC system ducts, regular housekeeping, separation of work and construction areas, and protecting porous materials during construction. SSC (LEED consultant) conducted training for all contractors to ensure compliance with LEED and the team's sustainability goals.

Project Team

Architect: *Vincent Antonacci Jr., A.I.A.*

Commissioning Agent: *Brian Flynn*

Green Building Consultants: *Tad Radzinski, PE, LEED AP*

Remodel: *Jeff Ellis | JGR Interiors, Inc*

Indoor Air Quality Consultants: *Rutgers Center for Green Building*

Landscape Architect/Civil Engineer: *Menlo Engineering Associates, Inc.*

Construction Waste Management: *Kevin Juonniewicz | Omni Waste Services, Inc.*

To better understand the impact of green renovation practices on indoor air quality, the Rutgers Center for Green Building was hired to conduct VOC testing in guestrooms both prior to and post renovation.

The Sheraton Lincoln Harbor Hotel will submit construction documentation for LEED Certification in 2011 under the LEED for Commercial Interiors 3.0 rating system with a goal of LEED Silver.

Process

Energy Performance

The scope of the renovation gave the project team opportunities to reduce energy consumption in the connected lighting load as well as in the plug loads including electronic equipment and appliances. Lighting power density (LPD) is a measure of how much energy the connected lighting load consumes in watts per square foot. The project team was able to reduce the LPD by over 20% compared to what code requires. This was accomplished by installing fewer connected lighting fixtures and using efficient fixtures and lamps.

The project team also determined to use ENERGY STAR labeled equipment to the extent possible. The predominant electricity-consuming electronics in hotels are televisions. The project team selected ENERGY STAR LCD TVs that use Energy Savings Programmability (ESP) technology. ESP technology allows the set to turn itself off when not in use to save even more energy when guests or maids leave televisions on for long periods while the room is vacant. ENERGY STAR labeled refrigerators were also used in the hotel. Over 68% of all electronic equipment installed during the remodel was labeled ENERGY STAR, significantly reducing the electricity consumption of the project.

Increased Ventilation/Retro-commissioning:

Like most hotels, the Sheraton Lincoln Harbor Hotel utilizes wall mounted packaged terminal air conditioners (PTACs) to regulate thermal conditions in each guest room. Although there is no new HVAC equipment included in the scope-of-work for the LEED



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Ratings and Awards

Expecting LEED Silver

renovation, the PTAC units that were installed in 2008 provide additional outside air to guest rooms.

Each PTAC unit supplies a minimum of 70 cfm and up to 80 cfm of outside air to each guest room; on average 62% more than required by ASHRAE 62.1-2007 for similar spaces. The West Wing has a Lennox roof top AC unit to serve the corridors which provides 3,600 cfm of outside air to the corridors. Two guest-rooms on the 10th floor of the West Wing have been converted to a guest room lounge. The PTAC units there were left in place to serve the club lounge. Two PTAC units satisfy ASHRAE 62.1 requirements for outside air for this space but do not exceed the requirements by 30%. However, this is not a regularly occupied space within the hotel and is not required by LEED to have increased ventilation. The only regularly occupied spaces are the guestrooms, all of which exceed ASHRAE 62.1 by at least 30%, and in most cases, significantly more.

Water Use Reduction

As a part of the renovation, all guest room plumbing fixtures were replaced with low-flow alternatives. Conventional water closets were replaced with Toto dual flush toilets. Dual flush toilets allow the user to choose the appropriate level of flush (1.6 gpf or 0.9 gpf) with push-button style controls. Lavatory faucets were outfitted with water efficient aerators that deliver 1.5 gpm flow compared to International Plumbing Code (IPC) baseline of 2.5 gpm. Many hospitality establishments advertise high water flow shower heads as a perk for their guests. The project team researched low flow shower heads that could deliver the same level of comfort as a conventional fixture. A high-quality Kohler product was selected with a lower flow rate compared to the IPC baseline (1.75 gpm compared to 2.5 gpm). As a result of installing low-flow plumbing fixtures, the hotel is projected to save over 500,000 gallons of water annually. Additionally, significant energy savings is expected from reduced domestic hot water demand as a result of low flow lavatory and shower aerators.



