

ITEM 11615.2803 M – STEEL PLAY EQUIPMENT (NYCDPR)

DESCRIPTION

This work shall consist of furnishing and installing Steel Play Equipment in accordance with the details indicated in the plans at the locations indicated in the plans or where directed by the Engineer.

MATERIALS

Play Equipment:

Play Equipment shall be as shown on the drawings. All play equipment shall be:

Maxidex as manufactured by Playground Environments Int. Hauppauge, NY	Powerscape as manufactured by Gametime Fort Payne, AL	City Park Series as manufactured by, Miracle Recreation Equipment Co. Monett, MO
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Or equal as approved by the Engineer.

Unless otherwise specified herein, all materials shall conform to applicable portions of Section B, Materials and Methods of Construction”, issued by NYCDPR.

All play equipment design shall meet or exceed the Latest Rev. requirements as published in the Handbook for Public Playground Safety for the U.S. Consumer Product Safety Commission, and ASTM Designation F1487-Latest Rev., Standard Consumer Safety Performance Specification for Playground Equipment for Public Use. Play equipment design and construction shall also comply with the Guide To ADA Accessibility Guidelines for Play Areas, Final Ruling (ADA). Each Playground Equipment Manufacturer must be a member of the International Play Equipment Manufacturers Association (IPEMA) a third party certification inspection organization, which continually validates a manufacturer’s compliance with CPSC guidelines and ASTM 1487-Latest Rev.; or demonstrate that the standards and experience required for membership are possessed.

Footings: Shall be 22 MPa (3,200 psi) Average Concrete as per Section B, Materials and Methods of Construction”, issued by NYCDPR.

Steel Members:

Posts: Posts and vertical members shall be Schedule 40 pipe or Structural Steel tubing as specified below. Tubing for posts shall have a minimum thickness of 3 mm (.120”).

Railings and Fixtures: Railings and fixtures shall be Schedule 40 pipe or structural tubing of such thickness that the railings shall not sag or bend during use. Any tubing that bends, sags or does not meet ASTM F1487-Latest Rev., Section 12.5 shall be replaced and upgraded by the manufacturer at no expense to the State.

Tubular Steel: Tubular steel shall be structural tubing of the sizes and shapes shown in the approved shop drawings. Steel shall meet the specifications for ASTM A500, Grade B which has a minimum tensile strength

ITEM 11615.2803 M – STEEL PLAY EQUIPMENT (NYCDPR)

of 400 Mpa (58,000 psi) (for round and shaped) and a minimum yield point of 290 Mpa (42,000 psi) for round structural tubing and a minimum yield point of 317 Mpa (46,000 psi) for shaped structural tubing. Material shall be load-tested under ASTM 1487-Latest Rev., after fabrication.

Pipe: Pipe for climbers and ladders, shall be Schedule 40 or structural tubing steel pipe conforming to the requirements of ASTM A-120 and shall be of the same sizes, indicated on the plans. Steel pipe shall be load tested under ASTM 1487-Latest Rev., requirements after fabrication. The outside diameter of all hand gripping components including rungs on horizontal ladders, climbing bars, hand rails, etc. shall comply with the anthropometric dimensions as listed in the ASTM 1487-Latest Rev. standards.

Pipe Caps: All exposed ends of steel members shall be plugged with metal caps riveted in place with self-sealing rivets or spot welded.

Fittings and Hardware: All fittings and fastenings shall be as indicated on the approved shop drawings and as may be required to complete the installation. All fittings shall be of the best quality malleable iron, drop-forged steel or steel plate as indicated. Clamp fittings shall be cast aluminum or 12 gauge drawn quality or better steel and finished to match vertical components and shall be smoothly constructed with no projections or sharp edges. All clamps shall have tamper resistant fasteners and shall be pinned with a minimum of two (2) #10 "U" drive screws through to the vertical components as an additional precaution against slipping and twisting.

All bolts, lag screws, tie rods, threaded rods, nuts, washers, etc. shall be of the sizes indicated on drawings and/or on approved shop drawings, and shall be hot-dipped galvanized to conform to ASTM specification A-153. All rivets and pins shall be cadmium plated. All protruding bolts, screws and other threaded connectors shall be cut off to within two threads of nut, washer, etc., then satisfactorily peened to prevent removal by unscrewing, and filed completely smooth to remove all sharp edges.

Chain: All chain shall be 10 mm (3/8") hardened steel chain hot-dipped galvanized or polyvinyl chloride coated. Chain shall be Campbell, System 4 High Test chain grade 40 or better as manufactured by Campbell Corp., York, PA, or approved equal. At specific intervals, line shall be embossed with a C-4 Quality Grade Mark or equal marking.

