WATERPLAY BY MAKA

INSTALLATION AND OWNER'S MANUAL

An informative read about the installation and operation of your Waterplay spray park

Contact Information

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1.0 Important Information

Waterplay aquatic play features require installation by qualified personnel. **Use of non-qualified trades' people or use of non-approved parts will void the Waterplay Warranty.**

For Waterplay aquatic play features to be considered for warranty, all guidelines outlined within this document must be followed, in addition to your project being registered directly with Waterplay online at http://www.waterplay.com/en/park-registration/

Prior to commencing installation be sure to read through this entire document including all other project specific documents.

Waterplay aquatic feature maintenance is the responsibility of the owner. It is recommended a maintenance log be kept documenting water quality (if using a water treatment system) and all performed maintenance. See suggested inspection check lists, water quality log, and maintenance section for guidelines on how to maintain Waterplay aquatic features, in addition to keeping your Waterplay Warranty valid. These documents may be called on if warranty issues arise.

⚠WARNING

When receiving Waterplay shipments inspect all items for damage and quantity immediately. Failure to do so could result in costly repair or replacement costs at the expense of the owner/installer.

When receiving any shipments from Waterplay be sure to inform the driver of any discrepancies and report as indicated on the shipping documentation when signing for receipt of goods. **All claims must be reported within 48 hours of receipt of goods. Claims reported outside of this time cannot be guaranteed.** If nothing has been noted on the Bill of Lading a claim may not be accepted. If you are unable to inspect the shipment at time of receipt you must note on the Bill of Lading **"Subject to inspection"**.

2.0 General

The following information provides direction on the installation, maintenance, and general operation of Waterplay aquatic play features. If additional information is needed that was not included, please contact Waterplay directly.

For Waterplay aquatic play features to be considered for warranty, all guidelines outlined within this document must be followed, in addition to your project being registered directly with Waterplay.

Project registration can be done online http://www.waterplay.com/en/park-registration/. Registration will confirm your warranty has been validated and Waterplay has all information required to ensure important aquatic play feature maintenance and useful operating information is communicated to the appropriate parties. Registration will require your Project Registration number (ORD-#####) that can be found on the front page of your Project Manual. This binder is an electronic document containing your project specific details, and is available through your dealer, or by emailing Waterplay directly at parts@waterplay.com.

If the project includes a Waterplay smartPLAY™ Controller or Water Treatment System (WTS), please reference the Waterplay smartPLAY™ Controller Setup Guide or the WTS Operations & Maintenance Manual for additional information.

3.0 Project Completion

NOTE

At the end of construction, the owner should have the following items in their possession.

3.1 Documentation

- Accurate “as built” construction plans from the project engineer, detailing changes (if applicable) from the original layout.
- WTS Operations & Maintenance Manual (if applicable).
- Electronic document titled “Project Manual” that includes the following documents:
  - Project Drawing Set – These drawings are used as a general overview of the park layout and not to be used for park construction. These are not to be confused with “For Construction” drawings to be issued by your local engineer.
  - Mechanical Workbook – Shows the recommended component water flow and valve sequencing.
  - Waterplay Operations & Installation Manual – Used as general guidelines to the operation, maintenance, trouble shooting, and installation details of Waterplay aquatic play features.
  - Component Specifications – Provides a general description of each component purchased.
  - smartPLAY™ Controller Setup Guide / Wiring Diagram (if applicable) – A guide to the controller wiring and use of your Waterplay aquatic play features controller.
  - Waterplay Warranty Information – Information on the requirements and coverage of your Waterplay aquatic play features.

3.2 Maintenance and Service Items

- Touch-up paint
- All spare nozzles and nozzle blanks (winter covers)
- Feature maintenance tools such as:

Figure 1: Feature Maintenance Tools

- ¾" Spray Jet Tool (item #1), used for removing ¾" nozzles.
- Torx Security Bits (item #2) #H27, #H45 and #H55, used for removing security bolts on features.
- Multitool (item #3), 5/16", 1/2" and 5/8" threaded tool used for removing 1-1/2" nozzles, 2-1/2" nozzles, 5" nozzles, and 6" nozzles.
- Additional service tools and replacement parts can be purchased from Waterplay.

4.0 Safety Inspection

It is the responsibility of the owner/operator to inspect the aquatic play area daily, with more thorough inspections conducted weekly and monthly or mid-season. This will assist in limiting the number of safety issues that arise. Waterplay has included recommended check lists, located in the appendix of this document, for these inspections. These checklists are meant as a starting point, each aquatic play pad owner is responsible for developing their own site-specific inspection procedure.

Please view our how to videos online at http://www.waterplay.com/en/spring-start/ for additional information and maintenance tips, or simply scan the QR code with your smart phone.

Figure 2: Spring Startup QR Code

5.0 Winterization & Shut Down Procedures

5.1 Winterization & Shut Down

Waterplay aquatic play features must be correctly winterized and shut down to prevent damage to components, supply lines, controllers, and manifolds during colder months or long periods of inactivity. This typically includes draining the main supply line, manifold, and all feature lines by low point drain (if installed) or blowing them out with compressed air. All components and lines must be free of water. Failure to do so could result in ice damage and costly repair costs.

- See recommended aquatic play pad check list “Winterization and Shut Down” provided in the appendix.

5.2 Spring Startup Procedures

Waterplay aquatic play features must be correctly commissioned after long periods of shut down to prevent damage to components, supply lines, controllers, and manifolds.

- See recommended aquatic play pad check list “Spring Startup Inspection” provided in the appendix.

6.0 Nozzles

6.1 General

Waterplay features will be shipped with blank nozzles that should remain installed until construction and concrete work is complete. The blank nozzles are also used for pressure testing and winterization or shutdown periods. After park construction and pressure testing is complete the blank nozzles can be removed to flush out the lines, prior to installing the performance nozzles.

> **NOTE**
>
> Be sure to store the blank nozzles in a safe place during the operating season as they are required to be re-installed for winterization or shut down periods.

- Plans should be made to inspect the nozzle outlets on a regular basis to ensure the fittings are secure and all orifices are free of debris.
- Park operators need to frequently monitor water pressures as it is critical that water pressures are kept at a safe discharge rate.
- Nozzle removal/exchange should be conducted in the morning as a temperature rise will cause expansion of the nozzle making it difficult to remove.

6.2 Nozzle Replacement

6.2.1 3/4" Nozzles

1. Ensure the water is turned off from the manifold and pressure has been relieved in the system.
2. Remove nozzle blank using supplied two pin ¾" Jet Spray tool (See section 3.2.).
3. Insert by hand into nozzle socket in a clockwise direction. Use ¾" Jet Spray tool to tighten nozzle until snug.
4. Nozzle should fit flush with component.
5. Do not over tighten as this could damage the nozzle.

6.2.2 1-1/2", 2-1/2", 5", & 6" Nozzles

1. Ensure the water is turned off from the manifold and pressure has been relieved in the system.
2. Remove bolt (center of nozzle) using supplied maintenance tools (See section 3.2.).
3. Remove nozzle blank using supplied Multitool (See section 3.2.). Simply start threading Multitool into the hole where the bolt was. Gently pull on the multitool until the nozzle lifts free. Some oscillation may be required to shake the nozzle free. Be careful not to damage the nozzle when removing it.
4. Insert specified nozzle and ensure O-ring is sitting properly and has been lubricated. **Apply an anti-seize compound to bolt(s)** and tighten until nozzle is fully seated in nozzle chamber.
5. Nozzle should fit flush with component.
6. Do not over tighten as this could damage the nozzle.

