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HELIX PROJECT | FALKIRK

The Helix project in Falkirk has transformed a tired and lifeless environment into one of the most expansive and attractive community locations in Europe. The Helix forms the hub of the Forth and Clyde canal and has a strong water theme with a kilometre of new canal providing a safe new connection to Grangemouth with a new lagoon, an adventure splash area and a wetland broadwalk. The entire site is linked by 27 kilometres of shared access pathways linking 16 communities, much of which has LED lighting, main access ways and a canal tunnel under the major M9 motorway.

Leca® Lightweight Expanded Clay Aggregate has played a key role below the surface of this project enabling construction access and land raising directly over a Scottish Water 36" fresh water trunk main and a 500mm pumped rising main. Its specification has avoided enormous additional costs that would have arisen from the rerouting of Scottish Water's assets.

Rising high above this futuristic community landscape are The Kelpies, two fabulous 30-metres high, stainless steel sculptures of equine heads that reflect the lineage of the heavy horse of Scotland's successful era of heavy industry. Created and designed by sculptor Andy Scott, The Kelpies now dominate the skyline illustrating the typically equine quality of strength and power, coupled with a majestic guardian stance, which are fast becoming an international landmark and visitor attraction. This beautiful sculpture has been brought dramatically to life by incredible engineering knowledge and superb construction skills.

FACTS

Amount of material: 2000m3 of LECA LWA (10-20mm)

Interesting Fact: Putting both raised hard and soft landscape works associated with the Kelpies over the ains would have placed unacceptable weight on the pipework so a lightweight product was required to substitute the traditional earth fill

Delivery Method: 8-Wheel Tippers

Contractors: Ironside Farrar

Overview of Project

Work on the Helix regeneration project started in 2007 when the scheme was awarded funding and financial support. Bringing the canal back into prominence for the community was a key consideration with the introduction of substantial community and activity centres to provide participation zones, sporting and leisure features. It is now one of Scotland's largest contemporary-based open space leisure projects and has been named Best Environment Project at the 2014 National Lottery Awards.

The overall landscape architecture for Helix was conceived by landscape architects and engineers Ironside Farrar of Edinburgh who were instrumental in leading the successful funding bid, masterplanning, design and implementation of this transformational project for Falkirk Community Trust, Falkirk Council and Scottish Canals.

David McCandless, graduate geo-environmental engineer, Ironside Farrar, explains the Leca® Lightweight Expanded Clay Aggregate requirement: "Putting both raised hard and soft landscape works associated with the Kelpies over the ains would have placed unacceptable weight on the pipework so we looked for a lightweight product to substitute the traditional earth fill and Leca® Lightweight Expanded Clay Aggregate fitted the bill. By replacing up to 1250mm of additional fill with Leca® Lightweight Expanded Clay Aggregate we reduced the increased load substantially and were able to demonstrate that the land raising could occur without undue risk."

A totally natural product, Leca® Lightweight Expanded Clay Aggregate is formed by heating and firing natural glacial clay in a rotary kiln at temperatures up to 1150?C. This process transforms the clay into lightweight ceramic granules with a hard shell and porous core. With a bulk density of just 0.3 tonnes per cubic metre, Leca® Lightweight Expanded Clay Aggregate has excellent insulation properties, is free draining, fire resistant, frost resistant and chemically inert with no hazardous properties. Used as a lightweight aggregate fill in many civil engineering and construction applications Leca® Lightweight Expanded Clay Aggregate reduces the weight on weak substrates and against retaining structures by up to 75% over traditional fill and eliminates expensive settlement delays, is easily handled and quickly installed. This resolved the weight problem at Helix to the satisfaction of both Ironside Farrar’s engineering team and Scottish Water’s asset manager.

Contractor Feedback

Civil engineering contractor R J McLeod (Contractors) Limited carried out the excavation and refill project and Spencer Carnie, Project Manager, supervised the work on site. He says: “We removed the existing fill to a depth of a metre to expose the top of the water main. Then we back filled and raised the levels with 2000m^{3} of Leca® Lightweight Expanded Clay Aggregate which was delivered close to the working site and allowed us to place it quickly and easily with tracked shovels. Leca® Lightweight Expanded Clay Aggregate worked very well for us with no problems at all.”

Leca® Lightweight Expanded Clay Aggregate also fulfilled a similar role on the Helix project but within a separate contract carried out by Balfour Beatty Construction Services UK (BBC). BBC was responsible for an access road project where again Leca® Lightweight Expanded Clay Aggregate reduced the load on the water main. Alan Brisbane, project manager for Balfour Beatty Construction, reports on the choice of Leca®

Lightweight Expanded Clay Aggregate: “We had a choice of several material options but through value engineering Leca® Lightweight Expanded Clay Aggregate material was specified. It proved easy to use, clean to handle and quick to install.”