CASE STUDY:
WREXHAM POLICE STATION
WALES, UK

GP®1 provides protective ground gas barrier solution for Wrexham Police Station

Cost effective measures, and the ability to demonstrate appropriate advice made JUTA UK the ideal partner to support the groundworks for Wrexham's new £21.5M police station.

GP®1

VOID VENT 25 MM

300 TT PROTECTION GEOTEXTILE

Materials
GP®1, Void Vent 25mm, 300 TT protection geotextile

Volume: 10,000 m²

Date: 2017

Specialist Installer
Acrefield Developments

Verification and sign-off
SENSOR UK

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The 8,600 square metre site (now built) is an eco-friendly facility. The building generates its own electricity through photovoltaic panels and also harvests enough rainwater to help wash 25 vehicles a day. Utilising smart LED lighting technology it also conserves energy too.

The building itself comprises 32 custody cells and houses 248 officers and staff, acting as the main police HQ for Wrexham and Flintshire.

JUTA UK were approached during the project design phase and asked for their advice on supplying and fitting a suitable gas protection membrane. The site was a radon-affected area, with radon above the action level.

The source of the ground gas was mainly organic material, which comprised plant/ woody fragments that are primarily associated with peat soils (1-4 m thick), underlying an amount of 'Made Ground' on site, as the source of ground gas generation.

Our TITANTECH® product portfolio encompasses an array of different manufacturing techniques. Regardless of the site conditions and no matter the proposed location in the construction setting. Our products are tested by a world leading third party manufacturer and are independently accredited and certified.

This enables JUTA UK to quickly engage with Geo-environmental engineers and Architects to provide the most relevant information, and justifications to assist with product approvals at regulatory levels.

GP®1 - gas resistant damp proof membrane was selected for this project as the most appropriate and cost effective gas barrier solution. It's manufactured from virgin polymers, and designed to perform the critical application function of a 'barrier' to ground gas for at least 60 years.

GP®1 is a proven and sustainable method of protecting building inhabitants from potential harmful gas migration from the ground and is manufactured in accordance with the requirements of BS8485, and is the gas membrane of choice for ground gas professionals.

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JUTA UK commented:

"We are keen to demonstrate that where appropriate advice is sought, cost effective measures can be implemented."

Critical to the success of any protective barrier install, is the quality of the workmanship. GP®1 was supplied and incorporated within the floor slab construction of the building by our specialist installer.

This ensured the highest standard of workmanship on site (NVQ level 2 gas membrane qualified installer, and TWI/CSIP plastic membrane qualified). The installation works were then checked and verified by an independent party to ensure discharge of relevant planning conditions.

A nominal underfloor venting system was also required to prevent gas becoming trapped below the floor slab. Void Vent 25 - a 25mm deep cuspated geocomposite - was installed in designed 'strips', to provide a pressure relief below the slab, and provide a 'path of least resistance' for any migrating ground gas, allowing it to naturally permeate into the atmosphere unhindered. The function of the gas barrier is to provide resistance to the passage of ground gas into the building, while this natural migration of gas occurs to the atmosphere.

A protective geotextile (300TT) was also included in the design, to be placed above the compacted subgrade to prevent damage to the GP®1 from underlying sharp materials. One thing we see removed often from gas membrane installation works is the protective geotextiles.

These are critical to ensure the long term functionality of the barrier. The most common cause of damage to barrier membranes comes after they have been installed, usually from follow on trades walking over materials.

It is essential we protect the GP®1 (and all gas membranes) from damage, until such time as they are covered up permanently, by concrete etc.

Patrick Flood, Technical Director for JUTA commented on the project overall: *"This was a brilliant project for us to be involved in. We adopted detailed design responsibility for the project and provided a robust and justifiable solution, which resulted in a saving of over £200k on budget proposals from other suppliers. This is another great example of where JUTA UK is involved early in the project and we were able to add substantial value to the supply chain".*