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## Designing a Spray Park

Building Safe facilities that make a lasting impression



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## **B. THREE ESSENTIAL INGREDIENTS**

Whether updating an existing facility, enhancing hotel amenities or creating a new public attraction, the spray park will require three essential elements: water, electricity and sufficient drainage. During the initial planning stages it is important to know and understand local public health and safety codes and regulations as they can have a significant influence on decisions made with regards to water usage, feature selection and surfacing.

### ***Water***

In recent years, public health authorities have become more actively involved in establishing water quality standards for spray parks. There may also be environmental restrictions on water usage that can affect the overall design. Even if specific standards do not exist, the spray park should be designed in a manner that makes efficient water consumption a priority.

Today's environment supports three main water management options:

1. Potable, drain to waste systems: Public water sources are used to feed the features in the park and water is drained to the storm/waste water system. This is a low-cost option for small spray parks with low water usage. It ensures a high quality water source at all times and reduces health risks.
2. Water treatment/recirculating systems: Water is drained into a holding tank, treated and then reused in the park. This is a more expensive option, but the best solution for larger parks or areas with strict water policies. Many jurisdictions are mandating the use of a water treatment system and have established health codes to which these systems must meet to be approved. The size and cost of a treated water system will vary depending on the size of the spray park, the number of features and their relative water flow rates. Usage expectations for the park and the type of disinfection required (e.g. chlorine only, chlorine plus ultraviolet [UV] light, CO<sub>2</sub>, etc.) also play a factor in the cost. This is currently the most common form of water management in the spray park industry.
3. Retain and reuse systems: Greywater (wastewater generated from domestic activities, e.g., laundry, dishwashing and bathing) is collected and utilized for other applications such as irrigation, washroom facilities and street cleaning. Retain and reuse systems are a relatively new concept. They are specifically designed for each unique environment and take into consideration the volume of water that will be captured, the amount that can be practically reused and the best distribution method.

Implementation of a water treatment/recirculating system or a retain-and-reuse system requires advance approval from local public health authorities. Most suppliers will work with the designer to provide the necessary documentation needed throughout the approval process. The time and effort involved in getting approval should be factored into the budget and project timeline.

Today, most spray parks utilize a combination of controllers and activators to sequence the flow of water and to place operation of the park's features into the hands of bathers. This reduces water consumption, as water only flows when the park is in use, while at the same time it also increases the intrigue and interactivity of the park as kids will try to anticipate which components will spray next.

Before adding a spray park to an existing facility, carefully evaluate the current water management structure to determine if it can support such a facility. In most cases, the existing pumps and filters cannot handle the increased water flow as water management for a spray park differs from many other applications. For example, an existing facility may not be able to accommodate the addition of a spray park due to the absence of a manifold or collection tank. Another reason may be a slow turnover rate (e.g. water must be turned over every 30 minutes in a spray park versus every three to

four hours in a pool). Understanding these considerations in the early planning stages will avoid unpleasant surprises and budget increases as the project progresses.

Considering water usage is critical in the planning stage, it is also important to understand the water's source. Does the location have a primary water source readily available? Is it a potable water supply, well water, lake water or some other type of water source? Answers to these questions can influence the overall site plan, as well as the design of the water management solution best suited to the environment. Keep in mind, the typical size of a supply line for a spray park is 51 to 102 mm (2 to 4 in. in diameter) with a static pressure of 0.52 MPa (75 psi).

### ***Electricity***

Is an electrical source readily available at the location in consideration? A minimum of 120 VAC is required to support a potable environment, but these requirements increase to 230 VAC single phase when water treatment/recirculation systems enter the picture. In addition, a qualified electrician will need to be on site for the installation stage of the project. Ensure this is taken into consideration when creating the budget for the project.

