**PLAYGROUND EQUIPMENT**

1. **GENERAL**
   * + 1. SUMMARY
          1. Section includes freestanding playground equipment and all necessary support members, hardware and connectors as shown on the Drawings and specified herein.
       2. REFERENCES
          1. ASTM F1487: Standard Consumer Safety Performance Specification for Playground Equipment for Public Use, latest edition.
          2. U.S. Consumer Product Safety Commission (‘CPSC publication #325’): Public Playground Safety Handbook, latest edition.
          3. ASTM F1292, Standard Specification for Impact Attenuation of Surfacing Materials Within the Use Zone of Playground Equipment, current version.
          4. ASTM F1951: Standard Specification for Determination of Accessibility of Surface Systems Under and Around Playground Equipment, latest edition.
          5. ASTM F2373: Standard Consumer Safety Performance Specification for Public Use Play Equipment for Children 6 Months Through 23 Months, latest edition.
          6. International Play Equipment Manufacturers Association (‘IPEMA’) Certification Service.
          7. Department of Justice 2010 ADA Standards for Accessible Design (‘2010 ADA’).
       3. QUALITY ASSURANCE
          1. Manufacturer Qualifications:

Firm whose playground equipment components have been certified by IPEMA's third-party product certification service.

Provide playground equipment and play structure components bearing the IPEMA Certification Seal.

ISO 9001 and ISO 14001 certified.

Cradle to Cradle certified.

* + - * 1. Installer Qualifications: Engage an experienced installer who is approved by manufacturer for both installation and service of the type of equipment required for this Project.

All crew leaders shall be Certified Playground Safety Inspectors.

* + - * 1. Safety Standards: Provide playground equipment complying with or exceeding requirements in ASTM F 1487 and CPSC No. 325.
        2. Pre-installation Conference: Conduct conference at Project site.
      1. SUBMITTALS
         1. Submit the following in accordance with Section 01 33 00:

Product Data: For each type of playground equipment indicated, including installation instructions, maintenance guidelines and inspection checklists.

Shop Drawings: Include plans, elevations, sections, details, and attachments to other work.

Coordination Drawings: Plans, drawn to scale, on which the following items are shown and coordinated with each other, using input from installers of the items involved:

Extent of surface systems and use zones for equipment.

Critical heights for playground surfaces and fall heights for equipment.

Samples for Color Selection: For each type of playground equipment indicated.

Manufacturer's color charts.

Include similar samples of playground equipment and accessories involving color selection.

Product Certificates: For each type of playground equipment, from manufacturer.

Material Certificates: For the following items:

Shop finishes.

Product Test Reports: Based on evaluation of comprehensive tests performed by a qualified testing agency, for each type of playground equipment.

Field quality-control reports.

Qualification Data: For qualified installer and manufacturer.

Maintenance Data: For playground equipment and finishes to include in maintenance manuals.

Maintenance Kit: At completion of installation, submit maintenance kit that will include all installation and maintenance information for the playground equipment installed.

Warranty: 3 signed copies of special warranty.

* + - 1. WARRANTY
         1. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace components of playground equipment that fail in materials or workmanship within specified warranty period. including shipping of replacement components to the project site.

Failures include, but are not limited to, the following:

Structural failures.

Deterioration of metals, metal finishes, and other materials beyond normal weathering.

Warranty Period from date of Substantial Completion:

Posts, clamps and hardware: Lifetime.

Decks, stairs and plastic components: Fifteen (15) years.

Metal Components: Ten (10) years.

1. products
   1. GENERAL
      1. School aged play sculpture, PlayForm7-B composed of main support posts shall be eight-inch (8”) O.D. five-inch (5”) O.D. and three and a half inch (3-1/2”) O.D. steel tubing and shall meet all requirements as specified in the current Building Code.
      2. All belts shall be made from styrene butadiene rubber
      3. All rope shall be comprised of six-stranded and tempered cable with a polypropylene core.
      4. Fabricate In accordance with ASTM F1487-11 unless otherwise indicated.
   2. PLAYGROUND EQUIPMENT
      1. School Aged Play Sculpture
         1. Steel Tubing: ASTM A 500, Grade B or ASTM A 513, cold rolled, electric resistance welded tubing, triple coated with hot-dipped zinc galvanized coating, chromate conversion coating and clear polymeric coating.

Tensile Strength: Minimum 55,000 psi.

Yield Strength: Minimum 50,000 psi.

Modulus of Elasticity: 25 x 106 psi.

Tension Testing: ASTM E 8.

Elongation: 25 percent in 2 inches.

Exterior Coating: Galvanized coating weight shall be within the range of 0.4 oz/sq ft and 0.6 oz/sq ft.

Interior Coating: Corrosion resistant, zinc-rich organic coating.

Finish: Superdurable Polyester Powder Coat.

* + - 1. Rotational Molded Polyethylene: Fabricated from color-compounded, linear low density, polyethylene with anti-static additives and machined to size.

Cross-Section: 1/4 inch (6 mm ) nominal thickness, double wall construction.

Ultraviolet (UV) stabilized: UV-8.

UV Exposure: SAE 1960-89, QUV 500 hrs, Delta E less than 2.

Melt Index: ASTM D 1238, 5.0 – 6.89/10 min 3.

