DELTA PD004 - Old Vinegar Works

# DELTA PROJECT DATAFILE

# Delta gets Vinegar Works out of a pickle

As it is one of the most distinctive buildings in the city of Worcester, any work carried out on the Old Vinegar Works had to be done with particular sensitivity, and the selection of effective materials from Delta Membrane Systems for waterproofing work was just part of this extensive project.

Work on the site in the Lowesmoor area of the city has included the creation of a new ASDA store, a new HQ for the local Territorial Army, and the refurbishment of a huge subterranean area of an existing building that is now suitable for use as a restaurant, night club, or similar function.

Back in the early 1800s, William Hill and Edward Evans – both chemists – established Hill, Evans & Co. which became the largest producer of vinegar in the world. It is claimed that the works produced some 2million gallons of malt vinegar every year.

The works closed in 1965, and the Great Filling Hall was made a Grade II listed building some nine years later.

It is in the basement area of this hall where Delta's approved contractor Peter Cox Property Services carried out extensive waterproofing work for the main contractor, Carillion Richardson.

One of the prime considerations in this work was that the architectural feature of the vaulted brick roof in this area

had to be retained. However, the boundary walls and floor were in need of waterproofing to ensure the area remains dry for future use.

Among the Delta products used on this project were Delta MS500 Clear and Delta MS20.

Benefits offered with the Delta MS-500 cavity drainage include resistance to chemicals and root penetration, and neutrality with drinking water.

Ideally suited for use in refurbishment or creation of basements, this product is part of the Delta System 500 package for basement work.

It also offers an efficient and cost-effective alternative to traditional sub-base courses made from lean concrete.

Made from high density polyethylene, MS-500 is a 0.6mm thick membrane with 8mm studs, allowing water to effectively drain. The drainage capacity is 135 litres/min., or 8,100 litres/hr..

The construction provides more than 1,800 dimples/$m^2$, giving an air volume between the studs of about 5.3 litres/$m^2$.

This dimpled sheeting protects foundation wall waterproofing against mechanical damage. It offers a compressive strength of greater than 250kN/$m^2$. It can also be used externally for waterproof protection of sub-ground structures.

Capable of operating effectively in temperatures ranging from -30 to +80$^{O}$C, the sheet has an elasticity modulus of 1,500N/$mm^2$.

Apart from its structural and construction benefits, MS-500 is also particularly easy to install. It may be laid quickly straight from the roll – with no need for additional equipment or excavation.

Roll size options are 2.4 and 2m x 20m, with a flat edge of 70mm on one side for overlap. For this project, 16 rolls of 2.4m x 20m MS-500 were supplied.

The Delta MS-20 high capacity drainage membrane has recently undergone a redesign to make it even stronger and more effective that the previous option. The new MS-20 brings to the market a compressive strength that has been improved by over 30% - boasting figures of around 200kN/$m^2$. This has been achieved by changing the profile of the studs from a circular conical design to an octagon in cross-section, and the smooth walls are now ribbed.

Pressure strength is improved parallel to the stress cracking stability which is also upgraded and extends the lifetime of the product.

Made from virgin high density polyethylene, this membrane has a stud height of 20mm, and comes in a roll size of 20m x 2m. This dimpled sheet can be easily laid without the need for costly equipment or time-consuming installation procedures.

It can be used in applications where extra drainage capacity

**The architectural feature of the vaulted brick roof in this area had to be retained.**

is required – such as deeper structures or basements – or where a larger flow rate is required. It can also be used as a cavity former for many types of new construction.

Contact surface to the ground is about 130,000mm$^2$ per m$^2$. The design ensures good pressure distribution and low point loads.

Resistant to degradation in soil, and from chemical attack, it is also non-polluting for drinking water.

The new MS-20 design further enhances the potential cost savings in both materials and construction time on the finished project, while bringing the enhanced compressive strength characteristics that make the product suitable for a wide range of applications.

