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# Integrated Design Process

In June 2004, Smith Carter Architects and Engineers Incorporated opened the doors to their innovative and environmentally advanced corporate headquarters. Situated on a five-acre, pie-shaped lot in Winnipeg's south end, the 50,000 square foot building was an opportunity for Smith Carter to tangibly demonstrate how the built environment can be used to increase communication, enhance productivity, improve employee satisfaction, and raise the profile of the company. The building has received critical acclaim, winning a Governor General's Medal for Architecture in 2006 and achieving LEED® Platinum Certification in May 2009.

Designed as an active 'beta site' or hands on laboratory, SC3 has since provided the interdisciplinary team of architects, engineers, landscape architects and interior designers an opportunity to test materials, study data and interpret results of sustainable building practices for internal use as well as application to a client's project.

The last few years have witnessed key shifts in public attitudes to ecology and green building practices. Smith Carter has acknowledged that sustainable design is a professional responsibility necessary to protect the health of occupants, and, in response, have pioneered design solutions that stem from imbedding environmental awareness as an integral part of the corporate culture. The integrated design process (IDP) is fundamental to this. Smith Carter's IDP methodology seeks to eliminate barriers between disciplines by requiring them to work together collaboratively with the client's representatives early in the project, striving to achieve design that optimizes systems, operations and building use within a holistic solution.

## THE TRADITIONAL DESIGN PROCESS

The traditional design process that most client groups are familiar with has a mainly linear structure due to the successive contributions of the members of the design team. With this approach, there is a limited possibility of building optimization early in the process, and optimization in the later stages of the design is often troublesome or even impossible. For example, little advantage may be taken of passive solar potential; there may be excessive exposure to cold prevailing winds during the winter, and poor daylighting and discomfort for the occupants. Since the conventional design process usually does not involve computer simulations of predicted energy



The Integrated Design Process is a collaborative design methodology that leverages the interactions of all disciplines and the client stakeholders, allowing more informed decisions. These informed decisions ultimately translate into optimized, balanced, and sustainable solutions.



performance, the resulting poor performance and high operating costs will most often come as a surprise to the owners, operators and users. The underlying cause, for example, is that the introduction of high-performance mechanical systems late in the design process cannot overcome the handicaps imposed by initial incompatible or otherwise uninformed design.

Traditional design approaches often manifest a confrontational process where contractual hierarchies between the prime consultant and the sub-consultants reinforce the differences, rather than the similarities, between the disciplines. Without an IDP approach, significant opportunities for fundamental systems integration, optimization and coordination are limited. As a result, traditional design methodology, and often the resulting project, is compromised with conflict and poor integration.

One of the keys to the success of the Integrated Design Process is the meaningful involvement of a broad representation of stakeholders at critical points throughout the design. It is through the involvement of the user groups and specialty consultants that a deeper insight into functional requirements is established and buy-in for the final solution is achieved. Involving stakeholders is done through a series of working sessions called *Design Charettes* that are lead by a trained facilitator. The development of appropriate sustainable design principles are integral to Smith Carter's charette process, and early in the project, strategies to achieve LEED® certification are evaluated in relationship to the project objectives. Complementing this early analysis is typically a baseline energy model that is used to test these preliminary sustainable strategies and further understand performance benefits (i.e. operating savings, annual fuel consumption, etc.).



Meaningful collaboration between all disciplines is absolutely critical to achieve such a high level of sustainability.

The SC3 LEED® Platinum building is the embodiment of the integrated design concept, addressing the sometimes conflicting needs of building systems, energy efficiency, functional requirements and user comfort in the design right from the start. To achieve truly innovative design solutions requires a better process. Without an integrated approach, it is safe to say that the design team would not have arrived at the same solution, and that SC3 would not have succeeded to the degree it has.

Within the SC3 design, certain design strategies were pursued that required the collaborative effort of multiple disciplines working ensemble. These include such features as:

- an access flooring system throughout the first floor that provides multiple benefits and serves multiple functions. It facilitates ventilation air delivery as well as IT and power distribution in a flexible and easily reconfigurable system;
- interior wall finishes of stainless steel and glass. These materials are finished surfaces

upon assembly, requiring no further application of paints or coatings which has a beneficial effect on indoor air quality and eases the burden on the mechanical system, and concomitantly, reduces the electrical power draw;

- an open office plan workspace configuration that eliminates interior partitions, saves on materials, reduces the mechanical and electrical complexity and load, and facilitates collaboration business transformation;
- outdoor deck surfaces of unfinished recycled materials with reflective surfaces, which assists in reducing the electrical load by reflecting natural light into the building, especially in the winter months when solar gain can also significantly reduce the heating load;
- a passive ventilation system that relies on operable windows and roof monitors to move air through the building in the summer months, allowing increased user comfort and controllability of the workspace.

These strategies, and many more besides, illustrate the gains made when each of the design disciplines is engaged to work collaboratively from the beginning of a project.

A LEED® Canada-NC Platinum building like SC3 is the very embodiment of the IDP process. Meaningful collaboration between all disciplines is absolutely critical to achieve such a high level of sustainability and energy reduction. Because of the high degree of teamwork that took place during the design of SC3, Smith Carter now has the opportunity to use this building as the basis not only for its further business growth, but can also look to the future confident that we are inhabiting a healthy and energy efficient workplace that will motivate staff and inspire clients for decades to come.