SECTION 116800 - PLAY FIELD EQUIPMENT AND STRUCTURES

Revise this Section by deleting and inserting text to meet Project-specific requirements.

Verify that Section titles referenced in this Section are correct for this Project's Specifications; Section titles may have changed.

1. GENERAL
   * + 1. SUMMARY
          1. Section includes playground equipment as follows:

Freestanding playground equipment.

Composite playground equipment.

* + - 1. DEFINITIONS

Retain terms that remain after this Section has been edited for a project.

* + - * 1. Definitions in ASTM F1487 apply to Work of this Section.
        2. IPEMA: International Play Equipment Manufacturers Association.
      1. PREINSTALLATION MEETINGS

Retain "Preinstallation Conference" paragraph below if Work of this Section is extensive or complex enough to justify a conference.

* + - * 1. Preinstallation Conference: Conduct conference at Project site.

If needed, insert list of conference participants.

* + - 1. SUBMITTALS
         1. Submittals for this section are subject to the re-evaluation fee identified in Article 4 of the General Conditions.
         2. Manufacturer’s installation instructions shall be provided along with product data.
         3. Submittals shall be provided in the order in which they are specified and tabbed (for combined submittals).
         4. Product Data: For each type of product.
         5. Sustainable Design Submittals:
         6. Shop Drawings: For each type of playground equipment.

Include plans, elevations, sections, and attachment details.

Retain "Samples for Initial Selection" and "Samples for Verification" paragraphs below for two-stage Samples.

* + - * 1. Samples for Initial Selection: For each type of exposed finish.

Manufacturer's color charts.

Include Samples of accessories involving color selection.

* + - * 1. Samples for Verification: For each type of exposed finish on the following products:

Include Samples of accessories to verify color and finish selection.

Retain subparagraphs below to suit Project.

Posts and Rails: Minimum 6 inches long.

Platforms: Minimum 6 inches square.

Molded Plastic: Minimum 3 inches square.

Coordinate "Qualification Data" paragraph below with qualification requirements in "Quality Assurance" Article.

* + - * 1. Qualification Data: For Installer, manufacturer, and testing agency.

Retain "Product Certificates" paragraph below to require submittal of product certificates from manufacturers.

* + - * 1. Product Certificates: For each type of playground equipment.

Retain "Material Certificates" paragraph below to require submittal of material certificates from manufacturers.

* + - * 1. Material Certificates: For the following items:

Retain subparagraphs below to suit Project.

Shop finishes.

Wood-Preservative Treatment: Include certification by treating plant that states type of preservative solution and pressure process used, net amount of preservative retained, and compliance with applicable standards.

Retain "Field quality-control reports" paragraph below if Contractor is responsible for field quality-control testing and inspecting.

* + - * 1. Field quality-control reports.
        2. Sample Warranty: For manufacturer's special warranties.
      1. CLOSEOUT SUBMITTALS
         1. Maintenance Data: For playground equipment and finishes to include in maintenance manuals.
      2. QUALITY ASSURANCE

Retain first "Manufacturer Qualifications" paragraph below if Project requires playground equipment that is certified and labeled by an independent testing laboratory according to ASTM F1487, excluding Sections 7.1.1, 10, and 12.6.1. Not all manufacturers' products are certified by IPEMA.

* + - * 1. Manufacturer Qualifications: A firm whose playground equipment components have been certified by IPEMA's third-party product certification service.
        2. Installer Qualifications: An entity that employs installers and supervisors who are trained and approved by manufacturer.
      1. WARRANTY
         1. Special Warranty: Manufacturer agrees to repair or replace components of playground equipment that fail in materials or workmanship within specified warranty period.

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

Structural failures.

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

Verify available warranties and warranty periods for units and components.

Warranty Period: **[Two] [Five] <Insert number>** years from date of Substantial Completion.

