

## **C6 - From the City to the Forest - Urban Climates & Ecological Landscapes**

**Presentation # 1 title:** Ecological Strategies for Mitigating Climate Change in the Urban Context

**Presenter:**

Randall Sharp - Sharp & Diamond Landscape Architecture Inc

**Abstract**

The objective of green infrastructure is to mitigate the effects of climate change, to conserve energy, protect water as a resource, and provide local food production. Effective green infrastructure and sustainable site development in British Columbia result in an urban landscape that is made up of a visible and ecologically functional framework of streets, green corridors, high performance buildings, green roofs, and vegetated walls. The building and landscape function together in harmony to replicate or restore natural systems and habitat. Evaporative surfaces moderate the microclimate and insulate the structure through shade, evaporative transpiration, thermal mass, and natural ventilation. These initiatives add value to both properties and the public realm. People are healthier, they connect with nature <biophilia>, and they are productive in their work environments. Development of buildings, sites, and municipal streets should, as a prerequisite, require stormwater source controls such as permeable surfaces, rain gardens, and green roofs as advocated by Metro Vancouver and the BC Water Balance Model. Rain is captured when it hits rooftops, rain gardens, pervious parking lots, or high canopy street trees. Rainwater and treated greywater is reused for food production, irrigating the landscape, and flushing toilets. With continuous canopy streets, green roofs and vegetated walls, the adjacent structures are shaded during the warmer months, the building occupants are more comfortable, the neighbourhood is quieter, and the whole city is cooler. The urban landscape creates a climate which influences air quality, energy consumption and human comfort. Air flows from areas of high pressure, such as vegetated open spaces, to areas of low pressure and high-density impermeable areas. Planted areas can be 10–15 degrees F cooler than built-up areas due to a combination of evaporation, reflection, shading, and storage of cool air. Woodlands and reclaimed industrial lands, which are located at the urban fringe, are connected by green corridors to draw cool fresh air and prevailing winds into city centers. In Stuttgart, Germany, a system of open-space corridors channel cooler air down interconnected park areas on hillsides, linking rural areas with built-up areas. In East Coast cities, shaded parks dispersed around the city are connected to air flow channels in the form of wide boulevards and greenways, providing cooling for local neighborhoods. In Vancouver, green streets are proposed to accommodate an infrastructure of large canopy trees interconnected by permeable surfaces over structural soil trenches. Living walls are connected to rainwater or gray water systems to provide additional cooling, air filtration, thermal mass and acoustical control. Transparent green facades integrated with glazing partially shade buildings in the summer while allowing daylighting and winter sun into interior spaces. Eco-roofs replace the lost green space lost by replicating local ecosystems and providing wildlife habitat. Green walls and big trees connect rooftop gardens to the ground. Several case studies will be presented including an eco-roof, a green façade and a living wall, designed by Sharp & Diamond Landscape Architecture Inc. The extensive green roof at the Burnside Gorge Community Centre in Victoria is a partial restoration of the endangered Garry Oak ecosystem. To hide an unattractive parking structure at the River Rock Resort in Richmond with a minimal budget, the firm used several species of fast growing climbers supported on screens for the different wall orientations. The Vancouver Aquarium in Stanley Park features innovative features including a living wall integrated with the building envelope. The living wall is irrigated by rainwater collected from the roof to support ferns, strawberries, wildflowers and groundcovers, all plants native to the coastal, temperate rain forest.

**Speaker Biography**

Randy Sharp, BCSLA, FCSLA, ASLA, LEED A.P., is a graduate of the University of Oregon and volunteers with the BCIT Centre for Architectural Ecology. In 1980, Mr. Sharp established a practice in Vancouver that has grown into Sharp & Diamond Landscape Architecture Inc., committed to ecological based solutions and designs that blend natural systems and architecture. His firm has designed and coordinated the installation of over 100 green roofs in British Columbia, as well as planning for high-density urban communities. Mr. Sharp developed the course Green Walls 101, an introduction to the

design and installation of green facades, living walls and vertical gardens, which he teaches in cities across North America for Green Roofs for Healthy Cities. Randy was the first landscape architect in Canada to become a LEED Accredited Professional. He is also the author of Ecological Site Development, Regional Strategies for Design, Construction and Maintenance for Metro Vancouver, as well as a contributor to Planting Green Roofs and Living Walls as well as numerous international design magazines.