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Sustainable Materials

During the design phase, the project team began to research which sustainable materials would be relevant to the renovation. The renovation achieved 10% recycled materials as a percentage of total materials costs. Notable products with recycled content include Armstrong acoustic ceiling tiles with 65% post-consumer recycled content, Mohawk guestroom carpet with 30% post-consumer recycled content, and casegoods from American Atelier with varying percentages of recycled wood content.

The hotel achieved approximately 40% regional materials by cost. Materials are considered regional if they have been extracted/harvested and manufactured within a 500 mile radius of the construction project. Notable regional materials include casegoods from American Atelier.

Over 88% of new wood utilized in the remodel was Forest Stewardship Council (FSC) certified wood. American Atelier was the supplier for all wood products including furniture framing for the project.

Green Operations and Maintenance

The Hotel's recycling program has been upgraded to single stream recycling that will accommodate all five waste streams required by LEED: paper, corrugated cardboard, glass, plastics, and metals. All recycling is being collected in clear plastic bags. All other waste types are placed in black bags. Guests also participate in waste recycling in the building. Two waste bins are located in each guest room: one for recycling streams and another for all other waste. Fluorescent lamps, batteries, ballasts, and electronics are separated on site and placed in separate containers.

Omni Waste coordinated construction and demolition waste during the renovation. The project achieved over 96% waste diversion from landfills.

Thermal Comfort Design

The hotel's HVAC equipment tentatively complies with ASHRAE Standard 55, Thermal Comfort Conditions for Human Occupancy. The project team is presently reviewing whether the hotel renovation complies with the ASHRAE 55 standard. This standard is intended to provide a comfortable thermal environment that promotes occupant productivity and well-being.

Hardscape Management Plan

The hotel is developing a building exterior and hardscape management plan to encourage environmentally sensitive building exterior practices that provide a clean, well-maintained, and safe building exterior while supporting high-performance building operations. Sample high performance practices that could be implemented pursuant to the plan might include environmentally friendly ice removal and sidewalk cleaning.

Bicycle Storage and Changing Rooms

The project team strived to provide alternative transportation options for building users to benefit from the area's relatively dense development. Secure bicycled storage and changing rooms were provided for building employees. The hotel fitness center provided easy access to changing rooms and showers and was located near the entrance of the building.

Indoor Air Quality Management:

Multiple strategies were undertaken to ensure superior indoor air quality for building occupants. All adhesives, sealants, paints, and flooring systems met low-VOC requirements established by the organizations referenced by the LEED Commercial Interiors Rating System: SCAQMD, GreenSeal, GreenGuard, and the Carpet and Rug Institute. No composite wood products contained added urea-formaldehyde further reducing emissions typically associated with new construction and remodeling.

Additionally, the project team prepared and implemented a Construction Indoor Air Quality Management Plan to minimize air quality issues with contractors and building users. Sheet Metal and Air Conditioning Contractors (SMACNA) guidelines were implemented during construction including daily construction housekeeping, HVAC protection, use of appropriate filtration media, protection of porous materials, use of low- and no-VOC products, pathway interruption, and source control.

To better understand the impact of green renovation practices on indoor air quality, the Rutgers Center for Green Building was hired to conduct VOC testing in guestrooms both prior to and post renovation. The study concluded that the use of green materials during the renovation of the hotel resulted in no significant loss of indoor air quality as compared to unrenovated rooms. While the green renovation did lead to small increased in VOC concentrations, these were probably much less than they would have been if conventional building materials had been used. Additionally, the renovation appears to have decreased levels of CO₂ and total fungi, but these improvements in indoor air quality may prove to be temporary.