### ***Drainage***

One of the key benefits of a spray park is they are most commonly design with no standing water. This makes it a safe and fun environment for kids of all ages and abilities; it also generally eliminates the need for a lifeguard. In order to accomplish this, drainage must be planned in the early stages of the project to prevent water from pooling and eliminate unsafe conditions. If the features are being added into a pool or beach entry facility, lifeguards will be required in the same fashion as a pool.

## **C. LOCATION AND MATERIAL SELECTION**

Not all spray parks are created equal. It is important to consider the facility's location before evaluating the different suppliers and options, which best meet the project's unique requirements. Is the environment supervised or unsupervised? Is it a public park located in an area highly susceptible to vandalism? Is it indoors or outdoors?

The answers to these questions will help determine the materials that should be considered when selecting the features. For example, if the facility is located outdoors, near the ocean, in an unsupervised public park, design materials such as stainless steel with a superior paint should be considered, as it will withstand vandalism, provide superior UV protection and resist corrosion.

Choosing the right equipment could mean the difference between a successful spray park and a maintenance nightmare. It will also directly influence the amount needed to budget for features. Less durable materials generally come with a lower price tag and a shorter warranty than their more durable counterparts.

### ***Surfacing***

While there are many options available for surfacing a spray park, local health codes, American Society for Testing and Materials (ASTM) standards, budget, ongoing maintenance, durability and longevity should be considered when making a selection. The surface of the spray park should be nonporous, to prevent the build up of bacteria and non-slip, to prevent injury.

Known for its low cost, excellent traction and minimal upkeep, broom finished concrete has been the recommended standard by designers and suppliers all over the world. However, new advances in surfacing options have led to the emergence of brighter colors and unique designs. These can be

useful in enhancing the look and theme of a spray park, but they come at a higher price and may not provide the same longevity as a concrete surface.

Stamping, acid etching and coloring can enhance a concrete surface at a more reasonable cost. Keep the project's budget in mind when evaluating surface options. All too often projects fall flat because decisions were made to spend precious budget dollars on items, which enhance the esthetics of the attraction, but contribute nothing to the play value. Remember, this is what will keep visitors coming back to the park.

### ***Site amenities***

In creating a destination, additional amenities may need to be incorporated into the facility. Local health authorities may require a washroom or shower facility to be available. In addition to this, many parents request seating outside of the spray zone that provides good visibility of the spray park. It is also a good idea to consider adding shade structures over part of the facility and seating areas to offer sun protection on hot days. There may also be opportunities to include revenue generating concessions and activities around the area when building a new facility or when trying to improve revenue generation in an existing facility.

Early on in the planning stages, spray park designers and builders should carefully evaluate the potential site and investigate any external factors that could influence the success of the project. In doing this, the designer/builder will be better prepared to create a budget estimate.

## **D. ESTABLISHING A BUDGET**

When creating the budget for a spray park, many designers/builders make the mistake of focusing on the features as the primary expense. The features provide the visual impact and play value, however, most of a project's cost is associated with all of the other things that go into designing, building and operating the park, *e.g.*, project management, engineering and various approvals. Too often, initial budgets do not adequately anticipate additional costs and as the project progresses, cuts are made to the features or site amenities in order to bring the project back in line. Unfortunately, these elements are what end users value the most; they should be maximized for the long-term success of the facility.

Some key considerations to include in your budget:

- Project management: someone will need to co-ordinate the different parties and ensure the installation goes smoothly;
- Engineering and Design: design drawings will require local engineering approvals;
- Electrical: qualified electricians are needed for installation;
- Approvals: health authority and community approvals may be required and can incur time and expense to the project;
- Installation: site preparation and any unique requirement (*e.g.* bringing the water source into the location if it is not readily available) should be considered;
- Surfacing options;
- Startup: the system will need to be tested and operated before opening. If a water treatment system is involved, in-field training and commissioning will also be needed; and
- Operational costs: ongoing water, electrical power, maintenance, chemicals and repairs for general wear and tear should be considered.

