1.1 GENERAL REQUIREMENTS

A. The conditions of the Contract and Division 1 General Requirements apply to the Work under this Section.

B. All references to products by manufacturer, trade name or performance Specifications bearing the connotation "or Approved Equal" shall be as determined by the Landscape Architect and the City, per MGL c. 30 s. 39M, part b, criteria 1.

1.2 WORK INCLUDED

A. Provide all labor, equipment, implements and materials required to furnish, install, construct and perform all site improvements complete as shown on the Drawings and specified herein.

B. To be included, but not limited to the following:

1. 2 – 5 Year Old’s Composite Play Structure;

1.3 REFERENCES

A. Examine all other Sections of the Specifications and all Drawings for the relationship of the work under this Section and the work of other trades. Cooperate with all trades and all departments of the City of Boston and coordinate all Work under this Section therewith.

B. The following related items are included under the Sections listed below:

1. Section 02 41 00 - Site Preparation and Demolition
2. Section 03 30 00 - Cast In Place Concrete
3. Section 31 00 00 - Earthwork - Clearing, Excavation, Filling and Grading
4. Section 32 10 00 - Bases, Ballasts, and Paving
5. Section 32 18 16 - Playground Protective Surfacing

1.4 SUBMITTALS

A. Shop Drawings and Samples

1. Provide complete Shop Drawings and/or samples and catalog cuts for all items called for on the Drawings and as specified and in accordance with applicable requirements under Division 01.
2. Provide a copy of the inspection certificate from a Certified Playground Safety Inspector confirming that the play equipment is in compliance with ASTM 1487 and all other applicable standards and regulations.

1.5 PRODUCT DELIVERY, STORAGE AND HANDLING

A. Deliver materials in manufacturer's original unopened and undamaged packages with labels legible and intact.

B. Store materials in unopened packages in a manner to prevent damage from the environment and construction operations.

C. Handle in accordance with manufacturer's instructions.

1.6 DEFINITIONS

A. The following items are included herein and shall mean:


2. A.S.T.M. - American Society for Testing and Materials. The following standard specifications are applicable to the associated items as listed.
   a. A36...Steel
   b. A153...Zinc Coating (hot-dip) on hardware
   c. A307...Carbon Steel bolts 66000 psi tensile


4. ADA - Americans with Disabilities Act and its current regulations.

5. AWS: American Welding Society

6. SSPS: Steel Structures Painting Council

PART 2 - PRODUCT

2.1 Composite Play Structures General Specifications

A. Manufacturer/Product: The 2-5 Year Old Playstructure shall be in compliance with the layout, features, and arrangements shown on the Drawings. All structures shall be manufactured by Landscape Structures, Inc. (LSI) or Approved Equal.

1. The 2-5 Year Old Playstructure shall be a custom PlayBooster(PB) structure by LSI or Approved Equal as shown on the Drawings and as specified in 2.02 below.

2. The 5-12 Year Old Playstructure shall be a custom PlayBooster (PB) + Evos structure by LSI or Approved Equal as shown on the Drawings and as specified in 2.03 below.
3. The Three-Bay Swings (BASE BID) shall be an Arch Swing structure by LSI or Approved Equal as shown on the Drawings and as specified in 2.04 below.

4. The Single-Bay Toddler Swings (ALTERNATE #2) shall be an Arch Swing Structure by LSI or Approved Equal as shown on the Drawings and as specified in 2.04 below.

5. The Group Spinner shall be an OmniSpin structure by LSI or Approved Equal as shown on the Drawings and as specified in 2.05 below.

B. Material: All materials shall be structurally sound and suitable for safe play. Durability shall be ensured on all steel parts by the use of time-tested coatings such as zinc plating, zinc-nickel plating, powdercoating, soft PVC coating (TenderTuff by LSI or Approved Equal), etc. Colors shall be specified.

C. Fasteners: Primary fasteners shall be socketed and pinned tamperproof in design, stainless steel (SST) per ASTM F 879 unless otherwise indicated (see specific product installation/specifications). All primary fasteners shall include a locking patch type material that will meet the minimum torque requirements of IFI-125. Manufacturer to provide special tools for pinned tamperproof fasteners.

D. Soft PVC Coating: All metal components to be PVC-coated (TenderTuff Coating by LSI or Approved Equal) shall be thoroughly cleaned in a hot phosphatizing pressure washer, then primed with a water-based thermosetting solution. Primed parts shall be preheated prior to dipping in U.V. stabilized, liquid polyvinyl chloride (PVC), then salt cured at approximately 400 degrees. The finished coating shall be approximately .080” +/- .020” thick at an 85 durometer hardness and have a matte finish. Four standard colors shall be available. Colors to be selected by Landscape Architect.