6.2.3 Bobble Nozzles

1. Ensure the water is turned off from the manifold and pressure has been relieved in the system.
2. Remove bolt (center of nozzle) using supplied Torx Security Bit (See section 3.2.).
3. Pull off existing Bobble nozzle
    a. Attach replacement by lining up the orientation tab and sealing groove with the feature.
4. **Apply an anti-seize compound to bolt** and tighten until nozzle is fully seated in the sealing groove.
5. Do not over tighten as this could damage the nozzle.
6. Bobble nozzles do not typically come with a winter blank, in this case for pressure testing it as advised to use the playPHASE base cover plate to pressure test prior to installing the feature.

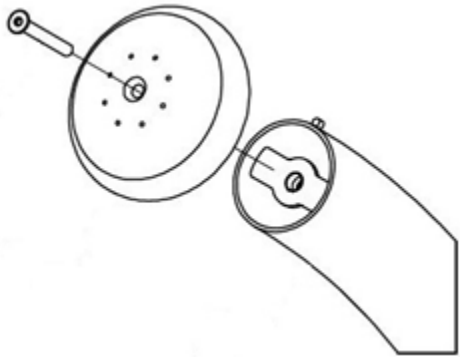

Figure 3: Bobble Nozzle Replacement

6.3 Pop-It Ground Spray Nozzles

1. Pop-It nozzles are removed the same as the nozzles in section 6.2.2 above except they have two security bolts and require two “T” tools (See section 3.2.) to be removed.

Figure 4: Pop-It Nozzle Assembly

2. Pop-It ground sprays do not include winter blanks, so care needs to be made during installation not to damage the performance nozzle. These nozzles can be left in for winter months however, it is imperative the supply line and Pop-It valve have the water blown out. Additionally, the SMC tubing must be disconnected, and the canister drain must be free of debris. See the Pop-It specification sheet for further information.
3. If the Pop-It valve is not pulsing correctly it may have debris stuck inside the valve. This can be cleaned out by taking apart the valve and flushing clean.

7.0 SmartPLAY™ Controller & Activator Operation

For complete instructions on running the controller please review the smartPLAY™ Controller Setup Guide. This will discuss how to navigate the controller functions, connect an activator, and activate the park features. This guide is included within the Project Manual.

8.0 Solenoid Valves

8.1 Manually Turning ON and OFF

Figure 5: Solenoid Valve Top View

- "Rotating to the "ON" position will open the valve and will stay open until it's manually turned to the "OFF" position,
- Rotating to the "OFF" position will manually close the valve and allow for the controller to electronically turn the valve on and off.
- To run the park electronically with the controller all valves must be in the "OFF" position.
- To electronically control the valves, see the Waterplay smartPLAY™ Controller Guide.

8.2 Setting Feature Flow

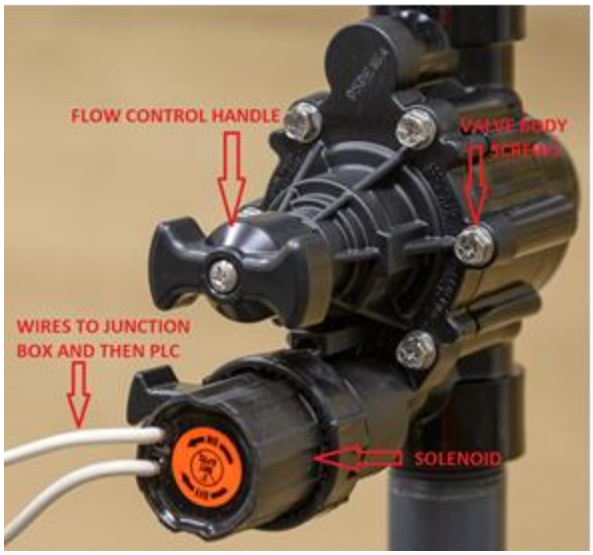

Figure 6: Solenoid Valve Diagram

- With the controller and pump on electronically, activate the corresponding valve output using the controller Valve Test screen, or manually rotate the solenoid counterclockwise to the “ON” position. You should hear water flowing through the valve.
- Increase or decrease the flow through the component by turning the flow control handle.
- Adjust accordingly to set the desired display for the component.
- Re-engage the solenoid body clockwise to the “OFF” position or turn off the output using the controller Valve Test/Auto screen if this is how it was opened.
- Flow may need to be re-adjusted during standard park operation if features are sequenced as this can affect the flow.

8.3 Cleaning Solenoid Valves

- Isolate the solenoid valve from the manifold by closing the supply to the valve and if possible, the supply to the manifold.
- Drain the leg the valve is connected to.
- Remove the solenoid valve by rotating counterclockwise and inspect the O-ring for debris, damaged or twisting.
- Unscrew the six screws on the valve body and remove the diaphragm, and spring.
- Check for any debris on the filter screen and or diaphragm inside.
- Be sure not to lose any small items like the internal spring, or bolts.
- Reassemble the valve.

8.4 Valve Chatter

If the valve appears to be vibrating excessively and sounds of valve chatter are present (a pulsing thud or ticking noise), this usually means air is trapped in the valve. This is commonly mistaken for water hammer, but it is a different problem. It can be fixed by loosening the top two and middle two valve body screws one to two full turns. If required use a flat head screwdriver to pry the valve body and valve top open. This will allow the air to purge and some water to shoot out as well.

Figure 7: Water Hammer Procedure

9.0 Component Care and Maintenance

⚠CAUTION

- Test new cleaning products on a small inconspicuous area to check for adverse effects.
- Do not use power washers or electric polisher on decal products.
- Review product manufacturer instructions for specific details.
- Cleaning products are available for purchase from Waterplay.

9.1 Environmental Considerations

9.1.1 Water Quality

For projects that utilize a Water Treatment System, Waterplay requires a maintenance log be kept with the minimum daily measurements: ORP, PH and Combined Chlorine etc. Total Dissolved Solids should be measured weekly. The maintenance log needs to be recorded for the life of the Waterplay equipment. This will ensure a corrosive environment is not created due to a chemical imbalance, thus shortening the working life of Waterplay aquatic play features and components.

Shocking of sanitizer will result in the rapid failure of powder coated products. The passive layer of stainless steel will also decay, resulting in potential rust issues that are not covered under warranty. See U005 Waterplay Warranty Policy for full details.

Features installed in pool environments require consistent control of water chemistry. Features immersed in water require extra attention to cleaning as this produces a harsh environment for the features.

For potable parks, hard water deposits will collect over time on the components. How quickly this occurs will depend on the municipal water quality.

9.1.2 Air Quality

Indoor aquatic facilities should take careful consideration into planning sufficient air turnover rates and humidity control, to prevent premature failure of powder coat and Stainless Steel.

Industrial fallout should be considered for any outdoor play area located near an industrial area, as there is the possibility of airborne contaminates coming from heavy equipment, carbon steel equipment, industrial exhaust etc. Increased maintenance intervals for cleaning the components will be required to prevent premature decay of powder coat and Stainless Steel.

