



WATERSTOP SOLUTIONS

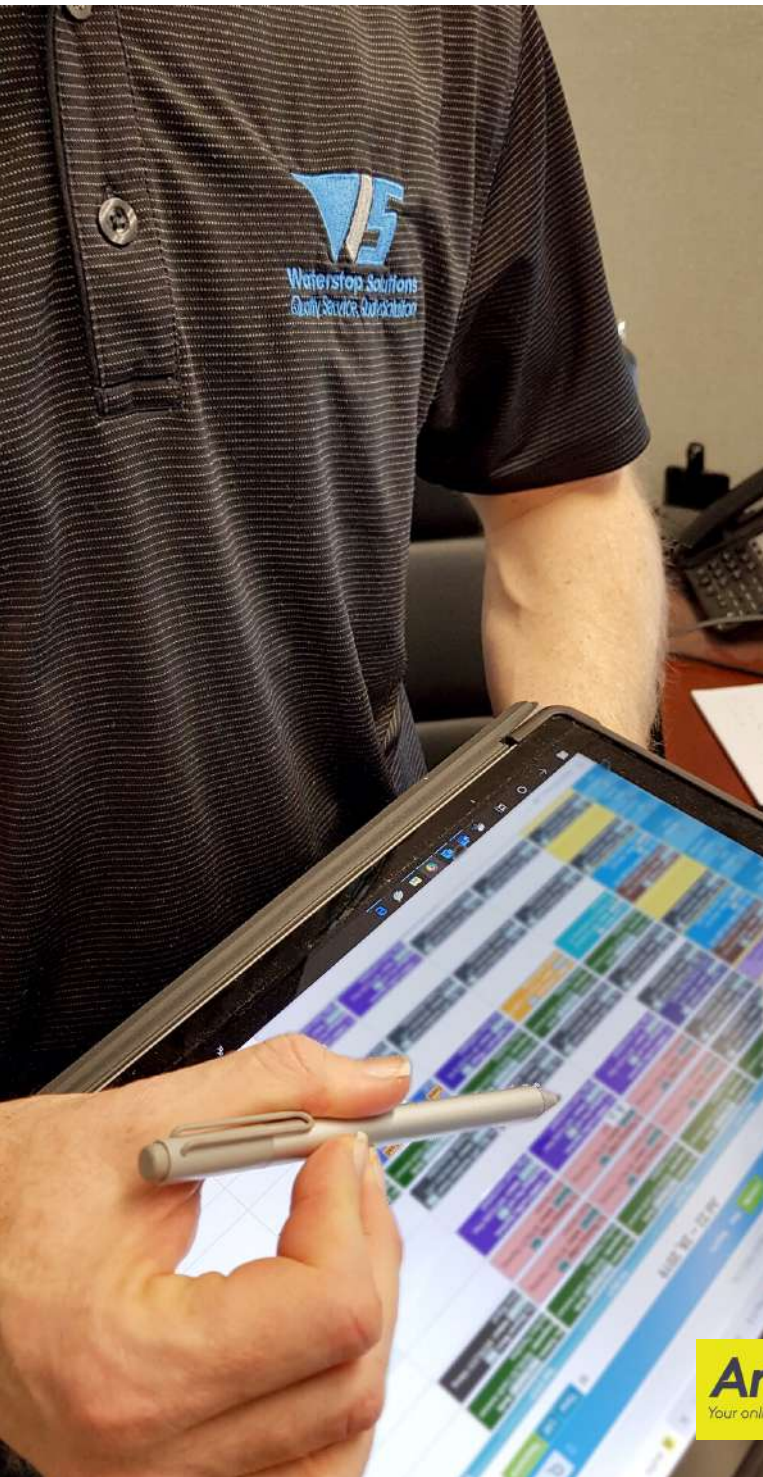
TECHNICAL SYSTEMS

ISSUE 2 - 2019 // WATERSTOPSOLUTIONS.COM.AU
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Investigation, Diagnosis & Solutions

REMEDIAL WATERPROOFING



Waterstop Solutions has extensive experience in diagnosing the source of waterproofing failures and in recommending solutions to meet any criteria.

Often a combination of systems is required for the best approach – all depending on your project and how the treated area is constructed.

It would be impossible to cover every approach we are capable of in a document of this size. Instead, what follows is a combination of the systems and processes we frequently perform:

Investigation, Diagnosis & Solutions

Our veteran industry inspectors perform thorough, non-invasive assessments to provide solutions for our clients. They are equipped with modern technologies, such as Non-Invasive Inductive moisture meters and thermal imaging, to further validate their diagnoses. More thorough leak investigation services are also offered upon request.

