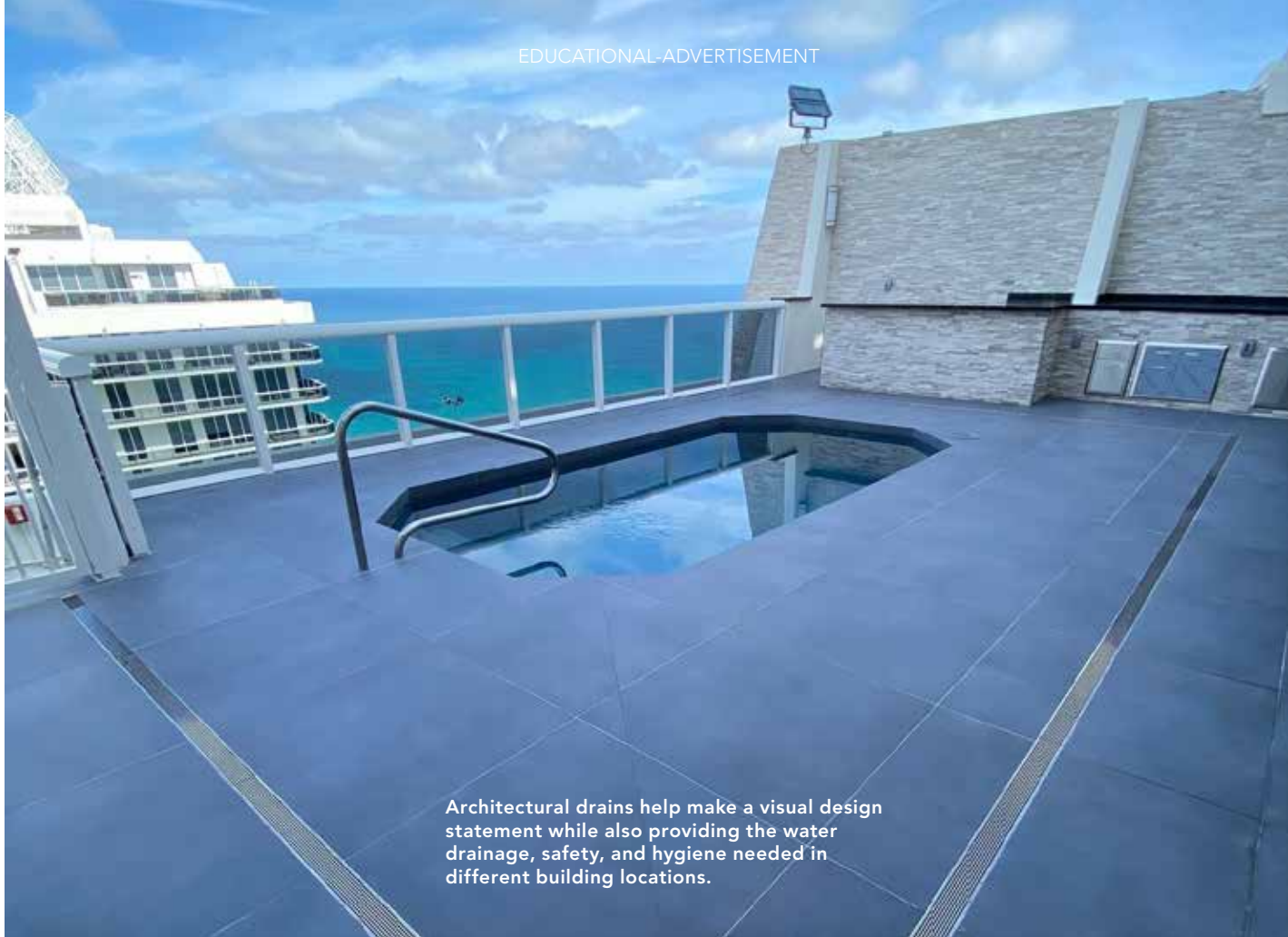


Photo courtesy of Infinity Drain



Architectural drains help make a visual design statement while also providing the water drainage, safety, and hygiene needed in different building locations.

