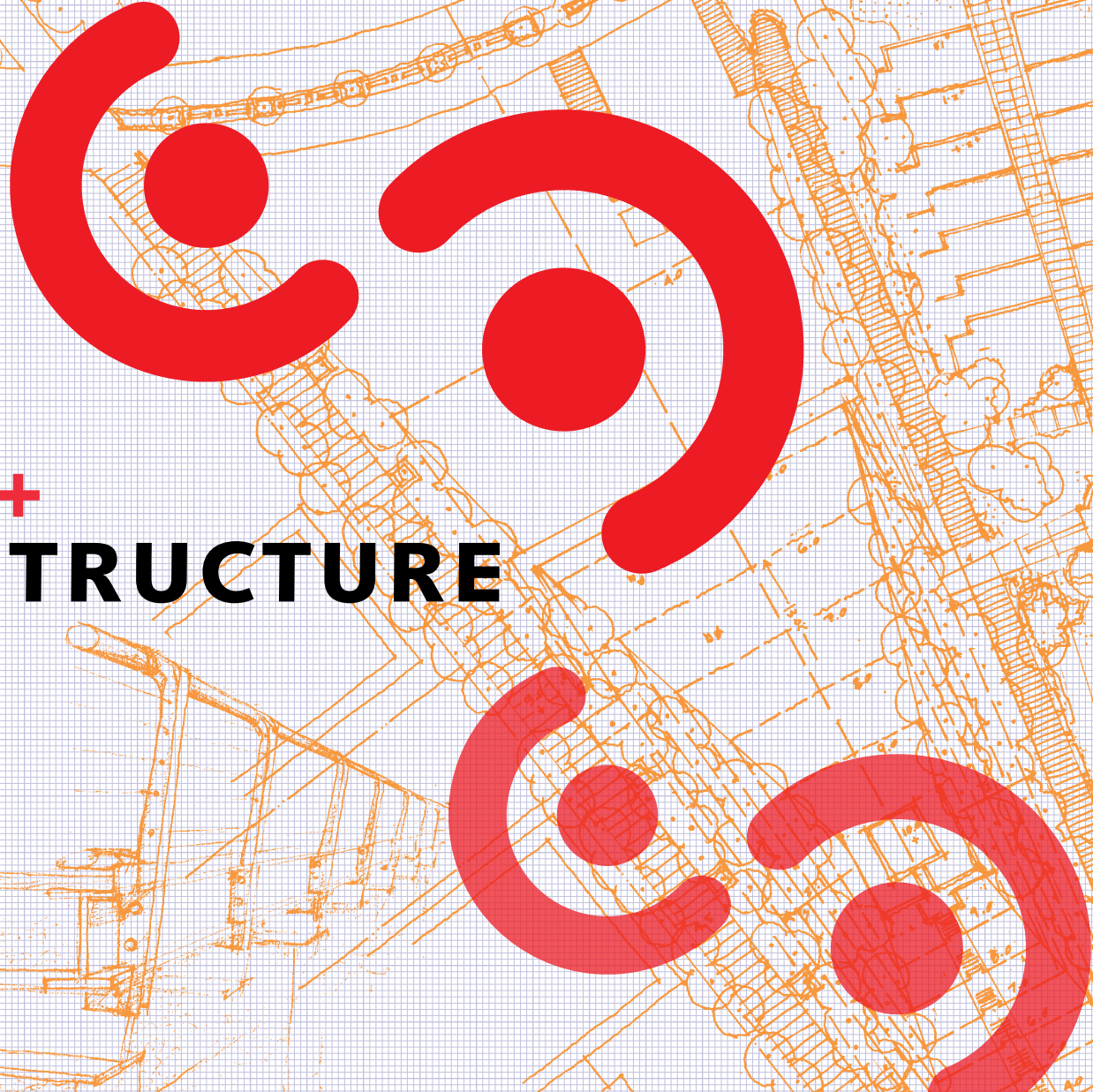


PUBLIC SPACE + INFRASTRUCTURE



INNOVATION – THE IMPERATIVE OF OUR GLOBAL FUTURE

Within a relatively short period of history, we have settled into an often unquestioned framework of community building, especially in North America. Against this comfortable but failing paradigm, we must spur ourselves to vigorous innovation – reaching out beyond the traditional practices and bylaws to set new precedents for generations to come. Facing and overcoming the fear of change and challenging the established protocols within which planners, engineers, designers and builders have become so constrained, is critical to developing a new framework – the dense, livable, resource-efficient and socially robust sustainable community.


Driven by a recognition that change is both essential and urgent, those who would remake our community models are searching collectively for the new paradigms in which community life can flourish in the context of a changing environment and the rapid diminishing of the earth's limited resources. Beyond mere survival, these innovators also embrace new societal structures that reflect an emerging commitment to equity and social balance within our community relationships.

Southeast False Creek (SEFC) has offered the opportunity for such innovation. Led by an emerging vision of a “better way”, the City Council of the day provided the challenge and the designers, authorities and builders found themselves exploring planning principles and approaches to neighbourhood and infrastructure development that are in some ways

completely new, and in others, cast backwards to a richer earlier time – reminiscent, as Mike Harcourt mused in Chapter Two, of the medieval city.

Given what was an almost vacant waterfront site, encumbered only by the past devastation of its environment, the SEFC precinct provided its designers and builders the opportunity to explore new approaches and multiple innovations. They evaluated and refined the integration of public space infrastructure with the sustainable character of the neighbourhood. They sought to develop a community that would address social and economic issues as well as protect the environment. They challenged established protocols of road design, parking, amenity allocations, child-friendly environments and the relationship between social well-being, density, livability and public amenities. They celebrated the immediacy of the transportation connections to the heart of the city while creating a village community clustered about its own commercial centre with animated public spaces to encourage social interactions and inspire a sense of serendipity. They aimed to foster spontaneous neighbourly exchange and build social relationships across a broad spectrum of cultures and life interests.

SEFC challenges us to adopt a significant shift in vision and to rework our conventional “textbook” solutions, for we are in a world where conventional solutions will not provide a future for our children. Our new world lies where collaboration and innovation command the day to ensure sustainability is the precedent of tomorrow.



Artist's rendering of the waterfront at Southeast False Creek showing Habitat Island (far left), the “Canoe” bridge (centre), and mixed shoreline including seawall, boardwalk, and areas for pedestrian water access.



“Southeast False Creek has a view of the future... of future generations living and working in a truly sustainable urban village.”

Striking a balance between past and future is the particular challenge facing those who attempt to create landscapes and amenities that will inform and create community. Too much of the past and the space may feel museum-like, failing to inspire new thinking. Too little, and the place may be flat, inauthentic, neutral.

In this chapter, we explore the question of place and its particular relevance in building sustainable communities. From questions of heritage to solutions coupling stormwater management with play space, from the way the land is treated to the way people interact, this chapter brings forward stories about public areas, infrastructure and heritage. We also learn of the phenomenal effort required to ensure the new community’s environmental integrity by cleaning up the toxic residue of its past.

Chapter Three of *The Challenge Series* sits at the transition from plan to process, from discussion to design and development. If the people who come to live in the new SEFC community will ultimately “deliver on the promise of the place,” this Chapter explores how the promise has been made.

The story is one of commitment – to history, collaboration, to pride of place – and to designing with an openness that recognizes the place will ultimately be made by those who live there. This idea is best captured by the SEFC Art Master Plan:

Southeast False Creek has a view of the future. A future of sustainability is all its contexts – social, economic and environmental. It’s a view of future generations living and working in a truly sustainable urban village. It’s a viewpoint shaped by urban planners, politicians, public and private developers, scientists, engineers and artists. Ultimately it is a view shaped by each and every person that will call Southeast False Creek their home. Each day they will deliver on the promise of the place. – SEFC ART MASTER PLAN 2007

Larry Beasley

I travel for work all over the world. And everywhere I go, whether I meet planners, architects or urban designers, people know about Vancouver. They love what they see and they want to know how we do it. That's why I know there is going to be extraordinary interest in Southeast False Creek.

The main thing that Vancouver is known for is a humane, beautiful, high-density urban environment. It's revered; people come here to study it. Second, there's an expectation about the attitudes we take to the problems of the day. We're expected to be urban design trendsetters, with cutting-edge policy, expertise and implementation.

We are recognized for knowing how to govern at the municipal level. In most of North America, there's a power struggle between the public and private sectors, and the public

has been losing for 25 years. What we've done well, I think, is to take the best of the expertise, skills and inclination of each sector, and combine them into something better. People are shocked when I say it was my job to help developers make more money – but if they made more, they invested more on fine design and the public realm, because our system caused one interest to feed the other. The net effect is that we have millions of dollars of public equities that other communities can't even expect.

This project also illustrates that Vancouverism isn't just one form, tower and podium; it's a way of life, with many forms. I call this "experiential planning" – designing to meet people's experiential expectations. It's about love, it's about an emotional reaction, it's about the positive things you don't

"What we've tried to do with Vancouver urbanism is to develop an experience that you will find fulfilling..."

see in modern cities, which are just machines for living. What we've tried to do with Vancouver urbanism is to develop an experience that you will find fulfilling, in a place – high density – where you least expect it. The SEFC form is going to generate genuine community, because its design causes people to interact with one another. It will be studied and copied around the world.

Of course, you have to be critical even as you celebrate. I feel SEFC doesn't provide enough architectural diversity. And we need to diversify how we subdivide land for development – the subdivision pattern of SEFC is pretty standard.

We also haven't done well on creating a social mix – we must do better on genuine middle-income affordability. When the NPA Council led by Mayor Sam Sullivan pulled back on one-third, one-third, one-

third [an even balance of market, "modest market" and social housing], that was a patently bad, retrogressive step, not in the interest or philosophy of the City. We saved some of the social mix, but it was supposed to be cutting edge in every way, and it won't be.

In the grand scheme of things, however, this project is going to be revered. I hope the City convenes a symposium to look at what we've achieved, and how to improve it in the next phases of SEFC.

Larry Beasley
Former Director of Planning
City of Vancouver

Distinguished Practice
Professor of Planning, UBC

Founding Principal
Beasley & Associates Planning Inc.



Views of the Southeast False Creek seawall. Vancouver Mayor Sam Sullivan officially opened the new seawall on May 28th, 2008 (bottom right).



PROFILE

Jody Andrews

Manager, SEFC and Olympic Village Project Office
City of Vancouver, 2005-2009

The original manager of the City's SEFC Project Office, Jody Andrews' task was to move a grand vision into reality. This meant clarifying relationships and responsibilities across a multi-disciplinary team to develop eight city blocks in three short years – with the world watching.

Roger Bayley, Design Manager for Millennium Water, says Andrews established the collaboration and sustainability ethics that underpinned the project. "He was very even-handed and astute at managing priorities to deliver what the City wanted: innovation and exploration of how to build a better community, a sustainable community. I have immense respect for his passion and energy."

"Jody played a significant role in launching this project," says Shahram Malek of Millennium. "He is as passionate about human and ecological aspects as he is about bricks and mortar."

"Jody Andrews is an elegant manager," says Scot Hein, Vancouver's Senior Urban Designer. "He created a project culture that allowed us to do our best. His leadership style resulted in high quality physical results that are a legacy for the City."

"People loved working with him," says Robin Petri, SEFC Manager of Development for the City of Vancouver. "The project wouldn't be what it is today without Jody."

CHALLENGE

To officials at the City of Vancouver – elected and staff – to lead a gathering of design professionals to assess what has been achieved in SEFC so far, and determine what can be improved in subsequent phases to further enhance Vancouver's urban model and push the parameters of sustainable community development.

Memorable experiences are directly related to places and time. There is a certain symbiotic relationship between the creation of memories and the influence of the physical environment, built or natural, upon human activity. It is therefore important, in the “creation of place,” to recognize this influence and understand how to properly shape perception and experiences through effective urban design.

