

Green Design and Universal Design: Convergences

BY BOB TOPPING, B.ARCH., OAA, MRAIC AND THEA KURDI, DIP. ARCH-TECH

Building owners, developers and architects are increasingly being asked to enhance the accessibility of their projects, in addition to the ever-lengthening list of other project requirements that vie for available space and funds. *Wouldn't it be nice if accessibility features were easier and less expensive to incorporate into your projects?* At first glance, green design and universal design appear to be completely separate concepts with no obvious relationship. In this article we suggest that they are not so different after all! In fact, the more we study the requirements for sustainable design, the more convergences and overlaps we see with universal accessibility. This convergence of differing design philosophies offers many opportunities for architects and their clients to add value to their sustainable projects, resulting in buildings that are more welcoming and usable for everyone.

Today's marketplace is embracing green design in a big way. Not so long ago, creating a 'green' building was considered to be a fringe, lofty, 'tree-hugger' goal. Today, green design is a mainstream part of the building industry with obvious benefits. Sustainability is now viewed as an integral part of most projects, and a mandatory design requirement for many corporate and government clients.

The concept of universal design is still maturing within the design and construction industry. Knowledge of the principles and practical

application of universal design continues to evolve among architects and their clients. Progressive designers are realizing the benefits of inclusive design strategies, particularly as changing demographics influence the age and functional profile of building users. The consequences of our aging population are undisputed—more and more people with functional limitations will be using our buildings—most of whom would never consider themselves to be 'disabled.' Universal design addresses this reality, recognizing that such functional diversity exists throughout the entire population—it's not just about people with 'disabilities!'

Green design is about making better choices for the planet, using fewer resources, less energy, and ensuring indoor environmental quality.

Universal design is about making better, more inclusive choices that recognize the diversity of human abilities across the entire population. It carefully considers the design requirements of building users of various ages, sizes, sensory abilities, language skills, etc. In our work as accessibility consultants, over the last 20 years, Designable Environments has noticed that many of the systems and elements incorporated into projects to support sustainability goals also directly affect the accessibility and usability of the building—either positively or negatively. By adopting a particular sustainability strategy, or by choosing a specific green product, you can

www.istockphoto.com/stockshares



Green Roof.

What's in it for you?

Approximately 4.4 million people in Canada have disabilities, representing 14.3% of Canada's population.

Approximately 1.85 million people in Ontario have disabilities, representing 15.5% of Ontario's population. That's one person with a disability for every seven Ontarians. This is expected to change over the next seven years to one person with a disability for every five Ontarians—20 per cent of the population! According to Statistics Canada's Participation and Activities Limitation Survey (PALS) 2006, nearly 40 per cent of people over 65 years of age have a disability, and a recent study predicts that seniors (65+) could outnumber children under 15 within the next five years (Statistics Canada, CBC News, May 26, 2010).

An RBC study estimated that *presently Canadians with disabilities account for \$25 billion a year in consumer spending*. The study also found that every person with a disability may influence the spending decisions of another 12 to 15 people, those who are colleagues, family members, business owners and other service providers. (Source: Statistics Canada, Health and Limitations Survey & Survey of Labour and Income Dynamics, Reported in Tapping the Talents of People with Disabilities, R. Wright, The Conference Board of Canada, 2001, J. McCallum & D. Holt, "Outlook for people with disabilities...Cautious optimism on a mounting 21st century social challenge", Current Analysis, Royal Bank of Canada, April 2000).

Most organizations would jump at the chance to reach 15 to 20 per cent of the marketplace, not to mention a cut of the \$25 billion spent. What about your company? What about your own staff? What would it cost for your company to lose your most senior staff due to a lack of accessibility?

make your project more accessible and inclusive.

EXAMPLES OF CONVERGENCE

The following are just a few examples of the many convergences between green design objectives and the principles of universal design.

