

JUNE 2015

# SITELINES

Landscape Architecture in British Columbia



## THE HEALTHY CITY

The Silver Tsunami | Identifying Sources and Mitigating Toxins in the Environment | Big Trees and Soil Volume Standards in Toronto | Ecological Development, Art and Water Management in North Vancouver | New Forms of Seniors Housing and Health Facilities | Epilogue: Meeting At The Neighbourhood Pub

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The purpose of Sitelines is to provide an open forum for the exchange of ideas and information pertaining to the profession of landscape architecture. Individual opinions expressed are those of the writers and not necessarily of those of the BCSLA.

## SURFING THE Silver Tsunami



Randy Sharp  
FCSLA, ASLA, LEED® A.P., G.R.P.



Colorful townhouses in St. Johns, NL, grey residential high-rises and houses in Vancouver.

**I was driving home late at night on Broadway listening to Leonard Cohen and Nick Cave.** For a moment, I didn't know where I was. The grey buildings lining Broadway all looked the same. I missed my turn into the neighbourhood. Was I lost, was it dementia, or was I suffering from Vancouver-blind-ism?

Planners, architects, landscape architects and urbanists from around the world praise 'Vancouverism', residential buildings in the form of point block towers with a podium of townhouses providing 'eyes on the street'. However, grey residential high-rises, bland housing blocks, and beige retirement homes are becoming pervasive across BC.

In a northern climate, colour, diversity, and landmarks are essential for wayfinding, especially for those suffering from dementia or otherwise distracted. Given the availability of electronic gratification, we need activities and destinations to draw us outside to breathe, exercise and meet our neighbours, colleagues and visitors. St. Johns, Newfoundland is famous for its colorful townhouses, civic landmarks and humour. Copenhagen has 17<sup>th</sup> century as well as 21<sup>st</sup> century red, yellow and blue rowhouses along its waterfront. In the normally grey UK, new residential towers feature a wide range of form, materials and bright colours. ▶



Cover Image: Photo by Randy Sharp  
Mural Artists: OS Gemeos

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'Surfing the Silver Tsunami' refers to the extensive resources sourced online aimed to the demographic shift of the ageing baby boomers over the next 10–20 years. The population of seniors in BC is projected to double by 2030. One-third of persons 85 years and older will suffer from dementia. The April, 2015 SITELINES featured articles on engaging youth in a healthy city.

Over the next 27 years "Metro Vancouver's population will again grow by one million people". The Port Metro Vancouver estimates that shipments in and out of the harbour will double in the same period. Automobile, diesel truck and freighter emissions will increase greatly.<sup>1</sup>

Why focus on the Healthy City? The City of Vancouver is developing actions to implement 'A Healthy City for All' strategy.

Vancouver Social Policy and Projects have consulted with stakeholders and the public to develop goals, indicators and targets for 'the health and well-being of people, place and planet.' New policy does not effectively address water management, air quality, noise pollution, urban forestry, alternative transportation, elder education and health strategies.

Articles in this issue explore; solutions from cities such as Toronto, Oakland and Delta and North Vancouver. 'Zoomers' are ageing baby-boomers who want new forms of housing and health care in a resort-like setting coupled with excellent service. We also review other forms of seniors' living in Canada, the US and Denmark such as ageing in place, various types of care facilities, co-housing, and a dementia village that mimics real life activities. The journey

ends in Oregon where residents meet in neighbourhood breweries to discuss place-making and ways to build a healthy city.

I would like to thank the following persons who provided peer review of the articles:

- Maureen Connelly, MAIBC, Director of the Centre for Architectural Ecology
- Alexander Kurnicki, MBCSLA, City of North Vancouver
- Anne Paxton, caregiver and MSc in Global and Population Health at SFU
- Photos and drawings (except those identified) are by Randy Sharp [sl](#)

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# IDENTIFYING SOURCES AND MITIGATING TOXINS in the Environment

**Addressing environmental health and contributors to chronic diseases** have broad implications for society and the built environment. "As stewards of the environment, we are in a unique position to transform the urban landscape. Air quality, temperature, water preservation, sound suppression and daylight are critical to our wellness and ability to maintain healthy and productive lives in dense urban environments."<sup>1</sup>

I was recently diagnosed with a mild form of Parkinson's disease, a progressive disorder of the nervous system that affects movement. I can function normally, go on long treks (in the Himalayas), enjoy life, and continue to work, except that my typing is painfully slow. I am participating in research at the Pacific Parkinson's Centre at UBC, and therefore interested in the

potential cause(s) of Parkinson's and related neurological disorders such as Alzheimer's disease and dementia, and what Landscape Architects can do to mitigate the impact of potential pollutants.

Living on the West Coast, I have followed a Mediterranean diet for 40 years, however, the processed fast foods and TV dinners of my youth in America may have contributed to my condition. My dad was very proud of his perfect suburban lawn. Our first house in Ithaca, New York, made the cover of the 1958 Cornell University extension guide to turf maintenance and the application of chemical fertilizers and herbicides. In the early 60's our family moved to a brand new neighbourhood in the Midwest surrounded by cornfields sprayed with pesticides. The deep winter snowfall and the pungent orange summer air pollution were likely

attributed to the particulate matter and carbon emissions from the nearby steel mills of Chicago, IL and Gary, IN.