Urban design excellence can appear accidental, as with many European cities, where places have physically evolved over many years, and layers, of intervention. The most memorable of these places usually perform well when analyzed for contextual quality, comfort and activity. The necessary ingredients of placemaking include a cogent ensemble of buildings that shape spaces through their form, scale, materiality and detailing, combined with an effective response to human comfort with respect to

sun, noise and smell, and providing a theatrical backdrop for the observation and enjoyment of human interaction.

As designers, we observe and apply these recognized placemaking qualities in our contemporary civic context during a time of rapid urbanism. Yet, while we may understand and apply historic lessons, the question remains whether this is enough to “create place.” Urban design excellence may instead be best achieved by being purposefully incomplete, especially if the physical change is happening rapidly without the benefit of time’s patina (the establishment of “context”). Incompleteness, and related unpredictable opportunities for use and participation, may best lead to places that become memorable, because they will evolve towards something more authentic over time through ongoing intervention, programming and use.

Thus, a successful designer may set the stage, but it is the “theatre of the place” that is most important in creating meaning and memory. Placemaking can occur at many scales and under opposing political ideals. It can be active or passive, expressive of culture and ethnicity, historic or contemporary, permanent or fleeting – or any of these qualities in combination. Notwithstanding any such qualities, placemaking is only achieved if there develop individual and collective connections to, and identification with, the place through the creation of significant meaning and memory. The role of the design process is to understand these insights and leave room for the unpredictability of transformation over time.

Scot Hein
 Architect and Senior Urban Designer
 City of Vancouver

“Urban design excellence may... be best achieved by being purposefully incomplete... [this] may best lead to places that become memorable”

The intensity of the transformation of the area, from wet land to dry land, from natural to “man-made”... is significant for making us consider the meaning of progress.

Foreshore Lands Statement of Significance, 2004

Heritage elements are woven throughout SEFC development. Planned sidewalk medallions explore the relationship between SEFC’s ecological heritage (rich estuarial hunting ground and trade route for Coast Salish people) and its industrial heritage (shipbuilding, metal fabrication and salt refinery).



HERITAGE + PLACE

Every place is the product of layers of history, natural and human. Heritage advocates say these layers are critical. They create a unique identity, born of geography and circumstance, informed by knowledge of what has gone before. They tell us who we are.

Early planning for SEFC was heavily focused on the new challenge of sustainability – to the point, says Hal Kalman, where heritage was at risk. Kalman was Chair of the Vancouver Heritage Commission when planners Ian Smith and Mark Holland presented to it in the late 1990s.

“They were throwing around the word sustainability,” he says. “But in the process of planning

an environmentally sustainable neighbourhood they were going to demolish every trace of the existing neighbourhood.” The Commission agreed the community should be “brand spanking new” but “recognized as only the most recent of many layers of history.” The argument was accepted, and heritage conservation was enshrined in the SEFC Policy Statement.

In 2004, as Principal of Commonwealth Historic Resource Management Ltd., Kalman contributed to SEFC as a consultant, identifying the “character-defining elements” that give the place its identity. Some were tangible – a few

remaining industrial buildings, the zig-zag shoreline made of boat slips and storage sheds. Others were less tangible, such as retaining open space behind the Salt Building, in recognition that a boat landing once entertained a stream of traffic at that spot, as boats arrived and left with loads of salt.

“The only sensible way to march into the future is with a sense of the past,” says Kalman. “We learn from history. Those who don’t, make terrible mistakes.”

Salmon icons are etched into granite blocks at the amphitheatre to mark historic spawning routes.

PROFILE

Scot Hein

Architect and Senior Urban Designer
City of Vancouver

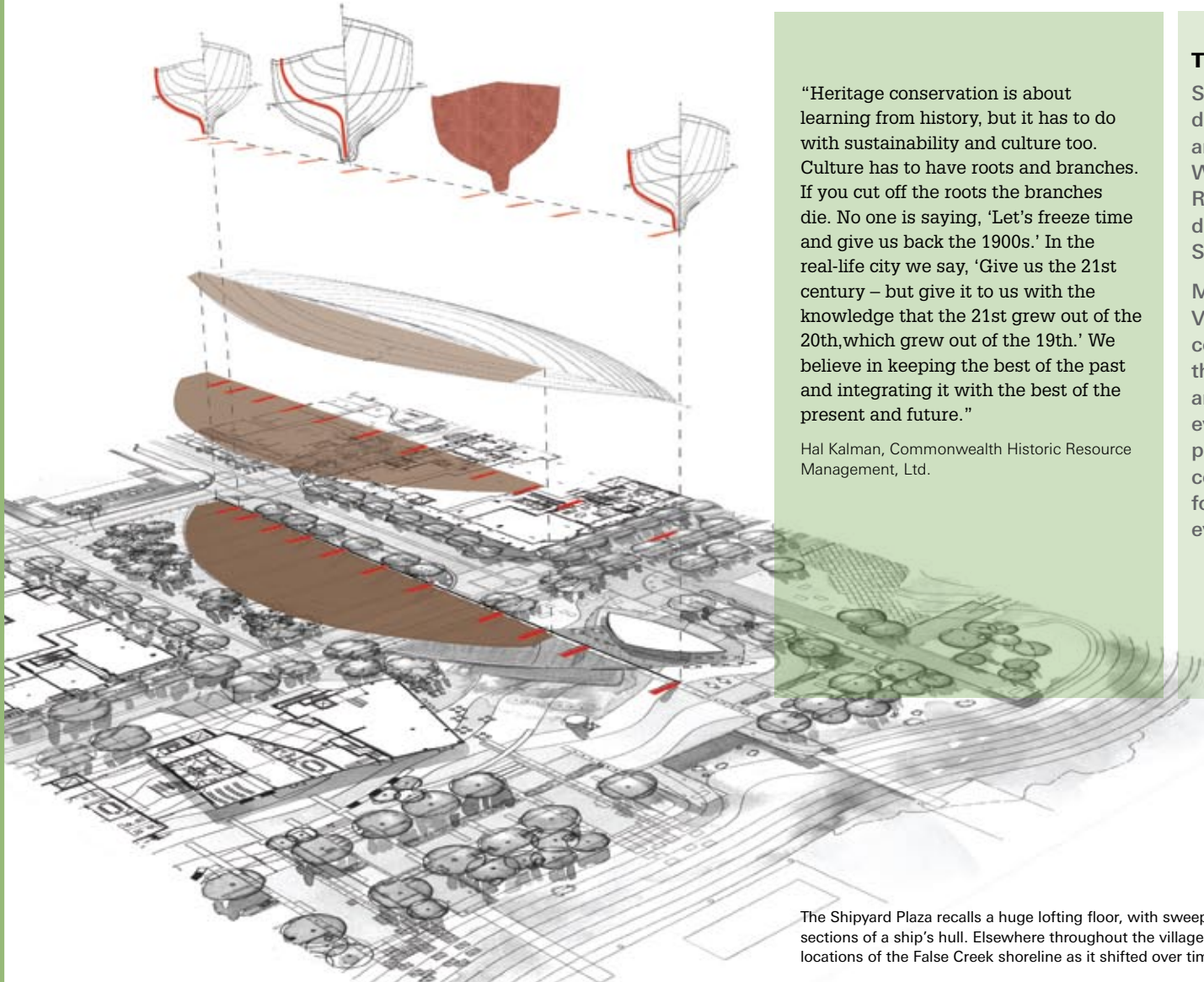
An architect who studied and worked in the US, Scot Hein moved to Vancouver in 1981. When the prospect of inappropriate development loomed nearby – a plan for high towers on Vancouver’s Arbutus Lands in Kitsilano – it sparked his advocacy and call to public service.

“For five years, another architect and I worked collegially with City staff on behalf of fellow neighbours to say, ‘There is a different approach to placemaking that respects prevailing form, scale and character while still accommodating high density,’” recalls Hein. He laughs. “That experience seduced me to the ‘dark side,’ working with the City.”

Hein is now head of the City of Vancouver’s Urban Design Studio, which holds a variety of design, advocacy, planning and management roles. Hein is proud of the design excellence in Olympic Village, and the way the process fostered innovative thinking.

“Despite the aggressive timelines, there was a lot of discipline in the early phases of this project,” he says. “I’d like to think there was an art to shaping the creative process that allowed the designers to distinctively contribute their best towards a larger identity for the village.”

“I pinch myself every day because I probably have the best job an architect practising urbanism could possibly have.”



“Heritage conservation is about learning from history, but it has to do with sustainability and culture too. Culture has to have roots and branches. If you cut off the roots the branches die. No one is saying, ‘Let’s freeze time and give us back the 1900s.’ In the real-life city we say, ‘Give us the 21st century – but give it to us with the knowledge that the 21st grew out of the 20th, which grew out of the 19th.’ We believe in keeping the best of the past and integrating it with the best of the present and future.”

Hal Kalman, Commonwealth Historic Resource Management, Ltd.

The Shipyard

SEFC is characterized by three distinct historic areas that retain an industrial identity. The City Workyard, the Shipyard and the Railyard inform the design of three distinct neighbourhoods within the SEFC community.

Millennium Water, the 2010 Olympic Village, sits in the shipyard district – context that can be seen in detailing throughout the site. The waterfront and public plaza bear particular evidence of this heritage, which provides unique definition to the contemporary community through forms, materials and structures that evoke memories of the past.

The Shipyard Plaza recalls a huge lofting floor, with sweeping lines on the pavement outlining various sections of a ship’s hull. Elsewhere throughout the village, inset lines in paving surfaces will mark the locations of the False Creek shoreline as it shifted over time.

The Shipyard Plaza

Where once the hulls of great ships were shaped, a lively urban gathering space now comes to life. The plaza and commercial centre were designed by Chris Phillips of Phillips Farevaag Smallerberg (PFS) and Norm Hotson of Hotson Bakker Boniface Haden.

“Their idea was to work with the processes of shipbuilding,” says Mike Derksen of PFS. “They chose lofting, and reinterpreted it in the built form using the patterns that were produced.”

Lofting is the process of laying out a full-size working drawing of a ship to begin shaping its parts. The Shipyard Plaza is effectively a huge lofting floor, with sweeping lines on the pavement outlining various sections of a ship’s hull. Some lines