A total of 36 rolls, each measuring 2m x 20m, was supplied for use on this project.

Water prevented from penetrating by the MS-500 and MS-20 drains away to a Dual V3 Sump, also found in the Delta range.

This packaged pump station is designed to collect ground water through the top opening, and/or via the three 110mm side push-fit inlets. It can be used to collect the water that penetrates through the wall, along with – if needed – grey water from sinks, showers, washing machines, and dishwashers but not foul water from a WC.

The side inlets also provide a useful means of collecting water from restricted areas by means of 110mm drainage pipe set in the floor design, level with the slab.

The station comprises of two Delta V3 pumps, with floats set at different levels to act as duty assist or duty standby. All internal pipe work is pre-assembled within the chamber, including non-return valves and a gate valve for isolation purposes. The station is delivered only requiring the connection of two unions to complete all the internal pipe work.

This area is just part of the £75 million development to be known as St. Martin's Quarter which will include close to 300,000sq.ft. of shops, restaurants and leisure outlets.

It was important that the historic architecture be retained in many aspects of the project, and that the materials specified would achieve this goal.

Delta Membrane Systems' supplied the materials for the waterproofing of the basement area, expertly installed by Peter Cox Property Services. One of the prime considerations for this work was that it be completed on time ... which has been achieved.

The result is a substantial area that will be enjoyed by the people of Worcester for decades to come.

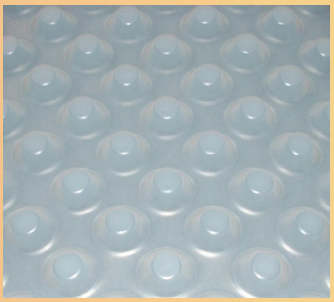
**Work included the use of Delta MS500 Clear and Delta MS20.**

# PRODUCT DATA

## DELTA MS 500

This membrane is used on both wall and floors and features an 'air gap' of 5.3 litres of space per $m^2$. Delta MS 500 is used for light water ingress situations, and is also available in a clear version for walls.

This aids the selection of good fixing points in the more difficult applications – for instance, random stone and friable brickwork.



The sealed DELTA fixing is used to secure System 500, the centre shank of this fixing is also used for subsequent dry lining applications, using a size 12 screw.

## DELTA MS 20

This is a heavy gauge, compression resistant version of DELTA-MS has deep 20mm studs. This is used where extra drainage capacity is required, for example on deeper structures, or where a larger flow rate is required.

DELTA MS 20 can also be used as a 'cavity former' for many types of new construction.

It may be applied as a cost-efficient horizontal or vertical permanent shuttering between a shotcrete shell or curtain wall and a concrete structural wall.

| | | |
|---|---|---|
| high density polyethylene | **Material** | high density polyethylene |
| approx. 0.6mm | **Thickness** | approx. 1.00mm |
| approx. 8mm | **Stud Height** | approx. 20mm |
| 2.4m x 20m<br>2m x 20m | **Roll Size** | 2.00 x 20m<br>(Also in board format) |
| >250kN/m | **Compressive Strength** | approx. 150 kN/m |
| approx. >5 l/s - m<br>approx. 300 l/min - m<br>approx. 18,100 l/h - m | **Drainage Capacity** | approx. 10 l/s - m<br>approx. 600 l/min - m<br>approx. 36 100 l/h - m |
| approx. 5.31 l/m² | **Air Volume Between Studs** | approx. 14 l/m² |
| -30°C to +80°C | **Temperature Resistance** | -30°C to +80°C |
| Resistant to chemicals, resistant to root penetration, rot proof, neutral towards drinking water. | **Chemical Properties** | resistant to chemicals, resistant to root penetration, rot proof, neutral towards drinking water. |
| Class E (DIN EN ISO 11935-2, DIN EN 13501-1) | **Behaviour In Fire** | Class E (DIN EN ISO 11935-2, DIN EN 13501-1) |

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