"The World Health Organization warns that chronic, non-communicable diseases are rapidly becoming epidemic worldwide. Escalating rates of neurocognitive, metabolic, autoimmune and cardiovascular diseases cannot be ascribed not only to genetics, lifestyle, and nutrition; early life and ongoing exposures, and bioaccumulated toxicants may also cause chronic disease."<sup>2</sup> Persistent Bioaccumulative Toxicants (PBTs) in the environment may cause Alzheimer's, Parkinson's, various neurological disorders and other chronic diseases. PBTs are a class of compounds that have high resistance to degradation from abiotic and biotic factors, high mobility in the environment and high toxicity. ►

Randy Sharp  
FCSLA, ASLA, LEED® A.P., G.R.P.

Metro Vancouver and the Canada Green Building Council identify solvents and materials used in building construction that contribute to air pollution, and construction equipment that emit harmful diesel particulates. Designers and contractors can minimize or eliminate toxins on the construction site by selecting materials, equipment and site logistics during the specification and acquisition stages.<sup>3</sup>

At a neighbourhood planning scale, siting residences, community gardens and schools in proximity to highways, diesel truck routes and industrial corridors should be avoided. “Higher levels of traffic-related air pollution at schools are linked to slower cognitive development in 7- to 10-year-old children in Barcelona. The findings suggest that the developing brain may be vulnerable to traffic-related air pollution well into middle childhood, a conclusion that has implications for the design of air pollution regulations and for the location of new schools. While the authors controlled for socioeconomic factors, the accuracy of these findings may be limited by residual confounding, that is, the children attending schools where traffic-related pollution is high might have shared other

unknown characteristics that affected their cognitive development.”<sup>4</sup>

Pesticides including insecticides, herbicides, and fungicides are formulated to kill, repel, or at least control pests such as insects, weeds, and fungi. “Various present-day pesticides have been linked to cancers, and neurological, endocrine, developmental, reproductive, respiratory, and immunological disorders. Pesticides produced in tissues of genetically modified crops, and also applied in large quantities to exploit crops’ resistance to herbicides, were recently found in women and cord blood.”<sup>5</sup>

Integrated pest management (IPM) can also decrease the prevalence of toxins in our environment. IPM advocates selecting the right plant (or crop) for the right location, and the use of beneficial biological or mechanical controls. In the case of an extreme infestation, IPM recommends using the least-toxic option for landscape maintenance. Time management, as well as an owner’s or property manager’s desire for a manicured landscape, are driving the landscape maintenance industry. Maintenance companies continue to use high emitting, noisy dusty two-cycle leaf blowers and trimmers, chemical fertilizers

and pesticides to save time and reduce labour costs. More education and guidance from the landscape industry is required, and/or strict regulations from local governments and the Province of BC.

Funding and a political commitment to improve the effectiveness of environmental regulations and controls, better public education regarding exposure to toxins, research, environmental justice, and environmental health training for health care professionals and designers is also needed. Health care professionals in government, in public health, in research, and at clinics will only be successful against the onslaught of many chronic, debilitating diseases once environmental contributors are recognized, researched and addressed. Pollution and human exposure to harmful substances can be tracked on many levels, both by monitoring toxicants from large-scale industrial emissions, and by testing air, water, soil, and wildlife. Toxins can also be monitored in food, drinking water and consumer products.

Living green infrastructure is effective at substantially improving air quality in urban street canyons in high-density neighbourhoods. “Street-level concentrations of nitrogen dioxide and particulate



**Below Left:** High emitting, noisy dusty two-cycle leaf blower.

**Below:** Queen Alexandra School at the polluted corner of Broadway and Clark Drive.



matter exceed public health standards in many cities, causing increased mortality and morbidity. Controlling emissions, increasing dispersion, or increasing deposition rates can reduce concentrations, but little attention has been paid to the latter as a pollution control method. Both NO<sub>2</sub> (nitrogen dioxide) and PM (particulate matter) are deposited onto surfaces at rates that vary according to the nature of the surface; deposition rates to vegetation are much higher than those to hard, built surface.” Research shows that the increase in deposition on trees in street canyons can reduce street-level concentrations in those canyons by as much as 40% for NO<sub>2</sub> and 60% for PM.<sup>6</sup>

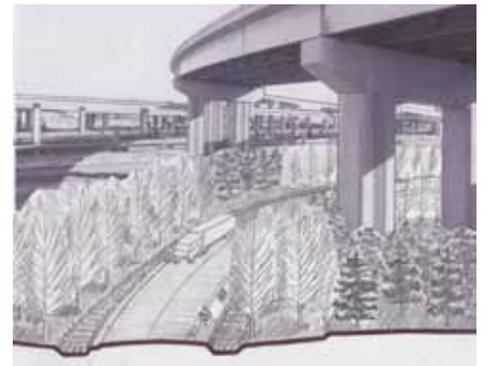
Landscape Architects working with communities, government and industry can mitigate the impacts of air and water pollution by planning and implementing by a wide range of effective design interventions. For example, the Port of Oakland, California with association with ‘Adapt Oakland’, a non-governmental organization, is preparing a plan that includes dense urban forestry at the edge of the port industrial zone and along a corridor of high traffic roads, truck routes and freeways next to the West Oakland neighbourhood.

