INTERACTIVEPLAY MULTI-LEVEL AQUATIC PLAY STRUCTURE – TECHNICAL SPECIFICATION

PART 1 - GENERAL REQUIREMENTS

1.1 SCOPE

Provide and install a multi-level interactive aquatic play structure suitable for submerged or partially submerged installation in public aquatic facilities. The structure shall be specifically engineered for interactive waterplay by children and adults and designed for long-term use in a chlorinated pool environment. All components and materials shall be new, of commercial waterpark quality, and designed as an integrated system by a single manufacturer specializing in Inter-Active fiberglass aquatic play structures.

1.2 MANUFACTURER QUALIFICATIONS

The aquatic play structure must be supplied by a manufacturer with a proven record in designing and engineering children's aquatic play structures (minimum **5 years** of successful experience). The manufacturer shall own and directly supervise the production facility to ensure quality control. A full-time **professional engineer** (P.E.) shall be on staff to oversee design and structural engineering, and a full-time **quality control manager** shall be on staff to supervise manufacturing quality. The manufacturer shall have prior experience with similar multi-level water play installations. Products that are "off-the-shelf" or not specifically designed for interactive water play are not acceptable.

1.3 APPROVED MANUFACTURER(S)

The basis-of-design product is the **InterActivePlay** multi-level aquatic play structure, as manufactured by **VPC Fiberglass** (InterActivePlay Waterparks, 10478 Ridge Road, Medina, NY 14103; Phone 585-735-9668; website: www.interactivewaterparks.com

This manufacturer and model have been selected for their superior fiberglass construction and unique interactive features. Any proposed substitution must be pre-approved in writing by the Owner's Representative **prior** to bid acceptance, and must demonstrate equal **play value**, material quality and construction, and warranty. The intent of this specification is to establish a **benchmark of quality and design** embodied by the InterActivePlay product; deviations that compromise durability, safety, or play value will not be accepted.

1.4 STANDARDS AND REFERENCES

The play structure and its installation shall comply with all applicable safety and quality standards, including but not limited to:

1. **ASTM F2461** – Standard Practice for Classification, Design, Manufacture, Construction, and Operation of Aquatic Play Equipment (interactive water play structures).
2. **ASTM F1487** – Standard Consumer Safety Performance Specification for Playground Equipment for Public Use (for general playground safety considerations).

3. **ASTM F2376** – Standard Practice for Classification, Design, Manufacture, Construction, and Operation of Water Slide Systems (for water slide design and safety).

4. All pertinent **ASTM F24** Committee standards for amusement rides/devices and any applicable local building codes (e.g. wind/seismic structural requirements) and safety regulations (including **Cal-OSHA** requirements or equivalent state regulations for water play structures). The structure shall also meet or exceed relevant **electrical codes** for bonding/grounding in aquatic environments and any **ADA** accessibility guidelines applicable to aquatic play (where features are at ground level).

1.4 SUBMITTALS

A. **Product Data/Specifications and Drawings:** Within 21 days of Notice to Proceed, submit complete product specifications, catalog cut sheets, and performance data for the proposed aquatic play structure and all associated components. Include dimensional general-arrangement drawings, weight/loading information, and water flow requirements for all features. **Drawings** shall be provided, including foundation anchoring details and structural support layouts, prepared or certified by the manufacturer's engineer. If required by the authority having jurisdiction, provide **structural calculations** and drawings stamped by a Professional Engineer licensed in the project state. All drawings shall clearly indicate required clearances, connections, and any interface with existing pool infrastructure.

B. **Pump and Equipment Data:** If a dedicated circulation or booster pump is required for the structure, provide specifications for the pump (sizing, performance curve, power requirements) and any required **electrical control systems**. Include wiring diagrams for integration of any features that require sensors or controls (if applicable). All electrical equipment and wiring shall comply with NEC and pool safety standards.

C. **Operations and Maintenance Manuals:** Provide at least two (2) complete sets of installation, operation, and maintenance manuals. The **operation manual** shall include start-up and shutdown procedures, daily operation guidelines, maintenance routines, inspection checklists, and **winterization** procedures for off-season shutdown. Manuals shall also include parts lists and recommended spare parts for maintenance.

