# Solution L E D

## S Y S T E M S

TO GROUND BORNE PROBLEMS

ALDERBURGH LTD

# Introduction

Introduction

**ALDERBURGH - Solution led systems to ground borne problems**

Manufacturing and marketing high quality products for structural waterproofing systems, we recognised the restriction of single source manufacturing to supply complete solutions. Partnering with other manufacturers to enhance our expertise has placed us in the unique position of being able to design and provide total system solution to today's construction problems in the following areas.

**STRUCTURAL WATERPROOFING** - Total systems with technically advanced products provide the waterproofing solution to almost any problem. A technically advanced range of self-adhesive and torch applied membranes, liquid systems expansion control, sealants and protection systems, including drainage control, provide the answer.

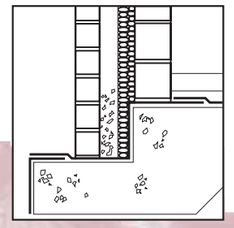
**GEO-MEMBRANES** - Whether for landfill waste containment, liquid waste storage or just ornamental landscaping, our expertise in the development of Co-polymer Thermoplastic technology

enable us to provide you with the solution.

**GAS BARRIER AND VENTILATION SYSTEMS** - Borne out of our involvement with below ground waterproofing and drainage, we recognised the potential need for products and systems to combat the increasing problems associated with developing on or near contaminated land, and potential hazards from ground borne gases and chemicals.

We have been at the forefront of development and technology in designing products and systems to enable potentially hazardous sites to be utilised. We are constantly reviewing and developing new products and solutions to construction problems.

Where appropriate all our products carry third party accreditation, are manufactured to legislation standards where recognised, or independently tested by *"Recognised Facilities"* where no standard exist.



To ensure our systems are installed correctly and fit for the purpose, we offer a full supply and fix service via our accredited contractor service, including all design layouts, calculations, take offs and installation control procedures. Alderburgh Ltd carries annual *Products Guarantee Insurance* which indemnifies the Company in respect of its liability arising under the Guarantees issued. This insurance is arranged with First-Class Security in the London Insurance Market.

We annually manufacture and sell over three million square metres of membrane products protecting buildings and occupants, both in the United Kingdom and abroad. Our knowledge and expertise in this market covers virtually any construction design scenario. Whether piled or raft foundations, solid or suspended floors, lift pits to swimming pools. Whether it is Housing, Public Buildings, Industrial, Retail, Hotels, Leisure or major Sports complexes and stadia. *We can help design the system to provide the solution.*







# Quality Control

*Alderburgh Ltd carries annual Products Guarantee Insurance, which indemnifies the Company in respect of its liability arising under the guarantees issued. This insurance is arranged with First Class Security in the London Insurance Market.*

High quality products and systems to provide solutions are only the beginning of our service.

Single source design and application of technically innovative products. Unique application techniques guaranteeing installation is right first time. The ability to react to latest developments, in both material technology and construction processes instantly. These are the reasons our systems have been specified and applied in some of the largest contracts to date.

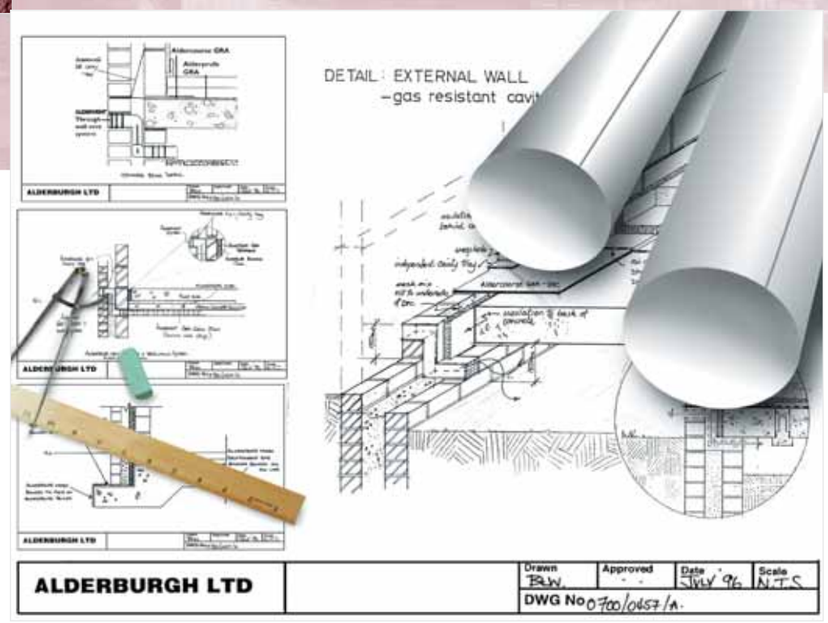
If incorrectly designed and. more importantly, incorrectly installed this can result in unknown extra cost and problems.

