





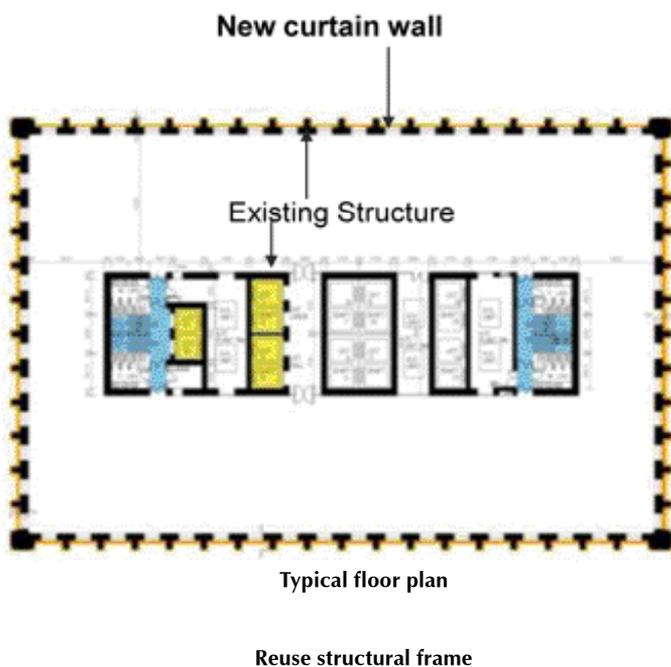
## China Resources Building

# Into the 21<sup>st</sup> century

The China Resources Building is the first building in Hong Kong using Leadership in Energy and Environmental Design (LEED) as the sustainable framework for building upgrade. LEED is an internationally recognized standard for assessing building sustainability in five major categories, namely, Sustainable Sites, Water Efficiency, Energy and Atmosphere, Materials and Resources and Indoor Environment Quality (IEQ).



The China Resources Building (before)

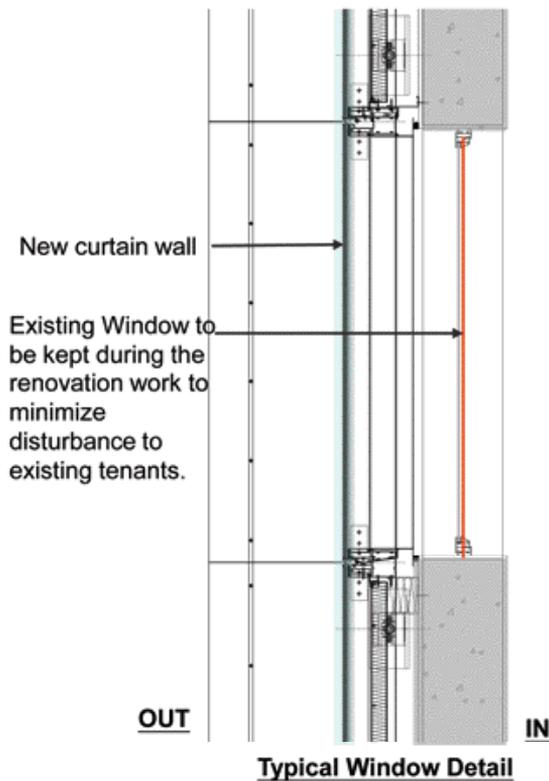


In this renovation project, the existing structural frame is being remained and reused in order to minimize the construction waste generated and the resources demanded. As of Jan 2012, over 1,600 tons of construction waste have been diverted from the landfill which accounts for more than 75 per cent of construction waste generated.

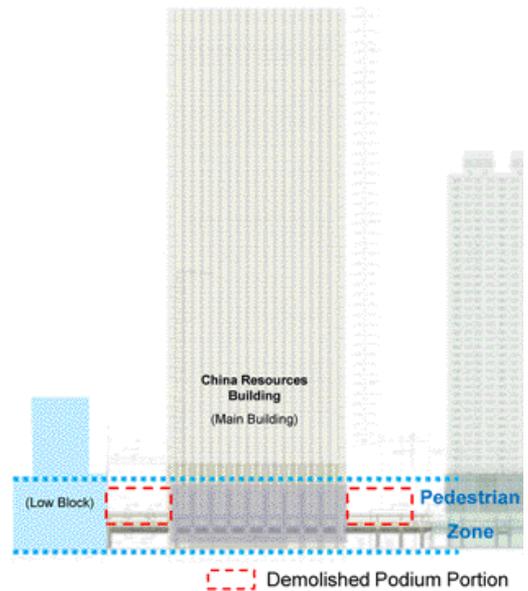
With careful procurement selection, building materials containing recycled content and manufactured in the region are used. GHG emissions due to the materials processing and transportation activities by trucks, trains, ships and other vehicles can therefore be reduced.