D. **Training and Certification:** Include the manufacturer's guidelines for operator training and a description of the **on-site training** to be provided. The Contractor shall submit documentation (upon completion) that the facility staff has been trained in the safe operation and maintenance of the play structure. Additionally, upon finishing installation, provide a **Certificate of Installation Compliance** from the manufacturer, stating that the structure has been installed under their supervision and according to their requirements, and that it meets all safety standards.

E. **Warranty:** Submit the manufacturer's warranty documentation. The play structure shall carry a minimum **ten (10) year warranty** on all structural and fiberglass components against manufacturing defects, structural failure, or material degradation from corrosion. All other moving parts, interactive features, and hardware shall have a minimum **two (2) year warranty**. Warranty coverage shall include materials and workmanship and shall be backed by the manufacturer (single-source responsibility).

PART 2 - PRODUCT

2.1 MATERIALS AND CONSTRUCTION

The multi-level play structure shall be constructed using **premium, corrosion-resistant materials** specifically chosen for longevity in chlorinated aquatic environments. The design shall eliminate or minimize any materials that are prone to rust or degradation in water. **Ferrous metals (iron/steel)** are generally not permitted for primary structural elements (with the exception of stainless steel hardware or components specifically allowed and protected as described below).

Key material requirements are as follows:

A. **Structural Supports:** All structural support members with the exception of slide supports shall be fabricated from **pultruded fiberglass-reinforced polymer (FRP)** structural shapes. The fiberglass structural members shall be of heavy-duty pultrusion, using high-strength glass fiber reinforcement and premium resin. The FRP supports must be **inherently corrosion-proof**, UV-stabilized, and highly resistant to chlorine and other pool chemicals. *Stainless steel or carbon steel shall **not** be used for primary support structure* (to prevent corrosion and reduce heat retention). The FRP structural system provides a proprietary advantage in durability – it will not rust, rot, or corrode, ensuring a significantly longer service life in chlorinated water environments compared to steel structures. All structural FRP surfaces shall be finished with a UV-resistant gelcoat or protective coating in the color(s) selected by the Owner to match the project theme.

B. **Decks and Stairs:** All platform decking, stair treads, and guardrails shall be constructed from **premium-grade fiberglass** materials for superior corrosion resistance and durability. Deck and stair surfaces shall have an **integral anti-slip texture** suitable for bare feet. The anti-slip finish shall be a permanent, molded or applied grit texture that remains slip-resistant when wet and is comfortable for users in swimsuits with bare feet. The fiberglass decks and stairs shall be structurally reinforced as needed and designed to support anticipated loads per ASTM and building code requirements (including live loads from users and water). All walking surfaces shall be free of any sharp edges or points – edges shall be rounded and smooth. The fiberglass construction of decks and stairs not only prevents rust and slippery algae growth (often seen on

painted metal surfaces) but also keeps surfaces cooler under the sun, enhancing safety and comfort.

C. **Enclosure Panels and Barriers:** Any enclosure panels, barrier walls, and guardrail infill panels on the structure (for example, panels on platform perimeters to prevent falls) shall be made of **fiberglass or fiberglass-reinforced plastic (FRP)**. These panels must be durable, impact-resistant, and corrosion-proof. All openings shall comply with ASTM F1487 requirements for entrapment and safety (no head entrapment or climbable gaps). **Netting** or **mesh panels** made of UV-stabilized, high-strength materials may be used under or around certain features (such as beneath slide exit ways or overhead walkways) to prevent access or catch falling objects, as long as they are similarly corrosion-resistant. All panel and barrier materials shall be securely fastened with stainless steel hardware.

D. **Roof Assemblies:** Overhead roof panels or shade toppers on the structure (if included in the design) shall be fabricated from **Type 316 stainless steel** or FRP as specified by the manufacturer. If stainless steel roofs are used, they must be **Type 316 or 316L marine-grade** to maximize corrosion resistance. Additionally, all exposed stainless steel roof pieces shall receive the same protective coating process described for hardware (see "Protective Finish" below). Roof panels shall be securely attached to the FRP supports and designed to withstand wind loads per code. The roof components provide shade and thematic appearance but shall be engineered not to create significant galvanic interaction with FRP supports (use isolation gaskets if needed).

