ABG blueroof

Rooftop Storm Water Attenuation, St James Quarter, Edinburgh, UK

creative geosynthetic engineering

Case Study

Photo Credit: BDP

Project Description

St James Quarter is an impressive new galleria retail shopping centre and residential development that rejuvenates a large area of the New Town in Edinburgh city centre. The site was formerly occupied by a dated 1960s era shopping precinct, and with the exception of the John Lewis store, all of these old buildings have now been demolished to make way for the new development. The £1 bn project creates 850,000 sq. feet of new retail space, with a capacity for 80 units focussed on high-end retail alongside the Bonnie & Wild's Scottish Marketplace and Food Hall.

The Challenge

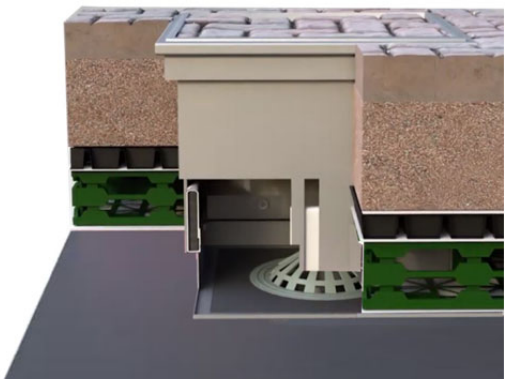
Such a large city centre development is subject to strict planning conditions for the management of surface water. The Water Environment Regulations3 (CAR regulations, Scotland) require all surface water from new developments to be attenuated and treated by a Sustainable Drainage System (SuDS) before it is discharged into the water network. The aim of SuDS is to mimic natural drainage, encourage infiltration and attenuate hydraulic impacts to minimise downstream flood risk. Excavating underground storm water storage tanks to control surface water run-off was not possible since three levels of basement parking are incorporated beneath the retail centre. Even where possible, basement tanks are comparatively expensive compared to roof level attenuation systems, with high spoil disposal costs, increased safety risks arising from the excavation activities and a large carbon footprint incurred as a result of the number of additional site vehicle movements.

The Solution

The proposals for drainage and SuDS at the St James Quarter development were mainly focussed on the

Project Information

Client	Nuveen Real Estate
Contractor	Laing O'Rourke
Consultants	BDP (masterplanning, architecture) Arup (engineering services)
Products	ABG blueroof VF 88mm (Level 5) ABG blueroof VF 108mm (Balconies x 2)
Roof areas	Total attenuation: 8,000m^2
Benefits	• Storm water / SuDS attenuation at rooftop level as an alternative to basement storage tanks • 7,809m^2 of 88mm void former attenuation system to the main level 5 roof areas, restricting flow rates to 301 l/s over 15,000m^2 catchment area • Bespoke diffuser chambers fitted to control downpipe flow rates



