VANCOUVER VALUATION ACCORD

Case Study 5

River Campus Building One Oregon Health & Sciences University (OHSU) Center for Health and Hearing, Portland, Oregon

Contents

Author: Theddi Wright Chappell

Date: March 2007

Review:

Peter Clark, Keith Goodwin, Chris Corps

OUTLINE

Portland's first Platinum LEED certified office building, largest and first of its type in the LEED rating system. 16-storey, 400,000 square foot multi-use public-private partnership, part of South Waterfront sustainable design revitalizing underutilized inner-city areas.

PROJECT DESCRIPTION

River Campus Building One is Portland's first Platinum LEED certified office building and the largest and first of its type in the LEED rating system. The building's completion marks the culmination of a successful public-private partnership between the City of Portland and its largest employer, Oregon Health and Science University (OHSU). Building One is part of Portland's South Waterfront, a re-development guided by state-of-the-art sustainable design principals and a commitment to revitalizing underutilized inner-city areas.

Building One, The Center for Health and Healing, is a 16-story, 400,000 square foot medical office, treatment, and educational facility that houses physician practices, outpatient surgery, a wellness center, research labs and classroom space. Eight upper floors are dedicated to physicians' offices; three to the March Wellness Center; four to research and educational facilities. The ground floor has a café, optical shop and day spa.

RATIONALE/BUSINESS CASE

Because the development is part of a public-private partnership, traditional business case metrics were not required. Rather, the project goal for Building One was to create a holistic medical and teaching facility using the highest possible level of sustainable design and construction principles. The design team's early focus on integration not only allowed optimal utilization of space and building systems, but also

facilitated projections of unprecedented cost savings. Systems modeling and performance projections indicate energy savings should be 61% greater than both Oregon code and the LEED version 2.1 ASHRAE standard, and water consumption will be 56% less than a conventional building.

KEY GREEN FEATURES

As noted, the design and development goal for The Center for Health and Healing was to achieve maximum design and efficiency in a facility that provides a healthy and productive work atmosphere with minimum environmental impact.

ENVIRONMENTAL

The fact that the development team was able to incorporate numerous innovations on budget while achieving such high medical facility/ lab standards (much higher than conventional office building standards) is a notable accomplishment. There are a number of green features in the building that deserve mention:

Figure 1

- 100% onsite water re-use system
- 10% net reduction in budgeted HVAC and electrical capital cost ($3 million savings)
- Natural ventilation in stairwells
- Radiant heating and cooling with thermal energy storage
- Displacement ventilation in exam rooms
- 300 kW output from 5 micro-turbines
- Onsite sewage treatment, with treated effluent used for toilet flushing and irrigation
- 60 kW solar photovoltaics integrated with south facing window overhangs
- Measurement and verification system for analyzing future energy use
- Site-built solar thermal system for water heating

SITE/LOCATION

- The project is located on a reclaimed brownfield site. It is served by streetcar, aerial tram, and bus lines. It is also well served by commuter bike routes and greenway trails. This project

represents a collaborative effort on the parts of the developer, the owner and the city to accomplish density, green building, and employment goals within Portland's central city.

- The south facing wall of Building One not only has sunshades, but also has PV technology built into the shades so they are generating energy while cooling the building.

MATERIALS & RESOURCES

- 50% FSC certified lumber
- Over 95% of construction waste was diverted from the landfill.

WATER EFFICIENCY

- Water plays a big role in the green features of this building. This project addressed more than just the conventional uses of water and how to minimize usage; it assessed the cooling properties of water, the embodied energy of water, and its capacity to serve as an air displacement mechanism.
- The ground water rainwater reclamation system is used for irrigation, in plumbing fixtures, for the cooling tower and for cooling slabs in the building. It supplies water to the green roof which also cools the building.
- Potable water demand was reduced by 56%.
- The rainwater groundwater system performs six different functions:
  - Irrigation
  - Water re-use at plumbing fixtures
  - Cooling tower make-up water
  - Cooling water for the micro-turbines
  - Cooling the radiant slabs in the building
  - Supplying water to the green roof
- A 20,000 square foot green roof manages storm water, rainwater harvesting and temperature moderation.
- HCFC-free chillers reduce the impact of energy use on the ozone layer.

Figure 2

ENERGY & ATMOSPHERE

- Energy efficiency is projected to exceed Oregon energy code and ASHRAE requirements by 61%.

- The south facing sunshades are also photovoltaic panels, thus integrating two important energy producing and cooling functions in one structure.
- The central utility plant was budgeted separately from the project but is an integral part of both Building One and the entire South Waterfront District. The developer funded the utility plant which currently provides electricity and thermal energy for the OHSU building and will eventually serve other planned buildings in the district. Locating the utility proximate to the end users saves significant amounts of energy typically lost in the energy transmission process.
- Occupancy sensors act as both lighting and HVAC system controls.
- The building mass utilizes the concrete structural components as energy storage systems, helping to moderate building temperature swings naturally and keep the cost of energy capture low.
- The egress lighting sweep combines both building security alarm and egress lighting functions.
- Another integrated feature is the recovery of waste heat from the therapy pool that is used for pre-heating the building's hot water system.

