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Alley24, U.S.A.

Case Study 31

Aspects of Sustainability

This project highlights the following:

Social Aspects

Human Resources
Corporate Community Involvement
Business Ethics
Health and Safety

Environmental Aspects

Energy and Climate
Materials
Ecosystems
Local Impacts

Economic Aspects

Project Selection
Supply Chain
Value Added

Alley24 is a mixed-use development in Seattle, U.S.A., that was designed and constructed using the Leadership in Energy and Environmental Design (LEED) certification to maximise sustainability throughout all stages of the project and create an energy efficient building with a high quality indoor environment.



Project Introduction

Alley24 is a mixed-use development in the inner city Seattle neighbourhood of Cascade. The development consists of 17,000 m² of office space, 172 rental apartments and 2,600 m² of street-level retail space. Alley24 occupies an entire block and is divided into four-buildings by two pedestrian alleys, which meet in the centre of the development. Sections of a historic building, the New Richmond Laundry facility, have been incorporated into the development.

Skanska provided preconstruction services for the entire US\$42 million development, and acted as the general contractor for the office building, underground parking and retail areas. The project was delivered to the client, Vulcan Real Estate, on time and US\$3 million under budget. The six story

high development opened in February 2006 and is home to over 200 residents and almost 1,000 employees, including the Skanska Seattle office. Alley24 is part of Vulcan's ongoing redevelopment of downtown Seattle's South Lake Union neighbourhood.

Alley24 was one of the first mixed-use projects in Seattle to achieve LEED (Leadership in Energy and Environmental Design) certification for its sustainability considerations during construction and energy efficient features. Skanska was involved in three separate LEED projects at Alley24, including the office building shell and core that achieved LEED Silver certification and two corporate offices, including Skanska's, which were awarded LEED Gold certification for their interiors.



Contributing Toward Sustainable Development

Alley24 is an energy efficient building that has created a vibrant pedestrian retail area and healthy living and working environments. The project has also contributed toward urban redevelopment, provided much needed living space in the Cascade neighbourhood and has promoted sustainable urban living. During the design and construction phases sustainable methods and materials were utilised. Environmentally friendly materials were prioritised for the project, environmental impacts were minimised during construction, high standards of occupational safety were abided by and construction waste was recycled where possible. Neighbouring communities participated in the preconstruction stages to ensure the Cascade neighbourhood benefited and the development contains space for community gatherings.

Social Aspects

Community communication and participation

Two preconstruction design seminars were held with local residents and business leaders to discuss how the Alley24 development could enhance the Cascade neighbourhood and the project was designed in accordance with the Cascade neighbourhood plan. Vulcan Real Estate also met with the Cascade Neighbourhood Council, a neighbourhood advocacy group, during the initial concept and schematic design phase to build consensus among the local community.

Sustainability education

Alley24 is a unique development in Seattle and has the potential to raise awareness of sustainable construction techniques, energy efficiency and

sustainable living through organised tours and everyday interaction. Skanska instructed construction teams on the sustainability requirements of the project during the preconstruction process. The Skanska team also gained valuable expertise in energy efficient features, such as sunshade and under floor heating systems, which have not yet been widely installed in the Seattle area.

Occupational safety

To promote site safety Skanska employed a full-time safety supervisor and implemented innovative processes, beyond the standard safety protocol, such as daily “stretch and flex” for all field and office personnel. No serious accidents occurred during the project and the Lost Time Accident Rate per million man-hours was four.

High quality indoor environment

Natural light, fresh air ventilation, protective sunshades and low-VOC (Volatile Organic Compound) materials have been used to create a high quality indoor environment within the office building. Large windows and 3.2 m high ceilings maximise natural light and the building’s open planned design allows light to penetrate deep into the core. The building is equipped with a hybrid HVAC (Heating, Ventilation and Air Conditioning) system, which offers a choice of natural ventilation through operable windows or a clean-air under floor air delivery system. Sunshades on the exterior of the building are automatically programmed to track the sun and regulate the indoor temperature. Only water-based and low-VOC paints, glues, sealers and carpets have been used to ensure a healthy indoor air quality.

Healthy and productive office environment

The high quality indoor conditions have created a healthy working environment and the Skanska Seattle office has perceived greater employee satisfaction and productivity since relocating to Alley24. During Skanska’s first year at Alley24 the sick leave rate was approximately 30 percent less than in their previous office. The offices have also been designed to create a friendly working environment with visually intersecting spaces that enable and encourage social interaction and employees are able to control their personal climate to ensure comfort.

Urban redevelopment

Alley24 has contributed toward the redevelopment and preservation of the historic character of the Cascade neighborhood by incorporating the neglected New Richmond Laundry facility into



the development. The project has brought retail outlets, over 200 residents and almost 1,000 employees to the area.

Contributing toward a vibrant neighbourhood

The mixed-use nature of Alley24 has created a vibrant urban environment with a high level of pedestrian activity throughout the day, which has enhanced the neighbourhood's character, liveability and feeling of safety. Imaginative streetscapes and public space for casual social interaction were incorporated into the design following local resident and business requests to promote a vibrant pedestrian-friendly environment.