The change of the facade is another highlight of the project. Apart from the aesthetic consideration, the building facade is also designed to ensure high performance through optimizing and balancing the energy and daylight.

For the renovated spaces, high efficient and innovative lighting system such as daylight sensor and occupancy sensor



High performance facade to reduce heat gain



**(Podium Level)**

Before Renovation:

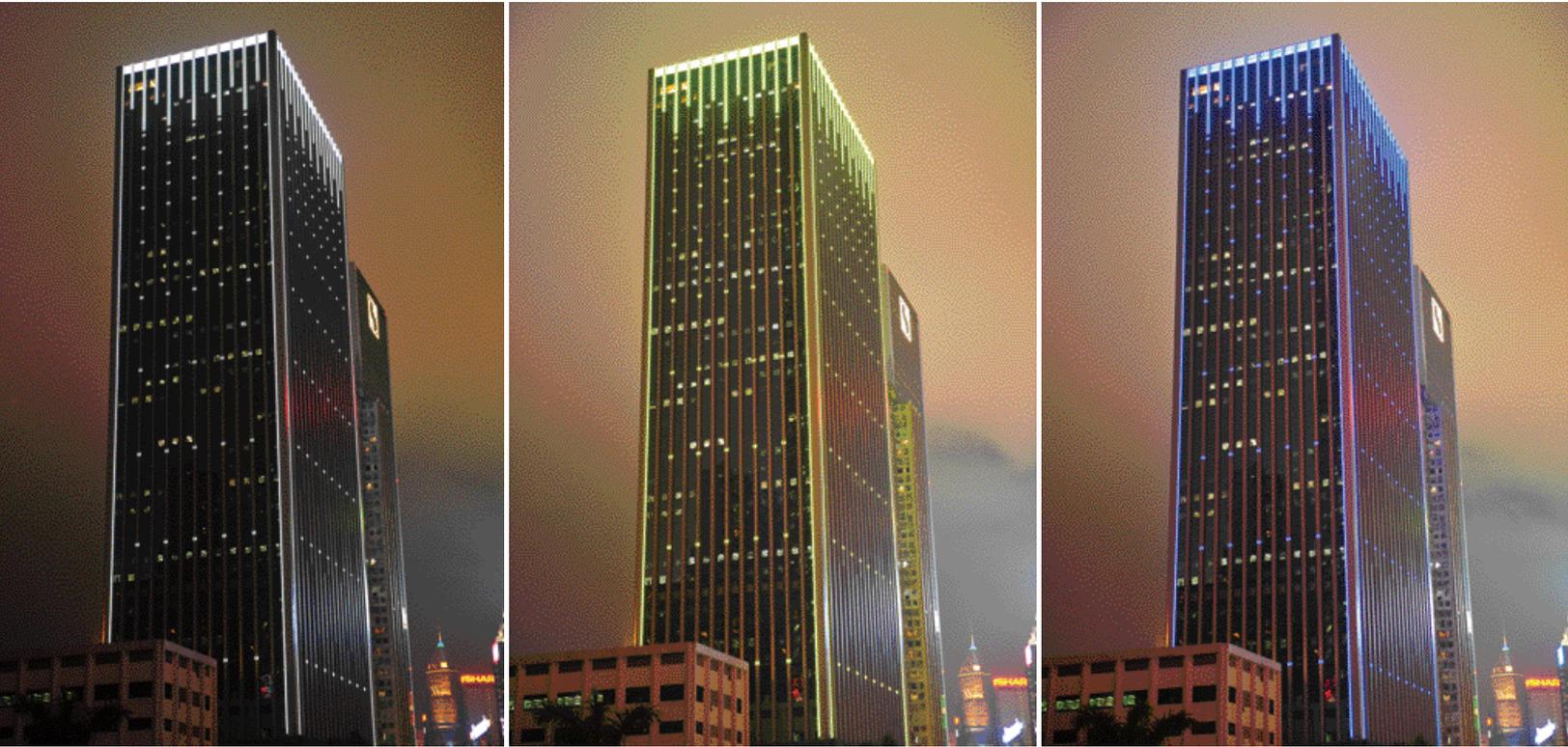
Building permeability :  
7% at Low Zone  
under SBD

**(Podium Level)**

After Renovation:

Building Permeability:  
33% at Low Zone  
under SBD

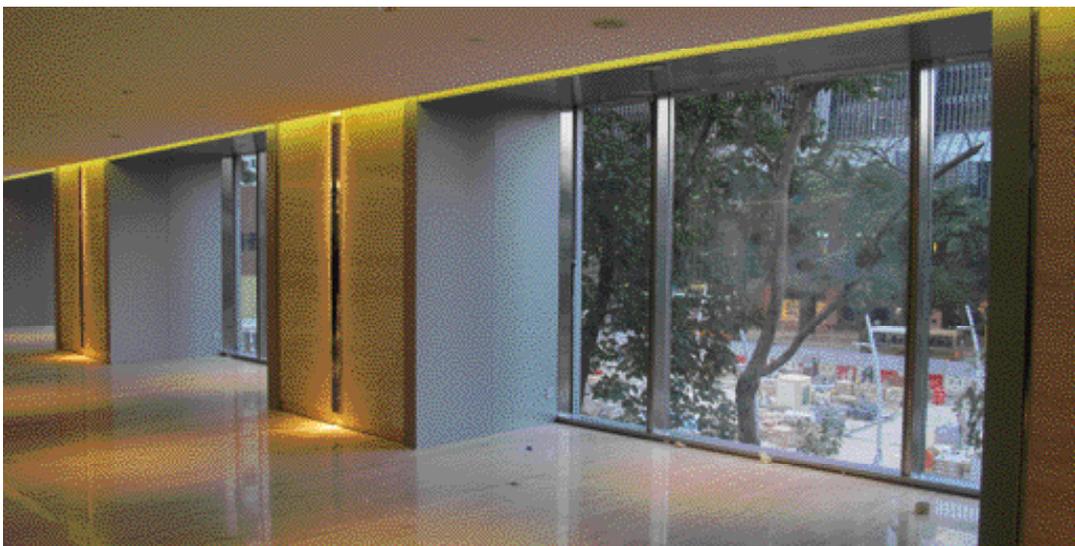
Enhancement of natural ventilation and natural light penetration at podium



are installed. The lighting fixtures in the perimeter are interlinked with the daylight sensors. When the daylight luminance level reaches the prescribed level, the daylight sensor will automatically dim or turn off the lighting system.

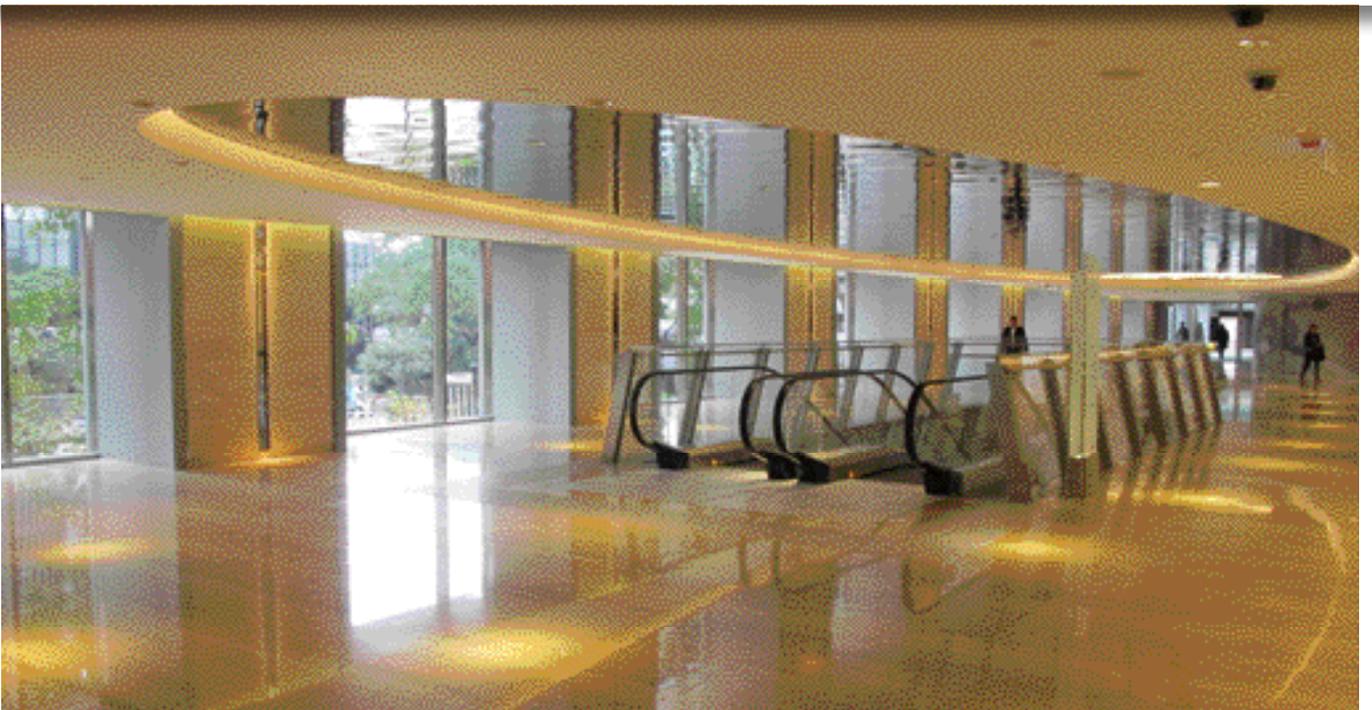
For the HVAC system, the air handling units (AHU) for the buildings are upgraded. With the installation of higher efficient equipment, energy can be saved during operation period and cost reduced for maintenance. Furthermore, CO<sub>2</sub> demand