The estimated potential cancer fatality risk from all diesel particulate matter emission sources, for persons living adjacent to the Port of Oakland, is 1 in 10. The vegetation in the greenbelts proposed by Adapt Oakland acts as a barrier by altering airflow patterns and the pollution plume trajectory. Particulate matter is also captured or deposited on the leaves and bark of the trees and tall hedgerow plants. The greater surface area, and the rougher or stickier the leaf and bark such as pine, cypress, poplar and ash, the higher the deposition rate. “These greenbelts, or vegetated air barriers, mitigate the effect of pollution on residents through inhibiting polluted air movement, filtering and reducing particulate matter, as well as other pollutants and noise. Vegetative barriers are most effective when planted close to the pollution source in heavily polluted areas.”<sup>7</sup>



**Above:** Fast growing poplars in a 12m wide greenbelt between Highways 99 and 10. Image: Google Map.

**Right:** Poplars in a min. 5m wide staggered double row. Conifers very effective capturing particulate matter.



In a similar initiative, Nancy McLean, MBCSLA, at the Corporation of Delta has installed fast growing poplars in a 12 metre wide greenbelt, 1 km in length, along Ladner Trunk Road between Highways 99 and 10. The double and triple rows of trees are planted in Nutrifor growing media comprised of bio-solids from the Annacis Island wastewater treatment plant, blended with sand and decomposed hemfir bark. The fast growing cottonwood trees filter air pollutants and diesel particulates, as well as soak up the stormwater runoff from the adjacent highways. Urban bio-filters utilize aquatic and riparian vegetation and bio-remediation growing media in rain gardens, bio-infiltration swales and wetlands to filter and biologically remove contaminants from urban runoff.

A combination of vegetated air barriers, bio-filters and urban forests, as well as green walls and living roofs comprise viable green infrastructure solutions for air quality and water management. Green walls and hedges can also cover up large expanses of barren grey concrete walls, often prone to graffiti. Refer to the April 2014 issue of SITELINES for articles on green roofs and vertical landscapes including green facades and living walls.

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# BIG TREES *and* Soil Volume Standards *in* Toronto

Randy Sharp, FCSLA, ASLA, LEED® A.P., G.R.P.  
Leda Marritz, ISA-certified arborist, and Michael James



**For as long as there have been cities, there have been urban trees.** For many years, they grew reasonably well in streets, parking lots, and plazas. But in the last 50 years, it's become increasingly apparent that urbanization and engineering demands have left little space for trees. At the same time, we want and need more benefits than ever from our urban forest: cooler, cleaner air and water, safer streets, and less pollution. Cities across North America are starting to come to grips with two facts: not all urban forest canopy is equal, and municipal urban canopy targets will never be realized unless we change how we plant trees.

*Not all Urban Forest Canopy is Equal.*

*“A 76 cm DBH tree provides 70 times the ecological services of an 8 cm DBH tree”<sup>1</sup>*

Trees provide an abundance of benefits, including reducing heat island effect, air and water pollution, and crime. But large trees provide significantly more environmental benefits than small trees.

For example, a healthy 40-year old Hackberry tree in the Midwest is estimated to provide 14 times as much rainwater and pollution interception as a 10-year-old Hackberry (McPherson et al 2006). Communities don't begin to reap significant environmental and social savings from trees until they become large and mature.

Placement is another factor in the value trees provide. Parks and green spaces have lots of mature trees – but they are already much cooler than city centers. To make real headway on the environmental challenges of extremely dense urban environments, we need to plant trees that will grow to maturity in hardscape areas such as sidewalks, parking lots and plazas. Living green infrastructure requires collaboration between experts in landscape architecture, civil engineering and utility logistics, as well as installers of urban tree support systems. The City of Toronto considers ‘trees as infrastructure,’ along with streetlights, utilities and transportation facilities.

## **Increasing Urban Tree Canopy Cover.**

Municipalities understand that to increase the urban canopy cover – and to grow trees that can make meaningful environmental contributions – they will need to create a rooting environment that allows them to grow to a minimum 200 – 300 mm diameter at breast height (DBH).

Research has proven that there is a direct relationship between the volume of uncompacted, health, oxygenated soil and the mature tree size (roughly 2.2 m<sup>3</sup> of soil for every cubic metre, 1 m<sup>2</sup>, of canopy). In dense urban settings where soil is compacted to meet road and highway loading standards, this presents a significant design challenge. Some of the most forward-thinking cities have responded by implementing soil volume standards into their development policies.

## **What is a soil volume standard?**

Soil volume standards can vary from city to city, but are usually development standards that effect new construction by developers,



**Opposite:** Proposed Etobicoke streetscape, <http://www.toronto.ca/legdocs/mmis/2011/ey/bgrd/backgroundfile-42022.pdf>. **Above:** Proposed Etobicoke streetscape exploded view.

and capital projects by municipalities. The Soil Volume standard dictates a minimum volume of soil that must be provided for a tree being planted in the public realm.

