DRAINAGE SELECTION GUIDE:

15 COMMON APPLICATION AREAS

Stormtech™

INTRODUCTION

A good drainage system is at the core of every good shower, but what is often forgotten is its importance in the other spaces of our homes, our residential thresholds, balconies, driveways and even public spaces like parks and playgrounds.

A drain's main function is to guide the flow of water towards a point of egress. Within homes, failure to do so can lead to water ponding in wet areas, which creates fall risks and moisture build up.

"Continuous damp will lead to increased mould and can increase the inside humidity levels of the house, increasing the spread of dust mites," Australia's Housing for Health guide notes. "The long-term effects of pooling water can include rot, rust, termite attack and eventually, structural failure."[1]

Similarly, the lack of adequate drainage in outdoor spaces can have serious consequences. During heavy rain or storms, water that does not have a channel of 'escape' can build up quickly, causing flash floods, concrete and building foundation erosion, landscape degradation and other damage and safety risks.[2] In addition, urban runoff can upset the water networks that sustain our natural ecosystems, as it collects a number of harmful contaminants when it travels across our roofs, gardens and roads before entering storm-waterways.[3]

Needless to say, high quality drainage solutions that do not require constant surveillance or human intervention are an absolute necessity in our cities, communities and homes. But with the variety of draining products on the market, how do you decide what system works best for your project? In this whitepaper, we explore 15 of the most common application areas for drainage systems, and the factors designers should consider for each.

RESIDENTIAL APPLICATIONS

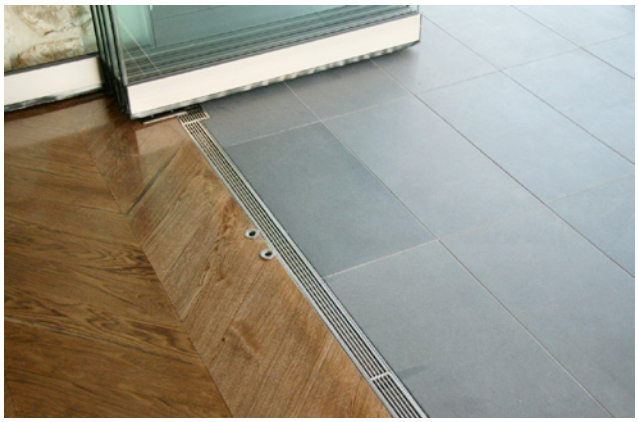
SHOWERS

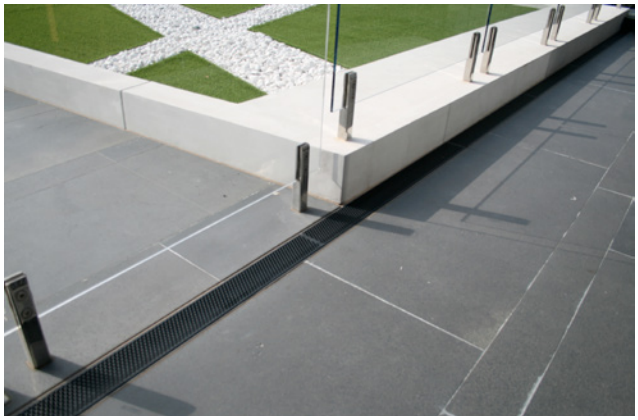
When designing showers, the primary goal is to contain the space with direct water exposure while maintaining ease of access. Many traditional shower drainage solutions rely on curbs to separate wet from dry areas, but this poses a fall risk, and is often harder for less mobile or elderly occupants to manoeuvre. As a result many architects prefer linear drains, which eliminate traditional barriers and allow for a hobless entry into a shower—without compromising on high capacity water removal rates.

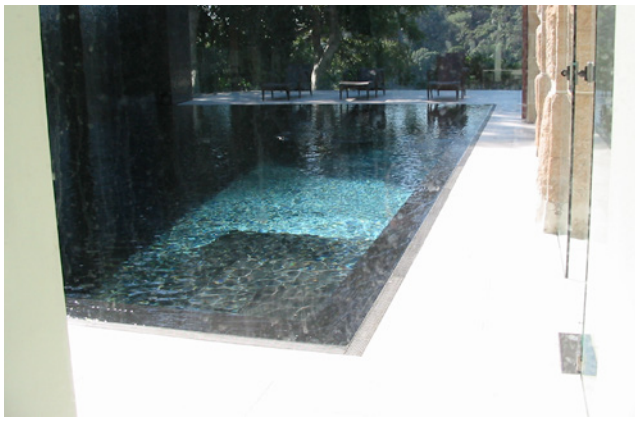
Another consideration to take note of is the difficulty of installation. For instance, a linear drain allows shower floors to slope in only one direction, making installation easier and faster, and giving builders more plumbing and waterproofing arrangement options. Large format stone or tiles may furthermore be used with linear drains without needing cuts to create the correct falls. This saves costs and time during the setting out and tiling stages, and creates a more seamless aesthetic.[4]

BATHROOMS

Traditional bathrooms are typically designed with a primary drainage trap and riser that houses the central floor waste outlet. Although this is effective in directing water to a point of egress, it may present constraints for the room's layout. To introduce more flexibility, many designers choose to specify linear drains, which only require a







2-way floor grading towards the point of water exit, as opposed to the traditional 4-way grading of floors.[5] The channel and grate should be installed 1 – 2mm lower than the tiles to avoid water ponding at the edges.