control ventilation (DCV) system is being utilized. In contrast to the traditional method ventilating a space at a fixed rate, DCV system uses sensor to measure CO<sub>2</sub> amount generated by building occupants and then regulates the amount of outside air entering the indoor space. As a result, the DCV system can control the outside air flow rate based on the actual occupancy to save energy. Compared with the LEED Standard (Per ASHRAE 90.1-2004), the building can save 2.35GWh of energy per year, which is





Renovation podium lobby at G/F



Renovation podium lobby at 1/F



equivalent to 1,950 tons of CO<sub>2</sub> emission.

Air quality is important to the building users' health, comfort and well-being. To prevent IEQ problems from arising, one of the practical ways is to specify materials that release fewer and less harmful chemical compounds. In the areas being renovated in the building, adhesives, sealants, paints, coatings and carpet system with low-emitting content are being used. Hence, the potential of occupant exposure to irritating and harmful contaminants can be greatly reduced.

China Resources Building targets to achieve the LEED-CS Gold Rating in 2012, which is expected to be the first sustainable renovation case in Hong Kong.

## Energy saving and sustainable elements

### The site

Although China Resources Building is situated in the prime location in Wan Chai North area, the complex offers great community connectivity and public transportation convenience. Some 57 bicycle storages and 27 shower facilities are provided to the building users to encourage 'Green Travel'.

### Water conservation

In order to cut unnecessary water usage and waste in more efficient ways, the native or locally adapted plants are being chosen for landscape design. Water-saving fixtures such as low-flow faucet with sensor control are used.



CO<sub>2</sub> Demand Control Ventilation

### Energy saving

Building owners and building occupants both want to reduce the running costs of the building, especially on energy use. In this project, the goal will be achieved through facade modification and upgrade of E&M equipment.



Daylight Sensor



Upgrade AHU

Apart from aesthetic consideration, the building facade is designed to ensure high performance through optimizing and balancing the energy and daylight. Glazing system which allows only 5% of solar energy transmitted to the indoor is used. High efficient and innovative lighting system such as daylight sensor and occupancy sensor are installed.

For the HVAC system, the air handling unit (AHU) will be upgraded with the installation of CO<sub>2</sub> demand control ventilation (DCV) system. Compared with the LEED Standard, an annual energy saving of 1.65GWh is predicted by computer simulation.

### Selection of materials

The existing structural frame is being reserved and reused so as to minimize the construction waste generated and the resources demanded. 75% of waste (estimated to be 53 tons) produced during construction were diverted from disposal.

### Indoor Environment Quality (IEQ)

To prevent IEQ problems from arising, one of the practical ways is to specify materials that release fewer and less harmful chemical compounds. In the areas to be renovated, adhesives, sealants, paints, coatings and carpet system with low volatile organic compounds (VOC) contents were used.



## External working platform

In order to minimize disturbance to building users during façade renovation and external works, a specially designed working platform is developed by China Resources Construction to carry out the external renovation of China Resources Building.

Elevated working platforms are being mounted on the external wall of the building for new façade installation. The equipment climbs on rails automatically which provide safe and efficient working conditions for workers and at the same time without obstructing the external views of the tenants inside the building. Furthermore, existing windows were

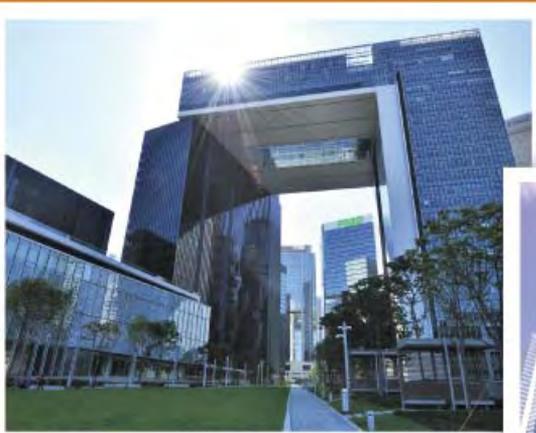
dismantled only after the new façade has been completely finished to ensure the usual noise and air problems during renovation are being minimized to the lowest level.





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# China Resources Building



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We are proud to be the  
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