Think of the soil volume standard as a shop drawing for trees. Every other element of the development package has a shop drawing that dictates how it is to be built so that it will provide a specific service over a minimum time frame. Why would trees be any different? Soil volume standards recognize that street trees are public assets that appreciate over time, and they need defined soil volumes to reach their design potential and provide the services that municipalities expect of them. This represents a significant shift; from seeing trees are purely ornamental, instead to planning, installing, and maintaining them as we would any other form of municipal infrastructure.

### Which Cities Are Doing This?

The City of Toronto was an early adopter of soil volume standards, and has one of the most ambitious ones we're aware of.<sup>2</sup> The 2007 drought (95 days without rainfall) resulted in the loss of a \$400,000 investment in street trees. In 2010, soil volume standards were included in Toronto's Streetscape Manual. Later, these standards were incorporated into the citywide Green Standard that requires 30 m<sup>3</sup> of soil for an individual tree, or 15 m<sup>3</sup> of soil per tree where the soil volumes are connected, for trees planted in the public realm. In 2014 this was increased to 20 m<sup>3</sup> of soil per tree where the soil is shared in a trench. Adjacent

soil in parks, planters, or front yards can also be counted if the tree roots have access.<sup>3,4</sup>

In 2012, Toronto commissioned the Tree Planting Solutions in Hard Boulevard Surfaces BMP Manual from DTAH (formerly du Toit Allsopp Hillier). This report pulled together learning and experience from all of the different public and private actors to create a best management practices (BMP) document for planting street trees in hardscapes. The Green Standard and the DTAH report work together: the former provides the soil volume standards, and the latter explains how to make this work in dense urban settings. A combination of different soil volume delivery approaches were researched and recommended to the city, including soil trenches and soil cells.<sup>5</sup>

### Other Benefits

There are other benefits to having a soil volume standard.

#### During the design process:

Often a project is already designed before a Landscape Architect or arborist is asked to find places to "jam" in some trees. A soil volume standard shifts this dynamic as the Developer in partnership with the City directs the urban design team to specify the relevant standards / details. Now the tree (and the landscape architect) 'sits at the table' as an equal partner at the very beginning of the design process – along with the utilities, transportation and all of the other requirements for the site. The soil volume for the tree is not only designed in

at the beginning of the process it is also budgeted for at the beginning of the design process.

### Stormwater benefits:

Providing large volumes of soil in the urban streetscape has positive unintended consequences.

Once the developer has paid for the required soil volumes, there is only an incremental cost for some extra pipes and stormwater (STW) modeling services to have these soil volumes do double duty as low impact development (LID) source controls. Street and sidewalk water infiltrate into the soil volumes, where they act as giant underground bioretention facilities. Stormwater engineers are able to meet their LID targets by applying bioretention services for considerably less land area and lower costs than the traditional engineered options such as STW basins and/or underground vaults. In fact, this comprehensive design solution makes the trees and their soil volumes an integral part of the municipal stormwater system.

A 2008 report from the Environmental Protection Agency stated that "Nearly all of the associated problems [of urbanization] result from one underlying cause: loss of the water-retaining and evapotranspiring functions of the soil and vegetation in the urban landscape." Soil volume standards are an important tool for bringing the function of the forest back to the city.

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# Ecological Development, Art and Water Management IN North Vancouver

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**Water dynamic, low-impact ecological development attempts to mimic as much as possible the natural hydrology of the watershed.** Before North Vancouver was developed in the early 1900's, lush forests predominated the lower reaches of the Coast Mountains we see today. Precipitation not caught by the continuous dense canopy old-growth conifers infiltrated the ground and eventually seeped into the coastal rivers and creeks to maintain base flow of 'fossil water' through exfiltration over a period of a few months to several years.

"Today, rain hitting hard surfaces instead flows quickly to the nearest waterway. It picks up contaminants, including oil, transmission fluid, fertilizers, and pesticides, as well as toxic metals such as copper from car brakes, a substance that can be lethal to salmon." The speed and force of the runoff, unnaturally accelerated through underground infrastructure, scours the streams and reduces nutrient supply including aquatic insects essential to the food chain.<sup>1</sup>

Rain gardens, bio-swales, underground swales and flow-through roof deck planters, mimic pre-development natural processes mentioned. They also provide surface storage helping to reduce peak flows from impervious surfaces. The civil engineers indicated that rain gardens offer the best hydrologic performance per square meter of land area. They also provide storage of runoff in absorptive soils and underground reservoirs, allowing where possible, infiltration into the subsoil, and evapotranspiration from the soil and vegetation. As an aggregate, these processes mimic natural hydrologic processes.<sup>2</sup>

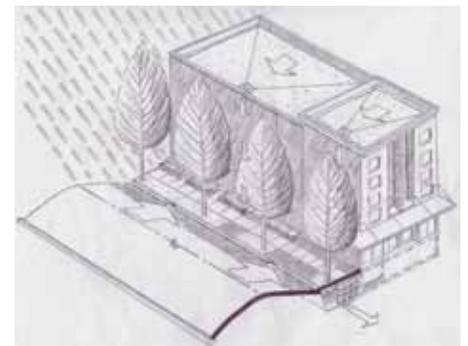
On urban, mixed-use residential zones in the Lonsdale and Marine Drive corridors, the City of North Vancouver has instituted

new stormwater (STW) regulations that expand the concept of 'site.' The traditional development approach of 'hard pipes' rainwater off buildings and conveying it as quickly as possible to the downstream receiving water body, thereby impacting the stream and already heavily impacted but recovering salmon resources. The new approach to STW captures all runoff starting at the centerline of the road, utilizing the pedestrian boulevard, and harvests the rainwater on the building rooftop.