**Presentation # 2 title:** The Developer as a Partner in Change: Defying Popular Myths

**Presenter:**

Larry Diamond - Sharp & Diamond Landscape Architecture Inc

**Abstract**

The development industry has sometimes been portrayed as rapacious and uncaring, complying with environmental requirements or making token efforts to reduce carbon footprints only under duress. While examples of poor development do exist and make for good press, the reality is that substantial changes are occurring in the way land is being developed and that the industry is embracing rather than rejecting environmental reality. In fact, it is finding that there are substantial long-term costs to be saved and that buyers and tenants, commercial, corporate or residential are demanding environmentally responsible products. Newport Village, Dockside Green, Mountain Equipment Co-op, Broadway Tech Centre and Suterbrook are case examples where land development approaches that incorporate public transit, increase useful open space, manage storm water responsibly and respond to micro climate are vital components of the built result rather than after thoughts. By partnering with developers instead of pursuing an adversarial approach, governments and approval agencies as well as the broader community are becoming beneficiaries. Recommendations are presented for engaging the developer as an innovative partner in the environmental equation given the challenging context of escalating costs and the public's increasing concern about climate change. The lull in development owing to the current economy provides an opportunity to re-think the crucial relationship between land developers and government levels.

**2.0 Process** The sites of specific projects are visited and sustainable aspects of each site development are noted. The aspects observed and recorded range from achieving compact development footprint and public transit access to fully sustainable LEED; compliant approaches. Subsequently, interviews are conducted with the following individuals: Sandy Treagis CFO, Mountain Equipment Co-op, Vancouver Fraser Hall, Development Manager, Onni Group, Vancouver Joe Van Belleghem, CEO, Dockside Green, Victoria Eric Martin, Vice President, Bosa Developments, Burnaby John Cordonier, Vice President, Bentall Group, Vancouver Susan Wilkins, R.P. Bio. Potttenger Gaherty, Vancouver was also interviewed as the biological consultant at Suter Brook.

**3.0 Extent of Sustainable Measures: Case Examples** Newport Village: Compact footprint, high density, reduction of sprawl, comfortable and safe pedestrian environment, extensive use of pavers, intensive roof deck gardens, public transit access, new town centre, reduced use of car. Suterbrook: Reduced energy construction choices, stream protection and enhancement, storm water management including sub terrain cisterns and green roofs on office component. Pavers on streets and sidewalks. Public transit access. selective measures pursued rather than totally LEED; compliant. Mountain Equipment Co-op Distribution Centre: Highly sustainable (LEED approach: Bio-swales, permeable paving, light weight structure, high albedo roof, high efficiency heating and cooling and public transit access. Dockside Green: Extensive LEED; approach (LEED#63720; ND Certification), brownfield site redevelopment, storm water management, high efficiency energy handling, sustainable construction material choices, package sewage treatment on site, bio-mass heat generation, pedestrian, cycle and public transit oriented. Broadway Tech Centre: high tech office park on brownfield site, intensive green roof decks, inter-locking pavers, direct access to public transit, pedestrian and bicycle access, reuse of existing warehouse structures, LEED; Gold Standard buildings.

**4.0 Recommendations for Improving Developer /Government Rapport and Better Results**

- Treat developers as an important part of the team. These case examples show that given a choice, land developers will come forth voluntarily with sustainable initiatives.
- Municipalities should invite proponents to put forth their sustainability agendas early in the application process. The list should be specific and outline how these measures will be achieved and which ones are realistic.
- There should be flexibility in sustainable approaches. Encourage tradeoffs that make economic sense, provide optimal benefits for the

public and for the proponent. • Proponents should tailor their measures to the specific site and context with respect to orientation, development form, materials, storm water management, reduction of automobile dependence and response to ESA's. • Municipalities should relax standards for parking thereby reducing private car use (i.e.: 1 stall per unit rather than 2, reduced commercial site parking requirements). • Encourage innovation and reward: there must be an economic incentive for developers to experiment or push the envelope (MEC example). • The environmental agencies should consider variable stream setbacks rather than rigid prescriptive ones, with greater emphasis on public education and specific access points that do not violate stream integrity.

