

information

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GREEN INITIATIVES AT MANDARIN ORIENTAL, BOSTON

From its inception, Mandarin Oriental, Boston's development team has sought a symbiotic relationship between their luxury hotel and residences, the environment and surrounding community. By maximizing energy consumption, connecting to the surrounding community, and employing sustainable construction practices, Mandarin Oriental, Boston is a model for thoughtful, environmentally conscious development and operations.

TUNING THE BUILDING

Mandarin Oriental, Boston is among one of the first local hotels to undergo "building commissioning," which ensure that all systems are working to maximum efficiency. As a master mechanic would tune a Formula One race car to burn fuel as efficiently as possible, Mandarin Oriental, Boston has been monitoring all of its systems since initial installation.

EFFICIENT HEATING AND COOLING

HVAC systems are typically responsible for a building's greatest energy consumption; however, the systems in place at Mandarin Oriental, Boston employs state-of-the-art technology that dramatically lowers energy usage while improving air quality and thermal comfort.

High-efficiency chillers, coupled with Variable Frequency Drives, reduce cooling energy consumption by more than 30 percent annually. All incoming ventilation and outgoing exhaust air is pre-cooled or pre-heated by four heat and cooling recovery units, which recover excess heat in exhaust air, transfer it to energy, and use that energy to pre-condition and dehumidify incoming air, significantly reducing the energy required for heating and cooling.

In winter, when temperatures are low, energy is further conserved by a "free cooling" system. Heat exchangers use cold water from rooftop cooling towers to supply chilled water, eliminating the need to use energy-consuming mechanical chillers.

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In addition, the use of district steam for heating and hot water eliminates the need for in-house boilers, minimizing Mandarin Oriental, Boston's carbon footprint as well as its energy consumption.

TEMPERATURE CONTROL

Computer controlled systems connect to every piece of large mechanical equipment (e.g. chillers, pumps, fans, and other assorted HVAC systems) in the hotel to operate the building's equipment based on need. For example, if no events are planned for a space, equipment for that area can be adjusted to reflect that fact or turned off entirely. This is known as Building Automation System (BAS).

Hotel guestrooms and condominiums will reset to the optimum holding temperature based on their location in the building and season when those spaces are either vacant or unoccupied. This practice will save energy rather than setting an arbitrary absolute temperature for the entire building. Motion detectors will also sense when guests and residents have returned and rooms will reestablish themselves to each guests' preferred temperature setting.

LIGHTING

Mandarin Oriental, Boston is designed to take full advantage of natural light, diminishing the need for exclusive interior lighting. The sun makes a wide arc around the building and massive expanses of windows flood public and private spaces with natural sunlight.

Energy efficient lightbulbs and an automatic, energy-management, occupancy based lighting control system, have also been implemented in guestrooms, function space and public areas, resulting in an 18 percent electrical consumption reduction.

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GREEN ROOF

Mandarin Oriental, Boston has the benefit of over 50 condominiums, 12 of which have roof gardens designed to sustain trees of heights up to six feet. Planned tree and shrubbery landscaping on these decks will make the roof more energy efficient. High-reflectivity paving systems on the roof will manage storm water more efficiently and help retain seasonal temperature fluctuations.

A beautifully landscaped garden off of the Newbury Arcade in the rear of the building adds to Boston's tradition of beautiful open spaces while serving as an active green roof to the parking garage that Mandarin Oriental, Boston shares with the Prudential Center.

BUILT TO LAST

Mandarin Oriental, Boston was designed and built to last for centuries. The materials used to construct the building include stone and brick, sourced from the United States, and installed by Boston's master craftsmen, including skilled masons. Built for sustainability, stability, and flexibility, the infrastructure of the building was designed to ensure easy modification in future ages.

In addition, Mandarin Oriental, Boston makes substantial use of rapidly renewable materials such as bamboo flooring and FSC (Forest Stewardship Council) certified wood for subflooring.

GROUNDWATER PROTECTION

Boston's historic Back Bay, home to Mandarin Oriental, Boston, is built on a fragile ecosystem of tidelands that was filled in during the 1800's, this means careful attention must be paid to maintain groundwater levels. Careful planning prior to hotel construction protects this critical balance, which was continually monitored throughout the building process.