Architectural Linear Drains for Indoor and Outdoor Use

Different product offerings suit many situations beyond bathrooms

Sponsored by Infinity Drain | *By Peter J. Arsenault, FAIA, NCARB, LEED AP*

Many commercial and residential building design projects incorporate very desirable connections between indoor and outdoor spaces. A key aspect to this design approach is keeping rainwater or snow melt from seeping or migrating to places where it is not wanted. Commonly, some utilitarian drains have been installed to collect and divert such water away from the building. However, many architects are paying closer attention to the quality of the drainage products and moving from commodity to architectural solutions. This is particularly true where

higher amenities are concerned such as outdoor spaces, wellness spaces, wet rooms, balconies, etc., where good appearance is required but so is compliance with performance requirements such as accessibility. In this course, architectural or decorative drainage solutions are reviewed as a very viable solution for creating wet spaces that are safer, more accessible, more hygienic, easier to clean, and cost effective. While such architectural drains have been commonly used in the bathroom shower, they also offer great design and functional benefits in many other building and site areas, too. They can help

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Learning Objectives

After reading this article, you should be able to:

1. Identify and recognize the need and options for proper water drainage to provide safety and accessibility in buildings and sites.
2. Investigate the design opportunities to create attractive, safe, and well-drained outdoor paths of travel.
3. Assess the means to provide different types of outdoor spaces with effective and safe drainage systems.
4. Specify architectural linear drainage systems in buildings in spaces beyond just showers.

To receive AIA credit, you are required to read the entire article and pass the quiz. Visit ce.architecturalrecord.com for the complete text and to take the quiz for free.

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to mitigate water damage, provide a safe and accessible pathway for guests, extend the life of floors or balconies, and may help architects avoid costly, ongoing water issues.

OVERVIEW OF DRAINAGE SYSTEMS

In the design and construction of buildings and sites, if there is water present (and there almost always is) then that water needs to be managed and controlled. It is common to think about how the water is being supplied (i.e., piped in through plumbing or irrigation systems) or where it may be coming from naturally (e.g., groundwater, precipitation, etc.). However, it is just as important to determine how it is being drained and carried away from the areas where it is present. Failure to properly drain means too much water is present and this can lead to a little, or a lot, of standing water. That water can cause structural or cosmetic damage to buildings, landscapes, or other areas. It is also a human safety issue in that wet surfaces are more slippery and can cause people walking on them to slip, fall, and become injured. Therefore, the design intent of a proper drainage system is to provide the long-term, ongoing remediation of excess water and the hazards that it may entail.

Of course, drains are usually covered with a grille or grate that is visible on floors or outdoor surfaces. In some settings, a purely functional and utilitarian drain cover may be appropriate. However, in many building locations, there is a desire to have the drains and their covers blend with a higher level of design. That means the shape of the drain, the depth of the drain catchment, the material for the cover, and other factors all come into play. In order to be sure that the look of the space being drained is not compromised, the selection of appropriate architectural drains and their integration into an overall scheme is critical. That means that these items aren't just for mechanical and plumbing engineers to consider. Rather, they require the review, input, and collaborative decision-making process of architects, landscape architects, and interior designers, too. Only in this way is the total design able to meet the aesthetic and performance needs of the project.

In the following sections, we consider some of the different aspects of designing architectural drainage systems.

Drainage Types Section

Not all drainage solutions are the same. Some require very standard components and others are better served by specialty items. Generically, there are three types of drains discussed, as follows.

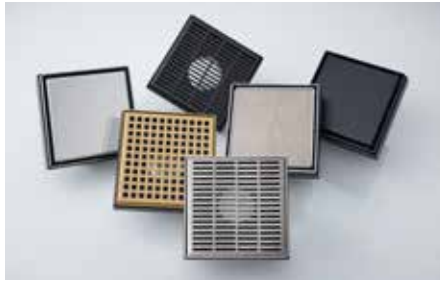


Photo courtesy of Infinity Drain

Center drains are based on sloping the surrounding floor or other surface to a central point that receives water into a catchment with a protective cover.