Nowhere is this more critical than in the design and installation of the correct system than below the structure.

If installed incorrectly the remedial cost can be, in the extreme, unsurmountable for the client.

That is why in the design of all our systems, potential application problems and difficult details are controlled and produced in the factory.

To guarantee correct application we operate a nationwide network of 'Accredited Contractors', skilled technicians who are trained and fully conversant with the site application of all our products.




We are constantly working to develop solutions to application, when our systems are specified, to guarantee correct installation so that the client knows there will not be a future problem. The control of this system is achieved through three main areas.

1. The manufacture and design of 'fit for purpose' products and systems. All our products are manufactured to relevant standards and comfort with current Building Regulations.

Where appropriate, relevant tests are carried out by recognised independent approved laboratories. These include:

Wimlas, BBA, RAPRA, Technology, Ove Arup &Partners and Department of the Environment.

2. Our technical staff assist at every stage of design and can produce all detail drawings relevant to our systems for inclusion in the structural design. 3. We operate an accredited application scheme, totally supervised by our technical staff on site, with fully recorded site installation and inspection controls guaranteeing our system is safe and installed as 'fit for purpose'.

CONFORMING REFERENCES

**The Building Regulations 1991,** Approved Document C: Site preparation and Resistance to moisture.

**NHBC Standards** Chapter 5.1 Substructure and Ground bearing Floors

**National Building Specification,** section J40.

**BS 8000: Part 4: 1989** Workmanship on building Sites: Code of Practice for Waterproofing.

**BS 8102: 1990:** Code of Practice for Protection of Structures Against Water from the Ground.

**BS 8215: 1991:** Code of Practice for Design and Installation of Damp Proof Courses in Masonry Construction.

**BRE Report 211** Radon: Guidance on Protective Measures for new Dwellings, 1991.

**BRE Report 212** Construction of New Buildings on Gas Contaminated Land, 1991.

**BRE Repor**t Radon Sumps: BRE Guide to Radon Remedial Measures in Existing Dwellings, 1992.

**NRPB Report R272**

Exposure to radon in UK Dwellings, 1994.

**CIRIA Report 149**

Protecting Development from Methane, 1995.

**BRE Good Building Guide 25,** Buildings and Radon, 1996.

**Building Standards (Scotland),** Regulations 1990 - Part G.

**Building Regulations (Northern Ireland)** 1990 - Part C.

**WIMLAS Certificate**

**Ove Arup & Partners** 1997

Passive Venting of Soil Gas Beneath Buildings. Partners in Technology Research Report.Department of the Environment and the Welsh Office (1992)


*Alderprufe Membrane 'Holdfast System'*

Control

# Public Buildings

Bartley Green Fire Station

A new Museum building was to be constructed on an old industrial site within the vicinity of a well used water course. Initial bore hole and trail pit tests carried out on the site suggested low levels of Methane gas and moderate levels of carbon dioxide gas to be present. The methane being detected approximately 100 meters away from the main body of the museum but adjacent to an ancillary building.

The original proposal by the design team was to construct the ancillary building using a gas barrier membrane incorporated into the base structure. The main museum building, it was considered could be constructed using a 2mm H.D.P.E. gas membranes incorporated beneath the building.

We were asked for our proposals and suggestions. For the ancillary building we concurred with the design teams proposals, but took a different approach concerning the main museum building. It is generally accepted that, (i) H.D.P.E. at this thickness does not exhibit a high degree of gas impermeability, (ii) Methane if detected can travel considerable distances, and equally

3500m Royal Mail Sorting Office (Grimsby)

'disappear' from monitoring equipment for some time before climatic and subsoil conditions prevail which make the gas reappear. Therefore we concluded an encapsulating membrane, achievable by using different interlinked elements, should be installed into the base structure of the main building.

On seeing the speed, cost effectiveness and efficiency of the gas barrier membrane system installation on the ancillary building a similar system was duly specified for the main museum building.

12000m Royal Armouries Museum Leeds

The Earth Centre (Doncaster)

*The products used were Alderprufe MR50, Alderprufe GRA (L/L), Aldercourse GRA, Alderseal Gastite Tape and Protal-2 Protection Board*

# Leisure

When a major football club wanted to extend its stand facilities the design team were placed with two potential problems. The development is on the site of a long established large industrial area which, over the years, has created possible contaminants in the ground. It is also close to a known landfill gas producing site with possible migrating potential.