Green design encourages the redevelopment of brownfield sites, the reuse of existing buildings and urban intensification strategies to locate people close to amenities and public transit services. Such planning strategies result in more compact communities where people can walk to work, school, shopping and recreation activities. More compact communities are also more accessible communities because residents do not have to walk or wheel such long distances. Seniors with stamina limitations, younger children, people who use mobility aids, and persons carrying groceries or other objects all benefit from shorter travel distances to amenities and public transit. Universal accessibility is also enhanced through creative planning and grading strategies, making the urban environment simple and intuitive to use with minimal effort.

Creating a public-use green roof is a great green design decision for many reasons, including improving the air quality around a building; replacing some of the habitat lost to plants and animals by the footprint of the building; reducing the rain water run-off; and conserving energy by significantly reducing the summer heat build-up on the roof, thereby reducing the air conditioning needs. It can also be a great universal design choice if amenity features are accessible to everyone. Green roofs allow people to get outside in a controlled environment without having to travel too far. Raised beds bring the flowers closer to seated and shorter people to smell and touch. They also provide a deeper soil base for larger plants and are easier to maintain because they reduce back strain caused by bending.

Maximizing access to natural daylight can contribute to a successful sustainable design by reducing the amount of artificial lighting. Appropriately-designed windows are also a great accessible choice where lower window sills are



Touchless washroom.



Compact community design.



Cork flooring.

provided to allow seated and shorter people a view. Operable windows also contribute to the natural ventilation of a building by reducing the amount of energy required for air conditioning. It's also a great accessible choice, provided the window hardware is low enough and easily operable—particularly for those who may spend so much of their lives indoors. Everyone benefits from the improved air quality.

A touchless washroom can contribute to sustainability where the lighting, faucets, urinals and toilets are automated. This controls both the amount of water and energy used as the temperature of the water is

preset. It's also a great accessible choice because persons with reduced strength or manual dexterity can easily use the fixtures and activate the controls. A touchless washroom benefits everyone, including those with immunity deficiencies, through reducing the risk of infection by minimizing shared touching surfaces.

Cork flooring that's sealed with a low or no-VOC, low gloss finish is another great green choice. It's a natural material produced from a fast growing source that can be made from waste product. Cork does not off-gas which preserves indoor air quality. It's also a great accessible choice because it's a low friction surface that's easy

to walk on or roll wheels across. Cork is more cushioned than hardwood surfaces, making it safer and easier on knees and other joints. Unlike other hardwood or other hard surfaces, cork has acoustic absorbing qualities which can be used to enhance the usability of a space for persons who are hard-of-hearing, by reducing reverberation and background noise. Being low or no-VOC provides great air quality for everyone initially, but especially for people with environmental sensitivities.

Automatic sensing lighting is another green design choice. It reduces the energy needs by keeping the lights on only when there is not enough natural daylight or when a person enters the room. By removing the need for users to see, reach and use a switch, an excellent universal solution is also achieved. Lights can be activated whether a user is standing or seated,

if a person has low vision or reduced dexterity, or by someone who cannot use their hands because they are carrying something.

CONCLUSIONS

These are only a few of many examples of the overlap between sustainability and accessibility. Many of the connections are simple and obvious; accessibility can be enhanced by simply making different product and material choices. Other connections are more complex, challenging architects to use all of their design skills to integrate the principles of universal design into their urban designs and master plans.

Most architects and their clients are well into the journey of transforming their design approach to integrate green design strategies into their projects. What we have begun to explore here, and most have yet

to realize, is how many opportunities these same choices provide for improving the accessibility of your projects.

Bob Topping, B.Arch., OAA, MRAIC is President of Designable Environments Inc. Thea Kurdi, Dip. Arch-Tech is an accessibility consultant with Designable Environments Inc.

ADDITIONAL RESOURCES

- ¹. Center for Universal Design, College of Design, North Carolina State University - <http://www.ncsu.edu/www/ncsu/design/sod5/cud/>
- ². "Why Accessibility Is Good For Your Business" - <http://www.accessibilitynews.ca/cwdo/resources/resources.php?resources=78>
- ³. "Why Accessibility Matters" - http://www.mcass.gov.on.ca/en/mcass/publications/accessibility/charles_beer/intro_why_accessibility.aspx