- **Center Drains** These are probably what most people think of when considering the use of a floor drain. In this case, a floor area, whether for a room, a shower, or an outdoor surface, is gently sloped from each side to a low point in the center. The drain catchment, commonly square or round, is connected to a suitably sized drainpipe that carries the collected water away from the area to its appropriate next destination (i.e., sewer, storm drain, retention pond, etc.). The catchment mechanism is typically covered with a grate or grille of some type that allows water to enter but keeps out other things such as debris. The cover also provides the needed safety protection for people, such that their foot lands on a smooth, flat surface instead of dropping into the open area of the catchment. The shape of a center drain is commonly square or round and available in standard sizes to suit different common conditions.
- **Architectural Linear Drains** A different, and often more elegant, approach for designing a floor drain, is to simply slope the surface all to one side. Then, along the length of the low end of the surface, a linear floor drain is installed in a recessed manner to drain away the water. In this case, the drain catchment area (also called a channel assembly) is long and rectangular, with either a vertical or horizontal drain outlet. That drain outlet can be connected in an appropriate manner to suitable drain piping that is located within the floor assembly or outdoor surface system. The drain channel assembly is covered with a long, rectangular grille or grate that functions the same way the center drain cover does – allowing water to enter while keeping out debris and providing a safe surface for people to walk on.

- **Custom Drain Solutions** In some cases, neither center drains nor purely linear drains are the right architectural solution for a project condition. For those situations, it is good to be aware that custom drains are indeed possible. They can take the form of curved or circular drains around a similarly shaped surface where water needs to be captured and redirected. Or they can be rectilinear by marrying several linear drains together to suit the geometry of a space. There are many different options and configurations possible, but as with any custom solution, it is best to check with a manufacturer during project design to determine fabrication parameters and tolerances that are possible and factors that influence cost management.

For example, a custom drain can address unique performance requirements, such as the percent of open or free area of the top grate or a larger outlet diameter that may be required in geographic areas that receive higher levels of precipitation. Custom drain grates can also be designed to address certain load requirements that may be in place for outdoor drains, such as heavy cleaning or maintenance equipment around a pool.

Performance Considerations

Performance is measured in several different ways when it comes to floor and surface drains. Some of the common performance items are as follows.

- **Drainage** The reason floor and surface drains are provided in the first place is because there is a performance need to drain away water. All drains will have a capacity of how much water can be drained away over a given amount of time (i.e., gallons per minute). The drain piping is usually

Photos courtesy of Infinity Drain



Architectural linear drains provide an elegant drainage solution based on sloping the floor surface to one side and removing water along the low end.



Custom drain solutions can take many forms and shapes subject to review with a manufacturer.

sized by a consulting engineer to match the needs of the area being drained based on a calculated volume and rate of water being managed. In the same way, any drainage system, particularly the catchment area, must be assessed for the capacity of the water that it can receive and drain away over time. If the catchment area is too large compared to the piping, then there is a risk of water pooling at the drain, since water is captured faster than it can be drained away. If the catchment area is too small, water may again pool outside of the drain because it cannot adequately capture all the water present. For linear drains, the size of the drain is not just the length, but also the depth of the catchment trough, which can vary. Therefore, for the best drainage performance, water flow calculations need to be considered for anything that is not a small or typical drainage condition, such as a bathroom shower. Outdoor drainage designs in particular should be addressed in this way since an abundance of rainwater can overwhelm any drainage solution at times.

- **Safety** Anywhere a floor or outdoor surface is being drained, there are certainly people who are occupying those spaces. Hence, there is a need to be sure that the drainage system does not provide a safety hazard or compromise the ability for anyone to walk or travel

over it. The proper drainage of the area is the first safety priority such that there is not the danger of excess water causing a condition which leads to a slip and fall accident. After that, it is important that the installation be designed and carried out such that the drain is flush with the adjacent finish materials. This requires proper detailing to allow for the correct depth of the recess for the channel and the drainage cover so as to avoid any

tripping hazard. The surface of the cover also needs to be considered to be sure it does not have holes or openings that are too large, such that they could cause a heel or toe to get stuck. Most of the covers are standardized by manufacturers and have likely already been tested for safety, but if there is any concern, a review of any safety testing should be done. There are many choices of cover types and styles, so it is likely that an appropriate one is available for most situations.