E. **Interactive Feature Bodies:** The majority of interactive play feature components (e.g. sprayers, valves, cannons, etc., detailed in the **Play Features** section) shall be constructed from **Type 304 or 304L stainless steel** for structural integrity of small parts *and* then protected against corrosion. All such stainless steel feature components must undergo an extensive **multi-layer protective coating** process to ensure they are exceptionally resistant to chlorinated water and UV exposure. This proprietary coating system shall consist of, at minimum: thorough surface cleaning and pretreatment, a phosphate conversion coating or equivalent bonding prep, an epoxy primer applied electrostatically to all surfaces, a multi-layer epoxy base coat, and a durable final Urethane clear topcoat. The finished coating system shall result in a smooth, sealed surface on all stainless steel parts, providing "belt-and-suspenders" protection (stainless alloy + coating) against rust for **years of maintenance-free service**. This process is a unique advantage of InterActivePlay Manufacturing yielding longevity in components that competitors' standard coatings cannot easily replicate.

F. **Hardware and Fasteners:** All bolts, nuts, washers, screws, and other fasteners used in the assembly of the structure and its features shall be **Type 316 or 316L stainless steel**, unless a specific component requires a different material (any such exceptions will be noted in the feature specifications). Type 316/316L provides the highest level of corrosion resistance in marine and chlorinated environments. Fasteners shall be of appropriate grade and size to meet

structural demands. All hardware that will be submerged or frequently wetted shall additionally be coated or have anti-seize compound as appropriate to prevent galling and corrosion. **No plain steel or zinc-plated hardware** is allowed.

G. **Protective Finish and Colors:** All fiberglass components shall be formulated with UV-resistant pigments or gelcoat in the manufacturing process to provide long-lasting color and protection. Colors for the structure (posts, decks, slides, features, etc.) will be selected by the Owner from the manufacturer's standard color range. The finish on all components must be suitable for heavy use and abrasion from water and users. Painted or coated finishes (on metal parts) shall be applied in a controlled factory setting following the manufacturer's proprietary processes (e.g., the multi-layer epoxy system for stainless steel parts described above). The resulting finish on metal parts shall be smooth, glossy, and chlorine-resistant, with no runs or sharp edges. All coatings and gelcoats shall be non-toxic and safe for incidental contact with pool water (no leaching of harmful chemicals).

2.2 AQUATIC PLAY STRUCTURE DESCRIPTION

A. The play structure shall be a **multi-level, modular aquatic play system** featuring multiple platforms at various elevations, water slides, and numerous integrated spray features. It should include at a minimum the following key play elements to ensure a rich interactive experience that is difficult to achieve with standard equipment:

1. A large, iconic **tipping bucket** or dumping feature which fills and overturns periodically to drench users (providing high excitement and visual draw to the facility).
2. Water slides of distinct types to offer different sliding experiences for a range of age groups.
3. A diverse array of **interactive water play features** accessible from the platforms and/or deck areas – including user-activated water shooters, pull-valve spray features, spinning or rotating water elements, and cooperative play stations (details in **Play Features** below). These interactive elements shall allow children to actively control water effects (through turning wheels, pulling ropes, or aiming devices), encouraging social interaction and repeat play.
4. Multiple **spray features and water effects** at various heights (ground-level, mid-level, and upper-level) that create a fully immersive water play environment (e.g., spray nozzles, water curtains, jets, and fountains).

B. The **water distribution system** for the structure is **built-in**: a manifold system (located under the main deck or within the structure's core) shall distribute water to each feature. This manifold, will connect to the pool's water supply via a main feed line and include multiple branch outlets with control valves. Each water outlet feeding a feature shall have its own **adjustable flow control valve** (1" PVC ball valve or similar), allowing fine tuning of flow rates to each play feature. The manifold design is self-draining or easily winterized per ASTM F2461 recommendations, and it simplifies

plumbing by centralizing connections – a distinct advantage in maintenance over systems with many separate lines.