INDOOR AIR QUALITY

- This is a 400,000 square foot medical building that is naturally ventilated.
- The atrium smoke control system is integrated with the garage exhaust system.
- Displacement ventilation is used in exam rooms for patient comfort.

Importance of Green in Attracting Tenants. The level of acceptance of Building One by the medical and teaching staffs and other tenants is currently unknown. This will most likely be determined over time and by such considerations as whether or not the development meets both performance projections and tenant expectations.

Non-Green Comparables. As the only LEED Platinum facility of its kind, there are currently no other medical facilities that are known to be direct comparables for Building One. As the remainder of the OHSU campus and South Waterfront is developed, other facilities may be developed that may be compared to this one at some level.

Since the facility has not been in operation a sufficient amount of time to complete a post occupancy evaluation, it is too soon to assess any competitive advantage (or disadvantage) that the building's green features may create.

Other Impacts on the Environment. The Willamette River is home to endangered steelhead trout and

Figure 3

chinook salmon. As such, development along the Willamette has to undergo National Marine and Fisheries Services review to ensure that proper precautions are made to protect the endangered species.

The OHSU project's ability to divert storm water run off is not only good for the project (smaller impact fees and repurposing the water for other systems), but also very good for the surrounding river environment. The innovations achieved help ensure that the river will continue to be a safe and enjoyable amenity into the future.

SOCIAL

The reputation of the project team members (Gerding Edlen, GBD, Interface Engineering and OHSU) has been enhanced tremendously by the success of this project. This is the first office building in the new South Waterfront District. The District is an urban renewal area in which the city has invested millions of dollars of tax increment financing for the purposes of: reclaiming the south waterfront; creating a sustainable community in the central city center, and elevating the profile of OHSU as a teaching and research university.

LARGER SCALE LOCAL/REGIONAL EFFECTS

The fact that Building One has achieved LEED Platinum certification has garnered significant press and public recognition for the level of sustainable features and design incorporated into this high profile building.

Since the building only recently opened, its performance is yet unproven; however, we understand great care is being taken to monitor systems performance and gauge tenant, patient and medical staff's comfort and level of satisfaction with the facility. This information should provide much-needed empirical data that can be more easily quantified and assimilated into valuations than the anecdotal information that is currently available.

Should the building meet or exceed performance projections (and the level of commissioning completed suggests it should), it could well serve as a catalyst for the development of additional facilities with ambitious sustainability goals. If the building does not perform as anticipated, or there are tenant issues with the green features, this could negatively impact the "case for green". Despite Portland's commitment to sustainability, the high profile nature of this building uniquely positions it to influence wider reaching investment decisions – either positively or negatively.

ABSENTEEISM, HEALTH ISSUES AND PRODUCTIVITY LEVELS

The aspects of health and green building are at the forefront of this project. Initially, the green building features were considered a potential detractor to the main business of providing state-of-the-art medical labs and facilities. Medical personnel questioned whether or not the sustainable products and design would in any way compromise the sterile environment or interfere with precise temperature

requirements. Questions arose as to whether or not the LEED standard would be strict enough for a medical facility. Nearly 50% of Building One is dedicated to medical practices; an additional 12% is reserved for outpatient services. Maintaining optimal air quality in both spaces is a vital health objective for the project.

Now that the facility is completed, doctors, the developer and designers all acknowledge Building One to be "high performing" as both a green/sustainable building and a health/medical facility. As with the analyses of its various systems, tenant satisfaction and retention levels over time will reflect the development's success from both an investment and environmental perspective.

ECONOMIC

Total Mechanical, Electrical and Plumbing (MEP) Systems Capital Cost Savings

Eliminating return air ducts in favor of return air plenums on nine floors	$1,160,000
Pre-cool building mass overnight, reduced HVAC system size	$400,000
Reduced size of central air handling units with fan-wall technology	$210,000
Bid controls at tenant improvement stage (vs. core + shell) for more competitive bids	$200,000
Interior atrium smoke control combined with garage exhaust	$180,000
Variable flow primary chiller vs. primary-secondary loop system	$175,000
Reduced area of telecom rooms based on needs analysis	$125,000
Other measures	$750,000
Oregon Business Energy Tax Credit (DCF payment at LEED Platinum)	$801,000
Other incentives (Energy Trust, BETC, GIF)	$465,000
Grand total MEP Initial Cost Savings (15 percent of original MEP budget)	$4.5 million

Since Building One is part of a public-private partnership, there was no mandate for financial feasibility from a typical market value perspective. However, an early focus on systems integration and effective conservation of natural resources resulted in high performance systems and design innovations that ended up costing less than a building of conventional design and construction.