Our inspections are all documented using our customised, cloud-based project management software. This software records time-stamped notations and media of the investigation, which is used to create a formal proposal for recommended remedial works.

High-Pressure Injection

LEAK SEALING/ POLYURETHANE INJECTION

The leak sealing, or polyurethane injection, process involves the high-pressure injection of flexible water-reactive polyurethane (or resin) into targeted areas to form a durable seal.

This system is ideal where a long-lasting waterproof seal is required to stop the passage of water or other liquids through gaps, cracks, joints and penetrations - typically in concrete and masonry construction.

It is a highly specialized process, requiring the skills of experienced operators. At Waterstop Solutions, our Technicians perform polyurethane injection works frequently. They receive ongoing training from industry leaders which equips our Technicians with expert skills and knowledge.

We use the best TDI (toluene diisocyanate) product available as our primary injection resin. This resin offers superior performance. Its main features include: permanent flexibility; very low shrinkage; water potable; low viscosity; and a hydrophilic reaction - it is the same product that is pre-approved by major traffic authorities around the world for major infrastructure assets.

High-Pressure Injection

LEAK SEALING/ POLYURETHANE INJECTION

While our TDI is a specialist permanent leak sealing product, where high-flowing leaks or voids are found, supporting MDI (methylene diphenyl diisocyanate) polyurethane products may be used first to prepare for the application of the TDI.

The injection process follows a customised procedure developed by Waterstop Solutions. Typically, 10mm holes are drilled at 200mm intervals to intersect the crack/joint allowing the resin to penetrate deeply into the targeted area.

On occasion, holes may need to be drilled directly into the crack/joint. Where holes are required through tiling, we offer to core-drill 20mm holes through the tiles prior to drilling the 10mm holes to help prevent tiles cracking or chipping. The drilling process can crack or damage tiles if not removed.

Temporary, high-pressure, non-return injection ports are then inserted into the drilled holes. Resin is pumped through these ports to fill the targeted area. The resin then cures rapidly depending on the amount of moisture present.

Our technicians manage the injection process to create a continuous three-dimensional seal buried in the concrete using a combination of proprietary methods, developed and honed over thousands of projects.

Once the initial injection is completed throughout, the entire process is repeated at least once to ensure a deeper and more complete pressurized durable seal into the substrate is achieved.

During this process we occasionally encounter unforeseen voids or building faults. Fortunately, our method can identify and seamlessly rectify such problems. Depending upon the application, we may use a combination of products to achieve the best results, while mindful to minimise additional product use. However, additional material and labour may be required. We normally allow for 1kg/Lm but additional material used will be charged out accordingly. If this occurs, we will notify you as soon as practicable to advise of the situation on your project.

When the process is fully complete, we remove the injection ports and fill the drill all holes with rapid set repair mortar. This can be done shortly after the works are completed. However, if the ports are positioned overhead and/or a larger void was found, this job may occur on the following day.

Installing this system means we do need direct access to the work area and unobstructed visibility, which could mean the removal of internal finishes, such as carpet, tiles, framing and plaster.

High-Pressure Injection

LEAK SEALING/ POLYURETHANE INJECTION

This system can be installed in any weather – in fact the wetter the better, as it reacts with water right before your eyes. In dry weather, flooding the source of water entry (where possible) may have a similar effect.

Waterstop Solutions’ proprietary injection system exceeds the highest injection process and safety standards in Australia and internationally throughout Europe and the USA. We continually review and reassess the method, always striving to hone and improve our systems.

Our proprietary leak sealing system forms a long-lasting flexible seal against water ingress which also withstands normal building movement between construction elements and details. We are yet to encounter a leak we cannot stop!



We have yet to
encounter a
leak we
cannot
STOP

STRUCTURAL REPAIRS - EPOXY INJECTION

Epoxy injection for structural crack repairs is normally performed when you are attempting to increase the structural condition of a concrete element that is currently cracked.

Before injection commences, where we effectively glue the crack together, it is important to understand: how the crack came about in the first instance; if there is a need for structural repair; and whether the crack could form again if epoxied.

If the crack has the potential to reappear, a new joint could be cut or, if non-structural, the concrete element could be injected with a polyurethane.

When structural crack repairs are required, epoxy resins are usually the desired product for the application.

Epoxy resin products are specifically formulated for this application, offering physical properties higher than that of concrete. Injection epoxy resins are required to have low viscosity so they can be injected into tight cracks.

Premium epoxy resins are moisture insensitive (will bond to wet concrete) and can have curing properties from semi rigid through to flexible.