C. **Anchoring and Grounding:** The structure will be anchored to the existing pool slab or foundation via **embedded anchor bolts or anchoring bases** provided by the manufacturer. Templates for anchor placement shall be provided to the Contractor to ensure accurate installation. All anchoring hardware in contact with the pool structure shall be 316 stainless steel and/or other non-corroding system recommended by the manufacturer (e.g., epoxy-set anchor rods). Each main support post anchor shall include a bonding lug or grounding stud. The Contractor is responsible for bonding **all metal components** to the facility's equipotential bonding grid per NEC and local electrical code. Electrical bonding points are to be provided on the structure by the manufacturer for this purpose.

D. **Integrated Play Value:** The assembled play structure must deliver a **comprehensive play experience** with a balance of thrilling elements (slides and dumping bucket), interactive spray elements (user-controlled cannons and sprays), and discovery elements (sprays and jets that create cause-and-effect responses). The layout of features should promote exploration across all levels of the structure, with **safe access** (stairs with handrails) to higher platforms and age-appropriate play events at multiple elevations. The design shall accommodate a high throughput of users during peak times without excessive crowding on any one element, meaning features are spread out and oriented in different directions. This integrated approach – combining numerous play modes in one structure – is a proprietary hallmark of the specified system, intended to set it apart from standard single-function play units.

2.3 PLAY FEATURES AND INTERACTIVE ELEMENTS

The play structure shall include a variety of proprietary **interactive water features** and spray elements, manufactured as part of the system. These features provide unique and engaging water effects, many of which are **user-activated** (by pulling a rope, turning a knob, or moving the feature) to foster interactive play. Each feature is designed for ruggedness and safety, with no pinch points or sharp edges, and all exposed metal parts are protected with the multi-layer coating as specified. At a minimum, the structure **shall incorporate the following features (or manufacturer's equivalent)** to match the basis-of-design play value:

1. Bucket Roulette: This feature has a fixed vertical base with nozzles, and a rotating outer pipe with handles for rotation and buckets. Participants rotate the buckets, aligning or avoiding the nozzles, by using the attached handles. Once the buckets fill to a certain level, they tip onto the user below. This feature encourages water play between different users as they try to strategically rotate back and forth to fill the others' bucket.
    I. Material: Stainless steel construction with fiberglass tippy buckets
    II. Activation: The water flows from the nozzles while the park is on, and users can rotate the outer pipe and buckets using the attached handles
    III. Hydraulic Req: 15 GPM at 20 PSI

2. Jetstream Arm: This spray feature mounts to a structure I-beam and has five built in nozzles that shoot straight down. It can be configured to run continuously, be activated by the PLC system, or be activated by the user if paired with an activation box.
    I. Material: 304 stainless steel construction
    II. Activation: When paired with an activation box, the Post Mount Jetstream can be user activated by a pull rope, handwheel, or color changing touch sensor.
    III. Hydraulic Req: 8 GPM at 25 PSI (at the manifold)
3. Pop Top Cap: This spray feature mounts on top of a structure I-beam and has an attached bell nozzle that sprays out all around like an umbrella. It can be configured to run continuously, be activated by the PLC system, or be activated by a user if paired with an activation box.
    I. Material: 304ss with chrome plated brass nozzle
    II. Activation: When paired with an activation box, the Pop Top Cap can be user activated by a pull rope, handwheel, or color changing touch sensor.
    III. Hydraulic Req: 5 GPM at 25 PSI (at the manifold)
4. Fanatic Cap: This spray feature mounts on top of a structure I-beam and has an attached nozzle that sprays water in a 90deg wide pattern up and at an angle reaching several feet away. It can be configured to run continuously, be activated by the PLC system, or be activated by a user if paired with an activation box.
    I. Material: 304 stainless steel
    II. Activation: When paired with an activation box, the Pop Top Cap can be user activated by a pull rope, handwheel, or color changing touch sensor.
    III. Hydraulic Req: 5 GPM at 25 PSI (at the manifold)
5. Surprise Barrel: An unsuspecting passerby walking within approximately 3 feet of the Barrel's hidden internal motion sensor activates 5 powerful nozzles that squirt out soaking the user.
    I. Material: Fiberglass
    II. Activation: Photoelectric sensor
    III. Hydraulic Req: 3 GPM at 25 PSI (at the manifold)
6. Deck Bubbler Nozzles: This group of nozzles installed in the floor of the play structure can spray up with a gentle burst approximately 3 feet. The nozzles have a flush mount and a lightly textured surface to prevent slipping. This feature can be programmed to run continuously,
    I. Material: 304 stainless steel
    II. Activation: When paired with an activation box, the Deck Bubbler Nozzles can be user activated by a pull rope, handwheel, or color changing touch sensor.
    III. Hydraulic Req: 5 GPM at 25 PSI (at the manifold)
7. Cloudburst Arm: This structure mounted spray arm features a shower head nozzle that sprays down like a localized cloud burst over the patron below. Mounted to a structural column, it can run continuously, be activated by PLC system, or be activated by a user if paired with an activation box.
    I. Material: 304 stainless steel