Outdoor play areas located near train tracks may also experience fallout from brake dust and train track wear. In these instances, increased maintenance intervals for cleaning the components will be required to prevent premature decay of powder coat and Stainless Steel.

9.2 Powder Coat & Fiberglass

For further information about fiberglass cleaning and repair, see Fiberglass Slide Maintenance & Repair Manual.

9.2.1 Regular Cleaning

- Use a mild soap and clean water with a soft cloth to wipe down features. Waterplay recommends SlideRenu - Slide Soap or similar product.
- The frequency can be adjusted dependent on the surrounding environment and spray park water quality. Adjust cleaning schedule as needed to keep a clean shiny park.

9.2.2 Heavy Cleaning

- If there are signs of water staining conduct a more thorough cleaning using a detergent or high PH degreaser. Waterplay recommends SlideRenu - Slide Detergent or similar product.
- Use a soft brush or clean cloth to scrub the feature.
- Follow product directions for dilution and soak time if required.
- If hard water mineral deposits, oxidation, and scale start forming on the features, use a scale remover with a non-scratch pad to remove. Waterplay recommends SlideRenu – Calcitrol or similar product. Rinse features with water thoroughly when finished.

9.2.3 Polishing

- To remove any scrapes or scratches use a polishing compound with an electric polisher. Thoroughly clean and dry the feature prior to starting as described above.
- Apply polishing compound evenly and be sure not to use excessive force or stay in one spot to long, this will cause fading and deterioration of the finished surface. Waterplay recommends SlideRenu - Slide Polish or similar product.
- Let polishing compound haze over or dry, then wipe with a clean cloth.
- Once polishing is complete, wax will need to be applied to restore a glossy finish. See below for wax process. If polishing does not remove powder coat scratches, see Touch up Paint Procedure.

9.2.4 Waxing

- Apply wax on a regular basis to protect and prevent fading from UV, weather exposure and environmental contaminants. This will assist in keeping a shiny new appearance. Waterplay recommends SlideRenu - Slide Wax or similar product.
- Wax is applied using a clean cloth by hand or using an electric polisher. Evenly distribute wax and wipe off with a clean cloth after the wax has hazed over or dried.
- If using electric polisher be sure not to use excessive force or stay in one spot too long as this will cause fading and deterioration of the finish surface.

9.2.5 Touch Up Paint

Every Waterplay project is shipped with a touch-up pen for small scratches and repairs (similar to an automotive repair).

In the event of major paint damage, a more intensive repair process may be required. The following instructions should be followed, and a matching aerosol paint product will need to be sourced. Please contact Waterplay for information on the RAL colors for your specific project to ensure paint matches as closely as possible.

Aerosol paint repair steps are as follows:

1. Protect the area from potential spillage and overspray. Allow product to fully dry each step.
2. Clean the area with a damp cloth.
3. Wet sand the area with 600 grit (or finer).
4. Mask the area only requiring the primer, where metal is exposed.
5. Apply a light coat of primer. Repeat as necessary.
6. Remove the masking, wet sand the area and feather the sides around the primed area leaving the mid area slightly raised. Clean the area with water and a damp cloth, then let dry.
7. For final painting, remove all masking and apply a smooth light coat spraying slightly beyond the area. Repeat process until the primer is not visible. Take time to ensure paint does not run and us multiple light coats allowing paint to dry between each coat.

Figure 8: Touch Up Paint Procedure

9.3 Brushed Stainless Steel (Grades 304/316)

9.3.1 Regular Cleaning

- Components should be rinsed with fresh water daily; this will wash away accumulated contaminants and chemicals.
- Components should also be wiped down bi-weekly with a soft cloth or sponge, in the direction of the grain.

9.3.2 Heavy Cleaning

In the event Waterplay features exhibit signs of surface corrosion, the corrosion should be removed as soon as possible to prevent further damage caused by pitting. Waterplay recommends E-NOX CLEAN, a high strength stainless steel cleaner or similar product.

- Apply the cleaner as per specific manufacturer instructions.

- If chemically cleaning the feature does not work on its own, a non-scratching Scotch-Brite pad can be used in the direction of the grain as a more abrasive method of cleaning.
- **Do not use steel wool** as this can scratch the surface of the stainless steel and contaminate the feature with carbon steel.

9.4 Acrylic Panels

- Rinse panels regularly with fresh water. Panels can be cleaned with a mild detergent and water. Removal of loose grime can be aided with a clean wet soft cloth or pressure washer at low pressure. Clean cloth often to prevent small particles from scratching the panel. **Never use Ammonia, window cleaners or other chemical sprays on acrylic**.
- SlideRenu Calcitrol can be used to remove calcium buildup.
- If the panels are etched, have small scratches; a polish can be used to buff out the etching or scratches. Waterplay recommends SlideRenu - Slide Polish or a similar product.
- To reduce the frequency of cleaning in the future, the panels can be coated with a layer of good quality car wax, or a hydrophobic compound. Do not use silicone-based waxes. Waterplay recommends SlideRenu SlideWax or SlideGloss.
- Water quality, surrounding environment and how frequent panels are rinsed with fresh water will determine how often the panels need to be cleaned.

9.5 HDPE Components

Rinse with clean water to remove loose debris, a soft bristle brush and/or pressure washer at low pressure can aid in debris removal, then clean with a mild detergent and water, rinse well with clean water to remove any detergent residue.

9.6 Before & After Photos

9.6.1 Aluminum Dumping Bucket

Figure 9: After Cleaning (Left) vs. After Calcitrol, Polishing, & Waxing (Right)

9.6.2 Fiberglass Slide Flume & Dumping Bucket

Figure 10: After Cleaning (Left) vs. After Polishing & Waxing (Right)

Figure 11: After Cleaning (Right) vs. After Polishing & Waxing (Right)

9.6.3 Brushed Stainless Steel

Figure 12: After Cleaning (Left) vs. After E-Nox Clean (Right)

10.0 Shipment Receiving

When receiving any shipment from Waterplay be sure to inspect the shipment and inform the driver immediately of any damage or missing items. Report as indicated on the shipping documentation when signing for receipt of goods.

If nothing has been noted on the Bill of Lading a claim may not be accepted. If you are unable to inspect the shipment at time of receipt you must note on the Bill of Lading "Subject to inspection". All claims must be reported within 48 hours of receipt of goods. Claims reported outside of this time cannot be guaranteed.

10.1 Inspect for Damage

Waterplay takes photos of all major project orders prior to shipping from our manufacturing facility. These photos are sent along with your notice of shipment and are a valuable tool for helping you inspect your goods upon receipt. When opening the truck or container, compare immediately to the way it looked when it shipped from our site. If it is significantly different, it should be an indication that something changed on route. Also, be careful to ensure that you are receiving the complete number of items as noted on the Bill of Lading and in the photos.

- Inspect the component wrapping to look for tears, cuts, or smudges.

Figure 13: Waterplay Component Wrapping as Placed in Truck for Shipment

Figure 14: Component Wrapping at Destination Indicating Shipping Damage

- Inspect shock watch stickers to ensure all clear.