1. PRODUCTS

Manufacturers and products listed in SpecAgent and Masterworks Paragraph Builder are neither recommended nor endorsed by the AIA or Deltek. Before inserting names, verify that manufacturers and products listed there comply with requirements retained or revised in descriptions and are both available and suitable for the intended applications.

* + - 1. MANUFACTURERS

Retain "Source Limitations" paragraph below if required; revise to suit Project.

* + - * 1. Source Limitations: Obtain playground equipment from single source from single manufacturer.
        2. Playground equipment and components shall have the IPEMA Certification Seal.
      1. PERFORMANCE REQUIREMENTS

Usually retain "Safety Standard" paragraph below to establish minimum safety requirements for equipment unless compliance with other requirements is stipulated by authorities having jurisdiction. Local or state authorities having jurisdiction may have additional or alternative requirements.

* + - * 1. Safety Standard: Provide playground equipment according to ASTM F1487.
      1. FREESTANDING PLAYGROUND EQUIPMENT

Paragraphs below are examples of freestanding equipment and are not intended to be all-inclusive. Indicate individual equipment or assembled systems' dimensions and elevations on Drawings or in schedules. Use these example paragraphs as guides for developing paragraphs for other types of playground equipment.

Copy paragraphs below and re-edit for each product.

Insert drawing designation. Use these designations on Drawings to identify each product.

Descriptive information in "Swing Set" paragraph below, describing swing style and capacity, can be deleted if product name or designation describes these characteristics.

* + - * 1. Swing Set **<Insert drawing designation>**: **[Traditional style with tripod angled legs] [Contemporary style with vertical bipod arches] [Contemporary style with single-post legs] [Contemporary T-style]** providing upright support.

Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:

American Swing Products Inc.

BCI Burke Company, LLC.

Henderson Recreation Equipment Ltd.

Approved equivalent.

Retain one or more of the subparagraphs below to describe swing characteristics that are not specified by product name or designation.

Retain "Metal Frame" or "Wood Frame" subparagraph below for frame material.

Metal Frame: **[Galvanized-steel] [Aluminum]** pipe or tubing.

Leg Upright(s): Not less than **[1-7/8-inch] [2-3/8-inch] [3-1/2-inch] [4-1/2-inch] [5-inch]** OD.

Overhead Beam: **[Match leg upright] [Not less than 2-3/8-inch] [Not less than 3-1/2-inch]** OD.

Color: **[As indicated by manufacturer's designations] [Match Director’s Representative's sample] [As selected by Director’s Representative from manufacturer's full range]**.

Wood Frame: Leg upright(s) and overhead beam not less than **[4 inches square] [6 inches square] [6 inches round]** or larger.

Overhead Beam Height: **[96 inches] [10 ft.] [Height as indicated on Drawings]** from pivot point to protective surfacing below.

Second option in "Suspension Members" subparagraph below is not available from all manufacturers. ASTM F1487 does not permit rope for suspending swing seats.

Suspension Members: **[Standard link chain] [Short link chain not permitting finger penetration] [Cable] [Manufacturer's standard]**.

Color: **[As indicated by manufacturer's designations] [Match Director’s Representative's sample] [As selected by Director’s Representative from manufacturer's full range]**.

Second option in "Swing Connector" subparagraph below specifies fully enclosed connections and is considered safer than S-hook connections. Verify availability with manufacturers.

Swing Connector: **[S-hook] [Double clevis and bolt link]**.

Swing Hanger: Galvanized **[stamped steel clamp and ductile-iron pivot] [heavy-duty ductile iron] [manufacturer's standard]**.

Swing Seats: **[Enclosed, full-bucket infant/tot] [Half-bucket] [U-shaped flexible belt] [Rigid rectangular] [Rigid disk] [Tire]** seat made from **[rubber] [plastic]**.

Color: **[As indicated by manufacturer's designations] [Match Director’s Representative's sample] [As selected by Director’s Representative from manufacturer's full range]**.