Our delivery systems for epoxy injection include low pressure syringes, balloons, gravity, dual caulking-gun systems and high-pressure injection (similar to the polyurethane injection system).

Waterstop Solutions' extensive range of resins and our raft of delivery systems have successfully tackled every scenario that we have encountered to date – from under bridges, to under water on dam walls.



Our Epoxy
Injection
Success Rate:
100%

CONCRETE REPAIR

“Concrete cancer” is rust – specifically within reinforcing steel, and it can “kill” buildings if not stopped. Unfortunately, the problem is likely to be much more extensive than symptoms on the concrete surface suggest. Once established, the rusting will spread along the reinforcing in each direction. It is impossible to know the full extent of the damage until the concrete is chiselled away.

Steel reinforcing in concrete rusts because of either chloride ions or carbonation. When steel rusts it expands up to eight times its volume, which can then cause rigid concrete to spall (break into smaller pieces). This can accelerate the rusting of adjacent reinforcing by exposing it directly to the environment.

Several factors predetermine the risk of concrete cancer, including proximity to the coastline and a built-up environment; the degree of concrete cover to steel reinforcing; the presence of differential metals; the quality and density of coating systems; cracking, joint and penetration detailing; and the level of preventative maintenance.



CONCRETE REPAIR

The typical method of repair is a process of:

- Accessing the repair zone and removing drummy concrete
- Saw-cutting the perimeter of the repair to eliminate feather edges
- Chiselling away concrete around the reinforcing steel
- Exposing the steel reinforcing until no rusted steel is found
- Preparing the exposed concrete within the repair until a sound substrate is achieved - further defects such as cracks may require additional treatment at this stage. Optional sacrificial anodes can also be added at this stage
- Installing additional steel reinforcing and/or pins
- Applying a rust inhibitor and primer to the steel and exposed concrete
- Formwork may be erected to assist in installing the repair depending on the situation
- Filling the prepared repair zone with a specialised shrinkage compensated structural mortar

The treatment of concrete cancer must consider appropriate weatherproofing and/or waterproofing as part of a complete solution. Otherwise, the repair work may remain a temporary fix as the underlying cause is likely to continue to affect the structure, depending on the situation.

It is recommended that a suitable protective coating is applied to the treatment area upon completion of the repair work, depending on the application requirements.

Occasionally, concrete repair scenarios call for us to consult with specialist remedial engineers within our network, depending on the complexity of the work and how it may interact with a building.

Our extensive experience on major civil projects has afforded Waterstop Solutions opportunities to design with industry-leading engineers and tackle some of the most complex concrete repair challenges imaginable in the built environment. Using this knowledge, we can provide you a range of options to best meet your project criteria.



REVERSE/ NEGATIVE SIDE WATERPROOFING

Ideally, waterproofing is installed externally (positive side) against the soil. However, where access to the external wall is limited, we can install systems internally where a suitable substrate exists.

A suitable substrate normally means sound concrete, block work or brick work.

Firstly any plaster, paint, render or framing must be removed to access the substrate of the wall.

Then we consider the particular requirements of each application to determine the exact system we use. Our systems typically consist of waterproof coatings and supporting products and sub-systems, such as joint sealants, polyurethane injection and reinforcing bandages.


Common systems we install use either a 100% solids water based active latex polymer or a high solids waterborne epoxy. Both of these systems are breathable, allowing water to pass through them slowly as a vapour. These systems are water based, so **any vapours are non-toxic**. However, safety requirements dictate that adequate ventilation must be present in all work areas.

The treatments can be painted over in water based breathable paints (e.g. low sheen or matt acrylics) and most water-based after-trades such as tiles, direct stick or render.

It is vital not to put any holes or fixings through the system after installation because this may compromise its performance. We can easily detail around any holes or fixings prior to installation. If the system is inadvertently punctured, please notify us – it is easier to address this sooner than later.

Depending on the system employed, the treatment is designed to withstand up to positive 50 metres of water pressure and the reverse side can handle up to 30 metres of water pressure.

This means the tensile strength of the system is often stronger than the masonry to which it is applied!



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REVERSE/ NEGATIVE SIDE WATERPROOFING

The substrate cannot have active damp patches, or water passing through, when the coating is applied or curing. If so, the product could be compromised. If this occurs, additional works are usually required to remedy the building defect before the works can continue.

The latex membrane system is flexible, so will handle a small amount of movement. Whereas, the waterborne epoxy system is hard wearing with good abrasion resistance.

Our highly experienced assessors and materials experts can design the best system to meet your individual requirements.

Additional product layers and composite systems are often incorporated into projects to treat more complex or challenging building details.