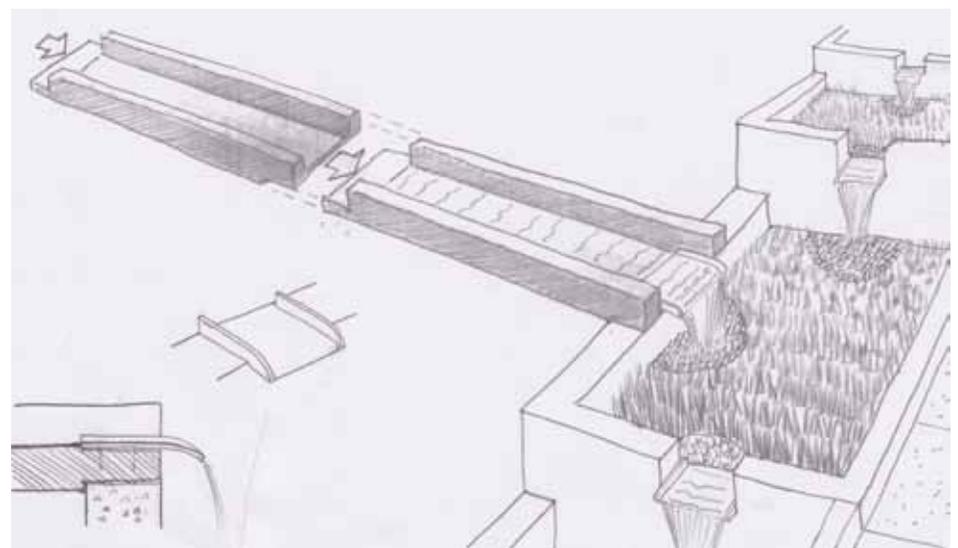
Remix, a new four story condominium development by Adera featuring sixty (60) apartments over ground floor retail, is located on West 14th Street between Bewicke Avenue and Mosquito Creek. Without treatment, urban runoff would normally carry harmful pollutants directly into the Creek. Instead, the City requires that the boulevard between the curb and the sidewalk serve as a bio-retention swale or rain garden to slow down and treat STW runoff prior to entering the Creek. Vector Engineering and Jonathan Losee, MBCSLA,

specified modular structural soil cells that provide void space for soil in the tree rooting zone, and biological treatment of the STW. The structure of the soil cells allows pedestrian foot traffic on the surface, tree rooting without heaving of concrete panels and prevents soil settling, with all the benefits of a bio-retention swale. Soil cells were installed in a two-layer system providing 16m<sup>3</sup> (570 ft<sup>3</sup>) soil volume per tree in a continuous trench.

At Remix, STW is collected from the street in a catch basin and then runs into the soil cells and distributed to ensure that it reaches the entire soil column, where runoff is treated and the flow rate is reduced. As the water moves through the soil column,



**Right:** Street and site stormwater treated in an underground swale / tree trench. **Below:** Water channels and flow through rain gardens.





nitrogen, phosphorous, and other pollutants are removed by microbial activity around the tree roots. A drain line at the bottom of the soil cells takes the excess water to the downstream catch basin, which then drains into the Mosquito Creek. Peak flows and thus the scouring effects of storms are no longer an issue from this development. The site has a total catchment area of 350 m<sup>2</sup> (3,770 ft<sup>2</sup>). “This innovative technique of on-site STW management adds to the high standard of energy conservation that Remix promises to their residents through other features such as energy efficient windows and appliances and other in-unit green design amenities.”<sup>3</sup>

Mountain Equipment Co-op’s redevelopment of a formerly industrial site incorporated a STW facility as part of the store’s entry landscape. The STW system for the entire store connected to the nearby park which is part of the lower Lynn Creek watershed in North Vancouver. Mountain Equipment Co-op (MEC) asked the design team how

can visible sustainable features, landscaping and retail revenue can be maximized, while reducing development and operational costs? At this new MEC store, these environmental and financial objectives are in harmony, and have produced outstanding living architectural metrics and exceptional returns on investment (ROI). For the leading outdoor recreational retailer in Canada, it is essential to combine a positive experience of shopping for outdoor ‘gear’ with the protection of the environment, namely the adjacent water-courses of Lynn Creek and Burrard Inlet.