ABG blueroof with paved surface finish

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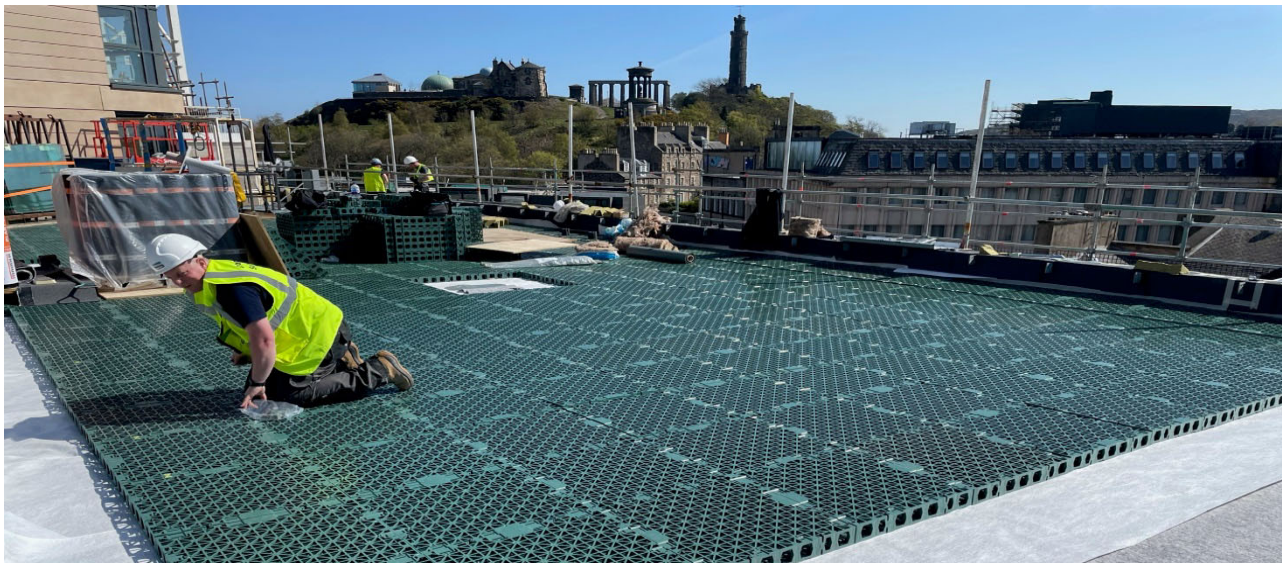
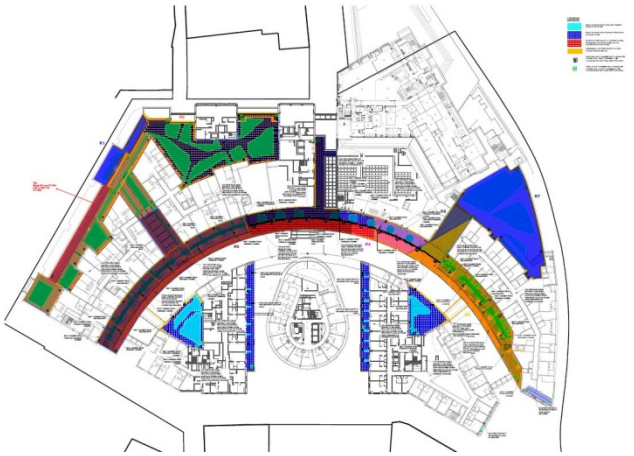


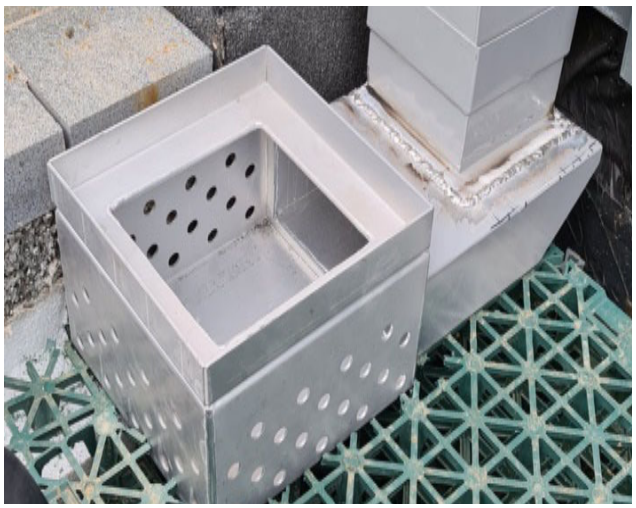
large 15,000m^2 catchment area on roof level 5, with 7,809m^2 of 80mm deep attenuation void capacity installed by ABG's installation partners Geogreen Solutions. The blueroof system treats and restricts storm water that deluges onto the roof before it is gradually released over a number of hours via outlet control and filtration chambers to the underground drainage system. The attenuation and restrictor chambers on level 5 (east and west of the soon to open central circular W hotel building) and onto balcony areas 1 and 2 at the front and back of the upper apartment buildings, are supplemented with an additional of 2,280m^2 of **ABG Roofdrain** geocomposite, installed at the base of rooftop planters to provide a connected drainage and irrigation / reservoir layer as part of the landscaping design.



Roof plan showing the ABG blueroof areas installed on level 5 (shaded blue)

The ABG Service

ABG calculated and designed the required attenuation capacity, including a new diffuser chamber solution to control water outflow at downpipes.



Stainless steel diffuser chambers fitted to downpipes

View of St James Quarter from the north of the site, with the two balcony attenuation areas visible in the foreground

Contact ABG today to discuss your project specific requirements and discover how ABG past experience and innovative products can help.

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