Capacity: **[One] [Two] [Three]** swing(s).

Age Appropriateness: **[Two through five years] [Five through 12 years]**.

Descriptive information in "Slide" paragraph below, describing slides, can be deleted if product name or designation describes this characteristic.

* + - * 1. Slide **<Insert drawing designation>: [Single] [Double-side-by-side] [Double-diverging] descending chute(s)[, traditional style]**.

Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:

American Swing Products Inc.

BCI Burke Company, LLC.

Henderson Recreation Equipment Ltd.

Approved equivalent.

Retain one or more of "Plan Configuration," "Access," "Sit-Down Entrance," "Frame," "Sliding Surface," "Sliding Surface Construction," "Colors," and "Age Appropriateness" subparagraphs below to describe slide characteristics that are not specified by product name or designation.

Plan Configuration: **[Straight-aligned] [Quarter-turn] [Half-turn] [Three-quarter-turn] [Full-turn spiral] [S-shaped]** chute(s).

Access: **[Stair or stepladder with handrails] [Vertical ladder] [Vertical ladder with side handrails]**.

Sit-Down Entrance: With **[protective barriers] [opaque plastic panel barriers] [canopy or hood enclosure]** and overhead **[handhold] [and side handholds]**.

Frame: Manufacturer's standard **[galvanized-steel pipe or tubing] [aluminum pipe or tubing] [wood]**.

Sliding Surface: **[Inclined] [Wavy] [Washboard rollers]**.

Sliding Surface Construction: **[Flat, continuous stainless-steel sheet with integral, full-length side rails] [U-shaped, continuous stainless-steel sheet with integral, full-length side rails] [One-piece plastic with integral, full-length side rails] [Plastic tube, ID not less than 24 inches] [Plastic tube, ID not less than 30 inches]**.

Colors: **[As indicated by manufacturer's designations] [Match Director’s Representative's sample] [As selected by Director’s Representative from manufacturer's full range]**.

Age Appropriateness: **[Two through five years] [Five through 12 years]**.

Descriptive information in "Tunnel (Crawl Tube)" paragraph below, describing tunnels, can be deleted if product name or designation describes this characteristic.

* + - * 1. Tunnel (Crawl Tube) **<Insert drawing designation>: Freestanding, [straight-aligned] [quarter-turn] [half-turn] [S-shaped] [zigzag] [wavy] [inclined]** configuration.

Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:

BCI Burke Company, LLC.

Henderson Recreation Equipment Ltd.

Playworld Systems, Inc.

Approved equivalent.

Retain "Material" or "Color" subparagraph below, or both, to describe tunnel characteristics that are not specified by product name or designation.

Material: **[Plastic tube, ID not less than 24 inches] [Plastic tube, ID not less than 30 inches]**.

Color: **[As indicated by manufacturer's designations] [Match Director’s Representative's sample] [As selected by Director’s Representative from manufacturer's full range]**.

Descriptive information in "Climber" paragraph below, describing climbers, can be deleted if product name or designation describes this characteristic.

* + - * 1. Climber **<Insert drawing designation>: [Arch] [Tower] [Dome] [Overhead horizontal ladder] [Overhead pole] [Flexible cable net] [Flexible chain net] [Vertical ladder] [Vertical panel wall]**.

Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:

BCI Burke Company, LLC.

GameTime; a PlayCore, Inc. company.

Henderson Recreation Equipment Ltd.

Approved equivalent.

Retain one or more of "Frame," "Accessories," "Colors," "Capacity," and "Age Appropriateness" subparagraphs below to describe climber characteristics that are not specified by product name or designation.

Frame: Manufacturer's standard **[galvanized-steel pipe or tubing] [aluminum pipe or tubing] [wood]**.

Accessories:

Sliding Pole(s): **[One] [Two] [Three] [Four]**.

Handhold rings.