The relationship between the store and the local park is celebrated by an indigenous-inspired canoe sculpture. The North Vancouver Arts Office in partnership with MEC and the City, commissioned ‘Swale’ by artists Veronica and Edwin Dam de Nogales. Also because of its prominence and symbolism, visible water management became a key driver for site development and living architecture metrics:

**Clockwise from Bottom Left:** Rain gardens in front of the MEC Store in North Vancouver (both top and bottom photos). Swale sculpture by artists Veronica and Edwin Dam de Nogales. Water Management for parking; Ash trees planted in structural soil capped with interlocking permeable pavers.

### Sustainable Site and Living Architecture Metrics:

- Average annual rainfall: 1,725 mm;
- Total site area 0.58 ha, Developed Impervious Area is approximately 75%;
- 100% mitigation on site up to and including a 10 year storm event;
- On-site stormwater conveyance system is not connected to municipal storm sewer;
- Capacity/volume retained; 10-yr. 24-hour storm: 110 mm, Storm depth x Area = 638 m<sup>3</sup>
- Exceeds the CNV STM requirements and LEED® (reduction in the 2-year storm event); ▶



**Far Left:** Water channels on roof deck at William Griffin Recreational Community Centre.

**Left:** 'Salmon Cycle' participatory water art by Bruce Joyce, Artist.

A question we could pose to ourselves as professionals could be 'How do we adopt natural forms of water management of the wet coastal climate of British Columbia in today's dense urban conditions with engineered systems? Through integrated design, we are designing living buildings and ecological sites that, among other sustainable features, collect on-site rainwater and celebrate its playfulness and science. This can also be done with art.

- Exceeds DFO (Department of Fisheries and Oceans Canada) requirements;
- Green façade provides rainwater intercept and evaporative transpiration;
- No potable water used to support landscape or green wall, rainwater only; Structural soil trenches support vehicles and provide a reservoir for canopy trees;
- The rushes, sedges and irises keep pervious contact zone of swales open for infiltration;
- Rainwater is celebrated in art and site design that makes visible the rainwater flow;
- Highest sales per square foot of retail floor area by a MEC store (N/A).

*Note: Metrics provided by Kerr Wood Leidal Associates, Sharp & Diamond Landscape Architecture Inc. and Proscenium Architecture.*

Since final completion, Randy Sharp worked closely with the landscape contractor to ensure full plant coverage, green wall management and establishment maintenance. Rock armoring and weirs were adjusted to avoid any scouring or soil erosion. The water engineers at Kerr Wood Leidal Associates researched and monitored the water related performance metrics above.

North Vancouver is home to a large Persian community who immigrated to Canada after the Iranian revolution. I researched Persian gardens and how they have influenced the design of gardens and flood irrigation from Andalusia to India, as well as the conveyance of drinking water in Canada.

Water Architecture Dynamic Art (WADA) has been selected through an Art commissioning process for the new William Griffin Community Recreation Centre. The proposed 'Water Cycle' art installation by Bruce Joyce features a Pacific salmon pedaling a Penny-farthing bicycle activated by the public pumping an agricultural pump mounted on a non-climbable vertical pole. The participatory water feature recirculates rainwater stored in a cistern. As a bonus, the bicycle water wheel overspray provides a misty water source on the sunny days to enliven the terraced rooftop garden and the interconnected water channels.

During and after rain events, modern 'Persian' precast concrete channels allow water to flow through pleasure gardens. Multiple water feature 'highlights' freshen the water and cool the air as well as create delight as the water cascades through

stainless steel spouts, black basalt weirs, flow through planters and lush rain gardens. Most of the roof and WGCRC site runoff will be intercepted by tree canopies, evaporate and infiltrate recharging the groundwater. The STM exceeds the District of North Vancouver's modest requirements for a 50% reduction of Mean Annual Rainfall (MAR).

In summary, the celebration of water with art, biological treatment in rain gardens, rainwater harvesting, and the visible conveyance in surface channels are influencing new forms of landscape and architecture. The streams and water bodies impacted by development along the West Coast are highly valued resources to be protected. Developers and retailers in partnership with the City and District of North Vancouver, have inspired designers and policy makers to integrate water, art and science, living architecture and green infrastructure in new and restorative ways. The combined result will engage the public to stay longer, spend more, support the community, and enjoy water dynamic urban landscapes.

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## of Seniors Housing *and* Health Facilities

**Opulent villas and care villages, co-housing and assisted living, or simply aging-in-place, seniors have a wide range of housing, community services, and health care options.** How do we design for the 'silver tsunami', the doubling of seniors in BC over the next 15 years? What lifestyle choices are possible that will allow residents to participate in real life activities such as shopping, preparing food, meeting at the bar, or mimicking life of an era with like-minded people? Addressing the requirements for a diverse aging population is a challenge for architects, health care professionals and landscape architects.

**Health Care Facilities.** Modern nursing homes and congregate care facilities include attractive entrances, gardens, living areas and dining rooms that offer a positive first impression for potential new residents and their families. These facilities may feature 'state-of-the-art' management logistics and person-centered care. The caregivers are specially trained in communicating with dignity and respect, sharing health information, encouraging participation in activities, and providing safety and comfort for patients and their families.