Figure 15: Shock Watch Sticker OK (Left) vs. Not OK (Right)

10.2 Inspect for Accuracy

- Confirm the correct number of items has been received; this includes spray features, anchor hardware, playPHASE bases, fasteners, nozzles blanks (installed for shipping and pressure testing) and performance nozzles (shipped loose for install after park construction).
- Review shipping documents and compare to original order.
- If you are unable to inspect the shipment at time of receipt you must note on the Bill of Lading “Subject to Inspection”.

10.3 Report Discrepancies

- If found, indicate damage or missing items on Bill of Lading at time of receiving.
- Contact the transport company indicating your waybill number and request an inspection. This will initiate the claim.
- Contact Waterplay's Project Support within 48 hours and send a copy of the Bill of Lading with recorded damage and or missing items, as well as the shipping provider's claim number.
- Provide photos of the damage prior to unwrapping and after, to both Waterplay and the shipping provider.

10.4 Storage

- Components should be stored indoors out of the elements with protective wrapping in place.
- If protective wrapping becomes damp it should be removed as this could cause discoloration and fading of the feature finish coat and void the Waterplay Warranty.

11.0 Installation

11.1 General

The following information is provided to ensure that the installation of Waterplay features is done correctly and the resulting facility is a success. It is the responsibility of the park owner and general contractor to ensure all aspects of the construction are performed by skilled personnel under the direct full-time supervision of the corresponding licensed tradesperson.

Waterplay feature installation must be conducted in accordance with Waterplay guidelines and installation details provided for each feature, acceptable construction practices, local codes, and authorities having jurisdiction (AHJ). When required, approval by the engineer of record should be documented.

To ensure a smooth installation always plan ahead, the following list covers some key points and items to be verified or discussed prior to proceeding with the installation:

- Ensure all required approvals and permits are in place from local authorities such as health, building, by-law, etc.
- Obtain approved “For Construction” drawings from local engineer(s). This should include at minimum; site grading, plumbing, electrical, footing and final slab requirements. If conflicting information is found in documents, local codes will govern. Verify with project engineer regarding any changes.
- Ensure all applicable trades people review “For Construction” drawings and other installation documents prior to allowing work to commence.
- Confirm that the feature shipment has been thoroughly inspected for missing items or damaged goods, and any concerns duly noted on the Bill of Lading and communicated to the shipper and Waterplay. It is

imperative the any findings are duly noted at time of receipt and that Waterplay is notified within 48 hours of receipt of goods.

- Verify that the finished surface will conform to local codes and follows designed grading plans approved by the local engineer or AHJ.

11.2 Splash Pad Design Considerations

- Waterplay recommends a minimum overspray zone of 1.8m (5ft.) to help avoid damage to surrounding areas and keep pedestrian traffic from getting wet. Overspray zone must include a positive drainage slope to the splash pad drains. Do not slope the overspray area away from the pad.
    - If the overspray is sloped away from the splash pad this has the potential for flooding and damaging the surrounding landscape.
    - Areas with frequent high winds may need a larger overspray zone. Review on a case-by-case basis with your park design team.
    - Refer to your park design's Waterplay Pad Concept Layout drawing for detail
- Slopes (main splash pad and overspray areas) are to provide positive drainage to the drains. Slope grades are subject to local engineer's approval. Be sure not to have any low points around features or ground sprays as pooling will affect feature performance and maintenance intervals.
- All splash pad electrical products that have specified drainage connections must be connected correctly. Failure to do so will result in premature failure of electrical components. Electrical connections must be completed in a watertight manner.

11.3 Site Preparation

⚠CAUTION

Contact local “Call Before You Dig” groups to obtain all required information and approvals prior to beginning site work.

11.3.1 Site Survey

- Locate the spray pad within the intended area and complete site layout.
- Verify all required distances are maintained from property lines.
- Suggested backfill of trenches is 6” (150mm) of sand below the pipes and 8” (200mm) above.
- Suggested backfill of the spray pad area is 6” (150mm) of base coarse aggregate.

11.3.2 Excavate

- Excavate to intended depths and slopes, maintaining tolerances per the spray pad design.
- Comply with local codes, safety regulations and authorities having jurisdiction.

11.4 Footings

11.4.1 Footing Type

Component specification sheets for the facility's components are shipped with the anchor hardware. All footing details provided are only recommendations and must be confirmed with local engineer prior to commencing work. Please reference the "For Construction" drawings (provided by local engineer) to ensure the footing details are as per your local codes.

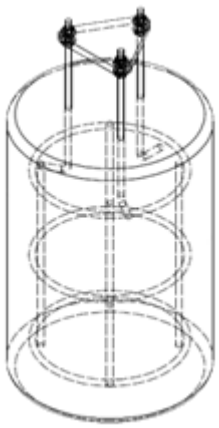

Figure 16: Footing Detail "F"

11.4.2 Footing Location

1. Confirm each footing excavation is correctly located, oriented and at the proper elevation to the other components.
2. Excavate to the specified depth.

11.4.3 Footing Reinforcement

1. Construct forms and place the required reinforcement.
2. Maintain specified minimum cover around reinforcement.
3. Electrically ground the footing reinforcement according to local codes and regulations.

Figure 17: Footing Reinforcement

11.4.4 Anchor Hardware

1. Secure hardware wooden templates with anchor hardware to forms for feature or playPHASE™ base attachment.
2. Confirm orientation is correct.
3. Allow 2" (50mm) clearance between top of concrete footing and bottom of template. Please refer to local codes and specifications for proper embedment depths.

Figure 18: Footing Template & Anchor Bolts

4. Double footed features require a jig between footings for correct bolt locations as well as center to center spacing. Refer to jig installation detail for more information.

11.5 Feature & PlayPHASE™

1. Ensure concrete footings have set (as per local specifications) and are ready for embedded feature or playPHASE™ base installation.
2. Remove the top nuts, washers, footing templates and footing forms from the concrete footing.
3. Keep the nuts and washers for component or playPHASE™ placement.
4. Install each component and playPHASE™ base on the assigned footing anchor bolts. Confirm correct orientation of each component to prevent water spray to undesired or dry areas.
5. Complete final elevation adjustments with bottom nuts on J-bolts. Use the second nut to secure in place.
6. Ensure that the tops of the bases (including cover plate) are adjusted to be flush and level with the final finished grade of the spray pad.
7. Refer to specific feature installation drawings for further details.

Figure 19: Luminary Cannister Installation

11.6 Feature Grounding

1. Loop ground wire for all components and playPHASE™ bases together on a continuous circuit to a grounding rod (or as per your local electrical codes) with a UL/CSA approved lug nut or grounding tab (supplied by others).
2. Grounding requirements are to be approved by the local engineer of record before commencing work.

Figure 20: Grounding of PlayPHASE Base

11.7 Grouting

It is recommended that a self-leveling, non-shrink cementitious grout is used to fill the void between the footing and the feature base or playPHASE™ feet.