Material Density: ASTM D 1505: Between 932 g/cc and 936 g/cc.

Tensile Strength: ASTM D 638: Between 2,200 psi and 2,500 psi at yield.

Flexural Modulus: ASTM D 790: Between 73,000 psi and 87,200 psi at 1 percent secant.

Horizontal Burn Test: UL 94 HB.

Arm Test for Impact Strength: 100 ft/lb at minus 40 degrees C and 1/4 inch thickness.

Colors: As selected by Architect from manufacturer's standard colors.

* + - 1. Belts: Fabricated from styrene butadiene rubber with 2 piles of polyester reinforcement

Thickness: Minimum 0.38 inch

Tension: Maximum 220 pounds per square inch or higher

* + - 1. Laminated Bamboo Panels:

Thickness: Minimum 0.75 inch.

Compression: Parallel to Grain: ASTM 3501-86A, 13,488 psi

Compression: Perpendicular to Grain: ASTM 3501-86A, 3043 psi

Tensile Strength: Parallel to Grain: ASTM 3500-90: Between 21,465 psi and 55,694 psi.

Tensile Strength: Perpendicular to Grain: ASTM 3500-90: 543 psi.

Flexural Strength: ASTM D3043, 12,800 psi

Shear Strength: ASTM D3048, 2,901 psi

Modulus of Elasticity: ASTM D1037, 2.9 E psi

* + - 1. Ropes: Fabricated from six-stranded and tempered cable with a polypropylene core. The galvanized wire cores of the six strands are inductively fused to polyamide coating.
      2. Fasteners: 18-8 grade stainless steel (300 series), unless otherwise indicated, with capped lock nuts to cover bolts. Tamper-resistant on principle clamping mechanisms.

Nylon thread-locking patch and liquid thread-lock applied to certain hardware as directed by manufacturer.

* + 1. PLAYGROUND MOBILE DEVICE ACCESS POINT
       1. All playground equipment to have a PlayPod mobile device access point attached in a highly visible location.
          1. Access point to be made of a cast aluminum casing covered by a fiberglass reinforced plastic panel. A
          2. Access point to have an electronic tag that permits users of smart phones to access playground equipment’s maintenance documents, part numbers, customer service direct links, and phone numbers, .
          3. Members of the community shall be able to view weekly play tips, can email accessible documents, and email or call the manufacturer.
  1. FABRICATION
     + 1. Assembled Steel Components:

All edges on flat plates shall be rounded by a 360 degree tumbling process.

Weld areas and flat plates shall be coated with a specially formulated epoxy/polyester primer to encapsulate the weld area.

* + - 1. Fastening System:

Fastening system shall utilize clamps.

Permanently attach clamps to the support post with a drive rivet to eliminate disassembly and slippage.

* + 1. FINISHES
       1. Powder Coat Finish: Superdurable Polyester Powder Coat, electrostatically applied at a thickness of 2 to 5 mils (0.002 inch to 0.005 inch)

Galvanized tubing to have factory-applied clear acrylic polymer coating.

All components shall be free of excess weld and weld spalls.

After fabrication all weld joints are to thoroughly cleaned using a chipping hammer and wire brush to remove all weld slag from weld joints.

Preparation: Components shall be cleaned with a three-stage alkaline bath and a sealer for adhesion and rust inhibitor.

Components shall be thoroughly dried before being coated with Superdurable TGIC polyester powder and cured at temperatures between 375 degrees F and 400 degrees F.

Salt Spray Resistance Test: ASTM B 117, 4000 hrs.

Impact Resistance Test: ASTM D 2794, min. 80 inch/lb.

UV Exposure (G154, 340): 3000 hrs, Delta E of 2, 90 percent gloss retention.

Pencil Hardness Test: ASTM D 3363: 2H.

Crosshatch Adhesion Test: ASTM D 3359-B: 100 percent pass.

Conical Mandrel: ASTM D 522: 1/8 inch, no cracks.

Gloss at 60 degrees: ASTM D 523.

* + - 1. Coated Parts: Coated parts shall be coated with Eco-Armor Polyethylene, 45 to 55 mils on the wear surfaces of all coated parts and 30 mils on other surfaces. Skid resistant, textured, impact resistant and UV stable.

Prior to coating, thoroughly clean.

Coating contains no volatile organic compounds (VOC’s), polyvinylchloride (PVC) and phthalates.

Property, Testing Method and Results: Flexibility (conical mandrel), ASTM D 522, 1/8 inch, no cracks (greater than 32 percent).

Adhesion: ASTM D 4541, 800 psi.

Impact Resistance: ASTM D 2794, greater than 320 inch-lbs.

Gloss: ASTM D 523, 12.

Taber Abrasion: ASTM D 4060, 26 (mg loss, CS 17 wheel).

Tensile Strength: ASTM D 638, 3482 psi.

Elongation (percent): ASTM D 638, 13 percent.

Humidity Resistance:  ASTM D 2247, no blistering or loss of gloss after 1000 hours.

Salt Spray: ASTM B 117, no significant change in color or gloss after 2000 hrs.

UV Exposure: ASTM G 53, QUV 2000 hrs, no significant change in color or gloss.

* 1. MANUFACTURER
     + 1. **Playworld Systems** 
          1. Local Representative:

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