Colors: **[As indicated by manufacturer's designations] [Match Director’s Representative's sample] [As selected by Director’s Representative from manufacturer's full range]**.

Capacity: **[Five] [10]** users.

Age Appropriateness: **[Two through five years] [Five through 12 years]**.

Descriptive information in "Merry-Go-Round or Whirl" paragraph below, describing merry-go-rounds and whirls, can be deleted if product name or designation describes this characteristic.

* + - * 1. Merry-Go-Round or Whirl **<Insert drawing designation>**: Rotating **[platform] [seating] [hang bars]** around a vertical axis.

Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:

BCI Burke Company, LLC.

GameTime; a PlayCore, Inc. company.

Henderson Recreation Equipment Ltd.

Approved equivalent.

Retain one or more of "Rotating Mechanisms," "Platform," "Handholds and Handrails," "Capacity," and "Age Appropriateness" subparagraphs below to describe merry-go-round and whirl characteristics that are not specified by product name or designation.

Rotating Mechanism: Permanently sealed and lubricated ball bearings with **[hydraulic] [or] [mechanical]** speed-limiting device.

Platform: Round, **[dish-shaped] [flat] [flat, dimpled]** steel sheet, not less than 0.12-inch- nominal thickness, with slip-resistant footing.

Color: **[As indicated by manufacturer's designations] [Match Director’s Representative's sample] [As selected by Director’s Representative from manufacturer's full range]**.

Handholds and Handrails: Metal pipe or tubing.

Color: **[As indicated by manufacturer's designations] [Match Director’s Representative's sample] [As selected by Director’s Representative from manufacturer's full range]**.

Capacity: **[Single] [Two] [Five]** user(s).

Age Appropriateness: **[Two through five years] [5 through 12 years]**.

Descriptive information in "Rocking/Springing Equipment" paragraph below, describing equipment with springs, can be deleted if product name or designation describes this characteristic.

* + - * 1. Rocking/Springing Equipment **<Insert drawing designation>: [Rocking rider] [Rocking platform] [Seesaw]**.

Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:

BCI Burke Company, LLC.

GameTime; a PlayCore, Inc. company.

Henderson Recreation Equipment Ltd.

Approved equivalent.

Retain one or more of "Seat(s)," "Multiple Seating and Standing Platform," "Frame," "Capacity," and "Age Appropriateness" subparagraphs below to describe characteristics of equipment with springs, that are not specified by product name or designation.

Retain "Seat(s)" or "Multiple Seating and Standing Platform" subparagraph below.

Seat(s): **[Cast aluminum] [Molded plastic] [or] [Wood] <Insert material>[; with handholds] [; with handholds and footrests]**.

Insert specific animal and vehicle types in "Seat Style" subparagraph below if required. Specific types may not be available from all manufacturers.

Seat Style: **[Animal] [Automobile] <Insert type of animal or vehicle, or other description>**.

Color: **[As indicated by manufacturer's designations] [Match Director’s Representative's sample] [As selected by Director’s Representative from manufacturer's full range]**.

Multiple Seating and Standing Platform: **[Manufacturer's standard platform with slip-resistant finish]**.

Color: **[As indicated by manufacturer's designations] [Match Director’s Representative's sample] [As selected by Director’s Representative from manufacturer's full range]**.

Frame: **[Galvanized-steel pipe or tubing] [Aluminum pipe or tubing] [or] [wood] and [one] [or] [two]** coil spring(s); two or more steel springs with steel base plate.

Color: **[As indicated by manufacturer's designations] [Match Director’s Representative's sample] [As selected by Director’s Representative from manufacturer's full range]**.

Capacity: **[Single] [Two]** user(s).

Age Appropriateness: **[Two through five years] [Five through 12 years]**.

* + - 1. COMPOSITE PLAYGROUND EQUIPMENT

"Composite Play Structure" paragraph below contains examples of components that can be included in a composite play structure; examples are not intended to be all-inclusive. Indicate assembled systems' dimensions and elevations on Drawings or in schedules. Use this example paragraph as a guide for developing paragraphs for other types of playground equipment.