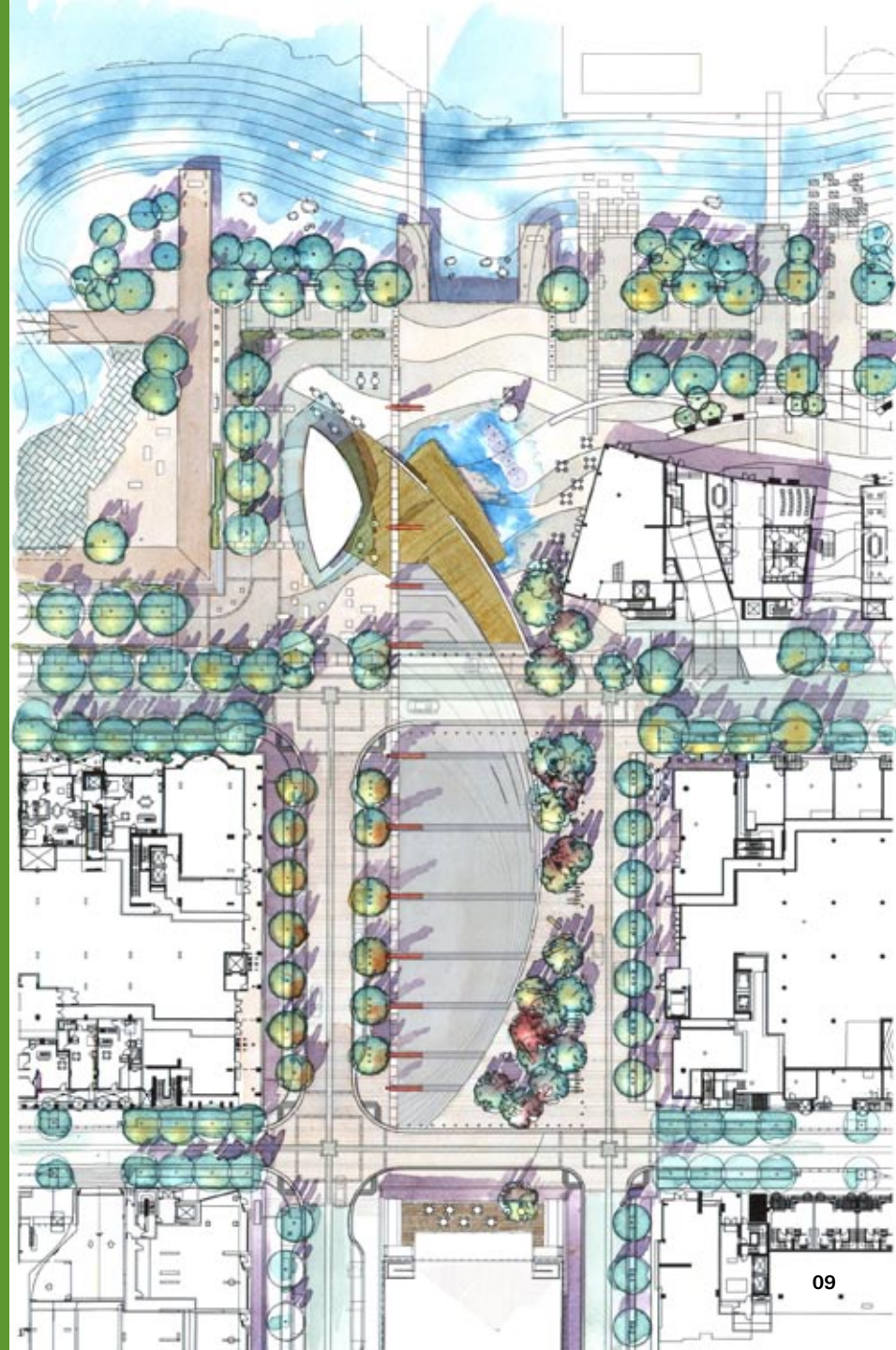
rise three-dimensionally as the site grade changes, providing a built-in seating area. Light standards on the plaza take the form of the varying ribs of a ship.

“They inserted just the right level of poetic references,” says Tilo Driessen of the Vancouver Park Board (the plaza is considered park space). “It is beautifully designed.”

At the plaza’s south end, the Salt Building will re-open as a brew pub and restaurant. Areas of wooden decking will remind pedestrians of the piers that once punctuated the shoreline. The faint smell of the ocean will continue unchanged – reminding not only of seafaring ships, but the natural estuary that existed long before.

A vibrant commercial focus along Manitoba Street from First Avenue to False Creek is to act as a “heart” for the community, anchored by the Salt Building... and a community square. SEFC Official Development Plan

Illustrative plan of the public plaza. The curves rise naturally as the landscape grade changes, creating seating areas. The plaza features granite pavers and is permeable, allowing absorption of stormwater. A children’s water play area is located at the plaza’s north end.



In 2007, with the SEFC Public Realm Plan complete, the City commissioned the SEFC Art Master Plan. A public process helped define how art should reflect the history, sustainability ethic and forward-looking nature of the new community, and set the stage for a public art selection process.

This process led to the choice of Vancouver artist Myfanwy MacLeod to develop a signature piece of public art for the central plaza in Olympic Village.

“She proposed two giant sparrows, 15 feet high – nicely scaled for a public open space that bridges between the monumental building scale and the human scale,” says Senior Urban Designer Scot Hein.

“By highlighting a non-indigenous species that’s now considered invasive, Myfanwy really picked up on the future challenges that face us.”

In addition to the sparrows, financed by Vancouver’s public art plan, Hein says the Olympic Village

development will include three other significant pieces of art, either paid for by the developer or as part of the approval of the Neighbourhood Energy Utility (NEU).

“Millennium wanted a private courtyard in its signature building. So the negotiation was, ‘In exchange, give us something special.’ So in the middle of the water courtyard there’s this fibre optic serpentine reed-like piece of art that is going to be so beautiful at night – kind of like the northern lights.”

The five ventilation stacks at the NEU will be hung with three-storey LED panels that can be programmed to light in any colour – or to indicate the total energy usage of the neighbourhood. A “stainless steel gazebo” is another artistic installation planned for the waterfront. Most art pieces will be installed in the new development after the Olympic Games have ended.



Artwork interwoven into the public realm often serves as a social catalyst or as a way to reveal complex ideas and issues.... At SEFC it is critically important ... to stimulate understanding that will lead to a greater sense of shared responsibility and caring. SEFC Art Master Plan, 2007

“Old World Sparrows,” by artist Myfanwy MacLeod, has been commissioned by the City for the plaza. Light standards on the plaza are shaped like the ribs of a ship (visible far left and inset, above).

The most storied district in a seaside town is its waterfront, and Vancouver is no exception. In the SEFC former industrial zone, the waterfront teemed with thousands of workers, as well as ship and rail traffic converging to exchange goods.

The transition from abandoned industrial site to vibrant sustainable community would depend heavily on successfully revising this waterfront. Scot Hein says drawing on history was part of the answer.

“What you see with the completed first phase is a design approach

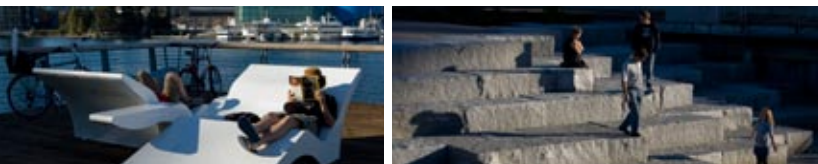
that’s kind of gritty; it reflects a working place. It has a naturalistic edge to it – it hasn’t been sanitized, it’s not pristine, it has historic materials like the boardwalk, and native plantings. It’s heavy and substantial; it has an authentic identity.”

PWL Partnership Landscape Architects were the lead design firm for the waterfront, parks and most public realm areas throughout Olympic Village. Principal Margot Long says the City asked for innovation.

“They asked us to look around the city, especially at the seawall, and push what was done there, to make it more animated,” she says. “So we wanted to have the development engage the foreshore – have people be able to get to the water wherever, and whenever, they wanted.”

“The City also asked us to make this waterfront – 650 metres in length – one continuous park, rather than a wall punctuated by parks. That was a new idea. And the seawall itself is different. It’s got 4.5 metres of width for pedestrians and 4.5 metres for cycling, wider than most of our streets.”

“In Southeast False Creek there’s a lot happening between the edge of the pedestrian path and the water,” says Tilo Driessen, Vancouver Park Planner. “There are benches, rip-rap, big granite blocks tumbling down to the water, decks that jut out over the water. Plus we did the things the Department of Fisheries required to create productive fish habitat. I think it will be appreciated by people. The water side of the path offers so much reason to go there and inhabit the area.”



“It’s artful, capricious, fun to the senses, beautiful. The landscape architecture of the Olympic Village waterfront is a thousand times more progressive than other waterfronts we’ve done.”

Larry Beasley, former Director of Planning, City of Vancouver

PARKS + COMMUNITY CENTRE

Parks

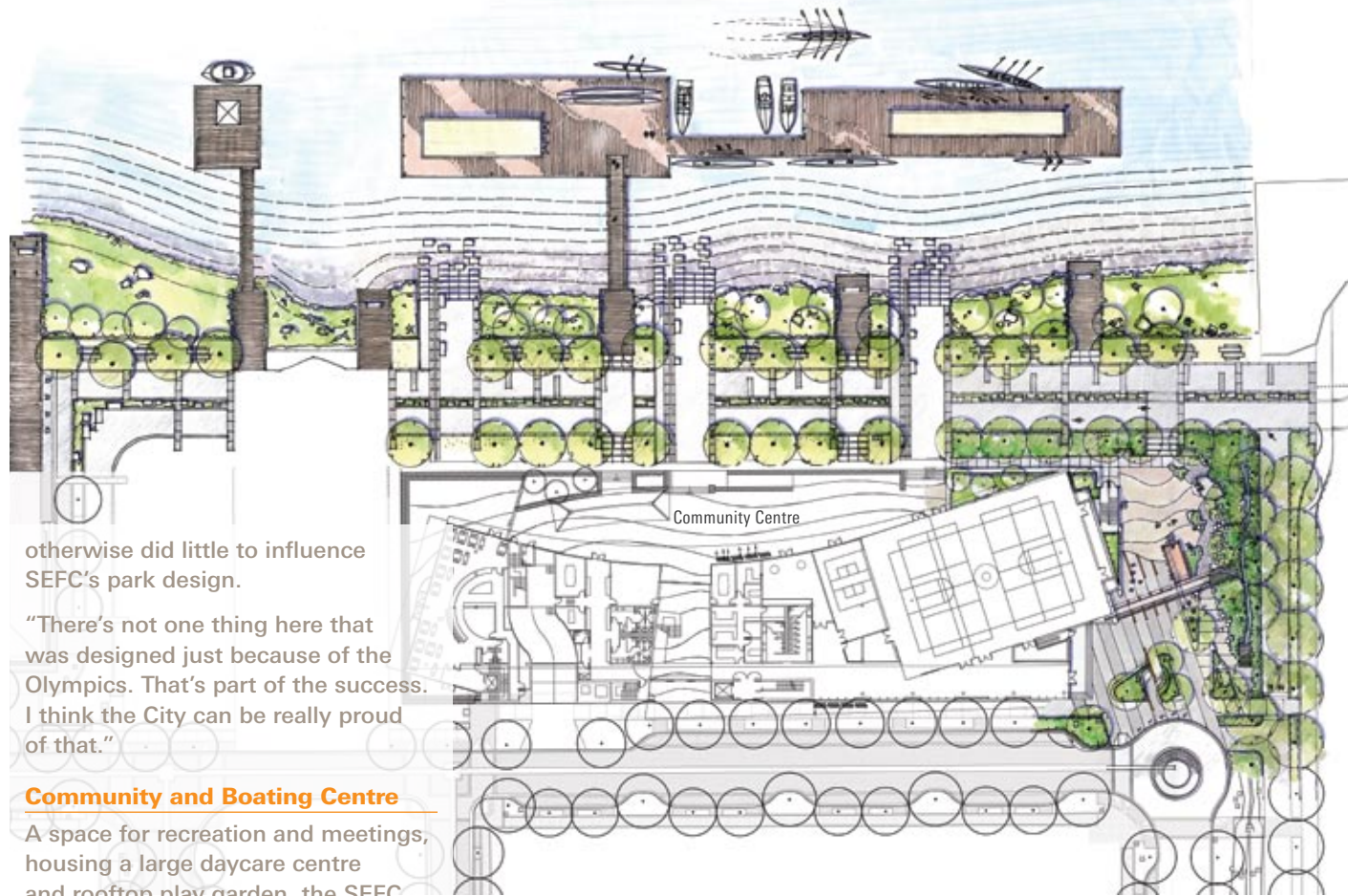
"I think parks are incredibly important, especially for people who live in cities," says Driessen. "There's a fundamental connection between the natural environment and people. It's where we belong. Parks in the city allow urban residents to partake in that connection."

Vancouver's standard for neighbourhood park space is 2.75 acres per 1,000 residents. Regional parks such as Stanley Park, which serve populations beyond their immediate district, occur at a rate of 6 acres per 1,000 residents. Beyond that, park design is anything but standard.

Margot Long says the City's approach to parks and public spaces in Olympic Village was focused on quality.

"This was a completely different model from others in the city. The City developed these public spaces, as opposed to working with a developer to develop them and then turning them over to the City," she says. "This proved to me that the City has stepped up to the plate to develop public spaces as they want to see them done. They set the bar."

Long says hosting the Olympic Games forced a quick timeline, but



otherwise did little to influence SEFC's park design.

"There's not one thing here that was designed just because of the Olympics. That's part of the success. I think the City can be really proud of that."