- **Hygiene** The presence of water is always a concern for cleanliness and the health of people since it can be a breeding ground for bacteria, mold, and other less than desirable conditions. Hence, it is important that any drainage system can be readily and easily cleaned as needed. This is the best way to be sure that any growth is eliminated but also to be sure that any foreign objects or debris that may enter can also be removed. Fortunately, most drain covers are designed to be removable so they can be cleaned and sanitized as needed. That removal also allows for access to the catchment area or trough to remove any unwanted items but also to clean and sanitize that area as well.
- **Barrier-Free Accessibility** Whether dictated by code or desired for anticipated lifestyle, barrier-free accessibility is a very typical performance requirement for anything that is part of a walking surface. The ability to make architectural drains flush with the surrounding surface and support the loads of people walking or

Photo courtesy of Infinity Drain



Barrier-free accessibility can be maintained or created through the use of recessed linear drains.

Photos courtesy of Infinity Drain



Different drain gratings allow for different appearances, including exposed stainless steel and ceramic tile-covered drains, to match flooring or concealed reveals.

riding in wheelchairs means that they have a head start on providing an accessible surface. In fact, they may facilitate accessibility. For example, it is common to see accessible shower stalls that use linear drains to capture the drainage water while allowing a wheelchair to enter smoothly into the shower area – the floor is simply sloped slightly (commonly ¼-inch rise per 12 inches) to direct the water to the drain and still allow for wheelchair access.

There may be other performance considerations too such as ease of maintenance and durability over time, both of which are commonly met based on the attributes already discussed. Of course, it is best to specify particular testing requirements and check with manufacturers to ascertain the actual performance capabilities of any drainage products.

Design Considerations

Incorporating architectural drains into a total space design requires an understanding of the different components of a system. Each can be selected, adjusted, customized, and specified to suit the needs and design intent of a project.

- **Channel Assembly/Catchment** This component is the working part of the drain that is concealed below the cover and fabricated to first catch, then direct, the water to the drainpipe. It is the part that needs to be designed into the floor or surface so that it provides the needed performance and is integrated as a flush finished condition. Depending on the application, there may be a need to provide for a waterproofing material or membrane around the channel, just as with any surface that is exposed to water. The type of waterproofing can

vary depending on the nature or type of drain and compatibility with the material of the channel assembly. Commonly, the channel assembly is made from stainless steel, but some PVC channels are also available. There are several general types to select from.

- **Site-Sizable Installations** consist of modular linear drain components that can be cut-to-fit on site or joined together to create any length. The outlet for this type can be located anywhere along the channel run. These are available in kit lengths or as a set of components in both stainless steel and PVC. Site-sizable installations can use most standard, compatible waterproofing methods.
- **Fixed-Length Installations** are prefabricated to specific lengths to be installed directly into the onsite construction. They include pre-pitched channels with a set outlet location. Both standard kit sizes and custom fabrication are available. Made from stainless steel, they are intended to be installed with most standard waterproofing methods.
- **Fixed-Flange Installations** are used when a vertical outlet is needed for connection to the drain piping. They include a pre-pitched flanged channel with set outlet location and a vertical (down) outlet. Standard kit sizes or custom fabrication are available made from stainless steel. This type should only be installed with liquid membrane or fabric sheet waterproofing methods.
- **Side Outlet Installations** are used where a vertical outlet is not practical or possible. They also include a pre-pitched flanged channel with a set outlet location and horizontal (side) outlet. Standard kits sizes or custom fabrication are available in stainless steel. As with fixed flange installations, side outlet channels should only be installed with liquid membrane or

fabric sheet waterproofing methods.

The heights of channel assemblies are typically on the order of 1-5/8-inch, although a low-profile 1-inch channel is available for site sizable installations. The lower channel height makes barrier-free installation easier in some cases. Such reduced height channels are likely to be reinforced on the sides with extra grooves or flanges to provide increased stability in mortar set installations.

- **Drain Covers** The visible part of the architectural drainage system is the cover. Typically, these are metal grates most often fabricated from different types of stainless steel. The thickness of the steel can vary from 18-gauge down to 7-gauge to suit different project weight-bearing conditions. The final appearance can vary based on the selection of the pattern of openings (linear grille, holes, etc.) and the final color of the finished metal – there are numerous options for both. In this way, the drain grate can either blend into the floor surface to be less noticeable or be used to create a contrasting line that works toward a purpose in the overall design.