Copy paragraph below and re-edit for each product.

Insert drawing designation. Use these designations on Drawings to identify each product.

* + - * 1. Composite Play Structure **<Insert drawing designation>**: Integral play assembly that provides more than one play activity; manufactured as a system or assembled from manufacturer's standard modular-sized units.

Manufacturers: Subject to compliance with requirements, provide products by one of the following:

BCI Burke Company, LLC.

GameTime; a PlayCore, Inc. company.

Henderson Recreation Equipment Ltd.

Playworld Systems, Inc.

Approved equivalent.

Retain one or more of subparagraphs below to describe characteristics of composite play structures that are not specified by product name or designation.

Retain "Metal Frame" or "Wood Frame" subparagraph below.

Metal Frame: **[Galvanized-steel] [Aluminum]** pipe or tubing connected with **[bolts] [or] [clamps]**.

Main Frame Posts: Not less than **[4-inch] [5-inch] [6-inch]** OD.

Color: **[As indicated by manufacturer's designations] [Match Director’s Representative's sample] [As selected by Director’s Representative from manufacturer's full range]**.

Wood Frame: Frame components connected with bolts.

Main Frame Posts: Not less than **[4 inches square] [6 inches square] [6 inches round]**.

Color: **[As indicated by manufacturer's designations] [Match Director’s Representative's sample] [As selected by Director’s Representative from manufacturer's full range]**.

Platforms: **[Perforated metal] [Wood] [Plastic] [Manufacturer's standard]**.

Color: **[As indicated by manufacturer's designations] [Match Director’s Representative's sample] [As selected by Director’s Representative from manufacturer's full range]**.

Roofs: **[Perforated metal] [Plastic] [Wood] [Manufacturer's standard]**.

Color: **[As indicated by manufacturer's designations] [Match Director’s Representative's sample] [As selected by Director’s Representative from manufacturer's full range]**.

Play Structure Access Component(s): **[Ladder] [Stepladder] [Stairs] [Ramp] [Accessible crawl ramp] [Accessible transfer platform]**.

Handholds: **[Protective barriers] [Guardrails] [Handrails] [Handholds][ on each side]**.

Equipment: Include the following play event components:

Revise subparagraphs below to suit Project.

Activity panel.

Balance beam.

Bridge.

Climber: **[Overhead horizontal ladder] [Vertical ladder] [Flexible net] [Panel] [Pole]**.

Log roll.

Slide.

Track ride.

Tunnel.

Colors: **[As indicated by manufacturer's designations] [Match Director’s Representative's sample] [As selected by Director’s Representative from manufacturer's full range]**.

Arrangement: **[As indicated on Drawings] [Manufacturer's standard]**.

Capacity: **[10] [20]** users.

Age Appropriateness: **[Two through five years] [Five through 12 years]**.

* + - 1. FABRICATION
         1. Provide sizes, strengths, thicknesses, wall thickness, and weights of components as required to comply with requirements in ASTM F1487. Factory drill components for field assembly. Unnecessary holes in components, not required for field assembly, are not permitted. Provide complete play structures, including supporting members and connections, means of access and egress, designated play surfaces, barriers, guardrails, handrails, handholds, and other components indicated or required for equipment indicated.

Retain one or more of "Metal Frame," "Wood Frame," and "Composite Frame" paragraphs below as applicable; revise to suit Project.