Promoting sustainable urban living

Alley24 has brought much needed residential space to the inner city Cascade neighbourhood, and has promoted sustainable living by offering residents and employees good access to retail outlets, restaurants, amenities, and the rest of Seattle via public transport. The development has secure bicycle storage facilities and is close to two Seattle car sharing locations, bus routes and the Seattle Streetcar system, which opened in December 2007.

Community support

Skanska's office includes a large conference space, which is typically used once a month for community purposes. The space was used for the ACE Mentor Programme, which aims to engage high school students in the construction industry, and involved approximately 50 students and Skanska employees. Skanska has also supported a Cascade community centre with time and money to landscape their exterior gardens.

Economic Aspects

Local construction materials

Local materials were prioritised and 27 percent of building materials and products used for the office building were manufactured within 800 km of the site. Richlite, for example, which is a durable material used on the exterior of the residential building is manufactured close to Seattle.

Local construction employment

175 construction workers were on site during the peak of construction. Roughly 95 percent of the workforce was from the Seattle area.

Vocational training

Skanska has established formal apprentice training programmes to develop the skills of site personnel. Around 75 construction workers received some form of specialised training during the Alley24 project, such as carpentry, metalworking or cement masonry.

Energy efficiency savings

Energy costs have been significantly reduced by the instillation of a hybrid HVAC system, efficient under floor heating and the use of natural light. In particular, access to fresh air through operable windows reduces the use of air conditioning, which is the largest consumer of energy in conventional office buildings. Tenants are metered individually to monitor and directly control energy consumption. Electricity costs at the new Skanska office at Alley24 are approximately US\$1,000 per month less than their old office due to energy efficient measures, despite the new office being slightly larger in size.



Promoting socio-economic diversity

Alley24 is participating in the Seattle Multi-family Tax Exemption program whereby 20 percent of the residential units have been made available for individuals and families earning below 60 percent of the local median income.

Local economic development

Alley24 has stimulated the local economy by bringing new employees, residents and retail outlets into the area. The street level constitutes a lively pedestrian shopping environment with 14 new retail outlets, many of which are locally owned small businesses.

Environmental Aspects

Minimising environmental impacts during construction

The creation of noise and dust was given particular consideration due to the mixed-use nature of the surrounding neighbourhood. The hours of work were restricted to reduce noise disturbance and Skanska maintained good relations with neighbours to ensure they were not excessively inconvenienced during construction. A water spray system was used during excavation to reduce dust pollution.

Environmentally friendly construction materials

Non-toxic, durable, recycled and locally sourced materials were prioritised for the project to minimise environmental impacts. The apartment buildings were clad in Richlite, which is non-toxic, highly durable and locally produced from environmentally sustainable materials, including recycled paper and natural fibre composites from

certified sustainable forests. The entire ground floor flooring of the office building was made from a single elm tree that fell in a storm and was sourced by a local company.

Recycling during construction

Sections of the Richmond Laundry facility were reused in the development and waste was minimised by recycling over 75 percent of construction and demolition debris. Fly ash concrete was used for the project, which recycles waste from coal-fired power stations and reduces carbon dioxide emissions by substituting a proportion of the energy intensive conventional cement.

Energy efficiency

The Alley24 development surpassed the Seattle Energy Code and includes the first Class A office building in Seattle, which uses a hybrid HVAC system, sunshades, natural light and low energy fixtures to minimise energy use. The Skanska office at Alley24 annually uses approximately 125 kWh/m² compared to 200 kWh/m² at their old office premises. The hybrid HVAC system has reduced energy consumption by 15 to 20 percent compared to conventional systems, primarily because no energy is required to obtain natural ventilation through the operable windows. The building is also the first in North America with exterior automatic sunshades to help control the indoor temperature. The use of natural light, low energy light fixtures and daylight and occupancy sensors have reduced the lighting power density by 30 percent in the Skanska office compared to the ASHRAE 2004 lighting standard. Alley24 is also equipped with energy efficient windows, a highly efficient central gas-fired hot water system and the landscaped rooftop gardens provide additional roof insulation.

Urban heat island effect

Alley24's rooftop gardens and concealed underground car parking contribute toward a reduced urban heat island effect by decreasing the extent of dark and paved surfaces.

Carbon dioxide emissions

The Skanska office in Alley24 has joined the Seattle Climate Partnership, which is a voluntary pact among Seattle employers to take action to reduce their own carbon dioxide emissions and exceed the global warming reduction target of the Kyoto Protocol.

Water efficiency

Low flow water fixtures and features such as waterless urinals have reduced water consumption in the building. The Skanska office uses 32 percent less water than the U.S. Environmental Protection Agency 1992 standard. The roof gardens reduce excessive run-off from heavy rainfall and rainwater is collected for the seasonal street level water features.

Renewable energy

Skanska signed an initial two-year contract to supply its office at Alley24 with 100 percent renewable electricity from the Seattle City Light Green-up programme, which is primarily sourced from hydroelectric sources.

Learning From Good Practice

Vulcan Real Estate selected Alley24 project partners for their specific green expertise in the planning, design and construction stages. All were fully engaged in achieving the sustainability goals and several were LEED accredited. During the project the Skanska team broadened their expertise to include sunshade and under floor heating systems, which has further strengthened their green credentials.