If the desire is to have the cover blend into the surrounding surface and visually disappear, then there are also options to have a linear opening on either side of a central section that is designed to receive finishing material or tile that matches the surroundings. In this way, the linear drain takes on the same appearance as the surrounding floor or outdoor surface. If complete obscurity is sought, then there is also the option of using a recessed reveal slot drain such that the flooring extends over the flange of the channel and allows the water to enter into the channel via a 3/8-inch

Photo courtesy of Infinity Drain



Architectural linear drains along the edge of pedestrian sidewalks or walkways help ensure that water does not collect there and cause problems.

reveal in the surface of the floor. A small removable panel allows the channel and drain line to be accessed in this case. Because of these different approaches, it is easy to see why linear architectural drains offer an elegant and coordinated look for architects and designers to create well-designed, elegant spaces without the visual interruption of the grates or covers.

- **Other Considerations** There are a few other things that can come into play when making design decisions about architectural drainage systems. As noted earlier, there are prefabricated sloped metal pans available that can streamline the installation of a sloped floor and drainage system. The size and slope options should be verified with a manufacturer, but in some cases, using this available product can mean less construction time and cost than traditional installations of flooring and deck surfaces. Relatedly, manufacturers should be consulted for lead times on different products, particularly if customization is needed. Generally speaking, fast turnaround times are possible but always subject to change.

With a better understanding of both the performance and design aspects of architectural drainage, we can now turn our attention to some specific types of installations. There are many different places where architectural drainage systems are appropriate for use. While some people have only thought of them for shower installations, John Flaa of Infinity Drain has seen firsthand how many other applications are possible. He comments, “We often talk of

‘thinking outside the shower’ when it comes to architectural drainage given the wide applications where linear drains can be utilized.” With this in mind, we next look at three common, general application types – outdoor travel paths, outdoor spaces, and indoor spaces.

DRAINAGE FOR OUTDOOR TRAVEL PATHS

Paths of travel are common for all building sites whether for pedestrians or vehicles. Commonly, such paths are paved with asphalt, concrete, or masonry or covered with other materials, such as wood or tile for decking or similar surfaces. The surface may be fairly smooth or textured, but if they are outdoors, then they are subject to receiving water that needs to be collected and drained away. Several different applications are discussed further as follows.

Walkways for Pedestrian Traffic

Outdoor pedestrian walkways always deserve careful attention for slip resistance and proper drainage. A common approach is to simply slope walkways toward one side so that water drains off them and onto the ground. However, areas with plantings or berms may not readily accept runoff and, in fact, may block it. Further, large, paved walkways or locations that are subject to more than typical amounts of water (whether due to rain or irrigation overspray etc.) can overwhelm the ground and saturate it to the point that it cannot receive any more runoff. That means water builds up and puddles along the edge of the walkway and can cause problems, either for the walkway and ground or for people.

A solution for these conditions is to add

a continuous linear drain along the edge of the walkway to receive and remove the water. Underground piping may be needed in this case, which can be accessed by vertical channel outlets from the drain directly down into the piping. Alternatively, horizontal, side outlets could be used to help distribute the water underground to a larger natural area where it can be more easily absorbed.

Driveways for Vehicular Traffic

Pavement of different types are the norm for vehicles to travel or park upon. Most often, that pavement is impervious to water penetration, which means that rainwater collects and pools across the entire paved surface. Just like walkways, the pavement for vehicles is typically sloped gently to direct water to the edges or to a central location where it can drain across the surface to unpaved areas or into an underground stormwater collection system.

In some design situations, the paved area is close to buildings and the paving creates a featured area – such as a combined courtyard and parking area, for example. In such cases, the design of the pavement and the surroundings is meant to convey a higher level of design such that utilitarian approaches to drainage don’t match the intent. There is likely the need to have drainage in these cases, not only to prevent water from ponding, but also to protect the building so water doesn’t seep into or penetrate at the foundation. In these cases, carefully sloping the paving away from the building and collecting the water with a linear architectural drain can be ideal. The linear appearance can integrate nicely with a paving pattern and even help reinforce a delineation of space. The selection of the grate in this case obviously needs to take into account the added strength needed, which likely means a heavier gauge of stainless steel will be appropriate. The outlets can be vertical or horizontal depending on the nature of the piping that it is feeding into.

