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Clarion Hotel Sign, Sweden

Case Study 34

Clarion Hotel Sign is the largest hotel in Central Stockholm and won awards for transporting construction materials by train instead of conventional road transport.

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



Project Introduction

The 4-star Clarion Hotel Sign in Central Stockholm opened in February 2008 and is the largest hotel in the city with 558 bedrooms and extensive conference facilities. The hotel is located approximately 500m from Stockholm's central train station and is part of the mixed use Norra Bantorget redevelopment. Clarion Sign has an architecturally innovative design intended to reflect the modern nature of Stockholm.

Skanska Sweden won the US\$ 67 million contract to construct the Clarion Hotel Sign between 2006 and 2008 for Choice Hotels. The ten-storey hotel has a total floor area of 29,000 m² and includes a 650-seat restaurant banquet hall, Aquavit Restaurant and conference facilities, which occupy the open planned ground floor. The 8 conference rooms of varying size are equipped with the latest

audio visual tools and can accommodate up to 1,220 conference guests. The western side of the building is entirely made of black granite, according to city planning regulations, due to the close proximity of railway lines. A glass curtain-wall faces the Norra Bantorget Square on the eastern facade.

Skanska overcame the logistical challenges posed by the urban and restricted nature of the site by transporting the frame of the building by rail instead of conventional road transport. The project received the Green Cargo transport company's environmental certificate and was approved by the Swedish Nature Protection Association's environmental scheme, which required a reduction in the total energy consumption during the project and the use of renewable energy sources for rail transportation.

Contributing Toward Sustainable Development

The Clarion Hotel Sign has increased Stockholm's hotel and conference capacity, and has contributed toward urban redevelopment and sustainable urban planning in the city. The hotel offers guests a comfortable and healthy indoor environment, is energy efficient and Choice Hotels intend to certify the hotel to ISO 14001 standards by 2010. During construction, stakeholders were informed and project partners were involved in the development of on-site solutions. Public disruption was minimised during construction and high standards of site safety were implemented. Skanska contributed toward the regional economy by employing construction workers from the Stockholm area, providing specialist vocational training and sourcing regional materials. The frame of the building was transported to the site by train, which reduced energy consumption and carbon dioxide emissions. Skanska reduced other environmental construction impacts by minimising pollution, monitoring water consumption, using environmentally responsible construction materials and managing construction waste.

Social Aspects

Minimising public disruption during construction

Skanska minimised public disruption by keeping site neighbours informed through distributing information, holding public meetings, employing staff to help minimise traffic disruption and by transporting materials by rail rather than road. Information leaflets were distributed to all businesses and residents in the area prior to construction activities to inform them of potential disruptions. Meetings were held on a monthly basis with neighbouring construction project managers, and fortnightly with the Swedish Rail Administration, Banverket, to discuss logistical, health and safety and environmental issues. Meetings were also held with the local authorities to discuss traffic management around the site, which was communicated to the public through information boards. The transportation of construction materials by train rather than by road reduced vehicular traffic congestion in Central Stockholm.

Public safety

The adjacent streets and railway lines were open to normal traffic throughout the construction and public safety was prioritised. Logistics coordinators were employed on the site to manage deliveries, minimise disruption and to ensure that vehicular traffic on the adjacent roads was aware of potential dangers. Skanska donated signage and pedestrian shelters to the local authorities to assist with future traffic management and pedestrian safety projects.

Occupational health and safety

There were no serious accidents on site although the Lost Time Accident Rate was 8.4. Health and safety inspections were conducted on a weekly basis and weekly meetings were held with construction managers and production leaders to review incidents and to discuss health and safety best practice. First Aid education was offered to construction workers and rail safety training was provided to personnel working near the tracks adjacent to the site.

Project partner collaboration

Communication and the sharing of knowledge among project partners was vital due to the restricted site area and logistical issues the site posed. Innovative solutions were developed through close cooperation with project partners, such as a unique curtain-wall solution without ledges or other fittings.

High quality indoor environment

The Clarion Hotel Sign offers guests comfortable, spacious and stimulating indoor environments, which promote wellbeing through natural light and high quality ventilation. The hotel's innovative design and Scandinavian art furnishings are intended to engender a creative and stimulating environment. The glass facade ensures that the entrance foyer, bar and restaurant are well lit with natural light and all bedrooms have large windows to ensure maximum access to daylight. High quality ventilation is provided throughout the hotel and rooms have the possibility of fresh air ventilation through operable windows.