* + - * 1. Metal Frame: Fabricate main-frame upright support posts from metal pipe or tubing with cross-section profile and dimensions as required. Unless otherwise indicated, provide each pipe or tubing main-frame member with manufacturer's standard drainable bottom plate or support flange. Fabricate secondary frame members, bracing, and connections from either steel or aluminum.
        2. Wood Frame: Fabricate main-frame upright support posts from wood. Fabricate secondary frame members, bracing, and connections from wood, steel, or aluminum.
        3. Composite Frame: Fabricate main-frame upright support posts from metal and plastic. Fabricate secondary frame members, bracing, and connections from either steel or aluminum.
        4. Play Surfaces: Manufacturer's standard elevated drainable decks, platforms, landings, walkways, ramps, and similar transitional play surfaces, designed to withstand loads; fabricated from **[perforated or expanded metal] [molded plastic] [plastic panel or plank] [polyethylene panel or plank] [wood plank]** made into floor units with slip-resistant finish. Fabricate units in modular sizes and shapes to form assembled play surfaces indicated.
        5. Protective Barriers: Fabricate according to ASTM F1487. Extend barriers to height above the protected elevated surface according to requirements for use by age group indicated. Fabricate from one or more of the following:

Revise subparagraphs below to suit Project.

Welded-metal pipe or tubing with vertical bars.

Steel sheet with openings for vision and ventilation.

Metal-pipe or -tubing frame with wire-mesh infill panels.

Opaque plastic panels with openings.

Vertical wood balusters with metal pipe or tubing or wood frame.

Wood panels with openings for vision and ventilation.

* + - * 1. Guardrails: Provide guardrails configured to completely surround the protected area, except for access openings. Fabricate from **[welded metal pipe or tubing] [metal pipe or tubing, and wood]**. Extend guardrails according to requirements for use by age group indicated.

First option in "Handrails" paragraph below complies with both ASTM F1487 requirements and CPSC recommendations; however, second option is preferred by CPSC, especially for weaker children . If more than one type of handrail, indicate location of each on Drawings. Verify available handrail dimensions with manufacturers of specified playground equipment. If more stringent CPSC guidelines apply to Project, retain second option below. See ASTM F1487 and CPSC No. 325.

* + - * 1. Handrails: Welded metal pipe or tubing, maximum OD between 0.95 and 1.55 inches.

Provide handrails at heights to comply with requirements for use by age group indicated according to ASTM F1487.

* + - * 1. Roofs and Canopies: Designed to discourage and minimize climbing by users.

Fabricated from **[metal] [metal-pipe or -tubing-framed welded wire] [opaque plastic] [clear polycarbonate plastic] [polyethylene] [or] [wood]**.

First and second options in "Signs" paragraph below specifies standard sign types offered by manufacturers; if required, specify additional signage in Section 101416 "Plaques," Section 101423 Panel Signage," or Section 101426 "Post and Panel/Pylon Signage."

* + - * 1. Signs: Manufacturer's standard sign panels, fabricated from **[opaque plastic with graphics molded in] [wood with painted graphics]**, attached **[to freestanding, upright support posts] [or] [directly to playground equipment]**.

Text:  Minimum informational content according to ASTM F1487.

Colors: **<Insert colors or manufacturer's designation>**.

* + - 1. MATERIALS

Revise this article to suit Project. Insert additional material standards if required for custom or customized equipment.

* + - * 1. Aluminum: Material, alloy, and temper recommended by manufacturer for type of use and finish indicated.
        2. Steel: Material types, alloys, and forms recommended by manufacturer for type of use and finish indicated, hot-dip galvanized.
        3. Stainless-Steel Sheet: Type 304; finished on exposed faces with No. 2B finish.
        4. Wood: **[Douglas fir, preservative treated after fabrication] [Pine, preservative treated after fabrication] [Western red cedar]**, surfaced smooth on all sides and all edges rounded.
        5. Plywood: PS 1, Exterior grade; smooth surfaced with rounded edges; preservative treated after fabrication.
        6. Opaque Plastics: Color impregnated, UV stabilized, and mold resistant.

Retain one or both of "Suspension Chain and Fittings" and "Suspension Cable" paragraphs below to suit Project. If retaining both, indicate locations on Drawings or with inserts.