II. Activation: When paired with an activation box, the Cloudburst Arm can be user activated by a pull rope, handwheel, or color changing touch sensor.
III. Hydraulic Req: 5 GPM at 25 PSI (at the manifold)

8. Nozzle Control Arm: This control station houses three individual motion sensors and is mounted off a structure column at a user friendly height. With an approximate range of 4 inches, the motion sensors are activated with a simple wave of your hand, no physical contact is required. Each individual sensor activates an associated fountain nozzle installed on the structure, expertly oriented to squirt into the pool area ahead.
    I. Materials: The control arm is 304 stainless steel and the fountain nozzles are brass.
    II. Activation: Photoelectric motion sensor with approximately 4 inch range
    III. Hydraulic Req: 10 GPM at 25 PSI each (at the manifold)
9. Wee Womper: This water blaster uses water pressure to propel its continuous stream when activated by its thumb trigger. This blaster pivots within a defined range when directed by the user. This interactive feature encourages playful water battles amongst users.
    I. Materials: 304 stainless steel
    II. Activation: The Wee Womper has an internal non-contact sensor that gets activated when the thumb trigger is depressed.
    III. Hydraulic Req: 8 GPM at 25 PSI (at the manifold)
10. Tentacle Sprayer: This curved arm is structure I-beam mounted and has built in nozzles that spray water out in arcs. It can run continuously, be activated by PLC system, or be activated by a user if paired with an activation box.
    I. Materials: 304 stainless steel
    II. Activation: When paired with an activation box, the Tentacle Sprayer can be user activated by a pull rope, handwheel, or color changing touch sensor. If desired, it can be set to run continuously, providing an interesting pattern of water spraying into the pool for users to carefully negotiate or play in below.
    III. Hydraulic Req: 10 GPM at 25 PSI (at the manifold)
11. Bucket Dump, Arm Variation: This playful bucket a multi-stage twist. Interacting with the column mounted activation box causes water to flow from the column mounted arm's spout into the bucket. Opportunely positioned above a travel path, the bucket can be strategically dumped onto an unsuspecting water player below as desired by the user.
    I. Material: 304 stainless steel
    II. Activation: The water flow from the fill arm is activated by an activation box, which can have a pull rope, handwheel, or color changing touch sensor depending on configuration. The bucket is manually dumped by the user.
    III. Hydraulic Req: 8 GPM at 25 PSI (at the manifold)
12. Gutter Falls: This classic trough feature is inconspicuously mounted on an upper structural component. When engaged, water overflows creating a curtain or waterfall effect. It can run continuously, be activated by PLC system, or be activated by a user if paired with an activation box.
    I. Material: 304 stainless steel

II. Activation: When paired with an activation box, the Gutter Falls can be user activated by a pull rope, handwheel, or color changing touch sensor. If desired, it can be set to run continuously, providing an interesting pattern of water spraying into the pool for users to carefully negotiate or play in below.
III. Hydraulic Req: 10 GPM at 25 PSI (at the manifold)

13. Small Water Wheel: This classic rotating water feature creates an exciting visual effect and gentle splashes of water down into the pool below. The movement can be seen from further away and helps generate interest in the play structure. It can be paired with an activation box if desired or set to run continuously to give a constant flow path for the feature pumps.
    I. Material: 304 stainless steel fill spout, fiberglass pultruded water wheel, ASA cups, and UHMW bearing
    II. Activation: Runs constantly while the park is on
    III. Hydraulic Req: 8 GPM at 25 PSI (at the manifold)
14. Large Tippy Bucket: This iconic water park feature creates a splash. It fills constantly with water and builds anticipation, precariously tipping over more and more, until suddenly it reaches its tipping point and spills its approximate 100 gallon capacity down onto the pool area below.
    I. Material: 304 stainless steel bucket and support frame, UHMW bearings
    II. Activation: Activated by the weight of the water, the cycle frequency can be set by how quickly the bucket fills with water
    III. Hydraulic Req: 30 GPM at 10 PSI

