

Guidance for the Service and Maintenance of Drained Cavity Waterproofing systems (Type C)

Introduction

The need to service and maintain the drainage elements of type C waterproofing systems is paramount to their long term success. This is highlighted in BS8102, the PCA code of practice for Remedial Waterproofing of Structures below Ground and by the distributors of products and equipment used to create waterproof basements.

This guidance note is designed to highlight the need to undertake regular maintenance of the drainage elements of all type C underground waterproofing systems. It will also consider the duties this may place on contractors, specifiers, homeowners, and property managers who install, control or own such systems.

The guide will consider the need to design and install maintainable waterproofing systems and will look at elements of the water management system that should be examined and maintained.

This guidance will not provide detailed information on how the servicing visits should be scheduled or performed. Site conditions, design, materials and the machinery used will all play a part when deciding on the frequency and scope of service visits. This document is not a "how to" guide for servicing.

Maintenance is fundamentally important to type A waterproofing systems where external drainage forms an integral part of the waterproofing design. The service requirements of these systems are not discussed in this guidance document but should be considered with equal importance.

Design Considerations

The basic principal of a Type C waterproofing system is that a cavity is formed between the ground retaining elements and the internal finishes. These cavities are used to direct water to collection channels that in turn deliver water to a point where it can be discharged. This process of water management is commonly achieved by the use of cavity drain membranes (CDM) perimeter drainage channels and sumps and pumps.

Type C waterproofing systems will fail if water is allowed to exert a pressure on the system so it is essential that cavities, drainage channels, sumps and pumps

remain free from any blockage that could inhibit the movement of water.

Cavities, drainage channels and sumps are susceptible to the deposition of silt, fines and other particulate matter that may enter the building from the ground. The deposition of Calcium Carbonate (free lime) can occur in circumstances where new concrete is encountered or chalky soils exist.

Drainage channels should be fitted with accessible rodding points that allow for jetting or washing. These openings are usually sited where channels change direction. Openings must be sited to allow periodic inspection and cleaning to be undertaken.

Sumps should be installed in locations that allow easy access for periodic servicing.

Pumps and associated pipe work should be accessible and installed in such a way as to allow easy serving and when necessary replacement of elements of the system.

Service and Maintenance

A schedule of maintenance should be agreed with the client in advance of commissioning. This schedule should then be adhered to throughout the life of the waterproofing system.

In some circumstances it may be necessary or desirable to amend the time and scope of the service visits. Any changes to the schedule of planned maintenance must be agreed with the client so that the service schedule is amended accordingly.

Trained, competent service engineers should be employed to maintain and service type C waterproofing systems. The person undertaking the service should have a good knowledge of the waterproofing system and have access to details of the installed system. Copies of the original installation plans and specifications should be available for inspection.

The service engineer should be properly equipped so that service operations are carried out effectively.

Initially inspections should be undertaken to the channels, sump chambers and pumping units. Examinations should also be carried out to the discharge pipes and associated valves.

Any accumulation of silt, fines, or free lime should be noted before cleaning operations commence. The pump unit should be inspected to ensure that it is operating correctly before any flushing operations commence.

Channels - Perimeter channels and any channels below the floor finishes should be thoroughly flushed with water in order to remove any built up deposits. This is usually undertaken by using a hose or water jetting device at each of the channel inspection points.

In some circumstances it may be possible to flush the system by back filling the channels from the sump. This method of flushing should only be undertaken by an experienced service technician and great care taken to prevent the uncontrolled escape of water.

Flushing water will discharge into the sump so care should be taken to protect the sump pump from fouling on any materials that are washed from the channels into the sump during these operations. Care should be taken so that water from the cleaning process does not overwhelm the pumps.

The sump chamber should be inspected for damage and cleaned to remove any materials that may have accumulated.

Discharge pipe work should be inspected and cleaned. Special attention should be paid to areas where water may collect and stand within the pipes during periods when the pump is not in operation. This is particularly important when free lime is deposited as discharge pipes and non return valves can become obstructed.

Maintenance of the pump unit will vary according to the type of pump configuration installed. Information relating to the servicing of individual pumps and configurations should be provided by the manufacturer.

Consideration should be given to the operation of the main and back up pumps and the condition of any batteries and switchgear should be established. Seals, washers and valves may require inspection and replacement.

The inspection and alteration of electrical circuits must be undertaken by a registered electrician.



Alarms and any back up switches that are fitted should be inspected and tested.

It should be remembered that the sump pump is a mechanical device and as such will fail eventually. It is therefore good practice to consider the service life of a pump and plan to replace the unit long before the pump fails.

It can be extremely difficult to estimate how long a pump might last so it is important to seek advice from the supplier of the pump when estimating service life.

Discharge points (the point where water collected by the waterproofing system and discharged to the outside) should be inspected and maintained as appropriate.

Where a type C waterproofing system is partly reliant on external land drainage or dewatering outside the building, special attention should be paid to the condition and service requirements of these elements.

Service Intervals

Type C systems should be inspected and serviced at least annually but in some circumstances the period between services may be considerably shorter. Site conditions, design, materials, machinery used and the implications of any system failure will all play a part when deciding on the frequency and scope of service visits.

It is advisable to schedule the first service visit within three months of the system being commissioned. This will highlight any problems, allow for the removal of debris that may have been deposited in the drainage channels during the construction phase and allow the service engineer to assess the risk posed by free lime and silt that may be washed in-to the system.

Service intervals may be affected by the following factors:

- The Volume of water being handled by the waterproofing system
- The prevalence of free lime
- The number of sumps and pumps associated with the system
- The deposition of silt, fines or other particulate matter into the system
- How hard the pumps are working (in some circumstances it may be advisable to install larger pumps)
- The implications of any failure in the drainage system
- The service life of the pump and batteries.

If uncertainty exists as to the frequency of service visits then it is always advisable to

take a cautious approach. It is better to schedule more visits than may be necessary and prevent a failure rather than leave things too long and risk a flood. If it is decided that visits are occurring too often then the maintenance schedule can be amended (see note in service and maintenance section above).

Detailed advice on the frequency of servicing visits is available from manufactures and suppliers of waterproofing products.

Liabilities

The need to service and maintain the drainage elements of type C waterproofing systems is paramount for their long term success. It follows therefore that this should be communicated to the client by the supplier or installer of the waterproofing system. Where a system is installed for a builder or property developer then it is important to highlight the need for servicing by the future owners or controllers of the building.

The need for servicing a type C waterproofing system should be made explicit when the system is proposed by the contractor or designer. This should be made in writing and can be within a report or as part of a tender submission. In some circumstances notification may be made under separate cover. Any notification should clearly state the need for servicing and maintenance and where appropriate highlight the implications if servicing is not carried out.

Contractors should clearly state the need to service and maintain the waterproofing system within any guarantees that may be issued.

Failure to notify the client of the need for servicing may result in a system failure. In some circumstances the consequences of this failure may be passed to the installer/supplier.

In the event of a failure resulting from poor servicing then, subject to the circumstances it may be considered that the company or individual responsible for maintaining the drainage elements may share some liability for any failure.

If the client, or other persons responsible for the building, fails to instigate or implement a service plan recommended by the installer designer or supplier, then it is less likely that any failure of the waterproofing system that results from a blockage of the drainage elements or the pumping system will be the responsibility of anyone other than the client or controller of the building.

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Further Information

The information contained in this leaflet is given in good faith and believed to be correct. However, it must be stressed that of necessity it is of a general nature. The precise condition may alter in each individual case and the Association is therefore unable to accept responsibility for any loss howsoever arising from the use of the information contained herein.