Such products have an “applied” finish which can be inconsistent and textured – they are not intended to be decorative or have a final aesthetic finish. In extreme examples, a “staggered” approach is required to complete the works, which means some sections are completed and allowed to cure fully before completing more difficult areas.



INJECTABLE DAMP-PROOF COURSE (DPC)

The purpose of this system is to, as the name implies, inject into position a damp-proof course (DPC) where none is currently in place or where the existing DPC has failed.

Damp proof courses are used to control rising damp and resultant damage.

The process typically involves the following steps:

- We drill strategic holes at regular intervals into the middle of the area to be treated. The distance between the holes will vary depending on certain variables such as the type of brick, cavity brick and how far the product travels when injected.

- The injectable DPC product is fed into the holes to treat a continuous layer of the wall.
- Once the process is complete, the holes are then filled with concrete repair material.

Once cured, the DPC product is usually undetectable. However, in some cases, it may slightly darken the area where applied. White spirit is used as a carrier in the formulation so it does have a strong odour, but this dissipates quickly.

The DPC formulation we use has the added benefit of not repelling itself once set – you can continue to apply further treatments for a deeper seal wherever and whenever required. This is a distinct advantage in using this product over other water-based versions.

The product works by lining the pores of the substrate to reduce their size. Water can no longer pass through the pores, but air still can.

The method is not effective on moving cracks, wide gaps or voids and non-porous substrates.



WATERPROOF MEMBRANE REFURBISHMENT

Applying waterproof membrane is like applying paint – surface preparation is critical! The success of most long-lasting applications is attributed to the work done before the application of the coating i.e. surface preparation and choosing the correct product.

In our line of work, it is common to spend more time on preparing the surface than on applying layers of waterproof membrane, to eliminate the risk of application failure. We use specialist coatings to make sure we match the specific needs of the substrate, existing coatings and the designed use of the work site.

Waterproof membranes fail for a variety of reasons, including:

- Insufficient waterproofing installed;
- Damage by other trades;
poor detailing (such as joints and penetrations);
- Inadequate falls or drainage;
- Product breakdown/age;
- Wrong product for the application; and
- Excessive building movement.

We work with our material suppliers to formulate robust systems that avoid application failure and allow Waterstop Solutions to offer some of the most comprehensive long-life warranties on the market.

Our first step in a refurbishment project is to assess the condition of the current membrane system. Once all the relevant information is gathered, work then begins on designing the best system to meet your project's specific requirements.

Before applying the membrane, we require a sound, uncontaminated substrate. This can mean anything from removing previous failing treatments, through to performing repairs of any defects hidden beneath existing layers. Such defects can include spalling concrete, incorrect falls, cracks and even voids.

In most circumstances where the existing membrane is relatively sound, one of our compatible systems can be used with the existing system. This can be relatively non-invasive and if installed early enough, may be as simple as a maintenance application over existing waterproofing – offering reduced costs to asset owners while maintaining full product manufacture-backed warranties, equal to removal and replacement options.

WATERPROOF MEMBRANE REFURBISHMENT

If the membrane is suffering a critical failure, it is often removed completely prior to the installation of a new membrane system. During this process, it is not uncommon to discover multiple layers of previous treatments uncovering a history of waterproofing works.

The level of exposure the final membrane has to the open environment and/or chemicals will determine the nature of the system installed.

Other critical factors in the selection of a membrane system are:

- What type and frequency of traffic will it be exposed to if it is not being protected with tiles, soil or similar?
- Is the system required to have a slip resistant finish or to be coloured if left exposed to pedestrian traffic?

Over countless projects, we have developed Waterstop Solutions' own robust waterproof membrane refurbishment process.

Partnering with leading manufacturer's in the field, we offer the highest quality systems, backed by the longest warranties available on the market, to meet your site requirements.



PENETRATING WATERPROOFING TREATMENTS

We employ the latest waterproofing technology in a range of systems applicable to porous substrates, such as concrete, brick work, mortar or stone. Depending upon your application, one of these systems may be a more economical option with the added benefits of introducing minimal change to the surface appearance of the original substrate and requiring very low to zero maintenance.

One such water-based treatment is our hardener densifier, which reacts with moisture and the free lime or calcium in concrete to permanently improve concrete abrasion resistance, reduce dusting and porosity, help heal minor static cracks – greatly extending the life of aging substrates.

Our PWR (Penetrating Water Repellent) treatment is another system which can be used on any porous substrate without changing its appearance, to maintain a dry look. This white spirit-based formulation penetrates deep into the pores and lines them with the product, reducing the pore size so that liquid can no longer pass through the substrate, while still allowing it to “breathe”. This can create the water beading “off a duck’s back” effect.