To ensure neither of these would cause a problem a total Gas Barrier system was included in the total ground area of the new stand.

Once again, due to the versatility of our systems in application and design, we were able to meet all the criteria required.


15000m² North Stand MUFC

A new sports centre extension incorporating an Olympic size swimming pool was being designed on a known gas contaminated site.

A total system incorporating our premium range dual purpose gas and tanking, waterproofing membrane Alderprufe MR50 was specified. The membrane, being 2mm thick, is uniquely versatile in its application, allowing all laps and details to be welded to guarantee security. A full protection system incorporating Backerboard 501-A was fully heat bonded to the membrane, another unique feature of the system. All the difficult cavity trays and membrane penetration cloaks were factory made to guarantee total integrity.

Village Hotel

To date two sports centres, a major power station and several underground structures have been protected with this system.

*Alderburgh products used include: Alderprufe GRA, Gastite tape, Alderprufe MR50, Aldercourse GRA, and Backerboard 501-A.*









# Buildings

# Housing

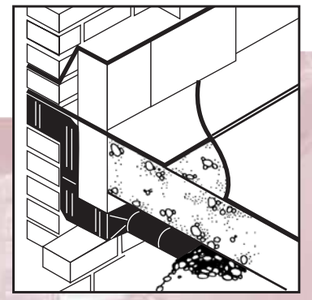
Housing

*Alderburgh products used include: Alderprufe MR50, Alderprufe GRA (L/L), Aldercourse GRA, Alderseal Gastite Tape, Aldercourse Century 2000, Aldercourse Excel and 3mm Backerboard 501A.*

A village built on a gas emitting coal seam was beset by problems and it was therefore decided to take the unusual step and relocate the whole village, houses, shops, pubs and school. Although the village would be moved to an area where all the gas emitting fuel had been removed, there were still traces of Radon and Carbon Dioxide present in the subsoil and the risk of 'travelling' methane although slight, was nevertheless a consideration.

Varying degrees of protection were require to the bases of all the new buildings in this mammoth project. Different types of barrier would be required to interlink with one another so that the result would be a homogenous effective barrier.

The design and construction team had not been able to find a unitary source for all the different types of membrane. We were approached and proved to be the only company able to provide all the membrane requirements, including an accredited contractor to complete the installation. The client specification required compliance with minimum



performance standards. Additional and up-to-date product testing confirmed Alderburgh's membranes were far superior to the required performance specifications, again the only company able to demonstrate this.

A national house building company was to build 179 house units adjacent to an old landfill site. Tests from boreholes and trial pits indicated Carbon Dioxide and Methane gases present on the edge of one part of the site. Extensive monitoring had not indicated gas moving into other parts of the site. From a geological analysis it was decided that migrating gas to the whole site was largely improbable. The design team decided to use a gas impermeable membrane in the base construction of the houses within 250 metres from the edge of the development where the gases were detected . From 250 metres to 500 metres a tough two ply cross laminated high density polythene film, covered on one side by a polymer modified bitumen would be used and those houses constructed beyond the 500 metre line would be built using 2000 gauge polyethylene in the solid concrete base. Alderburgh Ltd were asked if they could supply the necessary products for all elements of the above projects and necessary training to the site. The housebuilder has now adopted this specification for all houses built near to contaminated or suspected contaminated land.

*Barrett Homes, Leeds*

*Alderburgh products used include: Alderprufe GRA (L/L), Aldercourse GRA, Alderseal Gastite Tape. Alderprufe 1500*

*48000m² Arkwright New Town*

*Community Centre*

# Retail & Industrial

*Ventilation System - Waste Transfer Station*

*Alderburgh products used include: H.D.P.E. Geomembrane, Alderprufe GRA, Alderseal Gastite Tape, and 3mm Backerboard 501-A.*

An industrial warehouse, to be used for storing foodstuffs, was in the process of being constructed on an old industrial site which had been reclaimed and decontaminated. Building officers were not convinced the reclamation and decontamination had been effectively undertaken to allow the current building design to include use for the storage of food items.

It was proposed by the Design team to install an all inclusive barrier to protect the building from ground emitted gases and any chemical pollution which could rise to the surface past the capillary break. The barrier was to be installed below the cast concrete floor.

The design team had been unable to find an all inclusive barrier that could be installed satisfactorily within the work programme. We were approached to advise and suggest any methods that could overcome the problem.

