

Polypipe partners with WSP and BSRIA on unique earth tube project

Polypipe, the UK's leading manufacturer of plastic piping systems, has been approached to deliver a unique earth tube project as part of the redevelopment of a Hounslow primary school.



Ridgistorm-XL
earth tubes



Westbrook Primary School, which is undergoing a complete rebuild, has suffered for years from high noise levels because of its location on Heathrow Airport's flight path, with open windows in the summer heat often acting as a disruption to lessons. As such, Hounslow Council sought a heating and cooling solution that would create a comfortable year-round learning environment while reducing energy bills and environmental impact. The development work undertaken at the Primary School also had to satisfy the London Plan: the spatial awareness strategy for the Greater London area that provides strategic guidance for building work in the capital. As well as ensuring that the selected cooling and heating solution met the demands of the school, including helping to manage energy costs, the system also had to demonstrate a positive impact on the school's carbon efficiency – satisfying the London Plan's criteria of working towards the creation of a greener, more environmentally friendly city. As part of the redevelopment the consultant working on the project, WSP, specified a unique earth tube system which

would bring natural air in through an induction system and a network of plastic pipes – removing the need for a costly full mechanical ventilation system. After extensive research into earth tube systems, WSP decided that Polypipe's Ridgistorm-XL large diameter pipe system with electro-fusion jointing provided the optimum solution.

“Having researched a variety of materials and solutions, the anti-microbial capabilities of Polypipe's Ridgistorm-XL pipe system coupled with the fact the system can be designed and pre-fabricated to exact specifications, made the products an obvious choice”.

Neville Rye, WSP

CASE STUDY

Project

Unique earth tube project for London primary school

Client

WSP

Application

Heating & Cooling solution

Products

Ridgistorm-XL

Polypipe and WSP approached BSRIA at the early design stage to design a CFD parametric testing model which would demonstrate the capability of the Ridgistorm-XL system to work as an earth tube and justify its specification for this application. The tool is extremely advanced, and as such can model local conditions, including variations in atmospheric temperature and soil type, to determine the level of thermal efficiency possible – which in turn can be used to measure savings made from reduced carbon usage for heating and cooling the air in classrooms. Phil Henry, Specification Manager at Polypipe, said: “This is the first time that Ridgistorm-XL has been used in this way in the UK, and as such there was limited information on how much energy could be saved for the school, but the tool and the knowledge of our team and partners gave us the confidence that Ridgistorm-XL would meet the requirements of the project.”

A few metres below ground the earth temperature is very nearly constant at the yearly average atmospheric temperature.

In summer, the soil around the Ridgistorm-XL will be cooler than the atmospheric air, so the pipe will deliver cool fresh air to the school.

Conversely, in winter the soil around the Ridgistorm-XL will be warmer than the atmospheric air, so the pipe will deliver pre-heated air to the school – reducing the heating bill of the school.

The new school is expected to open in September 2014.