E. Polyester Powdercoating: All metal components to be powdercoated shall be free of excess weld and spatter. Parts shall be thoroughly cleaned via a 5-Stage Pretreatment process. Parts shall then be thoroughly dried and proceed through a set of automatic sprayers that apply electrostatic powdercoat. Parts shall be oven cured at 400 degrees F. The average powdercoat thickness shall be .0025”.

F. Super Durable TGIC polyester powder shall be specially formulated for optimum Ultra Violet (U.V.) stability and gloss retention. It shall meet or exceed ASTM Standards for:

1. Hardness (D-3363)
2. Impact (D-2794)
3. Salt Spray resistance (B-117 and D-1654)
4. U.V. Exposure (G-154)
5. Adhesion (D-3359, Method B)

The Paint Line shall employ a “checkered” adhesion test daily.

A minimum of seventeen standard colors shall be available.

G. Decks: All decks shall be soft-PVC coated perforated metal decks (Tenderdecks by LSI or Approved Equal). Decks shall be of modular design and have 5/16” diameter holes on the standing surface. There shall be a minimum of (4) slots in each face to accommodate face mounting of components. Decks shall be manufactured from a single piece of low carbon 12 GA (.105”) sheet steel conforming to ASTM
specification A-569. The sheet shall be perforated then flanged formed and reinforced as necessary to ensure structural integrity. The unit shall then be soft PVC coated. Decks shall be designed so that all sides are flush with the outside edge of the supporting posts.

H. Rotationally Molded Poly Parts: These parts shall be molded using prime compounded linear low-density polyethylene (LDPE) with a tensile strength of 2500 psi per ASTM D638 and with color and UV-stabilizing additives. Wall thickness shall vary by product from .187" (3/16") to .312" (5/16"). Four standard colors shall be available.

I. HDPE Panel Parts: These parts shall be manufactured from 3/4" thick high-density polyethylene (HDPE) that has been specially formulated for optimum U.V. stability and color retention (Permalene by LSI or Approved Equal). Products shall meet or exceed density of .960 G/cc per ASTM D1505, tensile strength of 2400 PSI per ASTM D638. Five standard solid colors shall be available. Some HDPE panel parts are specified in a two-color product with (2) .10" thick exterior layers over a .55" interior core of a contrasting color.

1. For non-recycled HDPE panels, a minimum of eight standard two-color options shall be available.

2. For panels noted as “Recycled,” the interior core shall be 100% recycled HDPE, black in color; a minimum of 5 options for the exterior layers shall be available.

J. Hardware Packages: All shipments shall include individual component-specific hardware packages. Each hardware package shall be labeled with the part number, description, a component diagram showing the appropriate component, package weight, a bar code linking the hardware package to the job number, assembler’s name, date and time the package was assembled, work center number, and work order number.

K. Installation Documentation: All shipments shall include a notebook or packet of order-specific, step-by-step instructions for assembly of each component, including equipment assembly diagrams, estimated hours for assembly, footing dimensions, concrete quantity for direct bury components, fall height information, area required information and detailed material specifications.

L. Packing List: All shipments shall include a packing list for each skid/container, specifying the part numbers and quantities on each skid or within each container.

M. Packaging: Posts shall be individually packaged in sturdy, water-resistant, mar-resistant cardboard boxes. Other components shall be individually wrapped or bulk wrapped to provide protection during shipment. Small parts and hardware packages will be placed in crates for shipment. The components and crates are then shrink-wrapped to skids (pallets) to ensure secure shipping.

N. Maintenance Kit: An order-specific maintenance kit shall be provided for each structure order. The kit will include a notebook or packet with a second set of installation documents and order-specific maintenance documentation with recommendations on how often to inspect, what to look for and what to do to keep the equipment in like-new condition. The kit also includes touch-up primer, appropriate color touch-up paint, sandpaper, appropriate color touch-up PVC, graffiti remover and additional installation tools for the tamperproof fasteners.
O. Posts:

1. Aluminum Posts: All aluminum posts are manufactured from 6005-T5 extruded tubing conforming to ASTM B-221.
   a. Aluminum Post Mechanical Properties:
      - Yield Strength (min.): 35,000 PSI
      - Tensile Strength (min.): 38,000 PSI
      - % Elongation in 2 inches: 10
      - Modulus of Elasticity: 10 x 106 PSI
   b. Straight Round Posts (PlayBooster or Approved Equal) shall have a 5” outside diameter with a 0.125” wall thickness.