Chain in "Suspension Chain and Fittings" paragraph below is commonly used for swing chain by most manufacturers and may be used for other components requiring chain. Revise paragraph if another chain type is required for Project in addition to or in lieu of 4/0 or 5/0 straight-link chain.

* + - * 1. Suspension Chain and Fittings: ASTM A467, Class CS, 4/0 or 5/0, welded-straight-link coil chain; hot-dip galvanized; with commercial-quality, hot-dip galvanized steel connectors and swing or ring hangers.

Revise "Suspension Cable" paragraph below to suit Project.

* + - * 1. Suspension Cable: Manufacturer's standard hot-dip galvanized cable; with commercial-quality, hot-dip galvanized steel connectors and swing or ring hangers.
        2. Iron Castings and Hangers: Malleable iron, ASTM A47, Grade 32510, hot-dip galvanized.
        3. Post Caps: Cast aluminum or color-impregnated, UV-stabilized, mold-resistant polyethylene or polypropylene; color to match posts.
        4. Platform Clamps and Hangers: zinc-plated steel, not less than 0.105-inch- nominal thickness.
        5. Hardware: Manufacturer's standard; commercial-quality; corrosion-resistant; hot-dip galvanized steel and iron, stainless steel, or aluminum; of a vandal-resistant design.
        6. Fasteners: Manufacturer's standard; corrosion-resistant; hot-dip galvanized or zinc-plated steel and iron, or stainless steel; permanently capped; and theft resistant.
      1. WOOD-PRESERVATIVE-TREATED MATERIALS

Retain this article if using treated wood or plywood components.

* + - * 1. Preservative Treatment: Pressure-treat wood products according to AWPA U1 and the following:

Use preservative chemicals acceptable to authorities having jurisdiction and containing no arsenic or chromium. Use chemical formulations that do not bleed through or otherwise adversely affect finishes. Do not use colorants to distinguish treated materials from untreated materials.

Kiln-dry lumber and plywood after treatment to a maximum moisture content, respectively, of 19 and 15 percent. Do not use materials that are warped or do not comply with requirements for untreated materials.

* + - 1. CAST-IN-PLACE CONCRETE

Delete this article if concrete for footings is specified entirely in Section 033000 "Cast-in-Place Concrete."

Retain one of two "Concrete Materials and Properties" paragraphs below. Retain second if using dry-packaged concrete mix.

* + - * 1. Concrete Materials and Properties: Comply with requirements in ACI 301 for normal-weight**[, air-entrained]** concrete with minimum 28-day compressive strength of 3000 psi, 3-inch slump, and 1-inch- maximum-size aggregate.
        2. Concrete Materials and Properties: Dry-packaged concrete mix complying with ASTM C387 and mixed at site with potable water, according to manufacturer's written instructions, for normal-weight concrete with minimum 28-day compressive strength of 3000 psi, 3-inch slump, and 1-inch- maximum-size aggregate.
      1. ALUMINUM FINISHES
         1. Baked-Enamel or Powder-Coat Finish: Minimum dry film thickness of 1.5 mils, medium gloss. Comply with coating manufacturer's written instructions for cleaning, conversion coating, and applying and baking finish.
         2. PVC Finish: UV-stabilized, mold-resistant, slip-resistant, matte-textured, dipped or sprayed-on PVC finish, with flame retardant added, and with minimum dry film thickness of 80 mils. Comply with coating manufacturer's written instructions for pretreatment and application.
      2. IRON AND STEEL FINISHES

Retain "Baked-Enamel or Powder-Coat Finish" paragraph below for factory-applied, baked-enamel or powder-coat finish.

