

National Centre of Excellence for Food Engineering



Location:
Sheffield Hallam
University, Sheffield,
South Yorkshire



Client:
Sheffield Hallam
University



Architect:
Arctica



Value:
£5.7 million

Civil Engineering

Structural
Engineering

Building
Consultancy

Geotechnical and
Geoenvironmental
Engineering

Project Management

Specialist services

The National Centre of Excellence for Food Engineering is strategically located alongside the Olympic Legacy Park in Sheffield.

It will focus on engineering processes of food production allowing for greater levels of study in this area. Offering laboratories, conference areas, workshops and teaching spaces, this research led facility will address an industry recognised shortage of food engineering expertise.

Engineering and Design Factors

The key design challenges and solutions are listed below:

- The site had a number of issues including made ground from former basements and the presence of relatively shallow coal workings. The high load and flexibility requirements meant that a solution of grouting the site and installing a reinforced raft solution with tied in pads and groundbeams.
- The nature of the building makes the requirement for M&E services onerous, requiring one third of the first floor footprint for plant area and significant clear depth below first floor for service zones. In order to meet this along with the planning restrictions on the overall height the decision has been taken to adopt the slimflor flooring system with deep

deck carried off the bottom flanges of the asymmetric beams. This has allowed the overall structural zone to be limited to 500mm even while carrying plant loading.

- Within a food processing plant, the internal drainage is a crucial part of the building design. The drainage must be designed to take into account the type of process intended in each area of the build. The design must ensure that the drainage system can deal with the quantities, and types, of liquids and solids that will be discharged from the process, building services, and hygiene operations within the facility. As a research facility the range of potential effluents becomes far larger therefore the drainage has been designed to incorporate a separate foul storage tank and shut off penstock to allow the foul process drainage to be cut off from the adopted system and pumped out as necessary.

Description of the Works

Alan Wood & Partners are responsible for the structural design and detailing of the frame and foundations. Masonry design & detail and metal deck floor layout and design also form part of the deliverables package. A complex infrastructure and drainage solution was also developed and detailed.

Core services

Civil Engineering / Structural Engineering

Sectors

Education