1. Build wood forms if required around component base to accept grout.
2. Let set as per manufacturer's recommendations.

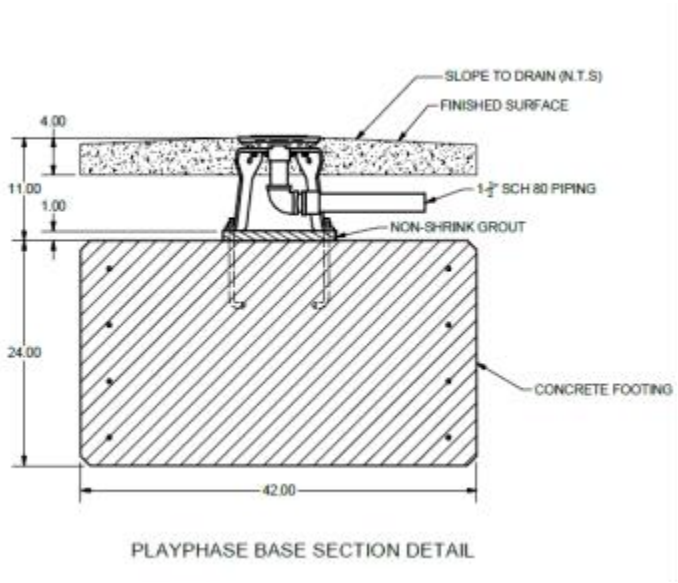

Figure 21: Grouting Under PlayPHASE Base

11.8 Manifold

- Reference the project engineer's Construction Drawings for manifold location
- Waterplay manifold systems are pre-engineered and fabricated for each park. The manifolds include solenoids valves, shut-off valves, and unions. Each solenoid valve is pre-programmed through the smartPLAY™ Controller with water conscious sequencing.
- Once installed, it is the contractor's responsibility to ensure a qualified electrician and plumber to connect the final assembly.
- Where the manifold is supplied by others, refer to piping and valve schedule information as indicated on the "For Construction" documentation.
- Installation of ball valves, hose bibs and unions should allow for servicing and winterizing.
- Low point drainage (gravity drainage) of components is required to ensure no problems with freezing in the lines. Typically, the manifold is designed to be the low point in the system but if not, a low point drainage system can be located between the manifold and the spray pad as per section 18.

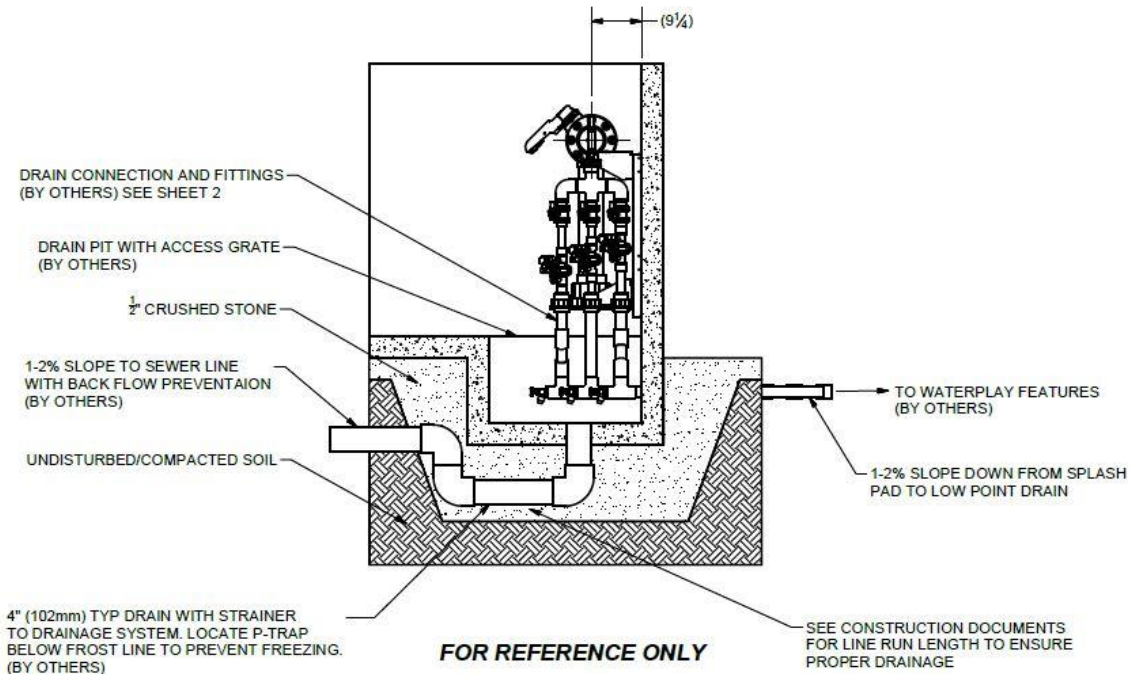

Figure 22: Manifold Detail

- Consult local codes to determine if any additional equipment is required, such as a backflow preventer, pressure regulating valve, and/or water meter.
- Any additional equipment must be approved by the local engineer of record before commencing work.

11.9 Park Drainage

NOTE

Drain placement is to be approved by the local engineer of record before commencing work. Always follow manufacturer's specifications, local codes, labor safety laws, and authority having jurisdiction.

11.9.1 Spray Park Drainage

- Size drain lines to ensure water volume is discharged from the spray pad without allowing an accumulated depth of water as this could cause suction at drain covers.

Figure 23: Drain Lines for a Spray Park

- Grate openings need to be sized to local codes.
- Facilities should have a second identical drain to prevent water accumulation, should one drain become blocked. Drains should be placed a minimum of 3'-0" (914 mm) apart.
- If code requires, provide an air gap for physical separation between the sewer system and park drain line.
- Drain lines need to be accessible for periodic clean out and flushing.
- Temporarily cap all unfinished pipelines to prevent rodent & debris entry.
- If installing a water treatment system, ensure the holding tank is installed at the specified elevation and ensure a positive drainage slope in the drain line to the holding tank inlet. Refer to "For Construction" drawings as provided by your local engineer for details.

- All connections to local sewer (or return in a recirculated system) must meet local code requirements. The design of the system must ensure that there are prevention mechanisms in place to prevent system contamination in the event of a sewer backup (for example – use of an air gap, or a backwater valve).

11.9.2 Condensate Drainage for Electrical Features

Some features with electrical wiring include a drainage hub at the base of the feature. These drain lines must be connected to a drain. Failure to do so will result in moisture damage to the electrical components.

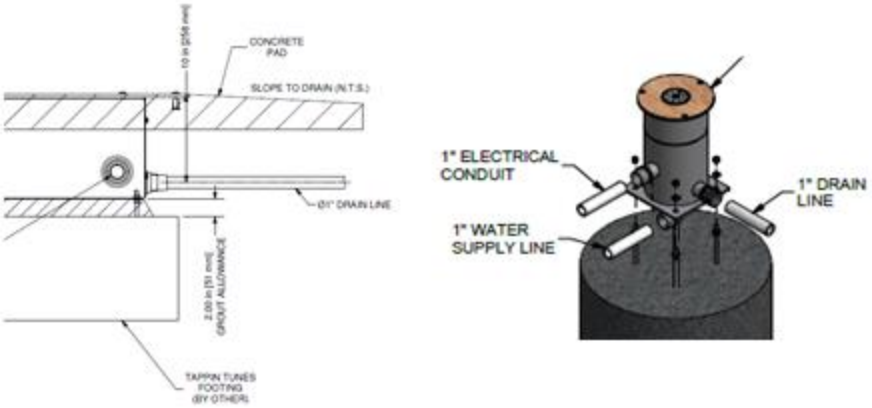

Figure 24: Condensate Drainage for Electrical Features

11.10 Supply Line Low Point Drainage

Low point drainage (gravity drainage) of components is recommended to ensure no issues with freezing water in the lines during winter months in cold climates. Typically, the manifold is designed to be at the low point in the system but if not, a low point drainage system can be located between the manifold and the aquatic play pad, that drains to a drain pit (French drain) or is connected to sewer. If no low point drainage is included in the design of the system, the lines will need to be blown out with compressed air for winterizing and shut down periods.