2.4 WATER SLIDES

A. The play structure shall incorporate water slides as specified. These slides provide different ride experiences and should be sized appropriately for the structure's platform heights (see drawings for exact elevations). Slides shall be designed and manufactured in accordance with **ASTM F2376** (Standard Practice for water slide systems) and meet all safety requirements for water slides in an aquatic park setting. Key slide requirements include:

1. **General Slide Construction:** All slide flume components shall be made of high-quality **marine-grade fiberglass reinforced plastic (FRP)**. Slides shall have a smooth glossy finish on the riding surface with no splinters or exposed fibers. The FRP slide components shall be fabricated with an **ISO-polyester gelcoat** (minimum 0.020" [0.5 mm] thick) on the interior surface for UV resistance and smoothness. The slide flume walls shall be of laminate construction using ISO and orthophthalic polyester resins with **E-glass** fiber reinforcement. Minimum wall thickness shall be **0.25" (6 mm)** for structural integrity, with additional reinforcement at high-stress areas such as curve centerlines, joints, and flange connection points. All slide pieces shall be factory finished to at least a **600-grit** or better smoothness on the riding surface for rider comfort. Color of slide interiors and exteriors shall be selected by Owner (they may differ for interior vs. exterior for visibility/theme).

2. **Open Flume Body Slide:** The flume shall have smoothly **curved side walls** that are rounded at the lip. The slide path will be gently curving, providing a mild thrill suitable for a broad age range. The specific slide layout (length, drop, curvature, and exit) will be as shown on contract drawings.

3. **Closed Tube Body Slide:** The tube slide path will also be gently curving. This slide typically generates a slightly faster, more enclosed experience. The exact slide length, path, and exit configuration (e.g., run-out or drop into pool) will be per drawings. Like the open slide, the enclosed slide shall have a safety bar or barrier at the start tub to prevent improper entry.

4. **Slide Exits:** Both slides are intended to **exit into the pool** (or a splash landing zone in the pool). Exit system may be a fiberglass runout or landing matt system. Landing Mats consist of one or more safety foam mats placed on the pool floor at the slide drop-off area to cushion riders' landing. The mats shall be constructed of high-density closed-cell EVA foam or similar, with UV inhibitors and designed for permanent submersion in chlorinated water. They must be securely anchored or adhered to the pool floor as per manufacturer instructions, so they remain in place during use but can be removed by maintenance staff if needed. The landing mats provide a safe deceleration zone for riders exiting the slide, preventing impact with the pool floor. The slides shall be engineered so that the rider enters the pool at a safe speed and angle (nearly parallel to water surface) to further minimize impact.

5. **Slide Structural Support:** Slide flumes shall be supported independently but integrated with the main structure. **Support posts and brackets for the slides** shall be made from **304/304L stainless steel or Galvanized Steel**, sized to adequately carry the load of the slide and riders. Each slide support column will have a base flange for mounting to the pool floor or structure deck (depending on design), anchored with specified hardware. Intermediate supports/brackets will tie the slide to either the structure or its own posts along the length as needed to maintain alignment and structural stability. The slide exit end shall be rigidly held so that it does not move excessively when in use.

6. **Slide Connections:** All flume piece joints shall be assembled with gasketed bolted flanges or approved manufacturer's connection system. **316L stainless steel bolts/nuts** shall be used for all flange connections. Joints between flume sections must be sealed water-tight using a **marine-grade caulk or sealant** approved for water slides (to prevent leaking and to ensure a smooth transition on the riding surface). The interior of each joint shall be finished so that no misalignment or sharp edges are present (flush on the inside). A thin bead of sealant on the inside is acceptable if smoothly tooled. The slide installation must be tested for leaks and any leaks corrected before opening to the public.