*Column Cloak Factory Farmed*

In this situation we advised placing a 1mm H.D.P.E liner directly onto the ground surface. H.D.P.E has very good chemical resistance and should any of the known contaminants rise above the capillary break we were confident the H.D.P.E barrier would not breakdown from their attack.

Over this a gas impermeable membrane should be installed and above this a protection layer to enable both membranes to withstand the rigours of the construction process. The proposals satisfied the Building Control Officials and the project was completed on time.


*Index Store - 22,000 square metres*

An unusual geographic occurrence has created an area of this country with ground permanently contaminated with carbon dioxide gas. This naturally occurring phenomena has not previously been considered to be particularly high hazard but, in recent years, there has been an attitude reversal and the problem is now considered by the Local Authority to be serious enough for the problem to be taken into account in the design of all new buildings.

Different types of membrane had been tried and specified to varying degrees of success. Due to the increased government funding a programme of updating school and public buildings was about to be given the go ahead. Architects and Engineers were attempting to find either a single gas barrier system which could be used in all the different applications or a single company that could provide a range of interlinking membranes which would be used in the different base constructions, to provide a gas impermeable barrier.

Alderburgh Ltd's range of products were evaluated and found to comply with the latter of the two specifications. In conjunction with the company, satisfactory systems have been designed and installed on several projects within the Authority and subsequently many other construction companies and authorities, within the area, are now either using Alderprufe products or evaluating their potential.


*Precision Steels - 16,000 square metres*

INDUSTRIAL Precision Steels

A new factory being designed and built in the same area. Incorporated into the floor design were several large sunken machine bed pits, varying in depth between one metre and six metres. We were able to design a complete barrier to cover the whole area, totalling some 16,000 square metres, using the full range of membranes in our system for the different levels and applications . The only complete system that was available from one source. All components and membranes being fully compatible for guaranteed integrity.

*Products specified include: Alderprufe MR50, Alderprufe GRA, Aldercourse GRA, Aldercourse Centry 2000, Alderseal Gastite Tape, and 3mm Backerboard 501-A, Corkflex B, Fibreflex, Foamflex and the Aldervent Geo-Grid Ventilation System.*









# Product Listings

**The potential development and construction on or close to know landfill sites and areas subject to Radon emission is now recognised as a potentially hazardous undertaking. The danger of landfill gas production, particularly methane which is highly flammable and carbon dioxide which is potentially poisonous in volume is well documented. To this end, Alderburgh have developed a range of products to combat this growing problem, a few of which are listed below.**

**Geo-textiles**

• **Ground Stabilisation** - Woven Fabrics •**Protection and Filtration** - Needle punched Fabrics •**Ventilation and Drainage Mats.** •**Studded Sheets** 6mm, 10mm, 20mm, 25mm. •**Ventilation Pipe Systems**

**Aldercourse GRA**

**Gas resistant Cavity Closure Damp-proof Course**

When used contiguously, **Alderprufe MR50** or **GRA** and **Aldercourse GRA** form a gas-retardant membrane and damp-proof course system for use on landfill and in other areas where protection from gases, particularly methane, is required.

**Aldercourse GRA** is an aluminium cored damp-proof course, developed in combination with **Alderprufe MR50** or **GRA** to provide a continuous "through the wall to the floor" junction. Both products have a low permanence of methane and other gases including radon.

**Alderprufe GRA**

A loose laid 20 micron pure aluminium foil substrate with a multi-filament polyester 20mm scrim grid sandwiched between two layers or polyethylene.

For use in solid concrete ground floors that are not subject to hydrostatic pressure, to protect building gas penetration from the ground.

**Alderprufe MR 50**

Alderprufe MR 50 self adhesive waterproofing membrane is intended for use in concrete, brickwork and blockwork construction, both internally and externally, to protect buildings against water and the ingress of methane and radon gases from the ground.

**HDPE & LDPE Landfill Membrane**

Factory formed membranes of complete homogeneity. Manufactured from raw polymer feedstock into sheets of even thickness from **HDPE, LDPE** and **LLDPE.** Manufactured in smooth form for ease of application. The membrane is also manufactured with a heavy embossed pattern on both sides, with a totally unique flat selvedge along both sides for ease of application. Used for the lining of sites prior to the placing of landfill material to give complete protection to the surrounding environment in the control of decomposing landfill, reservoir and pond linings, agricultural slurry tanks, liquid containment pits etc.

**Alderprufe Gas Barrier and Ventilation Systems**

For Land Development.

ALDERBURGH LTD

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