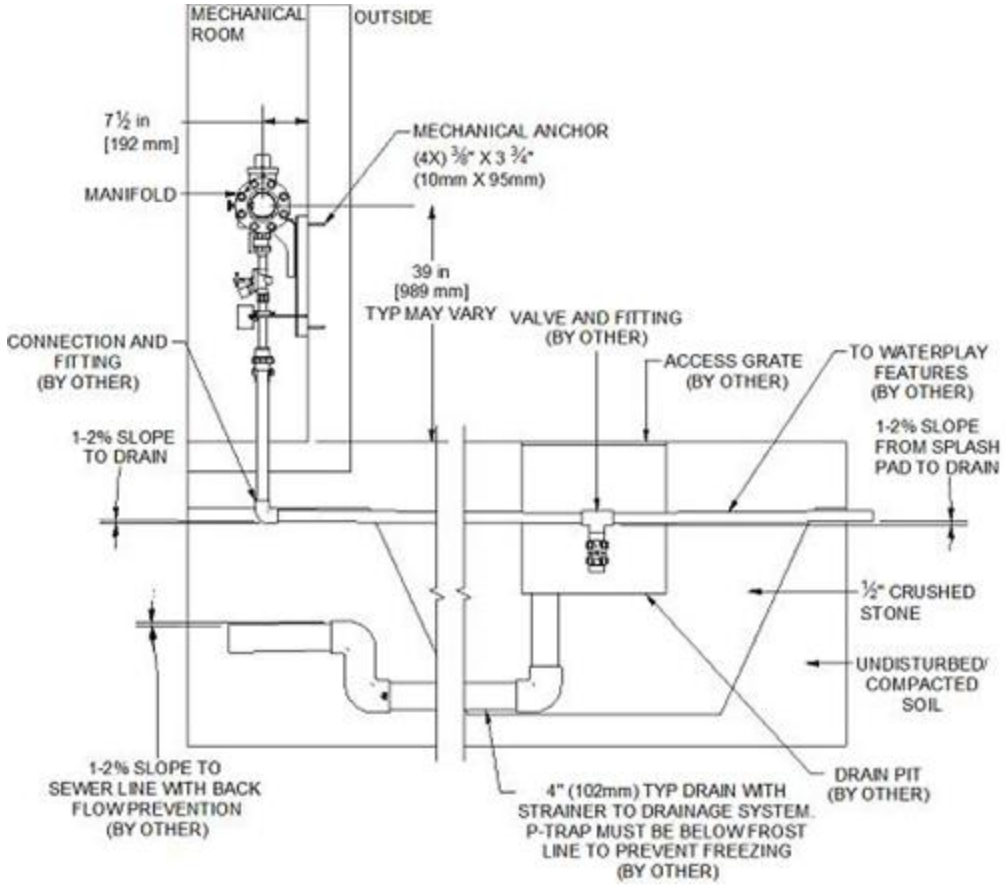

Figure 25: Supply Line Low Point Drainage Diagram

11.11 Trenching & Piping

11.11.1 Trenching

- Excavate trenches as per the “For Construction” drawings to ensure drainage, piping, electrical conduit, and layout details are as per local codes.

11.11.2 Piping

- Whenever possible use loops and center split piping to ensure even water distribution to features sharing the same supply line.
- Prior to connecting Waterplay features to supply lines be sure to complete the following:
  - Complete final connections to drains, manifold, and sanitary services.
  - Remove any temporary caps at the end of component lines, if applicable.
  - Flush all lines to purge debris utilizing the manifold as the source. This may need to be done several times to ensure the lines are clear of all debris capable of causing issues with performance nozzles and final water display.
- Complete component connections as required for a watertight seal.

Figure 26: Piping to Feature Bases

NOTE

All supply line and drain line slopes and diameters shall be approved by the local engineer of record prior to commencing work.

11.12 Pressure Testing

NOTE

Be aware that some components cannot be pressure tested as there is no way to disable the flow, thus you will need to pressure test the lines prior to connecting these components. Please note that Waterplay supplied components have been pressure tested prior to shipping. Pressure testing to be completed prior to installing performance nozzles.

- Once all piping connections are complete and winter nozzles blanks installed, pressure test the piping network at 70 psi or as specified by the engineer.
- Slowly apply pressure and inspect all plumbing for leaks.

- Release the line pressure by carefully opening the hose bib on the manifold.
- Make any necessary repairs to areas that leak, and re-test as required until all leaks have been repaired.
- If your installation includes any Puddle features make sure to remove the winter cover and insert the ¼-20 x 0.75 Bolt in the water outlet, when pressure testing. Pressure testing with the winter cover in place will cause damage to the cover and bolts.
- When using PVC Waterplay recommends pressure testing using water and not compressed air. Compressed air can be dangerous and cause shattering of pipes.

11.13 Electrical

- Electrical work must be done by a competent Electrician as per local and national codes.
- For full controller set up see the smartPLAY™ Controller Setup Guide and wiring schematic supplied by Waterplay.
- Install the specified conduits from the GFI circuit breaker at the main panel to the controller, from the controller to the activator(s), and from the controller to any applicable components.
- Pull and connect the necessary conductors from the controller to the activator and applicable components as indicated in the controller manual and wiring schematic.

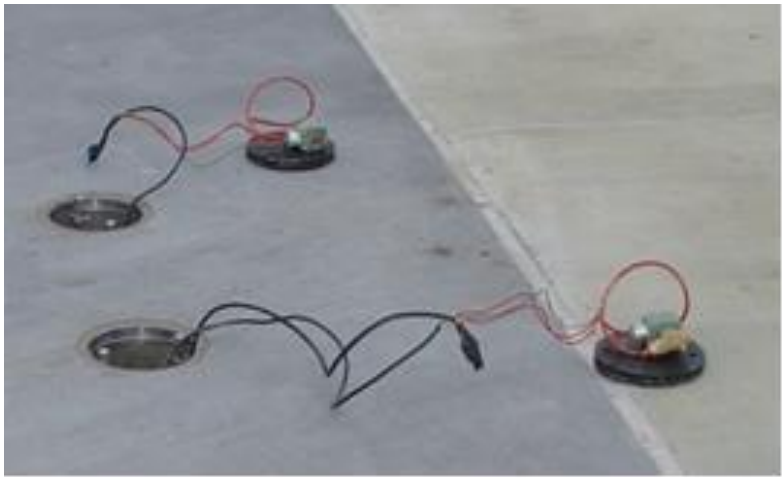

Figure 27: Feature Electrical Connections

- Pull and connect specified conductors from the GFI circuit breaker panel to the controller as indicated in the controller manual and wiring schematic.
- On the controller terminal strip, connect each valve to the assigned terminal as indicated from the mechanical workbook and wiring schematic (e.g. Valve 1 connects to Out1 and 24V-2).
- Test all electrical features prior to securing final cover plates.