However, beige retirement homes with bland monotonous interior spaces are commonplace. A friend who is a caregiver and activity coordinator at a new seniors village on Vancouver Island, has observed the behavior of his clients. Residents often cannot find their own rooms because small numbers are placed high over doors, or doors along corridors are painted the same colour. Residents appear lost and without purpose, severed from the routines of their former daily lives. The interiors are often decorated with non-obtrusive tones, i.e. shades of tan, beige and grey. They lack distinguishing architectural features, bright primary colours, or large engaging paintings and sculpture. This often leads



to disorientation among residents, especially those diagnosed with dementia.

'Way-finding' for persons with dementia, Alzheimers's and other diseases associated with memory, is essential in housing, health care facilities and the greater urban environment. A diversity of brightly colored or individually decorated doors, unique gateways to clusters of rooms, clear lines of sight, views of 'green', access to therapeutic gardens, and other distinguishing features help persons orient themselves, navigate in their environment, and find their way home.

**Resort-like Care Facilities.** 'Zoomers' are ageing baby-boomers who desire to grow old in a 'more fulfilling, meaningful and healthy lifestyle'. Zoomers want convenience, and they want it now! How do we design new forms of housing and health care for these active seniors who expect hotel or country club settings coupled with excellent service? Baby boomers that are financially independent are demanding luxury residences that cater to their wants and needs in a resort-like setting. Health care providers are aware of the changing attitudes towards what's often dubbed 'the golden years'. Improved lifestyle and affluence have led to high expectations among the aging baby boomers.

The baby boomer generation looks forward to a richer and more active lifestyle in



**Top:** Co-Housing on 33rd in Vancouver, [www.vancouvercohousing.com](http://www.vancouvercohousing.com). **Above:** Colourful doors on townhouses in False Creek, designed by Peter Cardew Architect.

the company of like-minded individuals. For example in the US, "The five-star Somerset House provides an extensive range of facilities that includes golf courses, spas and pools. The management also prepares in-house counseling on eating, nutrition and fitness, along with wellness programs to enhance the quality of life of its residents. Luxurious accommodation choices include villas, condos and cottages."<sup>1</sup>

Healthcare organizations provide IT systems that supports both caregivers and patients, as well as reduces administration, workload, and patient waiting time. Given the in-flux of aging baby boomers, personal choice is important. "We provide our residents with a wealth of options and services that allow them to live the retirement lifestyle that's right for them...▶

Running a high quality dining room, providing healthcare, transportation services and overseeing the well-being of the residents. It's an all-encompassing business.”<sup>2</sup>

**Aging in Place.** There are several options in Canada for seniors to retire gracefully in their own homes and/or with family. A safe, inclusive and engaging healthy city for seniors offers facilities and services for independent older adults, and for seniors who are more vulnerable and need additional support. The City of Vancouver's Age-Friendly Action Plan recommends designing the built environment in a way that allows seniors to 'Age in Place.' Living at home may be preferable for independent seniors, provided that the residence is universally accessible, safe and secure, there is regular visitation, and they have opportunities to participate at City Community Centres and Neighbourhood Houses.

The Age-Friendly Action Plan proposes to “Partner with other levels of government, non-profit housing providers, and the development industry, to expand the

availability of supportive and affordable housing, encourage new rental housing construction, and expand the continuum of housing options available to seniors.” Actions include the following: “Revise the Building Bylaw to improve accessibility and allow more seniors to age in place. Support a range of affordable housing options to meet the diverse needs of the community, including housing suitable for seniors, as a guiding principle in community planning processes.” In the urban realm, consider wayfinding in the design of neighbourhoods and public spaces (to allow ease of navigation and easily-recognizable features for seniors).<sup>3</sup>

**Co-housing for Seniors.** A new housing trend in co-housing supports healthy aging, provides community and quality of life, and offers independence and support for seniors. Several new and existing co-housing projects in Metro Vancouver and on Vancouver Island are attracting a larger percentage of seniors. These collaborative projects may comprise units that

are painted with bright lively colours, fully accessible, and have distinct well-illuminated entrances. Co-housing in BC often includes ownership privileges within a supportive environment. They provide a way to live with privacy while recognizing the benefits and importance of depending on other members of the community such as shared dinners, shopping trips and food production. Seniors living in co-housing are expected to participate in the community including in the upkeep of the home and garden. Real life activities help maintain personal vitality and reduce the risk of social isolation. Family members benefit from knowing that residents in co-housing are looking out for their senior relatives if there are any unexpected problems.

“Seniors co-housing is a sub-specialty within this style of housing. It acknowledges aging and accompanying vulnerabilities and dependencies. The intention is to provide a healthy and co-operative living environment with support for those who are experiencing health issues.”<sup>4</sup> ▶



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Gardens and outdoor rooms at Hogeweyk, Photograph by KopArt, Amstelveen. "Supermarket" at Hogeweyk, Photograph by KopArt, Amstelveen. Lifestyle interior decoration themes: Opulent, homey, Christian, artisan, Indonesian, and cultural. Landscape drawing by Niek Roozen, Weesp, <http://www.detail-online.com/architecture/news/dementia-village-de-hogeweyk-in-weesp-019624.html>



### A Dementia Village in the Netherlands.

Located in the town of Weesp, the Netherlands, Hogeweyk is a seniors village designed specifically as a pioneering care facility for people with dementia. Compared to traditional nursing homes, the residents of Hogeweyk are more active and require significantly less medication. Residents within each cluster have their own private unit with large bedroom and bath. They meet with other residents to share a living room, kitchen, dining room and garden within each themed cluster. There are no locks on the doors and residents are free to mix and walk or cycle around within the secure village, including choosing to visit the 'supermarket', café or pub, just as they may in the real world.