Community and Boating Centre

A space for recreation and meetings, housing a large daycare centre and rooftop play garden, the SEFC Community Centre lies at the waterfront on the east side of the Olympic Village site. A non-motorized boating centre will extend onto the water with piers for dragonboats, sailboats, canoes and kayaks. (Read more about Community Centre design in Chapter 4.) These amenities will help draw people to the waterfront, and encourage an active lifestyle for residents.

An illustrative plan of the Community Centre highlighting access to the waterfront and the non-motorized boating facility. The west end of the centre will house a waterfront restaurant. The daycare facility will include a play area on the roof, overlooking False Creek.

The redeveloped waterfront at Olympic Village has brought new life to the neighbourhood – in more ways than expected.

The City’s plan for redeveloping the waterfront required that a portion of shoreline be filled. The federal Department of Fisheries and Oceans initially resisted the plan, arguing that filling would diminish shoreline area and associated habitat. The need to create habitat

for wildlife eventually led a team of environmental consultants – including Lee Nickol and Barb Warnik from Golder Associates and Mark Adams from Envirowest – to propose building a small island off the SEFC shore. This innovative solution allowed the City to proceed with its plan, replaced lost shoreline area and resulted in a net increase in the area of intertidal fish habitat and park space.

The island and naturalized segments of the shoreline host aquatic, riparian and upland ecologies, including vertical snags, native vegetation and a natural shoreline that have attracted perching bald eagles and a variety of waterfowl. The habitat island and natural shoreline demonstrate the ability to reintroduce natural habitat back into the urban environment. The island form maximized the extent of new

shoreline; a connecting segment of land emerges at low tide which provides limited access to the public. Proof of success appeared in the fall of 2008 when herring returned to spawn, for the first time in many years, on a one kilometre stretch of the once toxic shoreline of SEFC.

Habitat Island was constructed to make up for habitat that was lost when another area of the False Creek shoreline was filled to enable development. The island includes vertical snags, native vegetation and a natural shoreline, which have attracted bald eagles and a variety of waterfowl.



INNOVATION

Increasing Shoreline Habitat

Dense human populations tend to drive out native plant and animal species. Development that creates new habitat, such as the new island off the shore of SEFC, provides an invitation to species to return – while enhancing the beauty and livability of the human experience as well.

Herring have laid eggs on approximately 1 km of shoreline spreading east from Habitat Island. Marine biologists confirm that the environmental cleanup and shoreline habitat creation is a huge success.

PROFILE

Tilo Driessen

Park Planner, Vancouver Park Board

An architect by training, with degrees from the Technical University Munich and UCLA, Tilo Driessen went back to school when a downturn in the real estate market coincided with his rising interest in the development of open space and public lands.

“I was lured in by the Greenways plan being developed for the City of Vancouver,” says Driessen.

“As an architect, I had always worked for private clients. I was intrigued by the idea that as an open space planner, I could work for the public at large. I liked that idea.”

Driessen began studies in landscape architecture at UBC with the goal of becoming a park planner. When an opportunity to work on the Greenways project opened up, he left school and dove into work with the City, eventually landing his current job – in the field he had targeted – with the Vancouver Park Board.

Working on the Olympic Village site was a privilege, says Driessen.

“There were fantastic people working on the project; it was a lively stimulating atmosphere,” he says. “Everybody who worked on it – from the people who conceived the first policies to the people who built it – we all feel a similar sense of pride. It’s a great project.”



At the northwest corner of Olympic Village, where the shoreline bends southward, is a new park with the working name of Hinge Park. A wetland winds through it, with songbird houses and places where kids can clamber on rocks and poke in the mud. Several bridges cross the water, including one made of a large section of storm sewer pipe. Follow the meandering paths and you arrive at the waterfront, gazing at Habitat Island with the downtown skyline beyond.

What you may not realize as you watch ducks forage in the reeds is that the wetland is a treatment pond handling stormwater runoff from the entire west side of Olympic Village.

“We’ve taken the infrastructure out of the ground and opened it up,” says Margot Long of PWL Partnership, the landscape architects who designed the park. “A lot of what makes the Village sustainable is subliminal. If you didn’t know about sustainability you’d just think it was playful.”

Park Board Planner Tilo Driessen says combining the engineering function of the rainwater remediation area with a children’s play park “was a big step for us.”

“Whenever you put water near children, they want to play with it. And wherever you have water, you have mud; some people have issues with that,” he says. “But it’s important for us to make the exposure to natural elements a part of children’s play. Perhaps too many of our playgrounds are one-sided. We may start to include more sand and sticks and all that stuff.”

Driessen says the park must respond to the needs of the residents in this new type of community.

“People who will move into Southeast False Creek won’t have access to backyards, so it’s important to offer this opportunity. In higher density cities, communal gardens take on some of the functions of backyards. We have to allow for that.”

A wetland winds through it, with songbird houses and places where kids can clamber on rocks and poke in the mud.



EAST PARK

Long says many aspects of Hinge Park serve more than one purpose. A water play feature at the south end uses potable water (not re-circulated chlorinated water) to feed the wetland during dry summer months. Bridges and stepping stones are placed to stimulate creative play even while they satisfy visual and functional values. A structured play area is designed for both disabled and able-bodied people. Wildlife habitat, natural play and aesthetic values merge. The sewer pipe bridge and homes for birds subtly educate visitors about infrastructure, interconnectedness and sustainability.

“The whole storm system is visible. It’s a landscape feature, it’s an amenity,” she says. “You don’t need the pipes, so we’ve brought them up and used them for something else. There’s the idea of reuse, that you don’t have to throw things away, ideas away. For me it’s ultimately a real sense of discovery.”



On the east side of Olympic Village, East Park also mixes an outdoor space for residents with stormwater treatment. The park uses bioswales – wide shallow ditches planted with greenery – to remove silt and pollution from surface runoff water.

“We want any landscape to serve multiple purposes,” says Margot Long. “Open spaces have less chance of being infilled if they’re serving a good purpose.”

“The entire Olympic Village project offers such great animating richness, with shipyards, the history of place, First Nations,” she continues. “We had to push the edges, and yet we don’t know how the places we’ve designed will ultimately be used – there are probably a lot of opportunities we haven’t envisioned yet.”

“A lot of placemaking is about having places flexible enough so that they can serve many activities and uses over time, and become the residents’ own.”

At left, Hinge Park becomes a reality, from sketches to illustrative plans to construction photos. The wetland will remediate stormwater with its winding channels and plantlife. An elementary school and community demonstration garden will be built adjacent to the park.

At right, East Park in sketches and plans, including bioswales that will also treat stormwater.



Nestled into a corner at the north edge of Olympic Village is a small park with a big role.

Pocket Park provides a “neighbourhood park” experience for residents, different from the regional feel of the seawall, says Margot Long of PWL Partnership, the park’s designers. Located next to the social housing, Long says Pocket Park is designed

for families – even though it lacks any explicit play equipment.

“The play elements are landscape elements as well. For example, there are four gateways, where kids can go through a pipe and be in a playhouse. But you could look at it and just say it’s a green space.”

The little park will also become home to the largest industrial artifact in

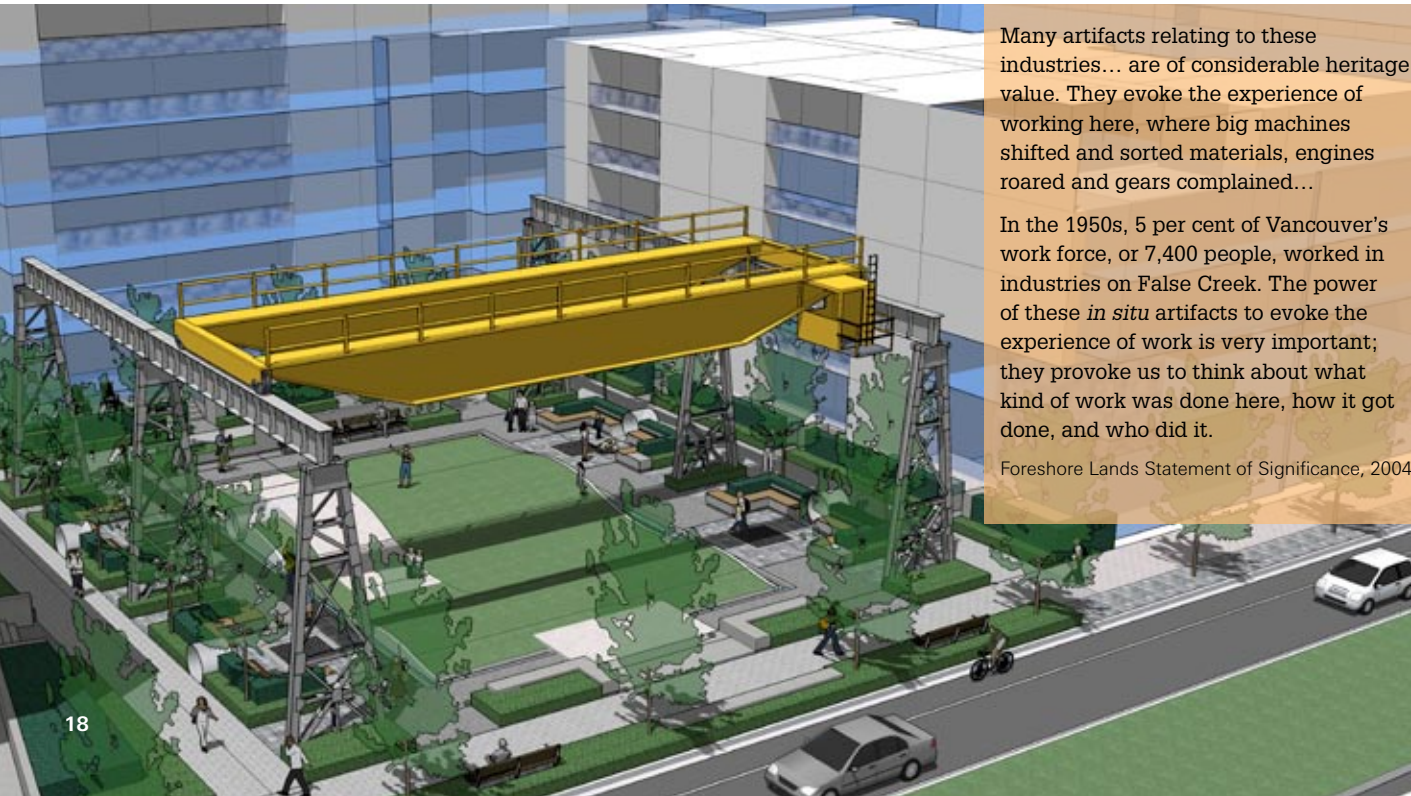
SEFC (except heritage buildings) – the old gantry crane saved from the Canron steel fabrication building. The crane will define the Park’s overhead space.

“In a backyard, people don’t sit on the open lawn,” says Tilo Driessen of the Vancouver Park Board. “They sit under a pergola, or on the deck; there’s always some

sense of enclosure or definition. The crane provides that. It almost turns that little park into a room, a beautiful marriage for heritage and recreational objectives.

“It’s a little jewel of a park – I think people will love it.”

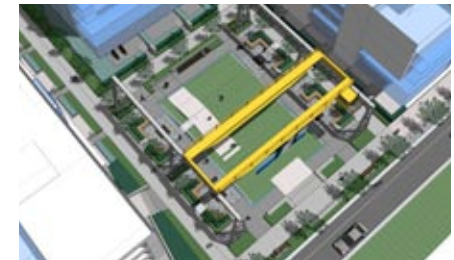
Pocket Park is designed for families, offering opportunities for imaginative play without formal playground equipment. The original Canron gantry crane, painted yellow, will be installed overhead to recall the site’s industrial heritage.



