



West London Dyke

DuraHold | Case Study

DuraHold. The Ideal Choice.

The structural stability & wall design surmount the large fluctuations in water level

Its smooth surface is perfect for the rapid flowing hydraulic conditions

Overcame the complex site conditions & construction challenges





Wall Engineer	Civil Engineer	Manufacturer	Installer
Risi Stone Inc.	Stantec Consulting Engineers	Unilock Ltd.	Ro-Buck Contracting Ltd.
<i>Newmarket ON</i>	<i>London ON</i>	<i>Georgetown ON</i>	<i>London ON</i>

This project is part of a large-scale reconstruction of the existing dyke system along the Thames River in London, Ontario. In this phase, approximately 300m (1000ft) of the dyke was replaced with a new 8m (26ft) high DuraHold wall.

Extreme 2 year and 75 year flood events in the Thames River have the potential to completely submerge the entire new wall. Due to the rapid flowing hydraulic conditions, the DuraHold product was used because its smooth surface reduces drag effect from flowing water. This, combined with DuraHold’s structural stability, high rate-of-installation and the capacity to create curves with its Tapered Half units, made it the ideal choice for this project.

With the river limiting site access, and the necessity to prevent contamination of the Thames River, all construction had to be completed from the high side of the wall. Proper coordination of the excavation, block placement, and infill material was crucial because of the limited space. Due to the height of the wall, a fall arrest system was utilized, with anchor wires secured to large blocks. Workers could then harness themselves to the wire allowing the range of movement required to construct the wall.

The complex space constraints and additional factors of the site made excavation and filling operations difficult and consequently reduced the installation rate to approximately 45m² (484ft²) per day. Under ideal conditions, machine-placed wall systems can be installed at much higher rates (100–150m² per day [1076–1614ft²]).

However, because machine-placed walls do not rely on the physical capacity of the workers to place the block, the rate of installation was maintained at the same level throughout the day.

A reinforced toe wall that was constructed to stabilize the original dyke in the 1980’s, was used as erosion protection. It was cut to fit the new wall layout and riprap was placed between it and the DuraHold wall. To allow for the water to exit the infill zone as quickly as possible following a flood event, the wall was backfilled with a 60cm gap-graded drainage layer. Drainage tiles were installed at grade, and flood event elevations, with the drainage tiles outlet through the wall face at 15m intervals.

On the North end, a 90 degree “hidden wall” was incorporated into the layout with a curved section abutting it. This new curved section reduces flow turbulence and allows the wall to taper back into the existing dyke structure. The “hidden wall” permits for a future planned expansion and will eliminate the need to dismantle a large portion of the new wall. Simply by removing the curved section and abutting to the “hidden wall”, the wall can quickly and easily be extended.

A pathway running alongside the Thames River was incorporated into the layout atop the new DuraHold wall. The South end of the wall was terraced, allowing the pathway to extend down under the Queens Ave. and Kensington Bridges, and connect to Riverside Park.