2. Round Steel Posts (PB): All steel posts are manufactured from 5” O.D. tubing with a wall thickness of 0.120”, shall be galvanized after rolling and shall have both the I.D. and the cut ends sprayed with a corrosion resistant coating.
   a. Steel Post Mechanical Properties:
      - Yield Strength (min.): 50,000 PSI
      - Tensile Strength (min.): 55,000 PSI
      - % Elongation in 2 inches: 25
      - Modulus of Elasticity: 29.5 x 106 PSI

3. Round Steel Arches (Evos): All steel arches are manufactured from 5” O.D. tubing with a wall thickness of 0.120”, shall be galvanized after rolling and shall have both the I.D. and the cut ends sprayed with a corrosion resistant coating.
   a. Steel Arch Mechanical Properties:
      - Yield Strength (min.): 50,000 PSI
      - Tensile Strength (min.): 55,000 PSI
      - % Elongation in 2 inches: 25
      - Modulus of Elasticity: 29.5 x 106 PSI

P. Clamps:

1. All clamps, unless otherwise noted, shall be die cast using a 369.1 aluminum alloy and have the following mechanical properties:
   - Ultimate Tensile: 47,000 PSI
   - Yield Strength: 28,000 PSI
   - Elongation: 7% in 2 inches
   - Shear Strength: 29,000 PSI
   - Endurance Limit: 20,000 PSI
Each functional clamp assembly shall have an appropriate number of half clamps and shall be fastened to mating parts with (2) 3/8" x 1 1/8" pinned button head cap screws (SST) and (2) stainless steel (SST) recessed “T” nuts. A ¼” aluminum drive rivet with stainless steel pin is used to ensure a secure fit to the post.

Clamps have three functional applications and shall be named as follows:
   a. Offset hanger clamp assembly.
   b. Deck hanger clamp assembly.
   c. Hanger clamp assembly.

Cables:
1. Comprised of six-stranded and tempered Corocord-cable (or Approved Equal) with a polypropylene core. The galvanized steel wire cores of the six strands are heated and covered with polyamide, color to be selected.

2.2 2-5 YEAR OLD PLAY STRUCTURE

A. Posts for PlayBooster by LSI or Approved Equal:
   1. Post length shall vary depending upon the intended use and shall be a minimum of 42” above the deck height.
   2. All posts shall have a “finished grade marker” positioned on the post identifying the 34” bury line required for correct installation and the top of the required protective surfacing.
   3. Top caps for posts shall be aluminum die cast from 369.1 alloy and powdercoated to match the post color. All caps shall be factory installed and secured in place with (3) self sealing rivets.
   4. A molded low-density polyethylene (LDPE) cap, with drain holes, shall be pressed onto the bottom end of the post to increase the footing area.
   5. Posts shall have a post number sticker for installation purposes.
   6. All posts shall be powdercoated to specified color.

B. Components for 2-5 Year Old Play Structure (PlayBooster or Approved Equal) shall include, but not be limited to the following:
   1. Curved Transfer Module (32”, Right) with HDPE panels, and PVC-coated steel weldment railings, steps, and decks
   2. Kick Plates (flat steel, PVC coated)
   3. Perforated Steel Decks, 44 3/8” Square, PVC Coated
   4. LDPE Molded Curved Double Slide (48” deck) (“Double Swirl Poly Slide” or Approved Equal)
5. LDPE Molded Modular Slide (40" Deck) (“SlideWinder2” or Approved Equal)

6. Block Climber (32" Deck) (14-gauge steel sheet assembly with PVC coating and HDPE panel)

7. Loop Ladder Climber (48” Deck): powdercoated galvanized steel tubing weldment

8. Curved Ladder Climber (48” Deck): powdercoated steel weldment arch with soft PVC coated perforated steel planks (Cozy Climber by LSI or Approved Equal)

9. Chain-and-Rung Ladder (32" Deck): soft PVC-coated zinc-plated steel chain with soft PVC coated steel bar stock rungs and HDPE handhold panels (Wiggle Ladder by LSI or Approved Equal)

10. Arch Bridge: Arched perforated steel deck with HDPE Panel barriers

11. Belt Bridge: Made from .315" (8,00 mm) thick mini rough top 3-ply rubber belting with polyester fabric plys, 40" (1016 mm) wide x 39 3/8" (1000,13 mm) long, black in color, with HDPE Panel barriers.