## **E. DEVELOPING A THEME AND CONCEPTUAL DESIGN**

Custom themes are what usually set spray park designers apart from one another. While themes may come with a price tag, it can also do wonders in adding flair and continuity to an environment and make it more memorable. It can be as simple as adding a corporate logo, recognizing key financial contributors or as exciting as designing an entire facility around a key theme with creatures, characters, colors and sounds to support the vision.

When planning the spray park's layout and selecting its features, refer back to the project's objectives. What demographic is the facility being targeted towards? Understanding how the water sprays from the features and how kids will interact with the water is critical. It is much more than selecting from a catalogue of features, which may appeal to the esthetic design.

If only one age range is being targeted the job is much simpler. However, it is far more likely the spray park's design will be geared to a range of children, from toddlers to 12 year olds and possibly older. In this scenario, it is ideal for the spray park to be segregated into three separate areas, each with an activator to allow users to operate each given area.

### *Toddler play area (Age: 1 to 3)*

When designed with a toddler's needs at the forefront this water play area represents a world of discovery. An abundance of ground sprays with softer sprays and bubblers should define this area. Any upright features should be sized appropriately; quick bursts of water or surprise sprays should be avoided. Toddlers like predictable water and continuous spray displays.

### *Family play area (Age: 4 to 7)*

The family play area is generally the focal point of the spray park. It is also where the majority of the larger features and themes should be incorporated. A large central structure, such as a slide, will become the landmark attraction luring children and families into play. Musical features, character themes and spray tunnels are typically found in this area. Components should encourage social interaction and be designed for both independent and group play.

### *High-action play areas (Age: 7 and up)*

A large mega-soaker dumping bucket or similar structure is a great focal point for this area. Unlike the family play area, cannons and co-operative play elements will dominate this section. Features can be a little further apart, as older kids require more space. Faster actuating ground sprays, more interactive programming (if using a controller) and components requiring cause and effect co-operative play experiences should be considered.

Work with the feature supplier to ensure the design is age appropriate and safety is considered in the layout of the features. Avoid overcrowding the pad with features as it can present safety issues when kids are running through spraying water.

Once the conceptual layout and design have been created, consider engaging the community or key stakeholders in the final decision making process. All too often the overall design falls short of meeting the kid's expectations and can result in a non-interactive, non-stimulating spray park.

Involving the community or key stakeholders in the component selection process is a great way to bring more end-user ownership to the spray park, as well as to gather unbiased feedback on which features would best suit the facility.

## **F. INSTALL AND COMMISSION**

A typical installation will take anywhere from three-to-eight weeks depending on site preparation, size of the park, selection of water management systems and co-ordination of qualified contractors.

At this stage it is important to keep monitoring progress and ensure installation is being conducted according to the design:

- Slope and drainage for the spray park is adequate;
- Plumbing is according to design and manufacturer recommendations based on approved feature layout;
- Electrical is correctly installed and meets code;
- Features are correctly installed;
- Pressure tests have been performed and adjustments have been made;
- Surfacing is completed to design; and
- Park is commissioned and operating to the planned design.

## **G. ENJOY AND MAINTAIN**

The grand opening of the spray park was a huge success, the facility surpasses the project's objectives and scores of people are enjoying it every day. So now what?

Spray parks are not 'maintenance free.' It is recommended facility operators/owners inspect their parks regularly to ensure it is operating to its full potential, as well as making sure the site is free of debris and/or potential hazards. Each features' nozzles operation should be observed for changes in water flow, which can indicate cleaning or adjustments are required.

Mechanical hardware and moving parts need to be checked for wear and tear and water pressure should be measured to ensure it continues to operate within manufacturer guidelines. A safety checklist (provided by the manufacturer) should be followed at every inspection and maintenance records should be kept.

If a water treatment system is in use, the system will need to be checked several times daily to ensure the chemical levels are correct and the system is performing within health standards and regulations.

A spray park is a place to have fun and the planning process should exemplify this. By taking the time to establish the needs of the community and making educated decisions based on long-term goals, it can be easier to build the spray park of everyone's dreams.

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