PWR also helps the substrate to effectively self-clean, while also stopping mould and fungal growth and protecting against salt attack and carbonation.

This treatment does need to be reapplied, typically every 7-10 years, depending upon the application.

Waterstop Solutions Penetrating Waterproofing Treatments are suitable for a wide range of applications such as: new and remedial waterproofing, dust proofing, reducing mould and dirt build up, reducing cleaning costs and slip hazards.

Liquid can no longer pass through the substrate, but it can still “breathe”



SAFETY & PROTECTIVE COATINGS

Safety coatings are normally used to reduce the risk of a slip, trip or fall.

The surface profile of these coating systems is raised to provide greater traction to each foot step. Therefore, safety coatings need to be extremely robust because loading is applied to a fraction of the surface area compared to that of a flat coating. They will also tend to hold more dirt and grit making them more difficult to clean. Stiff brushes and light water blasting with neutral PH solutions is usually much more effective than mopping.

The safety coating technology we use is water based, UV stable and is fit for vehicle traffic, making it suitable for a host of applications.

Our safety coatings can also be tinted to a wide range of colours, helping to meet standard OHS recommendations for colour contrasting the edge of hazards such as stairs or drains.

Protecting your concrete with appropriate coatings can extend the life of your asset and reduce the frequency and severity of future concrete repairs.

Over time, the entry of foreign material into concrete can weaken its structure and increase the likelihood of invasive and costly concrete repair works. Protective coatings significantly reduce the ingress of water and chemicals, including salt, into the substrate.

In selecting the most appropriate system for your application, we take various factors into consideration, including: your desired outcomes, the local environment, minimising chemical exposure, ambient temperature, house-keeping practices, substrate and building condition, construction method, access and detailing.

Protective and safety systems are usually applied in a similar way to house paints. As with any coating system, the surface preparation for any protective and safety system is critical for maximum performance and longevity.

Surface preparation may include joint, crack and concrete repair – as covered earlier in this document. It also usually involves water blasting, grinding, degreasing and/or acid etching – all depending on the system and existing substrate condition.



We have a wide range of concrete floor coating products we can recommend to meet your different requirements and expectations. There are many considerations to take into account when choosing the right coating for a project. Our experienced team can help you identify and select the protective coating to suit the requirements of your project.

CLEANING TIPS FOR SLIP-RESISTANT COATED CONCRETE FLOORS

The texture of slip-resistant flooring provides you with the traction you need for safety. It also means that you may need to take a different approach to cleaning.

Many slip-resistant floor coatings provide a “gritty” surface that is not compatible with cleaning with a mop because the irregular texture can catch the mop strings.

We recommend using a deck brush and warm water to clean floors with slip-resistant coatings. Avoid detergents to maintain a slip-resistant floor as they may create a soap build-up once the water evaporates if not rinsed off properly.

- In commercial settings, we recommend making it a daily routine to sweep slip-resistant floors. Sweep away debris using a dense, synthetic fibre broom/deck broom.
- If you have a slip-resistant floor at home, try to sweep at least once a week. More often may be necessary in outdoor areas when there is dirt or leafy debris on the ground.
- Spilled liquids should be cleaned up promptly using an absorbent material.



Cleaning slip-resistant floors:

1. Sweep
2. Wash
3. Rinse
4. Squeegee

- **When needed, clean with plain warm water using a dense, synthetic fibre broom (not a mop).** Scrub gently with the broom to free up dirt and dust. If needed, add a sparing amount of a PH-neutral cleaning product to the water (according to manufacturer’s instructions)*
- Use a low-pressure hose to rinse the floor thoroughly before it dries to avoid build-up of cleaning product. After rinsing, collect the excess water with a wet-dry vacuum. Alternatively, use a squeegee to collect the water to a drain or outside.
- Please be advised that detergents can be difficult to rinse off completely. Build-up of residues can make your floor less slip-resistant when it is wet.

**Some manufacturers make specific cleaning products for slip-resistant floors.*

JOINT REHABILITATION

Joints between concrete sections are designed to accommodate movement, which can be due to several factors including initial concrete shrinkage while curing, through to cyclic thermal movement. Joints should also be sealed to prevent debris, water or chemical solution ingress into subsoils.

If rock fragments, or other such debris, enter an open joint, and then the joint closes in to crush the debris, the edges of the joint can deteriorate rapidly. Major joint deterioration presents a safety hazard and potential source of damage to plant and equipment.

Failed joints can cause water entry into unintended areas or leaks in retaining structures. In the case of slabs on the ground, any unintended passage of water through the slab can compromise the ground-support underneath through 'liquefaction'. If chemical solutions are also allowed to penetrate failed joints, the substrate and surrounding environment are also at risk of serious harm.

