

RVT Group provides bespoke ventilation solution at 52 Lime Street – the Scalpel

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The Scalpel facts and figures

- The building is 190m (620ft) tall; 10m higher than the nearby Gherkin building – also constructed by Skanska.
- It has an internal floor area of 624,000 sq ft over 35 floors and two basement levels.
- Floor plates range in size from 6,500 sq ft to 16,000 sq ft and are arranged around a side core.
- It will provide over 500,000 sq ft of commercial space as well as a retail shop, a 10,000 sq ft basement restaurant, cafe and 11,000 sq ft public space.
- Arup, the structural and mechanical engineer, designed the reinforced concrete core and used three new technologies: core prestressing, integral damping, and optimisation through BIM.
- The construction techniques used include slipform, top-down and twin-wall methods, in restricted working locations.
- A Byrne Bros site team of over 160 workers delivered the 25,596m³ of concrete and 3,576 tonnes of reinforcement.

Managing air quality during excavation and construction

Dubbed the Scalpel, the £500m skyscraper in the City of London is due to be completed by the end of 2017. About one quarter of the office space will form the European headquarters of the global insurance business W. R. Berkley Corporation, which is also the financier and developer.



This landmark building was designed by U.S. architects Kohn Pedersen Fox, who won kudos for the Heron Tower in Bishopsgate. It is part of the skyscraper cluster in the City of London which includes the Leadenhall Building ('the Cheesegrater'). The Scalpel's slope mirrors that tower's incline and preserves the view of St Paul's dome.

In July 2013, Skanska, a leading project development and construction group, beat off stiff competition from Mace to win the £198m contract with WRBC Development UK - the London property arm of W. R. Berkley. Byrne Bros was commissioned to construct all the reinforced concrete elements within the development. Construction began after a year was spent demolishing three buildings, preparing the site and establishing the foundations.

Key benefits of the RVT Solution

- The air quality in the working area was maintained at all times with no dangerous levels of gases being recorded on monitoring equipment.
- The fans were positioned, using power extensions and ducting, without disrupting other trades on the very busy site.
- Comprehensive support and reliable equipment ensured that the RVT solution was effective and problem free.

“The fans worked really well. The reliability was also excellent, with no breakdowns or loss in effectiveness, even with the constant use over a period of several months.”

- Paul Williams ,
Project Manager,
Byrne Bros

“The performance and suitability of the solution supplied by RVT could not be faulted. The service was exceptional.”

- Kieran Odlum, Project
Manager, McGee

Managing ventilation during excavation and construction work

A ventilation system was required in order to manage the air quality within the work area, during the excavation of the top-down basement of the tower. This was vital to avoid the workers being at risk of long-term health damage from poor air quality and the build-up of diesel fumes. Comprehensive support was required in the hire of the equipment and the logistics of delivering and fetching the fans, taking into account the vehicle compliance requirements on site.

The RVT Solution



Based on the information provided by the client, we calculated that the finished basement would be approximately 6,250m³ in size. Taking into account the type of equipment commonly used on such sites, we allowed for 160kW of diesel machinery to be operating on site. Referencing BS 6164, we calculated that 30,00m³/hr of fresh air was required to counteract the fumes from these machines. We recommended the use of two Ventex 450CF fans, each with 24m of 450mm flexible ducting. The key advantage of forced ventilation, versus extraction, is the guarantee of fresh air at the outlet of the duct. This ensures that the health of those workers furthest from the exit routes is protected, and offers them assurance.

The fans were positioned at ground level with the ducting running into the furthest points of the excavation. We supplied accessories to extend the power supply and ensure that the placement of the units in the busy site did not disrupt other trades. Fresh air was forced into the hole to ensure that any fumes were diluted and displaced, thereby preventing areas of foul air from forming.