In bathrooms, other key factors to consider include the drain material (long-lasting stainless steel grates rather than plastic grates); the use of puddle flanges at all floor drains; and ensuring that all falls to the drain are even so that water does not pool at any point.[6]

LAUNDRIES

Floor drains are important in all residential wet areas, including laundry rooms, in case of appliance failure, such as washing machine overflow. Here, the same considerations extended to bathrooms and showers must be accounted for, particularly the effectiveness of the drainage system to remove large amounts of water efficiently.

THRESHOLDS (DOORWAYS)

The line of divide in projects where indoor spaces are designed to flow into the outdoors is a sensitive one. Designers need to ensure that the drainage system here performs well, and is inconspicuous or streamlined enough that the seamless aesthetic is not disrupted. The solution should also be universally accessible, removing the trip, slip and wheelchair hazards—such as step-downs and high gradient falls—that typically exist across doorways with rolling, sliding and bi-fold doors.

Before specifying a product, designers must first understand the frequency of heavy downpours at their project site, as well as the risk of potential overflow. Level threshold drainage can accommodate all door frame materials such as aluminium and timber.

BALCONIES

Like thresholds, balconies straddle the “weather-sensitive divide” between indoor and outdoor spaces, but their elevations and small surface areas present added challenges. A shallow balcony depth profile, for example, will limit the type of drains that may be applied, and reduce overall flow capacity. In these instances, lineal threshold drains are a great solution as they avoid any step-down provisions, support universal access, and sit parallel to walls or access points, or flush against the floor.

It's been said that the best drainage systems are those that go unnoticed, but for industry experts, the opposite is often true.

COURTYARDS + PATIOS

Failure of drains in our backyards, which are completely exposed to the elements, can lead to over-saturated soil, attract unwanted insects, and cause water to pool in low spots. Stormwater that flows toward walls is particularly dangerous, as it can compromise the foundation of a home over time.

Specify a system that will not clog easily and has high capacity water removal rates. Design also plays a part—drains with narrow profiles are normally preferred as they blend seamlessly with a variety of outdoor surfaces, from concrete to pavers and tiles.

DRIVEWAYS

Choose an extremely durable product—like one made of marine grade stainless steel—which is tested to manufacturing standards so it withstands light foot traffic as well as the weight of a passing vehicle. For example, a plastic drain will not last if it has to support trucks passing over it regularly. A good rule of thumb is to select a system that is at least one level stronger than required. Meanwhile, ensure that the top of your grate is located slightly lower than the surface of the pavement, so gravity and surface tension of the water help it enter the drain and not pond at the edge.

PAVED AREAS

In addition to the basic requirements of quality, support and performance, design is a key factor for drainage systems in paved areas, where a variety of materials may be used. Most designers opt for a drain with an extremely narrow profile that camouflages with its paved surrounds while delivering maximum surface water drainage.

POOLS + OUTDOOR AREAS

Understandably, a drainage solution with high volume water removal rates is a foundational requirement for pools and outdoor areas. However, specifiers should also take care to seek products that are stable, made of tough, durable materials, slip resistant, and easy to maintain and clean. Systems here also usually feature a finish that blends seamlessly with paved surrounds, though depending on site context and requirements, the grates may feature a wider or slimmer profile. When using stainless steel grates at surf beaches and around pools, always select 316 marine grade stainless steel and have it electropolished.

PUBLIC SPACES

PUBLIC PEDESTRIAN AREAS

Employing drainage products that are made from non-toxic, non-oxidising and durable materials, such as stainless steel, will limit the pollution caused by urban runoff. Moreover, drains that support the filtration process, such as removing the harmful contaminants or even "standard issue" garbage and detritus that are picked up by stormwater, will minimise the eco-impact of urban runoff.[7]

At the same time, consider surface obstructions like buildings, electricity supplier poles, native vegetation, or large trees early on in your planning. Existing bridges and underground services, like oil pipelines, water, gas and sewer mains, or communication cables, can also influence your design.[8]

ENTRANCE AREAS TO PUBLIC BUILDINGS

Although structural damage is less of a risk here, being mindful of restricted access to existing plumbing and drainage systems is crucial. Although new building sites allow drainage systems to be established in order to meet the "lay of the land", older properties may offer fewer possibilities for alterations. As a result, they may be better suited to more traditional drainage arrangements. Building surfaces like earth or concrete will also impact your team's ability to move or increase the number of available drains in the area.[9] Stainless steel entry mats are commonly used in public buildings to limit water being brought from the outside.