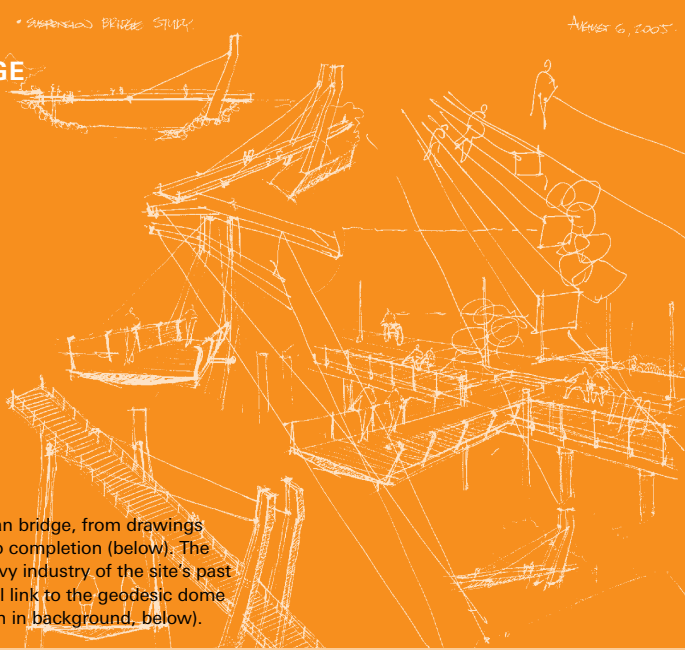
Many artifacts relating to these industries... are of considerable heritage value. They evoke the experience of working here, where big machines shifted and sorted materials, engines roared and gears complained...

In the 1950s, 5 per cent of Vancouver’s work force, or 7,400 people, worked in industries on False Creek. The power of these *in situ* artifacts to evoke the experience of work is very important; they provoke us to think about what kind of work was done here, how it got done, and who did it.

Foreshore Lands Statement of Significance, 2004



CANOE BRIDGE



The "Canoe" pedestrian bridge, from drawings to installation (inset) to completion (below). The design evokes the heavy industry of the site's past and also forms a visual link to the geodesic dome of Science World (seen in background, below).



FEATURE PROFILE

Wilco Landscape Westcoast Inc.

On any given day, you'll find Wilco's specialists leading projects ranging from a rooftop garden in Vancouver to a mine reclamation project in Ontario. With 17 years in BC and 50 years of history across Canada, the company is an expert in the construction of built landscapes.

At Olympic Village, Wilco built the entire pathway that snakes around the waterfront, including granite terraces, wooden piers, site furniture, handrails, bridges and lighting. In addition, Wilco constructed Habitat Island, an entirely man-made site providing habitat for wildlife.

Rob Maat, President and CEO of Wilco Westcoast, says the complexity of the project, with its integration of diverse elements, high level of detail and fast timeline, made it a welcome challenge.

"There were a lot of technical details, since most of the site was hard installations," he says. "Everything was custom built, so we worked with the landscape architects to make sure there won't be maintenance problems, that it will last, be durable, and so on.

"We try to be solutions oriented and not sit back and wait for the architect to figure it out. So we really liked this work. It was unique and challenging, and that's what we look for in our projects."

A signature installation along the waterfront, a 40-metre pedestrian bridge frames the tidal amphitheatre. The Canoe Bridge is designed to evoke the ribs of canoes and kayaks, celebrating the non-motorized boating area to its north. Its walkway is steel grating, allowing views to the water below, and creating fewer shadows on the water to maximize habitat value.

The bridge was built by Megatech Engineering Ltd. and installed by Wilco. Says Long, "They did a great job. The workmanship is phenomenal. The contractors are taking so much pride in what they're doing. They worked really hard."

The goal of celebrating sustainable design was entrenched in the Public Realm Plan for SEFC. This notion was applied not only to the neighbourhood’s focal points – its parks and plazas – but also to its infrastructure, the nuts and bolts upon which the neighbourhood is built, from streets to sewers. The emphasis on demonstrating sustainability can be observed down to the smallest detail as one walks the streets of the SEFC Olympic Village. In fact, the experience of the pedestrian was what dictated the design of the neighbourhood’s public realm and infrastructure. The objective was to create a pleasurable experience through the selection of materials, street furniture and street trees, and through the design and scale of the public spaces.

Street Design

“You’ll know you’re somewhere unique as you walk the streets of SEFC,” says a City of Vancouver engineer. This is because the streets are designed to create a sense of place, achieved largely through the scale of design. All of the buildings at SEFC are “zero lot line,” meaning their facades are built up to the edge of the property lines. Residential entranceways and storefronts open

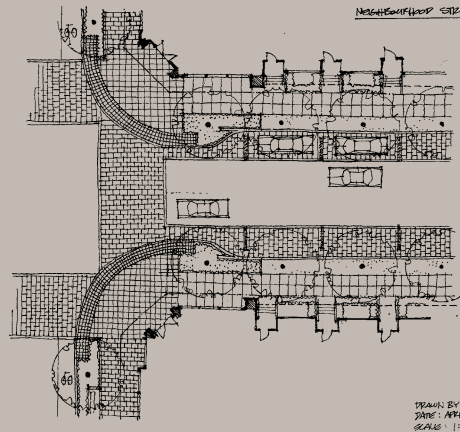
directly onto the sidewalk, inviting easy access and integration with the neighbourhood.

While streets at SEFC need to accommodate cars, the focus of their design was placed on walking and biking. This perspective was a key ingredient in creating a sense of place in the neighbourhood. The internal streets are surfaced with

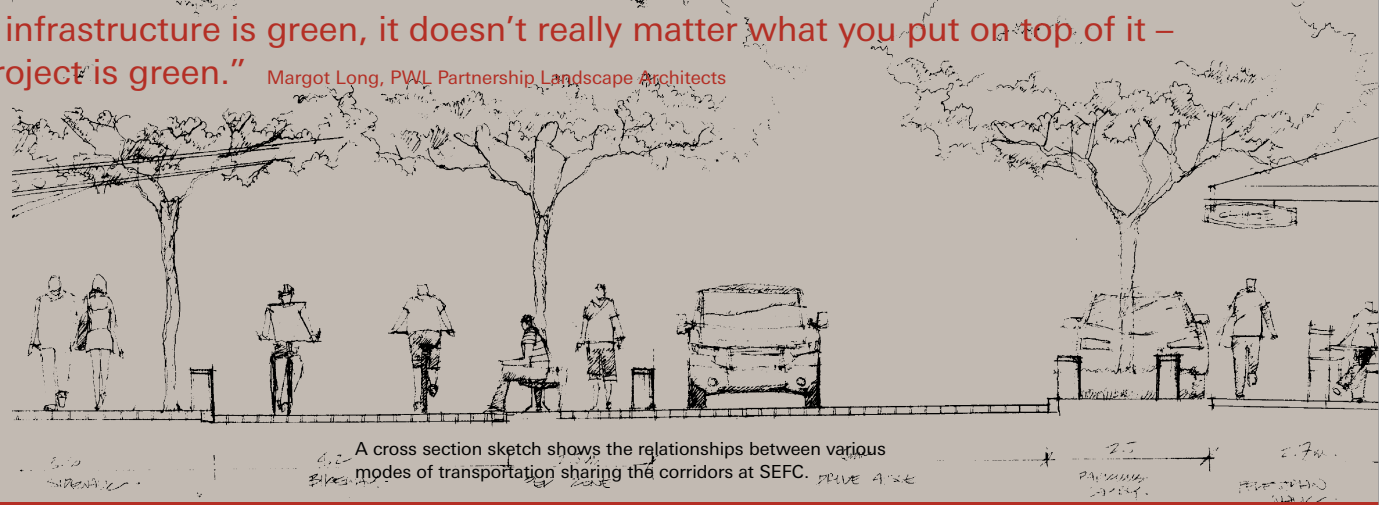
granite pavers instead of asphalt, adding to the experience of place. Street widths add another unique design element. While conventional Vancouver streets are 20 metres wide, street widths at SEFC vary between 12 and 18 metres, creating a more intimate street experience. The narrow streets presented a challenge to civil engineers, however, who were charged with

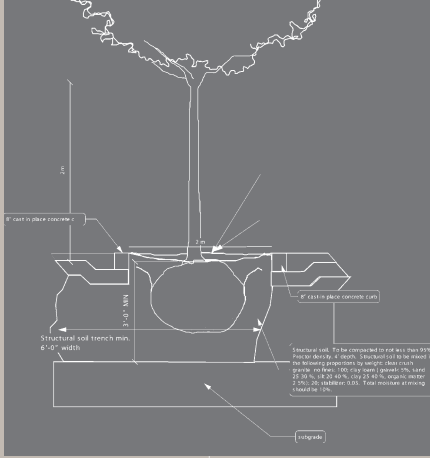
accommodating infrastructure below and above ground (pipes, cables, trees and bike lanes) within a significantly reduced area. They successfully met the challenge, and the effect – a sense of vibrancy and connectivity – presents a tangibly different urban experience from other parts of the city.

“If your infrastructure is green, it doesn’t really matter what you put on top of it – your project is green.” Margot Long, PwL Partnership Landscape Architects



A plan view of a typical street corner. Many material details have been implemented at intersections to add to the experience of place.





INNOVATION

Large urban trees

Large trees improve the livability of dense urban environments, but maintaining healthy trees in such locations has been a challenge. Implementing soil cell technology throughout a development should enhance tree health, resistance to pests and longevity – as well as the beauty of the neighbourhood overall.

Trees as Design Element

The Public Realm Plan saw trees as significant components of the public realm design, “key to creating scale, character, and legibility of place, and (giving) a sense of permanence to a neighbourhood.” As a result, significant attention was paid to the selection of tree species. Landscape designers considered tree species’ scale and character, colour, canopy shape, hardiness, disease tolerance, sustainability attributes, allergenic risks and neighbourhood character. Beyond their contribution to the look and feel of the neighbourhood, trees provide shade, habitat and food and help sequester carbon dioxide and pollution.

Street Tree Infrastructure

One of the objectives of the SEFC Public Realm Plan was to ensure that large trees grow along the streets of the new neighbourhood. However, growing large trees in a dense urban environment can be challenging.

“A constant problem in urban sites is that trees don’t have good root development because they’re in such compact soils,” says Rob Maat, CEO of Wilco, the company that



engineered much of the Olympic Village landscaping. “They remain stunted because they can’t grow properly, the top of the tree suffers, they’re more susceptible to insect problems and they tend to die earlier. You don’t have a healthy tree.”

To avoid these problems, “soil cells” were installed beneath the sidewalks and streets in Olympic Village. Soil cells are plastic interlocking modules assembled beneath the surface and pegged down at intervals. The cells stabilize the soil beneath the plants, enabling the root structure to develop. The cell wall acts as a semi-permeable membrane, allowing water to seep through but not soil particles. When joined together using their unique interlocking tabs, the cells form a strong matrix that becomes a permanent structure.

Structural soil: To be compacted to not less than 95% Proctor density, 4' depth. Structural soil to be mixed in the following proportions by weight: clean crushed granite- no fines: 100; clay loam (gravel< 5%, sand 25-30 %, silt 20-40 %, clay 25-40 %, organic matter 2-5%): 20; stabilizer: 0.03. Total moisture at mixing should be 10%.

Solar Trash Cans

As part of a year-long City of Vancouver pilot project, the SEFC waterfront is equipped with BigBelly Solar Compactors in place of conventional street-side garbage receptacles. The BigBelly units, manufactured in the US, contain sensors that trigger compaction when the volume of trash reaches a certain threshold. The compactors are freestanding and are powered by a small solar panel mounted atop each unit.

BigBelly compactors take up as much space as conventional garbage receptacles, but boast five times the capacity. As a result, there is less likelihood of overflowing waste, and garbage collection is required much less frequently, reducing noise, traffic and emissions associated with garbage trucks. The BigBelly units can operate for eight years on the equivalent solar energy it takes to drive a garbage truck 1.6 kilometres.

Sketch shows street tree with structural soil cell in place. The cells help protect roots from soil compaction, yielding larger trees and less pavement displacement as the tree grows.

Big Belly solar trash compactor installed on the SEFC Seawall.