Education and Training:

The Sheraton Lincoln Harbor Hotel has implemented a signage program to educate guests regarding the sustainable features and operations of the hotel. Examples of signage, which are being developed and implemented now include instructional stickers for dual-flush toilets, labeling of in-room recycling bins, and doorhangers for its Green Choice Program. The Green Choice Program goes beyond conventional sustainable housekeeping

measures (i.e. reuse of used towels). Guests may elect to decline all housekeeping by using the doorhanger. In return, the guest receives a \$5 food/beverage credit for use at the hotel.

The hotel is developing a summary document of the sustainable building renovation for use in the guest room compendium. The document will describe specific measures implemented during the renovation and will highlight the beneficial aspects of these measures. Additionally, the Sheraton Lincoln Harbor Hotel has developed a sustainable buildings and operations display for the lobby. The display focuses on the benefits of the sustainable renovation recently performed at the hotel.

Finance

Hartz compared pricing of using green products versus conventional products and found that the costs did not have a significant impact on the project. For example, there was no difference in cost in items such as carpeting, plumbing fixtures and TV's, and very little difference in products such as the gypsum wallboard, faucets, and shower fixtures. The Wallboard had an upcharge cost of 3% over the standard wallboard and the low VOC paint, although more expensive than standard paint, had become Hartz' standard prior to beginning construction on this project. Faucets and showers with volume control aerators had an additional upcharge of 1% of the total fixture cost. Overall, the cost to Hartz in using green products during construction equated to less than 1% of the total cost of the project. At this point, it is too early to know to report any cost difference.

Furniture, Fixtures & Equipment

Furniture and case goods were purchased and manufactured meeting all LEED guidelines. This includes use of low VOC adhesives, manufacturing within 500 miles of the job site, and fabrics on upholstered furniture contained low VOC or PVC content. There was a no upcharge associated with upgrading to LEED specified products versus conventional manufacturing.

Performance

As a result of this green upgrade project, the building has reduced domestic hot water demand, plug load demand, and lighting power density. Other performance are still being track and no further information is available at the time of completing this case study.

Lessons and Trade-offs

Verify very early in the electronics procurement process that all equipment is ENERGY STAR labeled. This project team ran into an issue where the electronics supplier provided some "ENERGY STAR equivalent" equipment. This equipment was as energy efficient as the official ENERGY STAR equipment, but did not have the label which complicated the certification process. Ensure that all project team members including suppliers understand the reasons behind a product specification (i.e. LEED requirements) to prevent this type of issue. Many architects are beginning to include plain English narratives within the construction specifications for LEED projects because of this particular issue.

Defining LEED project scope for Commercial Interiors projects can have major impact on outcomes. For example, renovations for conference rooms were delayed because inclusion in LEED scope would have disqualified the project due to ventilation requirements. Also, we were able to pursue IEQc7.1 (ASHRAE 55) although PTACs were not replaced as part of remodel scope.

Many hospitality establishments are nervous to decrease water flow to toilets (for maintenance issues) and showers (for guest comfort issues), but this project shows that great performance can also be achieved with fixtures that use significantly less water. According to hotel management, guests have occasionally asked about the flow rate of the showerheads since the aerators were replaced. When the management responds that the flow rate was changed as part of sustainability upgrades, the guests have largely been supportive.

List of Green Strategies

HVAC and Lighting Upgrade

- ENERGY STAR Equipment
- High-Efficiency Lighting Systems
- Occupancy Sensors

Site Improvement

- Hardscape Management Plan

Building Performance and Operations

- Operator and Occupant Training
- Low Flow Fixtures
- Construction & Demolition Waste Recycling Plan
- Indoor Air Quality Management Plan
- Alternative Transportation
- Plug Load
- Green Cleaning
- Retro-commissioning
- Post-Consumer Recycle Content
- Low-Emitting Materials
- Certified Wood
- Regional Materials