Balconies

Many residential, hospitality, and commercial buildings incorporate exterior balconies into their design. Those balconies are subject to all of the same weather and drainage issues as are found on the ground. This can be particularly noteworthy when the building is located in an area that is prone to frequent heavy rains or snow accumulation that needs to drain away when it melts. When there are multiple balconies aligned above each other, it often becomes impractical to simply allow the water to drain down onto balconies

below without any other means of managing the drainage. In some cases, a collection system may be used along the edge in the style of a gutter and downspout or scupper, but that can quickly become problematic from a design perspective or difficult to maintain on the part of the owner.

A more coordinated solution to proper drainage on balconies is to use architectural linear drains along or near the outer edge. By slightly sloping the balcony surface away from the building and towards the edge of the balcony, water is directed to a drain where it can be collected and piped away. If the linear drain is not located at the very edge of the balcony, then that edge can be tipped gently back toward the linear drain to prevent water from dripping down. The drain piping that the linear drain feeds into can be concealed within the balcony floor assembly and lead to a separate vertical drain. That vertical drain can outlet at the ground or tie into an underground stormwater system as may be appropriate.

DRAINAGE FOR OUTDOOR SPACES

Beyond outdoor spaces designed for moving through, there are plenty of residential and commercial spaces that are intended for people to use and linger in. Those can be large or small but often include a finished surface of some type that requires attention to the management of water there as well. Some common conditions are as follows.

Photo courtesy of Infinity Drain



Balconies require management of water, too, which can be provided, as shown above, with a continuous linear drain near the edge to collect and remove water.



Architectural drainage used in outdoor paved areas can be readily designed to accommodate vehicular traffic and alleviate drainage issues in parking and driving areas.

Decks and Patios

Many buildings are designed to include decks and patios. There seems to be a growing trend to cover those surfaces with a solid material, such as ceramic tile or a similar nonporous surface. Similarly, there are occasions where different materials are abutted next to each other and need some attention to detail. In all these cases, drainage needs to be a part of the overall design since water is not typically allowed to drain down between gaps in decking materials as on wood board decks.

For these more upscale approaches to decks and patios, architectural linear drains provide an ideal solution. The ability to integrate them into a design layout, between different materials or along edges, means that the surfaces can retain their design appeal while the linear drain takes care of draining away the water.

Outdoor Kitchens

A growing trend, especially for high-end residential work, is to include an outdoor kitchen and eating area. Often those are partly or mostly covered with a roof, but not always. If this feature is part of a design project, then the outdoor floor surface should be assessed for drainage needs. In some cases, the appropriate solution may be to slope everything away from the building, but in others, that may not be possible or practical.

Linear drains can be part of the solution here, especially if the outdoor kitchen area is immediately adjacent to the building. Providing a linear drain between the exterior wall and the floor surface of the kitchen helps to keep water outside and away from

wall and floor assemblies.

Outdoor Pool Areas

Outdoor swimming pools are popular in most hospitality projects and many residential ones (both single and multifamily). Here, the water is quite desirable – but only when it is inside the pool. There are plenty of ways that water can overflow the pool due to heavy rainfall or from splashing activities. Then, the areas around the pool become a focus of concern because wet, slippery conditions can occur that increase exposure to liability for the owner.

A common and well-accepted means of controlling the errant pool water is to run linear architectural drains around the perimeter of the pool – or at least any areas where people are walking. The location may vary based on the design of the pool and the area around it, but, generally, locating drains a few feet from the pool edge allows for water to land from splashing but remains close enough to contain any overflow as well. There may also be practical limits based on the pool construction as to how close a drain can be located. Regardless, the drain can also be used to delineate the pool edge and serve as a visual safety reminder, particularly for young children. The water can then drain back to the pool filtration system or be carried away as appropriate.

Door Areas

When interior spaces open through a doorway or open onto exterior ones, there may be a desire to keep the floor surfaces level with each other. This could be for

Photos courtesy of Infinity Drain



Decks and patios covered with tile or solid, continuous surfaces benefit from the design integration of architectural linear drains.



Outdoor kitchen and eating areas immediately adjacent to buildings are well served by drains along the edge of the building.

general design and appearance reasons or to comply with barrier-free accessibility between the two spaces. Many door manufacturers, particularly for sliding doors or folding operable wall systems, recommend that attention be paid to drainage at the door. That is because, in most cases, the threshold is not guaranteed to handle severe weather or water conditions. This is particularly true with a recessed or flush threshold, which is commonly designed for use only in a protected or covered condition.