Why Manage?

Vancouver is infamous for its rainy climate. The city sees an average of 1,117 millimetres of precipitation and 165 rainy days annually. As in many urban areas, rainfall during storm events needs to be managed to control runoff and limit the rate and volume of water that enters the storm sewer system. When very heavy rainfall enters the system, combined stormwater and sewage may overflow into local waterways, making it important to slow the rate of stormwater conveyance. Rainwater also collects contaminants from roadways and other surfaces, carrying a toxic solution into sewers. It is important to treat contaminated runoff by implementing filtration media that prevent sediments and toxic substances from entering waterways.

From Infrastructure to Amenity: 'Visible' Stormwater Management

Infrastructure, such as stormwater conveyance systems, is typically buried underground – out of sight, out of mind. At SEFC, the Public Realm Plan inverted this convention of infrastructure design, preferring

to open up the infrastructure and make it visible to the public. This is most apparent in the treatment of stormwater. The Olympic Village site is graded so that all rainwater flows either eastward or westward, depending where it falls. On the site's eastern edge, water flows into a bioswale that runs north-south into False Creek. Water that flows to the west will make its way to Hinge Park (see page 16) for treatment in the park's wetland system before entering False Creek.

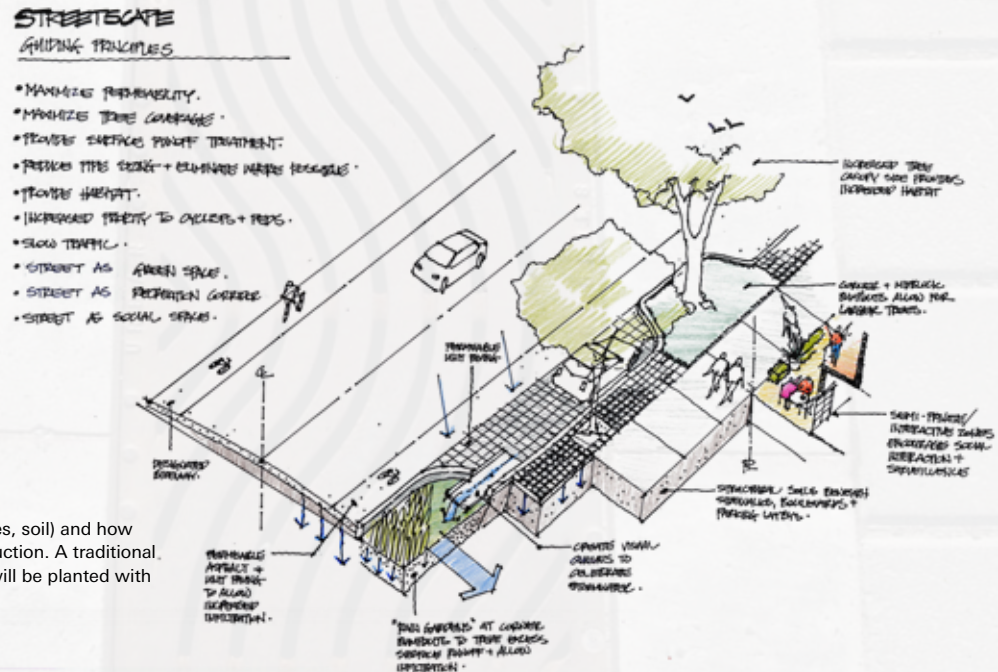
At Hinge Park, the water enters the wetland system through an exposed pipe, allowing residents and passersby to witness a part of the urban environment that usually remains hidden. This notion of exposing urban infrastructure also extends into the public art at the park. There is a bridge made of a giant pipe that is a part of the park design and children's play area. The pipe refers to the theme of water and the goal of celebrating rainwater and the water cycle.

Rainwater is part of the water cycle. Rain falls, is channeled to a body of water, evaporates, forms clouds

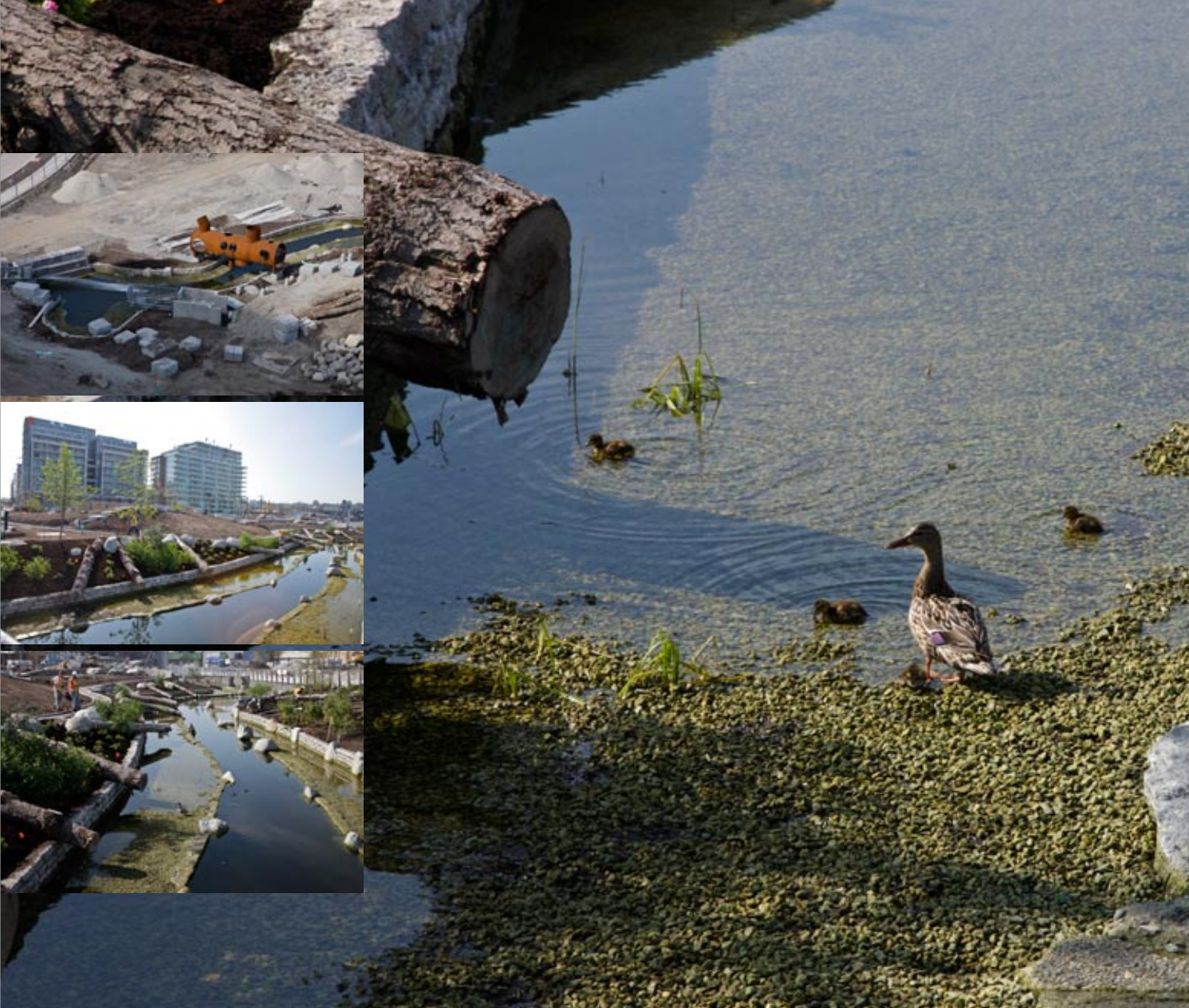
and falls again. As rain falls on the surfaces of the public spaces at SEFC, it is channeled down the centre of each street, visible to the passerby – a significant shift from street-edge sewers prevalent elsewhere in the city. Water is collected in sewer grates, and enters filtration galleries that begin the treatment process, removing toxins and particulate matter, and slowing

the flow rate. It then makes its way to the bioswale or the Hinge Park constructed wetland. Both treatment systems are above ground, exposing the flow stage of the water cycle and demonstrating how, by way of clever engineering, it is possible to clean up – naturalize – the rainwater even as it flows through our man-made environments.

The story of rainwater management should be visible to educate both visitors and residents. SEFC Public Realm Plan



Sketch shows relationships between landscape elements (roadways, sidewalks, trees, soil) and how they work as a comprehensive system. Inset photos show Hinge Park under construction. A traditional stormwater pipe (top inset) is installed as a children's play bridge; shallow margins will be planted with reeds. Wildlife is already returning to the park.



PROFILE

Robin Petri

M.Eng., P.Eng., LEED AP
Manager of Development, City of Vancouver
SEFC Project Office

Robin Petri has been working on the Southeast False Creek project since 2001. Originally working for the City of Vancouver Engineering Services, Petri was the engineering representative on the technical team that helped create the Official Development Plan for SEFC. She oversaw the four consultant studies (see Chapter Two, Translating Principles to Action) and the Merge Report that developed implementation plans for sustainable design at SEFC. On the topic of sustainability, she hopes that SEFC “is the model (sustainable community) that we envisioned and that we can continue to improve upon our successes,” building upon lessons learned from the first phase of SEFC’s development to push even further in future phases.

Petri is currently Manager of Development at the SEFC Project Office, a role she has held since its inception in 2005. She worked closely with the integrated landscape architecture and engineering team that designed the waterfront, public realm and infrastructure. She says one of the greatest achievements of the project, and one she looks forward to enjoying, is “the public spaces, because they’re public. We work for the public and we’ve created a place – a special place – where all are welcome.”

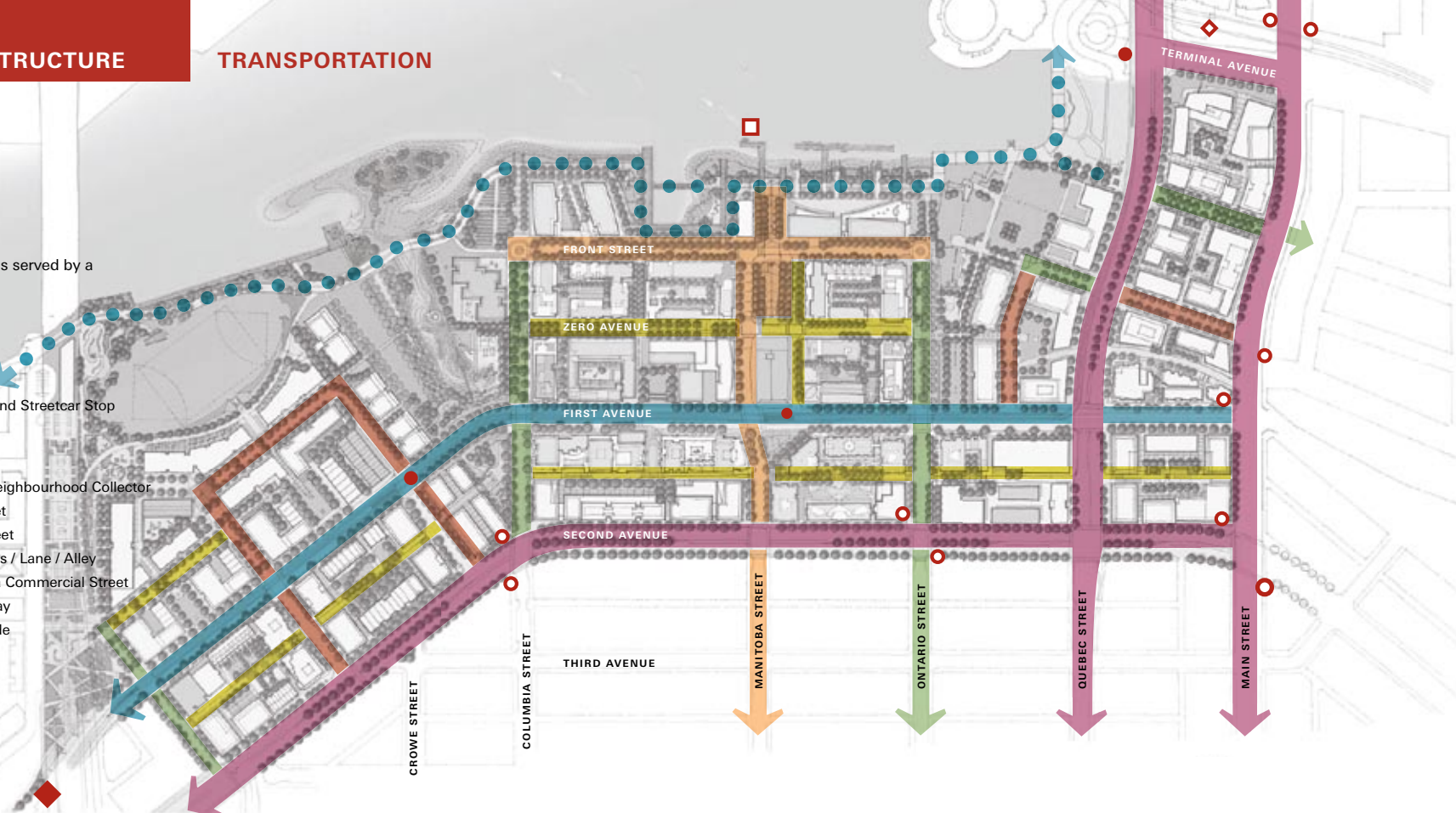
CHALLENGE

To planners and developers, to include local stormwater management in all new development. Local treatment reduces volume at sewage treatment facilities (saving energy), reduces the size of city-wide infrastructure, improves habitat and livability through planned wetlands, bioswales and green roofs – and keeps water in the local water cycle.