At Waterstop Solutions, we frequently perform joint replacement and install joint-improvement systems in conjunction with waterproofing works.

Our joint sealing process includes the expert repair of concrete joint edges prior to the installation of our recommended system.

The typical method used in joint rehabilitation is as follows:

- Repairs are square-cut into the concrete to prevent feather-edge cracking and to maximise durability
- Polymer repairs are used for rapid setting and higher impact resistance
- Once set, we normally grind repairs to ensure an extremely smooth transition
- Joints are re-cut and re-sealed to protect them from further damage
- Re-sealed joints are primed if the substrate is porous, which can double the life of the seal
- Appropriate joint sealant system for the application is selected and installed

With a countless meterage of experience in joint remediation, our team fully understands what is involved in selecting the right joint system for your application.



Our joint sealing process includes the expert repair of concrete joint edges prior to the installation of our recommended system.

GROUND CONSOLIDATION & SLAB JACKING

Waterstop Solutions uses cutting-edge mining technology to provide ground improvement services such as consolidation, slab jacking and void filling.

Our method of ground consolidation is superior to other methods used in the market as it is a true consolidation method. Other systems claiming to be consolidating are actually 'soil compaction' systems. Soil compaction devices can create further soil erosion and become ineffective.

Ground consolidation consists of injecting a polyurethane, or acrylic, through a spear (or similar) system. This consolidation process effectively "glues" the ground together, stopping the erosion process and re-strengthening the soil.

We deliver permanent solutions by applying our moisture reactive polyurethane technology to lift, re-level and stabilise sunken concrete. Subsiding slabs and footings, and other such issues, can be remedied with this technology.

Expanding polyurethane (PU) resin injection technology is primarily used for slab jacking. It raises, corrects and strengthens moving and sunken concrete structures on, or in, the ground.

With minimal interruption to traffic, our structural expanding PU resin can re-level sunken slabs and re-support moving slabs quickly and accurately without the need for demolition or replacement.

This treatment injects PU underneath existing concrete in strategic locations. It is fast acting – expanding up to 30 times its volume within seconds. The controlled placement of materials ensures that the ground in the treated area is "glued" together, stabilising against future erosion in the immediate location.

Because the PU can be open celled and permeable, this system will allow water to slowly seep through, if an application so requires, preventing pore pressure build up and reducing possible future erosion adjacent to the treated area.

In cases such as sinkholes and other large voids, we may reinforce the PU system with aggregate for added compressive strength and continuous ground support.

Our resin injection method allows even the heaviest vehicles, such as forklifts, trucks, buses and airplanes, to run smoothly over the treated area within minutes after the job has been completed.



GRINDING

Grinding is a method we use to remove surface layers and coatings from a concrete subfloor.

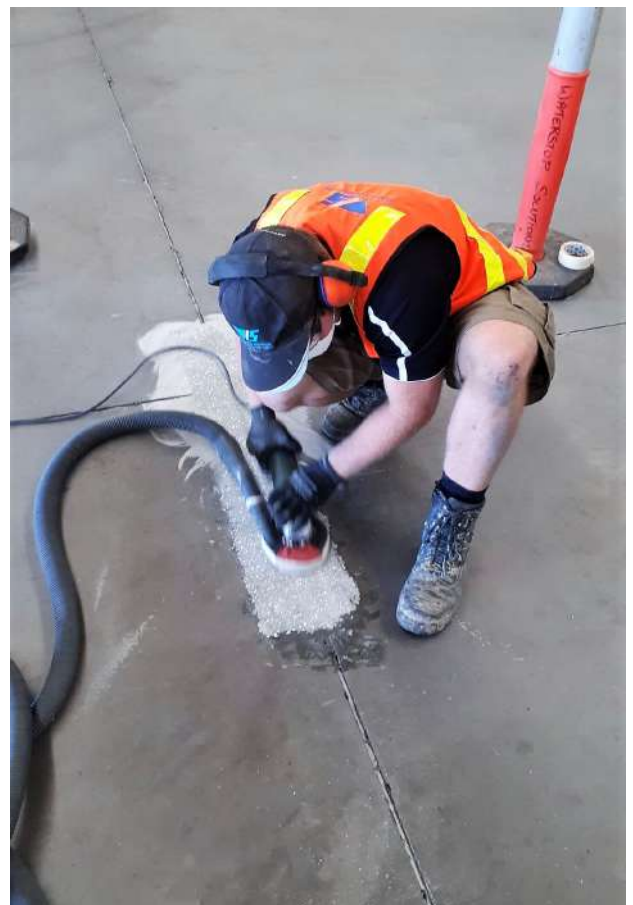
Predominately this service is used for the surface preparation of other systems mentioned in this document, but it can also be used in minor corrections. A good example is a trip hazard, which can be corrected with a light re-grind – slab-jacking in this case would be going overboard.