An itemized break out of project costs was not available; however, overall project development costs were quoted as $145.4 million. Some of the specific cost savings measures and anticipated savings from systems and design efficiencies are listed below:

ATRIUM SMOKE CONTROL

- Timed-egress analysis instead of conventional smoke control in the two-floor balcony saved close to $200,000.

ENERGY EFFICIENT MEASURES

- Commissioned features are expected to reduce energy consumption by 60%.
- Estimated yearly savings in operating costs from energy efficiency is $700,000.

According to Andy Frichtl, Principal, Interface Engineering, the project came in 15% below the original $30M budget forecasts for MEP systems based on a conventional design.

Despite the foregoing, cost benefit analyses for some of the individual components vary. The costs versus the savings generated by the rainwater conservation system are shown below:

A present value analysis of incorporating the system doesn't necessarily support the financial feasibility of investing in this component. However, with the ultimate goal of the facility being minimal environmental impact, a potable water resource savings of 64% outweighed financial considerations.

At some point, the valuation community may be asked to estimate what the "environmental value" of conserving this resource actually is.

INCENTIVES/SAVINGS

There were a variety of financial incentives, offsets and savings that accrued to the development because of design efficiencies and innovations. Some of the more significant ones are listed below:

- Since the bioreactor would preclude disposing of waste water, the client was able to negotiate applying the Systems Development Charges (SDCs) to offset the capital costs of the system.
- Incentives from the Energy Trust of Oregon and the Oregon Business Energy Tax Credits for energy efficiency and PV installations will be as much as $1.3 million.
- The 30% reduction in HVAC system costs paid for upgrades such as the integrated sunshades/ PV panels. Overall MEP capital cost reductions resulted in $3.5 million net capital cost savings that was applied toward architectural upgrades and integrated systems.

FINDINGS/POST-OCCUPANCY EVALUATION

Since Building One opened so recently, there has not been sufficient data collected for a thorough post occupancy evaluation. It is our understanding, however, that the Center will track absenteeism and productivity based on existing policies and practices and will transfer data to compare with the new facility.

In addition, the performance of MEP systems and green features will be monitored to assess whether or not the building meets performance goals and how well the building operates as a functioning medical facility.

VALUATION ASPECTS

One of the main areas of innovation in this development was the early incorporation of systems integration, particularly related to the MEP systems. As noted previously, this resulted in significant first-cost savings, as well as projections of continued efficiencies and additional savings over time.

A potentially valuable outcome of design innovation could be the space savings realized. The design concept of "right-sizing" systems can result in increased building area and possibly more rentable area for the building. According to Andy Frichtl of Interface Engineering, this is one of the currently unrecognized and underutilized benefits of integrated systems design.

Based on his own calculations, Mr. Frichtl estimated that mechanical room reductions on the top floor of Building One added $200,000 worth of rentable area. Whether or not his evaluation is accurate, an increase in the rentable area of a building is a quantifiable – and currently unacknowledged – potential benefit of systems integration. This is a concept that valuers should be aware of and investigate in similar situations.

There is also a belief that maintenance costs for "right-sized", integrated systems should be less. Sufficient data needs to be gathered to either support or dismiss this possibility. In addition, the concept of life cycle cost assessment needs to be considered in evaluating the various systems and components. Any disparities in the life expectancy of various components versus investment horizons will need to be reconciled.

In addition, will better integration and selection of green components result in extended life expectances – or not? Mr. Frichtl reported that advances in MEP systems over the past few years have decreased problems and lessened the risk associated with unproven systems. It will be the valuer's responsibility to gather enough available data upon which to make a plausible case for either increased or decreased risk associated with these types of innovations.

INTERVIEW

Mr. Frichtl is a Principal of Interface Engineering, the group that served as the project's design and commissioning team. Interface, a Portland-based engineering firm, has offices in Oregon, Washington and California. The Interface team worked closely with developer, Gerding Edlen Development, GBD Architects, KPFF Structural Engineers and Hoffman Construction to not only meet initial project goals, but also exceed them.

Interface's best practices approach for the Health & Healing Center, as well as other development projects in which they are involved, focuses on integration. By successfully integrating systems and space, a project can achieve both maximum performance and optimal space utilization. Innovations in radiant heating and cooling systems and displacement minimize the building areas that are not rentable, effectively creating additional space for revenue generation.

Today, more than 70% of Interface's workload is related to sustainable developments. Mr. Frichtl noted the growing demand by private sector developers for sustainable building expertise is increasingly motivated by tenant requirements. In those instances where government tenants are involved (as in the Potomac Yard development), a minimum standard of LEED Silver certification is required.

His discussions with developers and other market participants on the west coast indicate that there is growing market perception that incorporation of sustainable principles and practices is directly related to enhanced marketability and increased tenant attraction and retention. As in the case of the OHSU project, the idea that occupant/tenant comfort enhances productivity is basically a given in these markets.