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In addition, The hotel has recently partnered with the Massachusetts Oyster Project in an effort to recycle oyster shells. The Oyster Project works to return marine estuaries to their historic natures through the restoration of once native oysters, improving water quality while attracting sea life. Additional oyster benefits include: water filtration in rivers and tidal estuaries - 30 gallons per oyster per day, algae control improving water clarity, and offsetting the impact from sewer overflows and other manmade pollutants.

RECYCLING

An active comingled recycling program for all paper, glass, aluminum, metal & plastic is in place. The hotel also collects cardboard for the bailing machine, which compresses boxes into neat bales, ready for pick up and re-use.

Currently all of the hotel cooking oil is held at the loading dock and given in trade for removal to a third party. This third party sells our cooking oil to local operators of conversion stations where it is used for operating converted diesel motor vehicles. On average 100 gallons each month is collected for re-use.

The hotel's participation in Clean the World, a soap and shampoo collection and recycling program that redistributes donated hygiene products to at-risk people, donated 1,983 lbs. of soap and 1,597 lbs. of bottled amenities in 2014. In addition, linen donations were provided to several local charitable organizations including: sheets, towels, robes and slippers.

The installation of VIVREAU, a sustainable potable water system that dispenses unlimited quantities of pure, chilled still and sparkling water, eliminated the need to purchase environmentally unfriendly and expensive pre-bottled waters. The VIVREAU system

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substantially reduces the cost of purchasing single pre-bottled waters and eliminates storage issues.

As part of Mandarin Oriental Boston's colleague culture, associates are encouraged to organize internal paperless meetings. Plasma screens were installed in the colleague meeting space to promote the use of digital alternatives, discouraging hard copy print-outs. This initiative decreases paper usage and waste while increasing efficiency and profitability.

COMMUNITY CONNECTION

Mandarin Oriental, Boston creates density in a formerly underutilized footprint at the intersection of several of Boston's busiest neighborhoods. This pedestrian-friendly location, within walking distance of all basic services including restaurants, banks, houses of worship, stores, and several forms of public transportation, allows residents and guests alike to significantly reduce pollution created through automobile use. Built with this purpose in mind, the 570-foot Newbury Arcade runs behind Mandarin Oriental, Boston and connects pedestrians directly to the Prudential Center.

CONTROLLING LIGHT POLLUTION

Mandarin Oriental, Boston contributes to reducing light pollution through thoughtful lighting design. Low-level energy efficient step lights illuminate the building by directing light down instead of up; this creates a dramatic effect on the building façade and does not light the atmosphere.

AIR QUALITY

The air quality of Mandarin Oriental, Boston is extremely high; all systems were designed to maximize the use of fresh air throughout the building.

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Windows are operable, balconies have functional doors, and in-room ventilation systems draw fresh air from outdoors. Systems are carefully designed so that guests can have the benefits of breathing fresh air, even without needing to open the windows. There is no need for “undercuts” in doors either, which can allow hallway noise and light in, because of the excellent ventilation.

Mandarin Oriental, Boston has also added a new electric house car to the guest services inventory, the Tesla Model S. Unlike a gasoline internal combustion engine with hundreds of moving parts, the

Tesla electric motors have only one moving piece: the rotor. As a result, the Model S acceleration is instantaneous, silent and smooth; in 3.2 seconds the Model S can accelerate to 60 miles per hour, without hesitation, and without a drop of gasoline or emissions. Mandarin Oriental, Boston estimates an 80 percent cost savings by converting to an electric vehicle.

AN ENERGY EFFICIENT STRUCTURE

Mandarin Oriental, Boston was created to be as energy efficient as physically possible. The “envelope” of the building, which guards against intrusion of temperature and moisture, is built to museum-quality standards. In fact, the materials used to create Mandarin Oriental, Boston’s roof are the same materials used at the United States’ National Gallery.

Rigid Styrofoam insulation optimizes energy performance, controls humidity, provides stable, long-term insulation and blocks thermal shorts that may occur in roof, wall, and below grade assemblies.

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EDUCATION

With a goal to raise awareness of environmental sustainability issues, Mandarin Oriental, Boston has implemented a new colleague education and training program, *Doing More for a Sustainable Future*. This training discusses the importance of both the colleague and hotel's role in our corporate responsibility program and the possible negative impacts they may have on the environment if the program is not followed.

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