Urban redevelopment

The site was previously a petrol station, and the Clarion Hotel Sign development is thought to have significantly improved the image of the neighbourhood. The hotel is part of the Norra Bantorget redevelopment project, which is scheduled for completion in 2009 and includes



shops, offices, apartments and a new park. The hotel has brought 24-hour activity to the mixed use Norra Bantorget area.

Sustainable urban planning

The Clarion Hotel Sign is located in Central Stockholm with good access to public amenities and services. The hotel is also close to the Stockholm Central train station and has excellent access to public transport in the form of commuter trains, Stockholm subway lines and the Arlanda Airport Express train service.

Economic Aspects

Construction employment

Approximately 240 construction workers were on site at the peak of construction and around 80 percent of personnel were from the Stockholm area. The remaining workforce included Swedish workers from outside Stockholm and specialised technical staff from abroad.

Regional materials

The majority of the construction materials were procured from within the Stockholm region. Exceptions included the frame and the building's facade. The frame was prefabricated in Slovakia and shipped to Stockholm by rail for economic and environmental reasons.

Construction material transport savings

By transporting materials via rail the project transport costs were reduced by over 10 percent.

Vocational training

Construction workers received training to operate scissor and boom lifts and a traffic management course was provided by the local authorities.

Regional economic development

The lack of hotel space has been an issue in Central Stockholm in recent years. The Clarion Hotel Sign can accommodate 1,116 overnight guests, and when inaugurated accounted for approximately 8 percent of Stockholm city's hotel bed capacity. The Clarion Hotel Sign's extensive conference facilities have enabled Stockholm to compete with other European cities to hold large conferences and the hotel is expected to strengthen Stockholm's status as a city of tourism and business. Prior to the hotel opening, conference services worth US\$41 million was scheduled between the period 2008 and 2011, including a significant amount of new business from abroad that may not have otherwise come to Stockholm. The hotel has created 161 hotel jobs, including 50 employees without previous hotel experience who were employed through an employment initiative to find enthusiastic personnel.

Environmental Aspects

Minimising environmental impacts during construction

Noise and dust were not significant concerns because the project adjoined two other construction sites, and was distanced from apartments and offices. Significant noise disturbance was limited to within a two-month



period of groundwork. Water usage during construction was not seen as a priority issue due to the low levels of consumption.

Environmentally responsible transportation

The prefabricated frame of the building was transported from Slovakia by rail instead of conventional road transport and was unloaded directly onto the site from the adjacent railway. Transporting the frame by rail resulted in reduced energy consumption, carbon dioxide emissions and overall project costs. Between 2006 and 2007, over two million ton-kilometres of materials were transported by rail. Most of which was transported by Green Cargo electric trains, which use renewable energy sources. Green Cargo calculated that 173 tonnes of carbon dioxide was emitted during the transportation of construction materials for the Clarion Hotel Sign project. This amount compares to an estimated 408 tonnes that would have been emitted if only road transport was used.

Raising awareness of environmentally responsible transportation

The Green Cargo environmental certificate and the Swedish Nature Protection Association environmental scheme approval have raised the awareness of more sustainable construction transportation, which may influence other construction projects.

Waste management

Skanska sorted and segregated waste on site and a waste contractor managed all recycling and necessary treatment of refuse materials. 72 percent of construction waste was recycled externally and 12 percent was sent to a waste incineration plant to generate energy. Waste was also minimised by prefabricating the building's structure off site.

Environmentally responsible construction materials

Material choices were made in accordance with Skanska's approved substance list to ensure that non-toxic materials were used in the construction of the hotel. Environmentally responsible construction materials include the inner west wall made from compressed recycled paper and wooden floorboards, which cover over half the hotel's floor.

Energy efficiency

Efficient lighting is used where possible and the heat recovery ventilation system recycles approximately 80 percent of the outgoing heat back into the building. The hotel consumes approximately 200 kWh/m² per year.

Efficient district heating and cooling

Heat is sourced from Stockholm's district heating and cooling systems, which are significantly more efficient than producing heat and cooling locally within the hotel. The district heating system sources around 80 percent of its energy from renewable carbon-neutral energy sources. The district cooling system in Stockholm produces around half the carbon dioxide emissions compared to individual chillers in buildings.

Learning From Good Practice

Skanska overcame site accessibility issues by transporting construction materials by rail rather than conventional road transport. By utilising the adjacent railway, Skanska also lessened public disturbance, reduced project costs and minimised the environmental impact of the project.