### **Speaker Biography**

Larry Diamond, CSLA, PIBC is an award winning Landscape Architect and registered Planner. Mr. Diamond has been a principal with Sharp & Diamond Landscape Architecture Inc in Vancouver, BC since 1980. He specializes in urban design, land planning, and park development planning. He has been involved in all aspects of the development process and is especially adept at collaborative design. Larry has a passion for transforming our urban environments and has participated in numerous re-development assignments, urban revitalization, and land development projects. Mr. Diamond has been involved in integrated design teams as both a consulting landscape architect, planner, and architect. Larry has lectured at the University of British Columbia, the University of Toronto, University of Guelph, and the University of Waterloo.

**Presentation # 3 title:** Living Forest Communities – An Ecosystem-Based Approach to Forest Land Development

### **Presenters:**

Doug Makaroff - Living Forest Communities  
Jack Basey - The Trust for Sustainable Forestry

### **Abstract**

In light of the recent catastrophic downturn in BC's forest industries and the conflict caused by timber companies trying to sell their forest land for development, Living Forest Communities believes that it has found one model of community development that can assist communities in the large-scale transitions that many of them are facing. Simply put, our model is to acquire land on Vancouver Island and in southwestern BC, and place a restrictive covenant on approximately 85% of the land for sustainable forestry activities and value-added manufacturing. On the remaining approximately 15% of the land, we design European-style hamlets, or clustered communities with a limited number of light-on-the-land building sites for sale as residential homes. The sale of these homes finances the purchase of the land and covers the costs of building the infrastructure necessary for the conservation community. By working with municipal planners and partnering with the Trust for Sustainable Forestry and land trust organizations such as The Land Conservancy of Canada, we are able to help communities ward off suburban sprawl and make the transition from industrial logging practices to ecosystem-based harvesting of timber and non-timber resources. This transition brings economic opportunities to the community in the sustainable forestry sector, in the many industries of value-added manufacturing and in ecotourism and outdoor recreation. Our current project, Elkington Forest, is located just 30 minutes north of Victoria, BC. Featuring three lakes and old-growth Douglas fir stands on 950 acres of second-growth forest, Elkington Forest offers amazing views of Shawnigan Lake, the Saanich Inlet and the Southern Gulf Islands. Doug Makaroff walked the lands of Elkington Forest once a week for almost a year before beginning the design process. Using an extensive ecological baseline assessment, an archaeological overview assessment and a geotechnical analysis, Mr. Makaroff and his team were able to identify the 85% of the land that was most sensitive ecologically and the least sensitive 15% which would accommodate light-on-the-land development. Living Forest Communities will be presenting the Elkington Forest project as a representation of the Living Forest Communities model of land conservation and low-impact development.

### **Speaker Biography**

**Doug Makaroff President, Living Forest Communities** Doug Makaroff has 19 years experience as an urban planner and real estate developer, most of which have focused on applying the principles of Sustainability and New Urbanism to highly marketable real estate projects. From 1991 to the present, he has been the President of an urban planning consulting firm, serving public and private clients on Vancouver Island and the Lower Mainland. During this time, Doug was responsible for a wide variety of planning studies, including the creation of urban tree preservation bylaws, land use bylaws, development permit guidelines and official community plans. This company, Living Forest Planning Consultants Ltd., is now the Development Manager for the Partnership. From 1996 to 2003, he was a partner in the award-winning Shoal Point condominium project in Victoria, B.C. From 2003 to mid-2006, he was the Vice President of Planning and Permitting for the Loreto Bay Company. As the President and CEO, Doug is responsible for the success of the Elkington Forest project. He is committed to establishing this innovative community by utilizing tested and proven economic and environmental principles.

**Jack Basey QC Vice President, Development Services** Jack Basey has a law degree from Queen's University and a Masters of Business Administration from the University of Alberta. Mr. Basey is the former Director of Planning and Development Services for the City of Victoria. In this position, Jack oversaw the review and development of community plans, studies, zoning, land use bylaws, and regulatory bylaws. Jack's experience as a municipal lawyer has gifted him with a passion for smart growth urban land development and sustainability.