2.5 SAFETY AND CRAFTSMANSHIP

All aspects of the play structure shall be designed and fabricated with **safety, durability, and high craftsmanship** in mind, far exceeding basic commercial standards:

1. **Smooth Finish:** All exposed edges, corners, and points on the structure and features shall be machined or molded to a **rounded radius**. There shall be no sharp edges that could cut skin or snag swimwear. This includes metal edges on feature components, fiberglass edges on decks or rails, and slide entry/exit edges.

2. **Welding Quality:** Any welded components (e.g., stainless steel feature attachments, slide supports, handrail joints) shall be welded according to AWS standards for structural welds. All welds must be **continuously sealed (no skip welds)** and then ground smooth and polished. Welded seams on water-containing parts shall be leak-tested at the factory (hydrostatic or pressure tested for piping and sealed elements) to ensure no leaks.

3. **No Pinch/Entrapment Points:** The design shall eliminate **pinch points, entrapment hazards, and protrusions**. Moving elements (like the dumping bucket pivots or spinning features) must be guarded such that fingers or toes cannot be inserted into moving joints. All gaps in the assembly are either too small to insert fingers or large enough to not entrap (per ASTM F1487 specifications for entrapment).

4. **Structural Integrity and Compliance:** The entire structure shall be engineered to meet local, State and National building code requirements. The structure will meet all applicable and relevant ASTM F24 Standards/ Cal-OSHA requirements.

5. **Safety Standards:** The aquatic play structure is to meet or exceed all relevant safety standards for water play equipment. In addition to ASTM and building codes noted, it must also comply with any state-specific amusement ride regulations.

6. **Surface Treatments:** All walking surfaces (deck, stairs) are to maintain their slip-resistant texture over time. The texture process (whether an epoxy-bonded aggregate or molded grit) should be permanent – not a stick-on tape that can peel.

7. **Quality Assurance Inspections:** The manufacturer will perform in-factory test assembly and inspection of the structure prior to shipment when feasible. All components will be checked for dimensional accuracy and finish quality. Critical functional tests (such as verifying moving bucket release action, water flow tests through features, if possible, pressure testing of any manifolds) shall be completed. The structure will be shipped with protective wrapping and padding to prevent damage in transit. Upon delivery, the Contractor and (if available) the manufacturer's representative shall inspect all parts for any shipping damage or defects. Any issues shall be documented and resolved (repair or replace components) before installation.

PART 3 - EXECUTION – INSTALLATION AND COMMISSIONING

3.1 INSTALLATION

A. **Pre-Installation Coordination:** The Contractor and/or Owner in coordination with Manufacturer is responsible for obtaining all required permits for the installation of the aquatic play structure. This includes building permits and any necessary state amusement device permits. Shop drawings signed by a professional engineer (P.E.) should be submitted to the authority having jurisdiction (e.g., county building department) as needed for permit approval. The Contractor shall coordinate with the Owner's representatives and the manufacturer to verify that the existing pool structure, plumbing lines, and pump systems are compatible with the new play structure's requirements. **Field measurements** must be taken by the Contractor to confirm the as-built conditions (anchor locations, pool depth at slide exits, etc.) and avoid any discrepancies with the shop drawings. If any modifications to the pool (such as new pipe penetrations or drainage provisions) are needed, they must be planned and approved before installation.

B. **Removal of Existing Equipment:** (If applicable) At sites where an old water play structure or support column is being removed, the Contractor must demolish and remove those components carefully. Any existing **support piers or anchors** that will not be reused for the new structure shall be cut off **below the pool floor level** or as required so they do not protrude. The areas where old anchors were removed must be patched and restored to match the surrounding pool finish.

C. **Anchors and Structural Connections:** Prior to installing the new structure, the **existing pool finish at each new anchor location** (e.g., plaster or paint where a new base plate will sit) shall be chipped away to expose the solid concrete substrate. This provides a clean, sound surface for anchoring. The manufacturer's anchor bolts or insert plates should then be installed per the template. **Chemical anchoring epoxy** or preset anchors (if provided in a concrete pour) shall be used according to the manufacturer's instructions and building code requirements. After installing and leveling the base plates/anchors, any accessible anchor or connection hardware in user areas must be protected. Where an anchor or bolt is in a walk/play area, it shall either be covered by a **rounded toe guard** or encased in the surfacing so that no sharp edges or hard metal corners are exposed to bare feet.