Figure 28: Feature Electrical Connections

11.14 Final Component Preparations

- Tape off ground spray or playPHASE™ component bolt heads to ensure concrete will not cure on them.
- Place closed cell foam around the base of all features/playPHASE™ flanges where the concrete will cure. This is used to create an expansion gap and allow for caulking to seal the concrete to the flange and help prevent cracking.
- If installing features with flush ground panels such as Lily Pads or Action Plates, be sure to properly secure the provided templates prior to pouring the concrete. Ensure there is a coating of concrete release agent for ease of removal once the concrete has cured. Prior to the concrete curing, form a shallow V-Groove (approx. ¼", 6.25mm) around the perimeter of the template, this will reduce the chance of the concrete edge cracking.

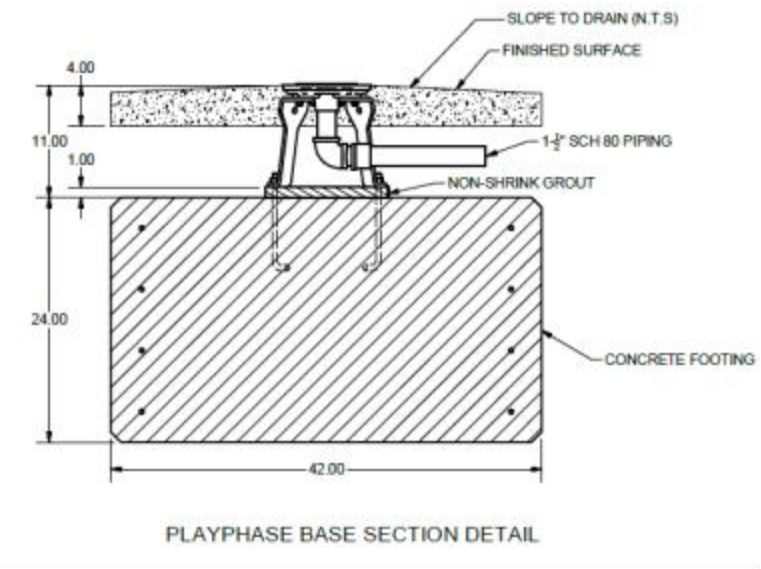

Figure 29: PlayPHASE Installation Detail

11.15 Final Pad Area Preparation

Suggested backfill is to be approved by the local engineer of record before commencing work.

- Backfill trenches – suggested backfill is 6" (150mm) of sand below the pipes and 8" (200mm) above.
- Backfill the aquatic pad area. Suggested backfill 6" (150mm) of base coarse aggregate.
- Place spray pad forms in preparation for pouring final slab.
- Confirm finished base for conformity with inspection elevations & sections.
- Confirm ground spray elevations correspond with final grade elevation.
- Place a moisture barrier between the base and concrete.

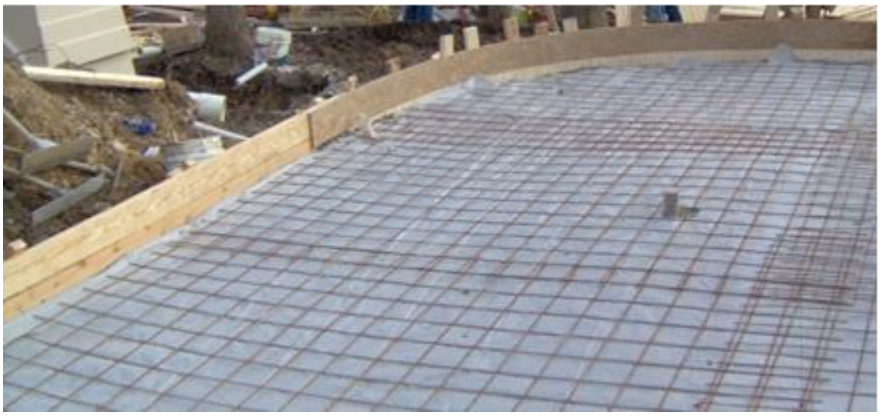

Figure 30: Moisture Barrier on Pad

- Install slab reinforcement mesh, or reinforcing steel as specified by local engineer.
- Conduct a final pressure test to ensure piping was not damaged when backfilling and compacting the base.

11.16 Concrete Pad Pour

> **NOTE**
>
> For other finish surfacing such as pour-in-place rubber, refer to manufacturer's written specifications, if required adjust height of concrete slab below to ensure correct height for features.

- Ensure the correct slope is maintained from pad surface to drains as per the "For Construction" drawings. This includes the overspray area as well.
- Eliminate low point collection areas that could create pooling around nozzles affecting the spray display, as well as creating slip hazards.

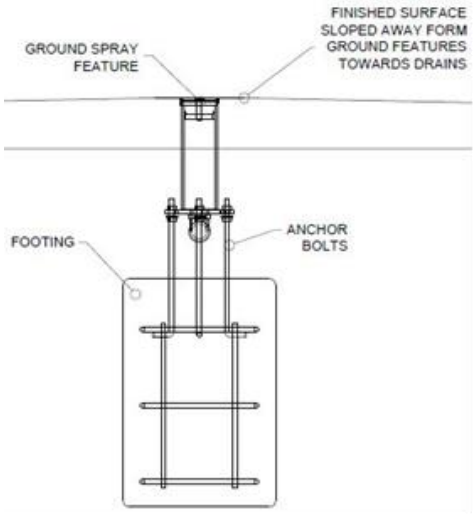

Figure 31: Finished Slope Around Ground Spray

- Establish expansion control joints as required.

- Ensure finished grade of concrete is flush with the top of each ground spray, playPHASE flange, and ground panels (or leave enough space for additional surfacing if required).
- Apply a light broom finish to create a textured surface to provide good traction.

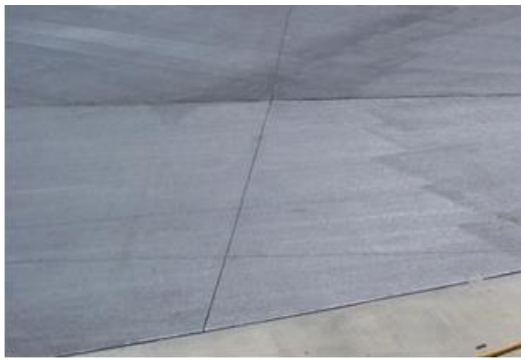

Figure 32: Brushed Finish on Concrete

- Clean ground sprays, above ground features and all nozzles of concrete splatter once the concreted has cured enough to allow foot access.
- Remove closed cell protective foam once concrete has set and apply a bead a caulking around the base of the feature or playPHASE base.

11.17 PlayPHASE™ Base Features

1. Remove playPHASE winter cover plate including O-ring.
2. Install the feature gasket (shipped loose in the parts box)
3. Peel up feature protective wrappings approximately 16” (400mm) to allow for access to flanges and bolt holes.
4. Leave remaining protective wrap in place until construction is complete.
5. Place features on specified playPHASE base
6. Verify the feature spray is correctly oriented.
7. Tighten down all bolts for a secure watertight installation.
8. Apply Waterplay decal to cover the tops of the feature bolts

Figure 33: Feature Installation on PlayPHASE Base

11.18 Performance Nozzles

1. Remove the nozzle blanks and save them as these will be used for winterization and shutdown periods.
2. Flush the system to purge all debris that could clog the performance nozzles and or alter the water spray.
3. Install the performance nozzles as identified for each feature.
4. Adjust nozzles to achieve desired spray effect.
5. For nozzle replacement details see section 5.0.
6. Nozzle removal/exchange should be conducted in the morning as a temperature rise will cause expansion of the nozzle making it difficult to remove.

