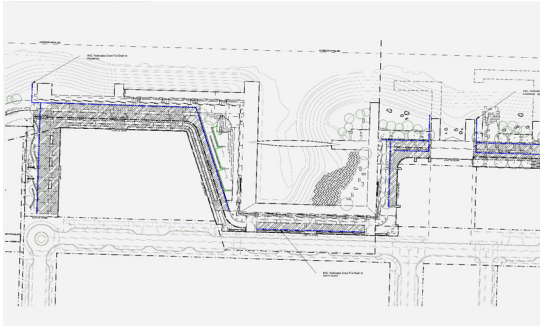


## A FORWARD-LOOKING ATHLETES'S VILLAGE

### Vancouver community plans around big trees



*Complete South East False Creek boardwalk plan*

The new community of South East False Creek, in Vancouver, Canada, and landscape architecture firm PWL Partnership were working on developing a seawall promenade along the waterfront. The City and the consultants all wanted to ensure that the new promenade had a large tree canopy to provide shade, reduce hardscape temperatures, assist in retention, detention and cleaning of rainwater on-site, and provide a beautiful area for pedestrians.

The seawall promenade was an extension of the existing walkway that winds around all of False Creek, and PWL intended to plant 80 trees along the new extension. The existing promenade area did not provide sufficient uncompacted soil volumes to grow sizable trees, however, so PWL used the DeepRoot Silva Cell, a system capable of holding vast amounts of uncompacted soil, to nourish the trees and allow them to meet the growth potential and life expectancy of PWL's design vision. Margot Long, a principal at PWL, explained their choice further, saying "having healthy and viable trees on this site was important to us and the City of Vancouver. As a green project, the City wanted to ensure the trees would be large and grow to their potential. As a sustainable project, the City wanted to ensure there would be adequate soil volume for the health and longevity of the trees."

PWL elected to install a two-deep Silva Cell system under most of the length of the promenade, opting to divide the installation into two building phases. Phase 1 was built in

2007, and spanned the area from the water's edge to a temporary Lock Block Wall about 7.5 m (25 ft.) away. In 2009, when the buildings on the other side of the Lock Block wall are finished, Phase 2 will begin. The wall will be removed and the promenade, with the Silva Cells underneath, will be extended closer to the building property line.

Each individual Silva Cell is composed of a frame and a deck (though when used to construct an entire system only one deck per Silva Cell stack is necessary—regardless of whether that stack is one, two, or three frames high.) More than 5,600 frames were used for the completion of Phase 1 at the South East False Creek promenade, providing a total of about 1,585 m<sup>3</sup> (56,000 ft<sup>3</sup>) of soil for the trees. Because the acreage of the site under construction reached about 11,425 m<sup>2</sup> (122,977 ft<sup>2</sup>), the Phase 1 of the installation was divided into five separate sections:

Section 1: Promenade along Triangle Park.

Section 2: Northwest section.

Section 3: South of Inlet section.

Section 4: East of Inlet section.

Section 5: Northeast section.



*Figure 1*



Figure 2

The Triangle Park and East of Inlet areas were the easiest sections to construct because the contractor was able to stage the excavator and materials at the side of the excavation area and build the complete system from the staging area, working up one level at a time. These two sections most resembled the standard Silva Cell sidewalk construction process where the excavator and materials are staged in the parking lane.

The other three sections were more challenging construction areas because they were bordered by water on one side and by the Lock Block wall on the other. This meant that a complete section had to be built first from bottom to top, and then the excavator had to move out onto the newly constructed area and build the next area from bottom to top (Figure 1).

For the Northeast section, which required integration of electrical and water utilities, the team ran the utility conduits directly through the bottom of the Silva Cell frames under the promenade and covered them with soil (Figure 2). The crew for the entire Phase 1 of construction consisted of an excavator operator, and a work team that varied between three and seven people in size.

The whole site sits on 12 m (40 ft.) of fill, and some settlement is expected over the long term. The standard details provided by DeepRoot were modified by consulting engineers to anticipate the potential settlement by adding a geogrid and

a geotextile under the 100 mm aggregate base course. A geogrid was also added on top of the geotextile that covered the Silva Cell decks. Finally, another geogrid was added to overlap the border between the Silva Cell system and the normal compacted soil base by .6 m (2 ft.) on either side to help smooth out any differential in settlement rates.

The promenade is currently in use as a pedestrian walkway and meets H-20 vehicle loading standards. Phase 2, begun in 2009, completed the installation with 1,400 more Silva Cells and 41 additional trees. In February 2010 the site was officially awarded LEED Platinum status.

**Installation Summary:**

- Total soil volume provided by the Silva Cells (Phases 1 + 2): 1,982 m<sup>3</sup> (70,000 ft<sup>3</sup>)
- Number of trees (Phases 1 + 2): 80
- Total soil volume per tree (Phases 1 + 2): 24 m<sup>3</sup> (875 ft<sup>3</sup>)
- Number of Silva Cells installed (Phases 1 + 2): 7,000
- Promenade area: approx. 11,425 m<sup>2</sup> (122,977 ft<sup>2</sup>)
- Project designer: PWL Partnership
- Client: City of Vancouver
- Tree species: Easy Street Norway Maple, Forest Green Oak, Emerald Queen Norway Maple, Armstrong Red Maple.

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Finished boardwalk  
(Silva Cells extend across asphalt and pavers)