D. **Assembly and Supervision:** The aquatic play structure shall be assembled on site strictly following the manufacturer's instructions. **Manufacturer's Representative:** The Contractor **shall include the services of a factory-authorized technician** from the play structure manufacturer to be on site for critical portions of the installation. A minimum of **five (5) working days** of on-site supervision is required (spread over the installation period as needed). This technician will guide the assembly process, ensure the structure is erected plumb and level, verify that all connections are made correctly (torque specifications, proper sealants used, etc.), and coordinate the integration of slides and features.

E. **All electrical bonding** should be completed by a licensed electrician in coordination with the structure installation. The technician will verify that grounding points provided are utilized.

F. **Water Supply and Plumbing Hookup:** The play structure's main water supply line shall be connected to the pool's circulation system or a dedicated pump as shown in the plans. Typically, a **flanged or threaded connection** at the base of the structure's manifold will be provided. The Contractor shall run the necessary piping from the existing water source (filter system or new pump) to this connection point, including any valves or throttling devices indicated. All piping shall be PVC Schedule 40 or 80 (or as specified) and installed per code. Provide unions or flanges at appropriate locations for future maintenance. Ensure that any new penetrations in the pool wall or floor for supply lines are sealed watertight with approved methods. If a **new pump** is part of this project (to drive the play features), it shall be installed with proper foundation, vibration isolation, and strainer as required. The play structure may have a simple control panel or interface; if so, mount it in the equipment room and connect according to manufacturer's wiring diagrams. If the system includes an electronic **Human-Machine Interface (HMI)** install per the manufacturer's instructions.

G. **Testing and Adjustment:** Once assembled and plumbed, the system shall be tested prior to opening to the public. Fill the supply lines and purge air. Turn on the water flow to the structure. The manufacturer's representative shall inspect for leaks at all joints (flange connections on slides, feature hookups, manifold connections, etc.). Any leaks must be fixed (tighten bolts, add sealant) and re-tested. All interactive features should be activated one by one to confirm they function as intended (e.g., pull ropes actually trigger water flow or movement). The flow control **valves on the manifold** for each feature should be adjusted at this time: balance the flows so that, for example, the tipping bucket fills at the correct rate (not too fast or too slow), the sprays reach their intended distance without excessive overspray out of the pool, and the water cannons have a good stream but not so forceful as to hurt users. This tuning of the system is critical to achieve **maximum play value** – an improperly balanced system could result in some features being underwhelming and others too dominant. The manufacturer's technician will have recommended settings; the Contractor shall adjust accordingly and mark/lock valve positions once finalized.

H. **Commissioning and Training:** After installation and initial testing, the Contractor shall arrange a training session with the Owner's staff. This training (typically a few hours, included in the on-site supervision days) will cover: start-up procedures (pump priming, opening valves, etc.), shut-down and winterization (draining lines, removing any components if required, covering features for off-season), routine maintenance (cleaning filters/strainers, checking for clogs in nozzles, tightening bolts periodically, checking coatings for damage), and safety inspections (what to look for daily/weekly before opening to patrons). The staff should also be trained on how to safely operate any user-serviceable parts of the system, and how to supervise patrons on the slides and features properly. Written **operational checklists** from the manufacturer shall be provided and reviewed.

I. **Project Closeout:** Prior to substantial completion, ensure that all construction materials and debris are removed from the pool and construction area. The Contractor shall clean all new equipment surfaces (remove any dirt, fingerprints, etc. – **do not use abrasive cleaners** that could scratch coatings; follow manufacturer's cleaning recommendations). All protective wrapping applied for shipment should be removed once construction activities that could cause damage are done. The entire play structure and surrounding deck/pool areas must be cleaned and restored to their original condition. The pool basin shall be refilled to normal operating level (if it was drained) and the water chemistry balanced for public use.

J. A final inspection will be conducted with the Owner's representative and the manufacturer's rep to verify the installation is complete and satisfactory. Any punch-list items (such as missing hardware, touch-up paint, etc.) must be addressed by the Contractor. The manufacturer's representative will then issue the **installation certification** (or sign the Owner's provided form) indicating the structure is installed per spec and safe to operate. This documentation will be given to the Owner for their records and for any regulatory sign-off.