The Olympic Village site is served by a variety of transit options.

-  Bus Stop
-  Streetcar Stop
-  Skytrain Stop
-  Future Canada Line and Streetcar Stop
-  Aquabus Stop

-  Distinctive Street / Neighbourhood Collector
-  Neighbourhood Street
-  Arterial / Historic Street
-  Neighbourhood Mews / Lane / Alley
-  High Street and Plaza Commercial Street
-  Park Street / Greenway
-  Waterfront Promenade



Getting Around: Multiple Choices

Thanks to a wide variety of conveniently accessible transportation options, getting around Southeast False Creek will be easy. Indeed, the hardest part may be choosing what mode of transportation to use!

Several routes and modes will provide connectivity with the rest of the city, and are aimed

at encouraging people to get out of their cars and be active. The neighbourhood’s network of paths and streets are designed for pedestrians, cyclists and transit. Three dedicated bike routes pass through SEFC in addition to the seawall bike and pedestrian route that follows the city’s shoreline. The waterfront will also be served

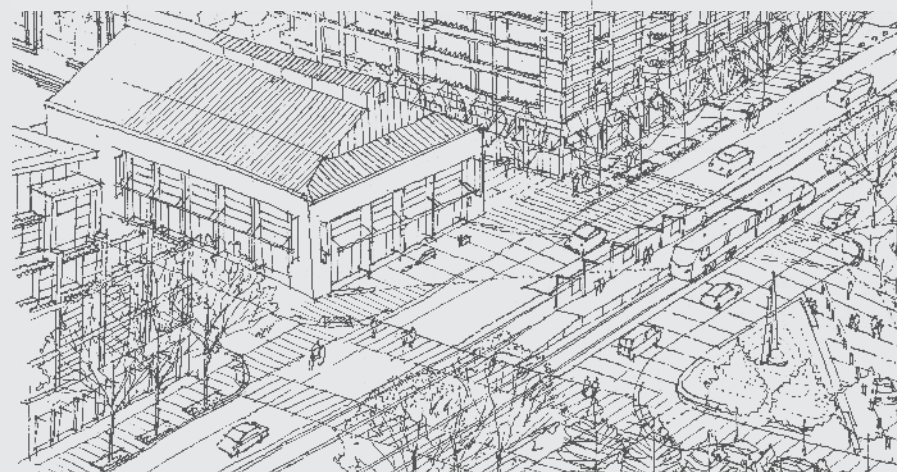
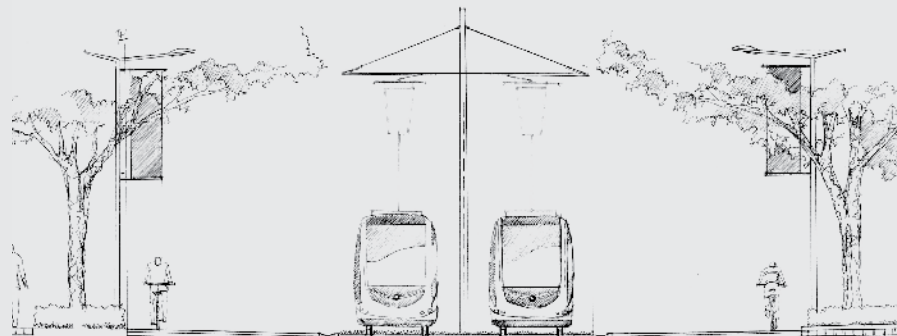
by a pedestrian ferry, which links to the city’s beaches and waterfront locales, such as Granville Island and the Vancouver Aquatic Centre. The neighbourhood will be a stop on Vancouver’s major recent addition to its public transit system, the Canada Line, a light rail transit line that connects the city’s downtown core with the Vancouver International

Airport. Major bus routes pass by and connect through the neighbourhood, as does Vancouver’s new Downtown Streetcar (see page 25). Finally, the neighbourhood is within walking distance of Skytrain, a light rail system that connects Vancouver’s city centre with the surrounding regional district.

First Avenue Streetcar

First Avenue is a distinctive street within SEFC. The street is designed to accommodate the first phase of a developing transit project, Vancouver's Downtown Streetcar. Described by a City employee as "one of the most unique streetscape characters within urban Vancouver," the street's design integrates the streetcar tracks and a central green meridian along the avenue. The boulevards and corner bulges will differ in character from conventional streetscapes and a large boulevard on the north side provides space for seating and planting opportunities. The streetcar will run eastward from Granville Island through SEFC to Science World and eventually to downtown and Stanley Park. Stops are located close to community amenities and commercial uses.

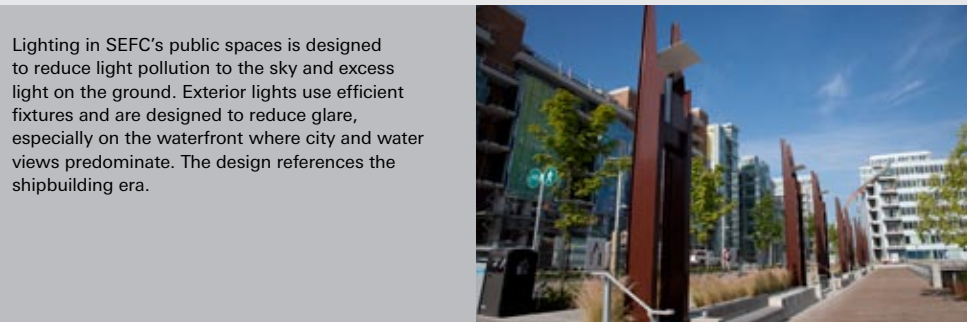
Vancouver's City Council approved a concept plan for a downtown streetcar system in 1999 following an extensive public consultation process. The primary purpose of the downtown streetcar is to link a number of downtown activity centres that are beyond comfortable walking distance for many. The system is intended as an expansion of the existing rail line in False Creek South, using the latest technology of modern low-floor electric streetcars. The project will extend and enhance the area's regional transit system. The first phase of the project stretches from Granville Island to Science World, and begins service during the 2010 Olympic Games.



Vancouver's new Downtown Streetcar will serve SEFC. Top, an artist's rendering of the First Avenue streetcar configuration. Middle, Salt Building with streetcar route.

Parking: Highlights and Innovations

- All residential parking at the Olympic Village will be underground.
- "Unbundled parking" was introduced at SEFC, meaning that the purchase of a condominium did not, by default, include the purchase of a parking stall. Purchasers were able to save money by opting out of the purchase of a parking stall.
- Eleven car-share vehicles will be located on site.
- Fifteen percent of parking stalls will have charging infrastructure for electric vehicles.



Lighting in SEFC's public spaces is designed to reduce light pollution to the sky and excess light on the ground. Exterior lights use efficient fixtures and are designed to reduce glare, especially on the waterfront where city and water views predominate. The design references the shipbuilding era.

Areas of Potential Concern

Since the early 1900s, SEFC has been a heavy industrial area (see Chapter One, "History"). Occupied by sawmills, steel fabrication and bridge works, shipbuilding, sand and gravel production, and brick and shingle manufacturing, this area has been filled with a variety of contaminants.

Twelve Areas of Potential Environmental Concern (APEC) were identified on the site, predominantly in the western areas occupied by galvanizing plants, shipyards and

heavy steel fabrication facilities. Eighteen APECs were identified off site, mainly to the south and the east, reflecting the heavy industrial use of the area with support industries located nearby to service the primary industries.

Compliance and Capping

The Olympic Village site was divided into 11 parcels for development, plus parks and public areas. With the exception of three parcels, the lands were remediated and Certificates of Compliance were issued. However,

at parcels 3, 6 and 11, residual contaminants remained: groundwater contamination at parcels 3 and 6, and soil contamination at parcel 11. The residual contamination was addressed by a risk assessment process, which showed that risk to people and the environment was within acceptable levels to the ministries of Health and Environment and therefore no further remediation was necessary.

At parcels 3 and 6, the zinc in groundwater contamination

extended more than 12 metres into the bedrock. It was shown that this residual contamination does not prevent a risk to the environment, and consequently it was not necessary or practical to conduct further remediation.

Human or environmental exposure to the residual contamination in soil at parcel 11 is blocked by the concrete walls and foundation of the building, and the contamination does not therefore present a risk.

- SITE
- - - LOT BOUNDARIES
- ▲ KEYSTONE BOREHOLE
- ⊕ KEYSTONE MONITORING WELL
- RL CSR RESIDENTIAL LAND USE STANDARD
- CL CSR COMMERCIAL LAND USE STANDARD
- HW HAZARDOUS WASTE REGULATION/TRANSPORTATION OF DANGEROUS GOODS REGULATION
- [Red Hatched Box] EXTENT OF SOIL EXCEEDING CSR RL STANDARD
- [Yellow Box] EXTENT OF SOIL EXCEEDING HW REGULATION

Diagram shows locations of test excavations used to identify areas of contamination. Below, waterfront before remediation. At right, jet grout walls are built to contain soils and prevent contact with the waters of False Creek.



DESIGN PARAMETERS

140 Trucks a Day . . .

Picture 64 Olympic-sized pools of excavated material. With approximately 160,000 cubic metres of material excavated in 10 months, this was the biggest excavation in the history of Vancouver. There were 95,000 cubic metres (38 Olympic-sized pools) of contaminated site material, of which 22,350 cubic metres (almost 9 Olympic-sized pools) was hazardous waste. All of the soil had to be classified as hazardous or not and whether it met or exceeded commercial or residential standards. Anything that was not hazardous but exceeded residential standards was sent to

the Vancouver landfill to be used as capping material. Residential quality material went to the Tsawwassen First Nation band landfill where the material had to meet stringent federal standards and was used as preparation filling for future development. All hazardous material went to the hazardous waste facility in Princeton, BC. At a rate of about 140 trucks per day (ten trucks per hour in a 14-hour workday), each load was tracked by licence, soil quality, tonnage and destination.

The pace of construction necessitated that all soil be classified before excavation began. Using a 20-metre grid, sampling at every

one-metre depth interval and drilling as much as 11 metres, Keystone Environmental characterized the quality of the soil for the entire site. By assessing the soil before excavation, excavated material could go straight into the truck, thereby cutting in half the amount of equipment needed. "There was no other way to do it in the short amount of time allowed for remediation," Bill Donald concluded. The main investigation took place from July to September 2006, requiring 93 boreholes, 43 monitoring wells and over 1,400 samples.