A very elegant and appropriate solution in this case is to run a linear architectural drain along the outside of the door. This protects the entrance and replaces the role of the threshold as the source of water protection. More importantly, it also allows for the interior floor, the threshold, the drain, and the exterior surface to all be flush with each other, thus keeping everything consistent and accessible.

DRAINAGE FOR INDOOR SPACES

Moving from outdoor spaces to the indoors, there are many locations beyond the bathroom that often require attention to drainage. This includes any room that has plumbing in it for washing, cleaning, toileting, or cooking. In some cases, a floor drain is required by code, in others, it is simply a good idea to prevent damage if a plumbing fixture overflows for any reason. The codes don't dictate the design of the drains, of course, just the performance criteria. Therefore, architects can work with plumbing engineers to incorporate architectural drains that meet the code requirements and work well with the overall design of interior spaces.

Restrooms

As noted previously, linear architectural drains are often used in showers. However, not all restrooms require showers but still do require floor drains. Floor drains near toilets and urinals, for example, usually require depressions in a floor with a central drain. It is often easier to design and install a slightly sloped floor that uses a linear drain located away from the toilets and sinks, but close enough to still be effective. Similarly, linear drains can be placed parallel to a bank of sinks to collect and remove water that may be splashed there. Again, sloping the floor in one or two areas is usually easier to achieve than a central recessed drain. This arrangement makes it easier for cleaning and maintenance of the restrooms, with excess

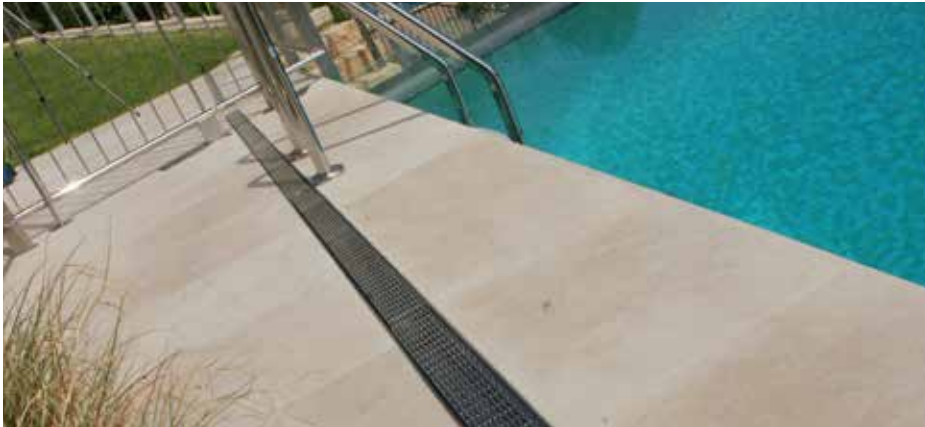
SCOTT COUNTY GOVERNMENT CENTER



Architect: Wold Architects & Engineers
Location: Shakopee, Minnesota
Application: Restroom Floor Drain

About the Project: Wold Architects and Engineers partnered with Scott County to construct a 145,000-square-foot addition and renovation of the existing Government and Justice Centers. Designs include placing all enclosed spaces at the building's core to allow for natural light in and views out. A range of floor drains for all public restrooms were provided for safety, accessibility, and cleanability.

Photo courtesy of Infinity Drain



Linear drains around outdoor swimming pools can make the area safer in an attractive and effective way.

cleaning water easily drained away. In all, restrooms benefit by being more hygienic and more visually appealing by using linear floor drains.

The case can also be made for increased ease of maintenance in restrooms when linear drains are installed. By having a linear drain along one wall, it is easier to hose down the floor and direct the water off the floor surface to one side rather than directing it to multiple center drains.

Locker Rooms

Similar to restrooms, locker rooms in athletic facilities, schools, clubs, and resorts can all benefit from using linear

architectural drains. Locker rooms usually include showers, so the linear drains can be considered and used there. But outside of the shower areas, the same benefits apply to toilet, sink, and changing rooms, where water may be splashed or accumulate and needs to be drained away. It also helps with the floor cleaning to combat athlete’s foot or other ailments related to such facilities.

