

LIGHTWEIGHT STRUCTURAL FILL

Jim Lorimer Park Playground

A new community playground built on weak ground

LOCATION
Burnaby, BC

APPLICATION
Playground fill

DESIGN
Van der Zalm + Assoc.

MATERIAL
Enviro-Rock FGA

OVERVIEW

To construct the new Jim Lorimer Park's playground, Van der Zalm + Associates specified Enviro-Rock foam glass aggregate, a lightweight fill material made from 100% recycled glass. Roughly 646 cubic metres of Enviro-Rock brought the site to grade while keeping the base stable and free-draining for the play structures, pathways, and hardscape above.

~90%

lighter than conventional granular fill, easing the load on soft wetland soils

THE CHALLENGES

The playground sits on the edge of the Chubb Creek wetland, where thick peat over soft clay compresses heavily under load. Bringing the site up to grade with conventional fill was projected to cause around 600mm of long-term settlement, far beyond what a playground could tolerate. Seasonal flooding and high groundwater meant the fill had to stay stable and anchored even when wet.



THE SOLUTION

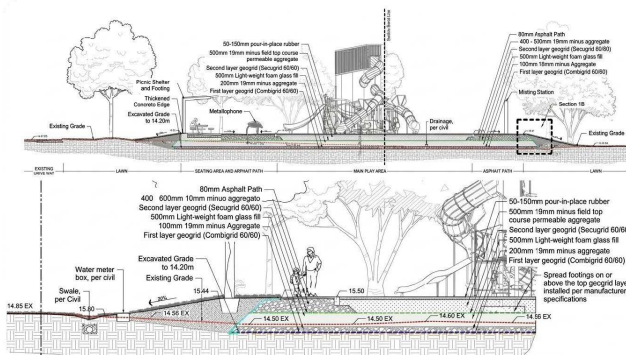
The design called for a 500mm layer of Enviro-Rock as lightweight structural fill, light enough to bring the site to grade without loading the soft soils below. Because the aggregate is buoyant and the site floods seasonally, the design had to anchor it against uplift. Settlement gauges were installed across the site to monitor the ground over time.



Placement & performance



Aerial view: ~646 m³ of Enviro-Rock placed across the playground footprint.



Design cross-section showing the layered, geogrid-reinforced fill.

PROJECT SPECIFICATIONS

Material supplied	~646 m³
Fill depth	500 mm
Reinforcement	Dual geogrid (Combigrd & Securigrd 60/60)
Surfaces supported	Pour-in-place rubber, asphalt, concrete
Recycled glass content	100% post-consumer

INSTALLATION

The subgrade was excavated, then the base geogrid was laid. Then the 500mm lift of Enviro-Rock went down next, sandwiched under a second geogrid layer and a compacted cap that lock the aggregate in place. Because the material is light and free-flowing, crews placed it quickly with standard equipment, no specialized handling.

PERFORMANCE

Enviro-Rock gave the playground a strong, free-draining base at a fraction of the weight of a traditional fill. That reduction in load brought projected settlement down from around 600mm to roughly 200mm, with just 20 to 30mm of movement expected within the reinforced layer itself. The interlocking aggregate and dual geogrid hold the section stable under the play structures and pathways, while its open structure keeps water moving through rather than pooling.

MATERIAL SPECIFICATION	VALUE	UNITS
Average grain size	25-75	mm
Dry bulk Density	250	kg/m³
Compressive strength @ 20% Compacted	1.01	MPa
Angle of friction (@ 65 kPa)	39	Degrees
Water absorption	7.2	%
R-Value per inch (dry)	2.4	ft² * hr °F/BTU-in