PROFILE

Bill Donald

P. Eng.
Principal, Keystone Environmental Ltd.

Bill Donald and Keystone Environmental Ltd. joined Millennium's team during the bid process, bringing expertise in sustainable management options for the site contamination. Keystone Environmental is an eminent environmental consulting firm headquartered in Vancouver. Remediation of this brownfield site was challenged by the stringent timeline. To address this, Donald and his team developed and completed a program to identify all contamination before construction began. Armed with this detailed information, the team was able to facilitate the excavation of over 160,000 cubic metres of material (over two-thirds of which was contaminated or hazardous waste), classifying it for appropriate disposal as excavation proceeded and without delays over a six-month period. For each inch of rainfall, the site generated over 1.5 million litres of water. The Keystone team worked with other team members to manage this water and the related regulatory process, including securing approval (a first in Vancouver) to discharge treated water to False Creek. "We are privileged to be a part of this team," says Donald, "creating what is arguably the most sustainable community on the continent."



CHALLENGE

To environmental authorities, to consider the full footprint of traditional brownfield remediation, including carbon costs of excavation, trucking and water treatment. Where risk assessment deems feasible, capping and controlling brownfield soil *in situ* can be proven to be a better option.

Water Treatment

Vector Engineering designed the sedimentation and erosion control plan for the entire Millennium Water development. This plan included a sediment pond and a variety of sediment control products (such as portable wheel washes, silt fencing, catch basin silt sacs, etc.) that mitigated the release or tracking of sediment out onto city streets and into the city storm sewer system.

Due to the sheer volume of water to be treated, the pond had to be supplemented with water treatment tanks that used a flocculent to settle out the total suspended solids (TSS). This wastewater treatment system was designed, built and operated by Storm Guard to deal with the TSS and also the contaminated water that was pumped out of some of the parcels during the excavation and foundation stage. Challenges at the site were significant given its historic use (heavy industry and related

contaminants), its proximity to False Creek, the ambitious development footprint and timeline. Storm Guard's discharge consistently satisfied all regulatory criteria, specifically relating to the following: heavy metal content, pH, total petroleum hydrocarbons, TSS, surfactants, organic toxicants and LC50 tests. The treatment plant ultimately treated over 88 million gallons (333,116 cubic metres) of water at flow rates of 500 gallons (just under two cubic metres) per minute. Analytical results obtained through a mobile onsite laboratory were used to ensure peak performance during changing influent water conditions (such as storm events and fluctuating contaminant loads). Results obtained on site were consistently supported by those obtained independently by the site's environmental monitor, Keystone Environmental.

Vector also designed the dewatering plan for the entire development, which consisted of a network of

pipes that conveyed the accumulated water from each parcel to the water treatment facilities. This water was first treated in the treatment tanks and then discharged into the sediment pond for further settling prior to discharge to the city sewers. Sediment loading could not be discharged if there were more than 75 ppm of suspended solids and the pH of the water was outside of the accepted range. Vector monitored the sediment control plan as a whole and ensured that all parties working in the Millennium Water site followed the plan. Keystone Environmental monitored the quality of the discharge water from the treatment facilities (sediment pond and tanks).

As part of the SEFC Plan, the City developed a wetland for Hinge Park to treat stormwater from upstream of the area (the catchment area south of the site) and from the surface runoff on the city streets within the Millennium Water site.



During excavation, all rainwater that fell on the site had to be captured and treated for contamination – more than 88 million gallons in total.

Jet Grout Wall

With more than 1,100 jet-grouted columns installed by Geopacific Consultants, this was the biggest jet-grouting contract completed in Western Canada. Jet grouting is a soil improvement technique that involves breaking up the soil structure completely and mixing the *in situ* soil with water cement grout. The grout mix is jetted back into the soil, with the aid of special tools, at very high speeds (800-900 km/hr) created by high pressures (7,000 to 9,000 psi or approximately 48,000-62,000 KPa). Technical and logistical challenges, due to the variable soil conditions and the proximity of the site to a tidal body of water, were resolved. The jet grout columns, in proximity to the ocean, create a soil-cement wall with two purposes: providing an impervious water cut-off wall and supporting the streets and other public space improvements constructed adjacent to the building excavations.

Wheel Wash

With a high volume of trucks entering and exiting the site daily, the potential for contaminated soil carried on their wheels to be tracked through city streets was viewed as a significant environmental issue. A 7 metre (24 foot) truck wash supplied by Wheel Wash International solved this potential problem. Units are fully self-contained requiring only city power (three phase or by means of generators) and a water supply. Water used to wash the undercarriages and wheels of exiting trucks is constantly filtered and recycled. Sensors placed ahead and beyond the mobile wheel wash function to activate and deactivate the wash cycle.

Top: Specialized drilling using the 'Klem drill' to form a jet grout wall.

Middle and bottom: Wheel-wash stations remove contaminants from all truck wheels before they leave the site.



FEATURE PROFILE

Metro-Can Construction, Ltd.

The remediation of the SEFC brownfield site was a critical step before construction. Metro-Can, a diversified general contracting company headquartered in BC, took on the job.

“The sheer size of this job was our first challenge,” says Derek Pilecki, Metro-Can’s Director of Preconstruction. “The Olympic Village excavation contract was possibly the largest building excavation contract in Vancouver’s history.”

Metro-Can worked with Matcon Excavation and Shoring Ltd. and Keystone Environmental to complete the remediation, with Vector Engineering providing surveying and quantification services for Millennium Development. The team removed the soils, categorized them and trucked them to certified fill sites or treatment facilities as required. A second challenge was constructing a jet grout water cut-off wall to keep False Creek out of the excavations.

“Our third challenge was removing vast quantities of rainfall,” Pilecki remembers. “A 12 hectare site collects lots of water, which gets contaminated from the exposed soils. We couldn’t discharge it to False Creek, so it was a serious problem.” With assistance from Storm Guard Water Treatment Inc. and Devon Environmental Services, the water was acceptable for discharge in Vancouver’s sanitary systems.

Metro-Can started excavation in January 2007. The Olympic Village site was declared remediated in September, 2008.

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PLATINUM



Millennium Southeast False Creek Properties Ltd.

Millennium Group is an award-winning Vancouver-based team of professionals and the developers of Millennium Water Olympic Village. They are renowned for their disciplined commitment to high quality architecture and luxurious design. At 1.4 million square feet, Millennium Water is the largest single-phase development in Canada. It is designed to be Canada's largest LEED Gold neighbourhood and a leading model of how to build a sustainable residential community.



Metro-Can Construction (OV) Ltd.

Metro-Can Construction is among the top 50 general contractors in Canada and the top five in British Columbia. Focusing on turning visions into buildings and delivering value to their clients, Metro-Can has completed over 280 institutional, commercial and multi-family residential projects. Since placing the first foundations on the Millennium Water project in June 2007, Metro-Can has proceeded to construct 10 LEED Gold buildings incorporating 540 condominiums, 250 social housing units, 60,000 square feet of retail space and a LEED Platinum community and boating centre.



ITC Construction Group

ITC Construction Group has proven capabilities in multi-unit residential, commercial and social housing construction projects. Established in 1983, they have successfully completed over 100 projects for private developers and public initiatives in BC and Alberta. ITC is proud to be the General Contractor of the eight luxury waterfront towers at Millennium Water. These LEED Gold certified structures consist of 315 condominiums and will be complemented by 13,619 square feet of commercial/retail space at the ground level. Quality Counts.



Rennie Marketing Systems

Rennie Marketing Systems (RMS) proudly leads the sales and marketing campaign for the residential component of Millennium Water. Led by Bob Rennie, RMS works closely as 'Millennium's representative' to bring to market the most innovative sustainable community in North America. Maintaining the project's identity of environmental awareness, RMS utilizes eco-friendly elements throughout the marketing campaign. RMS marketing objectives extend beyond sales achievements and include increasing global awareness of a new standard of development.



Durante Kreuk Landscape Architects

Durante Kreuk is an award-winning landscape architectural firm with over thirty years' experience in the private and public realms of design and development. A broad perspective and diverse thinking are the key to creating a wide range of sustainable, people-focused urban places. At Millennium Water, the unique challenge of creating a sustainable neighbourhood through an integrated design process was both complex and rewarding. The result speaks for itself.

GOLD



VANOC



Merrick Architecture



Gomberoff Bell Lyon Architects Group



Cobalt Engineering Co. Ltd



VIA Architecture



Nemetz (S/A) & Associates Ltd.



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of Companies
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KD Engineering
Letterbox Design Group
Morrison Hershfield
PWL Partnership
Landscape Architects Inc.
Quoin Project and Cost
Management Ltd.
Recollective Consulting

Vector Engineering
Services Limited
FVB Energy Inc.
Femo Construction Ltd.
Jeda Mechanical Ltd.
Pitt Meadows Mechanical
Power Drywall Ltd.
Sentrax Mechanical
Contracting Ltd.
William Kelly & Sons
Plumbing Contractors Ltd.

BRONZE

Aqua-Tex Scientific Consulting Ltd.
Blue Mountain
Technologies, Inc.
Commonwealth Historic
Resource Management Ltd.
IBI Group
Levelton Consultants Ltd.
Fraser Milner Casgrain LLP
Pioneer Consultants Ltd.
Contrada Enterprises Ltd.
Energy Aware Technology Inc.
Sandwell Engineering Inc.
FAMA Industries Corp.
Inform Projects Partnership
PricewaterhouseCoopers LLP
Trane



Olympic International Inc.

Olympic International creates comfortable, healthy and energy-conscious indoor environments. As a manufacturers' representative, they are committed to bringing the world's most innovative and sustainable technology to local markets. The Millennium Water project utilizes radiant heating and cooling technology, which will substantially reduce energy consumption and system noise, increase available ceiling height and improve overall thermal comfort and indoor air quality.

PARTNERS

Canada Mortgage and Housing Corporation

Environment Canada



Enerpro Systems Corp.

Enerpro Systems Corp. are market leaders in intelligent energy management for new construction and infrastructure upgrades to existing buildings. Since 1996, BC's only customizable energy management programs have been providing no-cost, full-service solutions that maximize efficiencies in energy and water use, reduce consumption and provide numerous economic benefits. This groundbreaking innovation has spurred a series of firsts in energy management, such as the ability to view a real-time display of all energy and water consumption within 1,100 housing units at Millennium Water.



Keith Panel Systems

Keith Panel Systems (KPS) is North America's leader in the design, manufacture and installation of rainscreen wall systems. They are proud to be part of constructing Millennium Water. The wall systems installed by KPS will preserve the performance integrity of the exteriors, reduce the heating and cooling loads, provide an extended service life and are virtually maintenance free. Alucobond®, Swisspearl® and specialty glass are the quality exterior finish products featured on proprietary systems by KPS.



Wilco Landscape Westcoast Inc.

Wilco has become expert in the construction and delivery of built landscapes. Offering project management and landscape construction services for civil, parks and development projects, Wilco is a leader in successfully delivering complex projects to its clients. Wilco thrives on diversity and challenges and seeks out projects that require the depth of experience and knowledge that they have accumulated through the vast array of projects the company has built throughout BC and Western Canada.

Next Chapter: Architecture

Chapter Four explores the architectural detail of the Olympic Village, from concept sketches to final design. With topics ranging from building envelopes to social sustainability, from passive design to community courtyards, the chapter explores the ideas and materials involved in building "better places to live." A special additional section outlines Arthur Erickson's legacy, not only in his final buildings at the Olympic Village, but through his impact as a mentor to many in today's architectural community.

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FRONT COVER Public spaces concept sketches showing both exploration and analysis of ideas.
BACK COVER Views along the seawall at Southeast False Creek, including granite block amphitheatre, solar-powered trash compactors, stepping stones to Habitat Island, naturalized shoreline sections and oversized "gull" chairs on boardwalk.