12. HDPE Table (19 1/2" wide x 34 3/4" long) with end panels and two bench seats of soft PVC coated perforated steel.

13. Hole Panel (HDPE panel with large hole for pass-through)

14. House Panel (Two-color HDPE panel with window openings and house details)

15. Periscope Panel (Two-color HDPE panel with octagonal periscope assembly)

16. Pilot Panel (Two-color HDPE panel with aeronautical details and PVC-coated 12” dia. wheel)

17. Storefront Panel (HDPE Panel with opening and counter)

18. Wire Barriers: Weldment composed of 5/8” solid steel vertical rails, 1-1/8” steel horizontal rails, angle irons, and 1/2” diameter wire with approx. 1-5/8” x 2-9/16” openings and soft PVC coated finish.

19. Large Square LDPE roof with shingle patterning

20. gpm @ 1-4 psi. Tamper resistant winter caps shall be included.

PART 3 - EXECUTION

3.1 COMPOSITE PLAY STRUCTURES (2-5 YEAR OLD)

A. Play equipment and play items to be installed per manufacturer’s directions and specifications, and per the Drawings.

B. Footings

1. The Contractor shall do all necessary excavation required for the installation of the play equipment. Excavation shall be defined as the digging of all required
footings and the removal of all materials encountered (footings, pavements, earth, boulders, broken concrete pieces, etc.) while digging those footings.

2. Concrete footings shall conform to the specifications contained in 03 30 00, Cast-In-Place Concrete.

3. Install all footings plumb and true.

4. Embedments into footings shall be cast-in-place, following all instructions in 03 30 00.3.01.D.3, Cast-In-Place Concrete: Embedded Items.

5. The depth of the top of the footing depends on the safety surfacing specified. See Drawings.

C. Erection

1. All tubular steel Posts shall be set square and plumb in concrete footings, to grade required, to assure level installation of platform angle frames and rails. All Posts shall extend 34" below theoretical finish grade.

2. Equipment shall be assembled to conform to the approved shop drawings and per manufacturer’s directions. All fastenings shall be made as shown on the drawings and shall be securely tightened. All work shall be done so that no hazardous projections shall be left on the finished work.

D. Cleanup: Upon completion of the work under this Section, all excess materials and debris resulting from work under this Section, including all packaging, shall be cleaned up, removed from the Site and from the City storage facility, and properly disposed of.

E. Manufacturer’s Guarantees and Insurance

1. Product Liability Insurance: The manufacturer of the playground equipment shall maintain, and have in effect at the time of the completed installation, an insurance policy covering completed operations (Product Liability) with a minimum limit of $1,000,000.00 (One Million Dollars). A certificate of insurance shall be available to the project owner on request.

2. Guarantees: The manufacturer shall furnish a written guarantee, covering the replacement of any damaged items or components, at no extra charge for the period of 15 (Fifteen) years. This guarantee does not cover items damaged by improper use or vandalism. Labor is not covered in this guarantee.

F. Warranty:

Manufacturer shall warrant that all play structures and/or equipment sold will conform in kind and quality to the specifications set forth in the specifications manual for the products identified in the Acknowledgement of Order and will be free of defects in manufacturing and material.

Manufacturer shall also provide:

1. 100-Year Limited Warranty for all stainless steel fasteners, aluminum posts, clamps, beams and caps, against structural failure due to
corrosion/natural deterioration or manufacturing defects. This warranty does not include any cosmetic issues or wear and tear from normal use.

2. 15-Year Limited Warranty for all plastic and steel components, including recycled plastic timbers, against structural failure due to corrosion/natural deterioration or manufacturing defects. This warranty does not include any cosmetic issues or wear and tear from normal use.

3. Rubberized coating shall be warranted against structural failure due to natural deterioration or manufacturing defects. This warranty does not include any cosmetic issues or wear and tear from normal use. (Except Wiggle Ladders, Chain Ladders and Swing Chain.)

4. 3-Year Limited Warranty for all other parts, ie: Cable-based products, Swing seats and hangers, Chain Ladders and Swing Chains, PVC belting material, etc. against failure due to corrosion/natural deterioration or manufacturing defects. This warranty does not include any cosmetic issues or wear and tear from normal use.

5. An authorized representative of the play equipment manufacturer must inspect and approve the completed installation. The play equipment will not be accepted by the play equipment manufacturer or the Owner until they are satisfied with the installation. No additional compensation will be given for any necessary corrective work. Contractor shall submit written certification from Manufacturer’s Representative that all play equipment has been installed in accordance with manufacturer’s prescribed standards.

3.2 2-TO-5 YEAR OLD PLAYSTRUCTURE

A. Install according to drawings and Manufacturer’s instructions, and according to specifications 3.01 above.