Fitness Clubs

Health and fitness clubs are popular and prominent throughout the United States, whether private, public, or part of an academic institution. All these facilities have any combination of restrooms, showers,

locker rooms, or other spaces that need plumbing and floor drains. In many cases, the appearance of these facilities is a key requirement, either because of an interest to be differentiated from competing facilities, or to remain consistent with the quality of design found in affiliated buildings or institutions. Linear architectural drains work well in these cases, since they can be readily integrated to work with the larger design goals.

Indoor Pool Areas

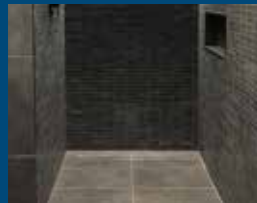
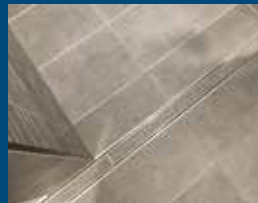
Not all swimming and therapy pools are located outdoors. Many are found indoors, particularly in colder climates or facilities that serve older populations. All of the same concerns about containing water are present in indoor pools as are found in outdoor pools. In fact, those concerns are often more critical when the pools are indoors since there may be smaller walking space around the pool and adjacent interior construction may be more vulnerable to displaced water. Linear architectural drains should be considered for all sides of an indoor pool to help alleviate all of these concerns, protect the building, and maintain safety for people using the pool.

CONCLUSION

Specifying architectural drains in a building project can provide appealing, well-performing solutions for many different project requirements. Successful design

Photos courtesy of Infinity Drain

ROCKET MORTGAGE FIELDHOUSE



Architect: Rossetti, SHoP Architects, Gensler
Location: Cleveland
Application: Players’ Locker Room Showers and Restroom

About the Project: SHoP and Rossetti set the tone of the Cleveland Cavaliers’ Rocket Mortgage Fieldhouse with sleek, modern upgrades. The restroom area was designated as a complete wet room with a combination of linear and center tile insert drains. In order to meet the specification standards set by the NBA, the manufacturer fabricated custom-length linear drains for the showers to meet the needs of the shower head height and needed water production as well as to avoid flooding.

Photo courtesy of Infinity Drain



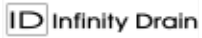
Linear drains used along the exterior edge of sliding or folding door panels protect the threshold and the building from water penetration in an elegant, flush, and accessible manner.

begins by understanding the nature and type of architectural drains available including the options for design and performance characteristics. Then, all of the areas that require drainage can be assessed for sizing and type, including outdoor travel paths, outdoor spaces, and indoor spaces. In doing so, it

becomes abundantly clear that architectural linear drainage systems provide a design option that improves the overall, integrated appearance of drains while still meeting all of the needed code, performance, safety, and operational needs of many different types of building projects.

Continues at ce.architecturalrecord.com

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Infinity Drain is the leading manufacturer of premium quality decorative and architectural drains. Innovations such as the Site Sizeable™ linear drain are ideal for residential and commercial applications. Proudly made in the USA. Infinitydrain.com

Photos courtesy of Infinity Drain

CLEMSON FOOTBALL OPERATIONS FACILITY



Architect: GoodWyn, Mills and Cawood (GMC) & HOK (Kansas City)
Location: Clemson, South Carolina
Application: Workout Facility

About the Project: Clemson’s football operation facility sets a new standard for the student-athlete experience. HOK worked on this project with GMC as architect of record and DPR as contractor. The complex includes 1.5 acres of outdoor leisure space and state-of-the-art training facilities. A total of 65 customized linear drains with tile-in features were provided at different lengths for the locker rooms, spa, and pool areas.

INSPIR CARNEGIE HILL BY MAPLEWOOD SENIOR LIVING



Architect: Handel Architects
Location: New York City
Application: Pool, Indoor Garden (Courtyard), Resident Room Showers

About the Project: Maplewood takes Senior Living to new heights with their Inspir Carnegie Hill property on New York City’s Upper East Side designed by Handel Architects. Customized linear drains were provided for 215 shower units using a modern, ADA-compliant tile insert style of linear drain. This design provides also allows for advanced cleanability within a wet room concept. Beyond the guest rooms, customized drainage solutions for the indoor pool and outdoor tranquility garden deliver a solution that meets multiple needs. The linear drains here provide safe, slip-resistant accessibility for residents and staff.