The doctors, nurses and caregivers aim to make the experience as real as possible to the residents. Residents may choose to shop at the food market and assist with preparing and cooking as they would at home. The caregivers wear normal daytime clothing rather than clinical clothing, and fit into a role that the dementia sufferers are likely to be comfortable with. In the 'working class'

households the caregivers are seen to be neighbours, while in the 'aristocratic' or upper class setting, the nurses act like servants. The different living styles have different types of music playing, significantly varied interior design, food menus and styles of table setting.

Hogeweyk was designed by Dutch architects Molenaar Bol & VanDillen. It was the brainchild of Yvonne van Amerongen, a caregiver who has worked with dementia patients for decades. Starting in the early 1990s, van Amerongen and a group of like-minded health care professionals began researching and designing a type of home where residents would participate in life, in a similar manner as they did before they entered a dementia care facility. "By treating residents as normal people, Hogeweyk seems to suggest that there isn't such a huge difference, deep down – just differing needs. By designing a city tailored to those unique needs, residents avoid the dehumanisation that long-term medical care can unintentionally cause."<sup>5</sup>

"People with dementia often struggle with unfamiliar spaces, colours, and even decor. At Hogeweyk, apartments are designed to reach familiar cultural touchstones, categorized into six basic "genres" of design: "goois" or upperclass (the decor looks old fashioned), homey, Christian, artisan, Indonesian, and cultural. Each apartment is different, catered to a particular lifestyle, right down to the silverware and furniture. "Living in lifestyles," explains Hogeweyk, "just like before."<sup>6</sup>

In summary, in the United States, many care facilities have earned a reputation of providing poor quality of life for their residents. Patient mistreatment, excess medication and low levels of staff morale are major issues at care facilities. In comparison, Hogeweyk's staff promotes an active lifestyle for residents. They live in a place that looks and feels like home. What we know to be a façade, the residents see as reality, which may help them to feel normal living with dementia.<sup>7</sup> "Psychologist Donald Spence defines the concept of 'narrative reality' as the ways in which stories and places help link the 'true' world to one that a person is better able to understand, using storytelling as a vehicle to understand the truth – you're in a place that's holistically normal, you're not lost..."<sup>8</sup>

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EPILOGUE:

# MEETING *at the* Neighbourhood Pub

Randy Sharp  
FCSLA, ASLA, LEED® A.P., G.R.P.

We end our journey in Portlandia, known for its placemaking, humour, water management micro-brews and a popular TV show. Portland, Oregon is North America's leading micro-brew city with 58 active breweries and more than 600 food carts and food trucks. The 'healthy city' is characterized by its abundant outdoor activities, bikeways, neighbourhoods, food and beer enthusiasm.

While studying landscape architecture at the University of Oregon, we were encouraged to meet at Max's Tavern, to talk with local residents and fellow students about community engagement and placemaking. We were told by Professor Kenny Helphand to 'Get Out', taste the real world and to share our experiences.

Nearly 20 years ago in 1996, a community in the east side of Portland transformed

a quiet intersection in a residential neighbourhood into 'Ecotopia' (inspired by a book by Ernest Callenbach) <sup>1</sup>. "They painted a mural on the pavement, installed a children's play area and a 24-hour tea station that neighbours supply with hot water and tea, a sharing bookshelf, a community cob oven, benches, a community bulletin board and chalkboard and a food-sharing stand. Standing as a beacon of hope that cost only \$65 to create, Share-It Square has become a hub of social activity. From those humble beginnings, a mini revolution was started in Portland, inspiring something like 350 smaller versions of the piazza in Italy or the public square in England in communities scattered throughout the city." <sup>2</sup>

In Vancouver, dialogue is happening in neighbourhood pubs from Kitsilano to Grandview Woodland, and in the ►

Portland's East Burnside 1950's strip is transformed with rain gardens, a boutique 'motel' and microbreweries.

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Car free days bring the community together to celebrate diversity, walk, eat, socialize and dance.

abundance of micro-breweries along the Main Street and Powell Street corridors. “We recognize that thoughtful city shaping must start by co-creating design responses at the neighbourhood scale that reinforce and enhance local, authentic identity,” Scot Hein, former City of Vancouver Senior Urban Designer.<sup>3</sup>

Landscape Architecture is both a profession and a lifestyle. We design healthy places

including urban farms, rooftop gardens, therapeutic and healing gardens, play areas and tree lined shopping streets. These special places offer respite, socializing, participatory art, and a chance to reconnect to nature. The challenge of our profession is to expand our knowledge, listen to local communities, and provide leadership to create a healthy city for all age groups and socio-economic backgrounds. You are

invited to meet at Brassneck Brewery, 2148 Main Street, on Friday, June 26th at 4pm to discuss placemaking, and maybe plan the next pop-up park or street festival.

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