* + - * 1. Baked-Enamel or Powder-Coat Finish: After cleaning and pretreating, apply manufacturer's standard two-coat, baked-on finish consisting of prime coat and thermosetting topcoat to a minimum dry film thickness of 2 mils. Comply with coating manufacturer's written instructions for pretreatment, applying, and baking.
        2. PVC Finish: UV-stabilized, mold-resistant, slip-resistant, matte-textured, dipped or sprayed-on PVC finish, with flame retardant added, and with minimum dry film thickness of **[80 mils] [100 mils]**. Comply with coating manufacturer's written instructions for pretreatment and application.
      1. STAINLESS-STEEL FINISHES
         1. Surface Preparation: Remove tool and die marks and stretch lines, or blend into finish.

Finish in "Bright, Cold-Rolled, Unpolished Finish" paragraph below is reflective nondirectional finish produced by rolling with polished rollers rather than by polishing. No. 2B finish is produced before forming and can be damaged by forming.

* + - * 1. Bright, Cold-Rolled, Unpolished Finish: No. 2B.

1. EXECUTION
   * + 1. EXAMINATION
          1. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for earthwork, subgrade elevations, surface and subgrade drainage, and other conditions affecting performance of the Work.

Do not begin installation before final grading required for placing playground equipment and protective surfacing is completed.

* + - * 1. Proceed with installation only after unsatisfactory conditions have been corrected.
      1. INSTALLATION
         1. Comply with manufacturer's written installation instructions for each equipment type unless more stringent requirements are indicated. Anchor playground equipment securely, positioned at locations and elevations indicated.

Maximum Equipment Height: Coordinate installed fall heights of equipment with finished elevations and critical-height values of protective surfacing. Set equipment so fall heights and elevation requirements for age group use and accessibility are within required limits. Verify that playground equipment elevations comply with requirements for each type and component of equipment.

* + - * 1. Post and Footing Excavation: Excavate holes for posts and footings as indicated in firm, undisturbed or compacted subgrade soil.

Retain "Post Set on Subgrade" paragraph below for playground equipment set without concrete footings, or delete if playground equipment is attached to a supporting structure that does not require support by concrete footings.

* + - * 1. Post Set on Subgrade: Level bearing surfaces with drainage fill to required elevation.

Retain "Post Set with Concrete Footing" paragraph below if playground equipment is set with concrete footings. Most playground equipment requires concrete footings.

* + - * 1. Post Set with Concrete Footing: Comply with ACI 301 or dry-packaged concrete-mix manufacturer's written instructions for measuring, batching, mixing, transporting, forming, and placing concrete.

Set equipment posts in or on concrete footing. Protect portion of posts above footing from concrete splatter. Verify that posts are set plumb or at the correct angle, alignment, height, and spacing.

Retain first subparagraph below for posts set in concrete.

Place concrete around posts and vibrate or tamp for consolidation. Hold posts in position during placement and finishing operations until concrete is sufficiently cured.

Embedded Items: Follow equipment manufacturer's written instructions and drawings to ensure correct installation of anchorages for equipment.

Finishing Footings: Smooth top, and shape to shed water.

Insert requirements here for other types of installations such as attachment to a supporting structural base frame.

* + - 1. FIELD QUALITY CONTROL

Retain "Testing Agency" paragraph below to identify who shall perform tests and inspections. If retaining second option in "Testing Agency" paragraph, retain "Field quality-control reports" paragraph in "Informational Submittals" Article.

* + - * 1. Testing Agency: Engage a qualified testing agency to perform tests and inspections.

Retain "Perform the following tests and inspections" paragraph below to require Contractor to perform tests and inspections.

* + - * 1. Perform the following tests and inspections with the assistance of a factory-authorized service representative.

Perform inspection and testing for each type of installed playground equipment according to ASTM F1487.

* + - * 1. Playground equipment items will be considered defective if they do not pass tests and inspections.
        2. Prepare test and inspection reports.

Retain paragraph below if Director’s Representative wants to be present during testing and inspection.

* + - * 1. Notify Director’s Representative 48 hours in advance of date(s) and time(s) of testing and inspection.

END OF SECTION 116800