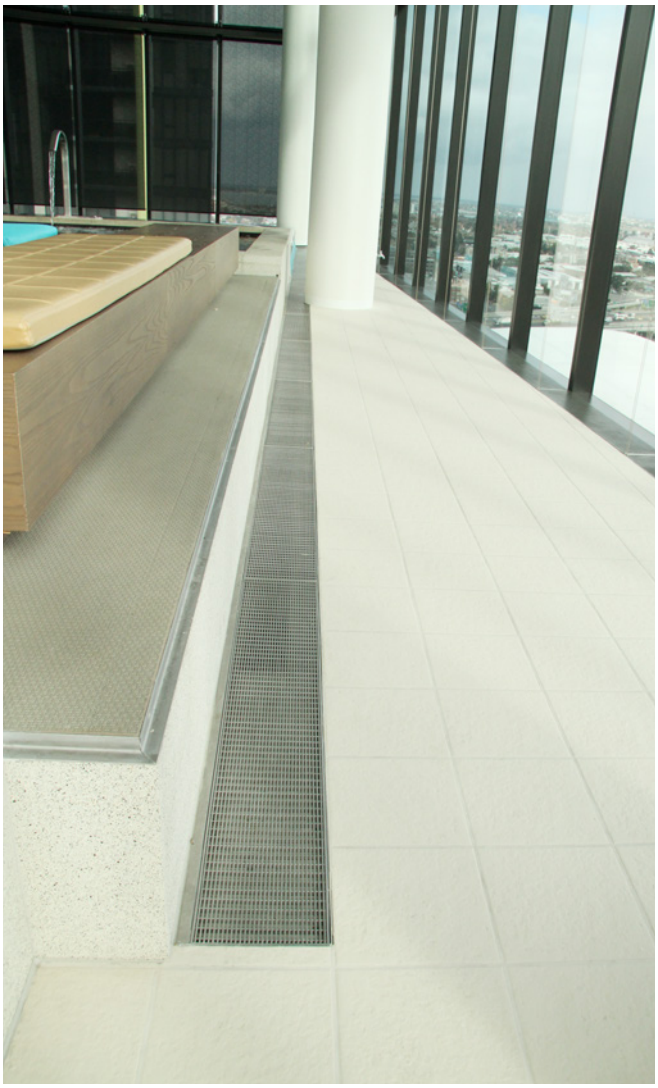
PARKS + PLAYGROUNDS

Correct grading is necessary to ensure that drainage does not pool wherever people tend to occupy, but is rather shed to an appropriate drainage ditch or retention pond. Collaboration with the landscape architecture team before the specification or installation of a product is critical. For playgrounds finger entrapment is a necessary consideration, especially for younger children.

AREAS WITH SPECIFIC REQUIREMENTS

COMMERCIAL KITCHENS

Designers should understand that water is not going to be the only liquid being disposed of in commercial kitchens (and other hospitality projects). Instead, waste being directed to drains



may contain fat, grease, and often, be very hot. Inefficiencies in these drainage systems can create hygiene and food safety issues, and only products that are easily removed, cleaned and maintained should be selected. Slip and fire resistant gratings, and seamless systems that do not pose 'trip or slip' hazards, are also extremely important.

Next, the best size and type of drain will depend on the scale of the project. However, most commercial kitchens will require a larger capacity solution, thanks to their array of fixtures and equipment, such as large compartment sinks, dishwashers, hose sprays and more.[10] Often used in commercial kitchen environments is vinyl flooring, for which a specific linear vinyl clamp drain is available.

CAR PARKS

Unlike paved areas and sidewalks, car parks are difficult to 'waterproof' given their large area of impermeable surfaces. Regardless of whether they are outdoors or indoors, all car parks will require drains that are able to support heavy and frequent vehicular loads. A popular material for parking deck drains is cast iron or stainless steel, and systems available in this space frequently feature profiles that may permanently connect different sealing or coating systems to the troughs.

SPORTING GROUNDS + GYMNASIUMS

Featuring similar requirements to parks and playgrounds, sporting grounds have additional concerns associated with fertilizers that may be used on site. Since stormwater runoff is not always treated in Australia, improper drainage of sporting grounds may contribute to the harming of our natural waterways, upsetting their delicate nutrient balance with the deposit of more chemicals. Drainage systems must be able to minimise these issues.

It's been said that the best drainage systems are those that go unnoticed, but for industry experts, the opposite is often true. Linear drains, for example, are one of the most popular systems today, and the reasons why are obvious to trained eyes. Not only do these rectilinear drains allow for design continuity with almost any surface material and space, they also offer superior water removal efficacy, are highly durable, low-maintenance and universally accessible.

Although drainage requirements may vary, one Australian family business has a thoughtfully designed and curated range for almost every project's needs. Stormtech's Slimline Grates and Drains feature elegant profiles, and come in a range of sizes and depths. The company has also led the way in Water Sensitive Urban Design (WSUD) drainage practices, ensuring that their Global GreenTag™-certified linear drains are genuinely sustainable instead of simply existing as the lowest-cost option.

As the best eco-friendly solution for residential and commercial drainage systems, Stormtech consistently guarantees the highest standards in workmanship and quality, while being committed to maximising the quality of water discharged via its linear drainage systems.

To find out if Stormtech's linear grates and drains are suitable for your project, visit www.stormtech.com.au.

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