St Giles Circus
Delivering safe air during basement works

October 2018

St Giles Circus development

Project: 4 levels of basement, all constructed top-down

Client: Consolidated Developments

Architect: ORMS

Main contractor: Skanska

Basement works: Careys

Construction work commenced: July 2017

Completion scheduled for 2020

Further information

St Giles Circus Development

St Giles Circus is a busy intersection in the West End, where Charing Cross Road and Tottenham Court Road meet Oxford Street. The area has seen a lot of development recently, including a key part of the Crossrail project.

Now, a project there is creating four new buildings and refurbishing a number of existing buildings to provide a mix of commercial and residential spaces, including an impressive multi-media centre and 800-person event gallery at basement level.

The challenge

Right from the design stage it was clear the top-down basement works would require ventilation and fume control measures. Working in this sequence allowed the upper levels of the building to be formed, while the basement was still being excavated below. RVT were asked to devise and set up a system which would ensure site workers could operate within a safe environment.

Having assessed the site, RVT identified the need for sufficient airflow for a number of complete air changes every hour within the basement, in order to ensure any harmful fumes were displaced. As work progressed, set-up was modified to reflect the site's changing – and complex – ventilation needs.

Ventex® Centrifugal Fan 450S

- Skid Mounted 415v Centrifugal Fan
- Airflow rating of 20,500 m/hr
- Can be used with long lengths of flexible ducting
- Ideal for providing ventilation during boring and tunnelling

"We have used RVT Group on a number of top-down construction projects. RVT's technical department can calculate the requirements for each project phase and both the service and ventilation equipment are excellent. Every time we are working in a confined area, our site operatives can carry out their work in a safe working environment."

Diarmaid Lawlor
Project Engineer
Careys Civil Engineering

During the initial excavation and breaking works, a single Ventex® Centrifugal Fan 450S was positioned at ground floor level, forcing fresh air through suitable voids and into the basement through up to 24 metres of ducting. The ducting outlet remained close to the dig face throughout, ensuring fresh air was supplied directly to the area where the risk from fumes was greatest.

For the excavation of the 'Box in a Box' section holding the auditorium – a very large enclosed area – a further four 450S fans were added on the ground floor. These are distributed across the structure's footprint to ensure an even spread of air across the basement, but still with an emphasis on directing the air to the dig face at all times.

Further centrifugal fans can be deployed tactically to provide fresh air to other sections of the basement as new levels are excavated.

As well as fans to ensure a steady flow of fresh air, attention has also been given to limiting the fumes being produced by diesel plant operating within the basement. RVT has supplied diesel particulate filters to capture and filter these fumes, as well as dust filtration equipment to manage specific dusty processes.

Air quality is monitored regularly, especially in low lying areas, where dangerous, heavier than air gases could be trapped. The ventilation measures will remain in place until the basement works are complete.