Concrete grinding machines use rotating heads to smooth and level the concrete surface. Naturally, this process creates a significant amount of dust.

We take dust management seriously assessing every task and meeting if not exceeding best practice and any relevant codes where applicable to protect you, your site and our technicians. Additional steps can be taken for further dust control if required on your site but if so please notify us prior to quotation so that we may satisfy your individual requirements and expectations appropriately.

Our dust extraction systems capture 99.9% of material, ensuring minimal dust build-up in work areas.

However, we recommended to our customers that they cover or remove any sensitive items from the work area prior to work commencing, as it is impossible to capture all of the fine dust particles created through the process.



Once the grinding work is complete, our Technicians carefully remove all visible dust and debris that result from this process.

On larger grinding projects in areas with low air flow, we can mobilize a large dust collector which can further control the air quality in the work area.

SUBSURFACE DRAINAGE SYSTEMS

Why it is important

Subsurface drainage aids the removal of water from the surface under a tiled rooftop, balcony floor, podium or deck. The purpose of subsurface drainage in buildings is to provide a permeable base layer that will serve as an escape route for excessive rain and stormwater that may find its way into the substrate.

Non-porous sand and cement-based bedding, or premix screed/bedding cementitious products, are essential for efficient rain and storm water removal, as well as aeration of the substrate. Durable and reliable subsurface drainage systems are also crucial.

If subsurface drainage systems are not completed or designed correctly, it will severely reduce the life expectancy of the waterproof membrane and after trades.

Specifying adequate and reliable subsurface drainage to complement the waterproofing as a complete system is critical during the building design. It is one of the most important parts of the building design to address for balconies, flat roofs, green roofs, decks and terraced buildings.

Saturation of tiling and topping screeds can result in water finding its way into the substrate. The water becomes locked in place until it either evaporates back out through its path of ingress or leaks through the substrate to the level below. Constant water saturation under the tiles can also lead to debonding of tiles and deterioration of the waterproofing membrane.

Salts and minerals that are present in the concrete can be drawn up from the tile bed through the grout by capillary action. When the carrier moisture evaporates, the salts and minerals crystallise creating a build-up of efflorescence (lime/calcium deposits) that appears as white coloured staining on the tiles, which can have a negative impact on slip resistance.



SUBSURFACE DRAINAGE SYSTEMS

Advantages of subsurface drainage system

1. Facilitates the evacuation of water.
2. Avoids pooling of water and saturation of tiling or topping screeds.
3. Reduces moisture-related distress.
4. Provides aeration to the building elements.
5. Aids in protecting the service life of the waterproofing membrane and after trades.

How do we rectify poor subsurface drainage?

- Provide functional falls to reduce standing water.
- Use a waterproof screed to fill in the low points of the deck and grind down the high points. Low points in the membrane will result in 'water pooling' in the substrate. As per the Australian Standard the waterproofing applied to the deck must not have any low points that allow for late pooling and must allow the water to drain back to the drain points.
- Modify drains by cleaning existing drains of calcium and debris build-up and drilling out the tops of drains to open weep holes.
- Install effective sub-surface drainage with weep holes and puddle flanges to allow the cementitious tile bedding to drain freely into the drains.
- Open up or remove any attachments that are closing up the edge of the balcony, which can trap water underneath the tiles.
- Floor penetrations such as floor wastes and other fixtures need to be installed and maintained with extreme attention to detail so that the continuity of the waterproofing is not impaired and subsurface drainage is provided above the membrane.

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SUBSURFACE DRAINAGE SYSTEMS

How do we rectify poor subsurface drainage?