11.19 Final Items

1. Remove remaining protective wrap.
2. Clean excess concrete splatter, loose debris, and foreign materials from the pad and features.
3. Apply joint sealer to create a moisture barrier between the concrete and the components.

4. Install graphic panels, cannon tops, flower petals and palm leaves (if applicable).

Figure 34: Welcome Sign

5. Do final inspection of components for any damage. If cleaning, polishing, or touch up paint is required, proceed as noted in section 9 Components Care and Maintenance.
6. Apply a coat of wax to components to help keep a high-gloss finish. This only applies to powder coated or fiberglass components and not brushed stainless steel finish.
7. Wax or a hydrophobic coating can be applied to acrylic panels to reduce the speed of calcium and dirt buildup. Waterplay recommends SlideRenu's; SlideWax and SlideGloss.
8. Remove all construction material and debris from spray area.
9. Post required signage and warnings
10. Turn on the water!

12.0 COMMISSIONING SERVICES

Waterplay Commissioning services can be arranged for an additional fee in advance of park opening if needed. Please work with Waterplay's Project Support team to coordinate timelines. Typically, 4 weeks notification is required. Commissioning can only take place once the installation and construction is complete.

13.0 TROUBLESHOOTING

If problems occur during the initial startup and pressure testing, see the following troubleshooting table:

No.	Problem or Symptom	Possible Cause	Remedy
1	No water flows to features	Controller power OFF	Verify main power & front door switch are ON.
		Incorrect valve type	Replace with 24VAC 0.25A valves.
		Blown fuse(s)	Replace blown fuse(s) from terminal strip (see Controller Wiring Diagrams for locations & type of fuses).
		Water supply interrupted	Investigate water supply source and verify all valves are in correct position. Verify manual valves from header are in the open position. Disengage solenoids and verify water flows.

No.	Problem or Symptom	Possible Cause	Remedy
		Controller programmed incorrectly	Reprogram clock for time, date & operation time. Verify component sequence settings are correct. Test operation of aquatic facility with the controller's TEST mode
2	One (or more) zones do not run	One or more zones are wired incorrectly	Verify valve wiring is completed as per the wiring diagram (Diagram in Controller manual) and piping plan. Test operation of aquatic facility with the controller's TEST mode to determine which component is out of sequence and correct wiring as required. Call Waterplay @ 1-800-590-5552 for assistance.
		Solenoid Valve Failed	Check controller fuses. Verify 24AC power at solenoid valve.
		Manual Valve Closed	Verify manual valve from header is in the open position.

No.	Problem or Symptom	Possible Cause	Remedy
		Nozzle or Pipe Blockage	Verify that distribution piping and the component nozzle(s) is not blocked with debris.
3	System stops running, or stops running periodically	Loose wiring	Verify all wire connections are tight.
		Program has come to the end of the sequence	Normal operation is to stop after 5 minute duration. Test program by touching activation device.
4	Water sprays continuously	Solenoid valves in manually open position	Set control valve(s) to automatic by closing manual operator (rotate clockwise).
		Activator sensitivity set too high (LED on sensor &/or PLC is on constantly)	Adjust (reduce) sensitivity on sensor by rotating adjustment screw. Adjust so that light turns on when hand is placed on sensor and light turns off when hand is removed.

No.	Problem or Symptom	Possible Cause	Remedy
		System in Test Mode (one or more component may be spraying)	When TEST is finished, push BACK button to exit TEST screen (valves which were open will now close).
		Dirt or debris in valve body keeping valve open	Clean Solenoid valve screen and diaphragm.
		Faulty control valve or solenoid	Test solenoid valve manually. If the valve won't operate manually it is defective & requires replacement. Swap suspect valve (or solenoid) with a properly operating one to isolate problem, replace valve (or solenoid) as necessary. Check wiring drawings.
		Power connected directly to transformer (ON/OFF switch & fuse are then bypassed)	Rewire power connection according to Section 1 of Instruction Manual.

No.	Problem or Symptom	Possible Cause	Remedy
5	Activator does not start the facility	Activator sensitivity not adjusted correctly	Adjust sensitivity of activator sensor. Adjust so that light turns on when hand is placed on sensor and light turns off when hand is removed.
		Activator sensor not wired correctly	Verify sensor wiring is correct. Check wiring drawings.
6	Buckets do not return to upright position	Bushing seized up with grime and water build up.	Clean bushings and shaft with Calcitriol and clean water.
		Bushings are loose or not sitting correctly	Secure bushings or contact Waterplay for replacement bushings.
		Excessive Pressure or flow	Reduce pressure to 10 psi. Adjust flow so that bucket tips every 15 – 20 seconds.

No.	Problem or Symptom	Possible Cause	Remedy
7	Water spray height varies or drops off	Supply pressure fluctuation	Investigate water supply source. Did sequence grouping change?
8	Blown fuses	Incorrect fuse	Replace with fuse type specified in controller drawings.
		Incorrect sensor wiring	Rewire according to controller drawings.
9	No inputs or outputs or power light showing in PLC	Controller power OFF	Verify main power & front door switch are ON.
		Faulty Transformer	Contact electrician to test transformer.
		Blown fuse	Replace fuse(s).
		Damaged PLC	Contact Waterplay @ 1-800-590-5552.
10	Touch screen is blank	Loose wire connection	Verify all wire connections are tight.
		PLC is OFF	Ensure PLC power and run light are on.

No.	Problem or Symptom	Possible Cause	Remedy
		Controller power OFF	Verify main power & front door switch are ON.
		Blown fuse	Replace fuse(s).
11	Interactive sound component not working	No light on the MP3 player	Refer to the wiring schematic. Check PLC out put on the expansion module. Check wiring from E-series controller terminal to the interactive panel (SND+, SND- & V-, V2). Check fuse. Check the relay.
		No sound	Check for memory card. Check speaker balance (R or L). Check Volume setting. Clean flow switches, push buttons, and sensors.
	Interactive sound component not working cont.	Excessive Pressure or flow	Reduce flow so that the water is about 5 ft. (1524mm). Fully cover the nozzle and wait for the sound. Continue to reduce height and cover again if still not working.

No.	Problem or Symptom	Possible Cause	Remedy
12	How to change sounds		Use a card reader to view the memory card on the computer. Find MP3 sounds (watch for copyright laws). Save Name sounds with the pre-fix 001_name, 002_name into a file. Copy MODE.txt on the card (that is the program) to the same file. Format card. Reload new sounds and MODE.txt onto card.

Appendix A: Inspection Checklists

The supplementary file “Inspection Checklists” contain the recommended checklists used for general maintenance.

Appendix B: Water Quality Logs

The supplementary file “Water Quality Logs” contain a template for the recommended water quality checks as well as a list of definitions and cautions.