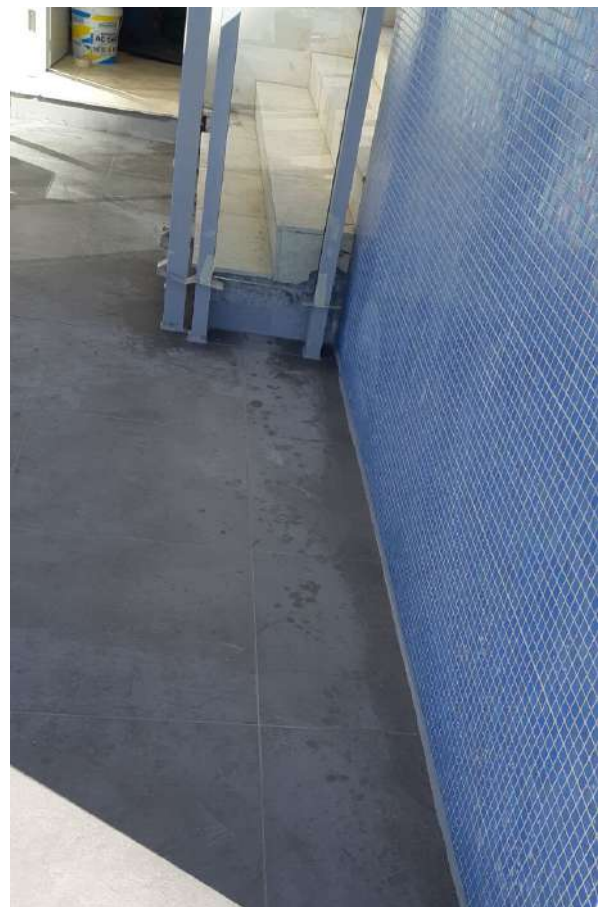
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- Select a cost-effective, long life membrane that is capable of bridging cracks and joints.
- Installing the correct waterproofing membrane under the tiles is essential because most membranes are not designed to hold water between the membrane and the tiles.
- Minimise tiles contact with cement-laden materials to reduce the presence of efflorescence.

Surface Sealant (PWR)

A budget-friendly way of addressing a leaking balcony is to reduce the amount of water entering the tile bed by installing a surface sealant, such as a Penetrating Water Repellent (PWR).

PWR is a breathable and non-colour changing surface sealer. Waterstop Solutions' PWR is a clear white spirit-based repellent that will cure with a "dry look" offering minimal to no visual change to the substrate. This system penetrates into the substrate reducing the pore size so that liquid can no longer pass through the substrate while still allowing it to breathe. The PWR system also makes cleaning easy by reducing mould growth and dirt build-up, whilst protecting against salt attack and carbonation.



SUBSURFACE DRAINAGE SYSTEMS

Epoxy grout

An alternative solution for repairing leaks on a balcony is to replace any existing cementitious grout with an epoxy grout.

However, this requires re-cutting the grout and installing the epoxy-grout. The epoxy grout is not breathable. If there is considerable water trapped under the tiles after application and/or water can enter under the grouted tiles from elsewhere (i.e. a joint or pipe fitting), then water will do what water does – it will find other exit routes such as a floor to wall joint or the perimeter of the balcony. The results can be unsightly if this occurs.

As with any remedial system, there are potential risks involved with having an unskilled person attempt this type of work.

Risks of engaging unskilled workers to rectify subsurface drainage:

- Ineffective positioning of weep holes
- Damaging other finishes
- Blocking drains
- Damaging pipe work or puddle flange
- Drilling through membrane system
- Insurance coverage

Waterstop Solutions' team of specialist technicians are highly qualified and they perform subsurface drainage remedial work on a regular basis. Most of our technicians hold a Certificate III Construction Waterproofing qualification, and these technicians either perform or supervise all works performed by Waterstop Solutions.

The Certificate III qualification includes a considerable component on remedial waterproofing and this, coupled with Waterstop Solutions' own extensive internal training, equips our technicians with the knowledge and skills to successfully trouble-shoot as required when variations to the standard task occur on-site

With remedial waterproofing work and its proximity to a waterproof membrane we recommend that best – and safest – practice would be to engage a qualified and highly experienced remedial waterproofing tradesperson with current insurances and QBCC licence to perform this work.

OTHER TRADES

At Waterstop Solutions, we are focused on being the best at what we do - specialised remedial contractors.

We do not aspire to become a “one-stop-shop” for trades, which we believe would divert our focus too far from the quality of our remedial work: we do not render, perform carpentry, plumb, paint or plaster.

However, we do hold a QBCC Open Builder Licence and often work closely with other such trades. Where only a couple of other trades are required on a job, we offer to subcontract and manage these trades to give our client a complete process when requested. Where more trades are required, we normally refer our clients to a builder who can more closely manage all the work.

Tiling is the only trade which is the exception to the rule at Waterstop Solutions. Since our work often involves disturbing or removing whole sections of tiles, we regularly include the re-laying of tiles in the scope of our work.

We are also happy to recommend other reputable tradespeople to our customers, who will ably assist them to complete their projects.

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 **Waterstop Solutions**

At Waterstop Solutions, our goal is to provide innovative, flexible and practical solutions to ensure the best possible outcomes for our clients.
We aim to deliver exceptional service to build and maintain long-term relationships with our customers

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