Plastic Lumber: On deck spans 1.5 m (5') or less, lumber may be fabricated from skid-resistant 100% plastic, recycled post-consumer thermoplastic, or 50 % recycled thermoplastic and 50% recycled wood fiber. Recycled lumber shall be protected during transportation. Unless otherwise specified, color shall be "Natural". All edges shall be eased, and all ends shall be cleanly cut. Recycled plastic lumber may not be used on spans greater than 1.5 m (5') unless additional structural support is provided. An engineering analysis of structural integrity shall be submitted upon request. Plastic Lumber shall be smooth on all sides and ends. All surfaces shall be sanded after being worked to the required dimension. Plastic Lumber shall be free from all but minor marks, blemishes, discolorations, warp, wane, twist, quirk or other imperfections. The intersection of all planes of faces, edges and ends shall be eased to 6 mm (1/4") radius.

Steel Fabrication: All steel components to be welded shall be welded in complete accordance with the standards of the American Welding Society. All welds shall be continuous around the entire perimeter. All welds shall be ground smooth. No tack welding and no field welding shall be permitted.

ITEM 11615.2803 M – STEEL PLAY EQUIPMENT (NYCDPR)

Corrosion Resistant Treatment: All fabrication and welding shall be completed prior to application of the corrosion resistant coating, metal pieces shall be cleaned of all weld spatter, mill scale, varnish, rust, grease, and the like and the surface mechanically or chemically prepared to receive the coating. This corrosion resistant coating shall be either a thermal spray zinc coating with a minimum thickness of 3 mils, or a multi-step iron phosphate bath coating process.

Polyester Powder Coating: A surface coat shall be applied to the thermal zinc or iron phosphate coated metal pieces in such a manner that the coating will not peel off. The manufacturer shall perform all processes required to achieve a smooth material bond. The surface coat shall be an electrostatically sprayed, lead-free, TGIC (triglycidyl isocyanurate) polyester powder coating applied to a minimum of 5 mils thickness which shall be oven cured at temperatures between 204 and 232 degrees Celsius (400 and 450 degrees Fahrenheit) for a period of 20 minutes. The TGIC polyester powder coating shall be similar to Secural by Spraylat, Tiger Drylac Series 49 as manufactured by Tiger Drylac U.S.A., Reading, PA, or approved equal and shall comply with ASTM standards as follows:

<u>PHYSICAL PROPERTIES</u>	<u>TEST METHODS</u>	<u>ACCEPTANCE CRITERIA</u>
Adhesion cross hatching	D-3359B	5B (0% area removed)
Flexibility conical mandrel	D-522	Pass 10 mm (3/8") mandrel
Pencil hardness	D-3363	Pencil hardness 2H minimum
Impact resistance	D-2794	15.8 N-m (140 in-lb) minimum
Overbake resistance-Adhesion	D-2454	5B
Overbake resistance-Hardness	D-2454	Pencil hardness 2H minimum
Overbake resistance-Direct Impact	D-2454	15.8 N-m (140 in-lb) minimum
Humidity resistance-250 hours	D-4585	No visible change to surface
Weatherability	D-822	No visible change to surface

Colors shall be as shown on the drawings. (Submittals required, see Submittals:). Material manufacturers directions for storage and use shall be adhered to. Material surfaces shall be protected during shipment so as to arrive mar and scratch free in the field.

Steel Decks: Steel decks shall consist of minimum 5 mm (11 gauge -.192")thick punched steel plate, reinforced and cross-braced as necessary to prevent any noticeable deflection. Finish shall be thermal spray zinc coated with a hot dipped polyvinyl chloride (PVC) system, 3 mm (1/8") (nominal) thick matte finish with a gritty non-slip surface. Deck surface must be slip resistant in both wet and dry conditions.

Plastic Lumber Decks. Plastic Lumber decking shall be sized as shown on the drawings and shall be affixed to supporting members in a tamper resistant method with spacers as necessary to prevent potential pinching.

Safety Railings: Safety rails shall provide enclosure and shall have no gaps greater than 89 mm (3.5") and less than 228 mm(9"). Tubing and pipe used for safety rails shall not exceed 41 mm (1.6") in outer diameter and shall have corrosive protection and powder coating as specified above. All welds shall be complete and ground smooth. These requirements shall conform with ASTM F1487-Latest Rev. standards.

Stair and Ladders: Steps and rungs on slides and other equipment should be spaced in accordance with ASTM

ITEM 11615.2803 M – STEEL PLAY EQUIPMENT (NYCDPR)

1487-Latest Rev. standards and CPSC Guidelines. Steps and rungs should be at least 381 mm (15") wide and horizontal to within plus or minus 2 degrees and slip resistant under both wet and dry conditions. Stairways and ladders with steps should have continuous handrails on both sides. The handrails should be placed at a height which will allow a child to stand upright over each step. These requirements shall conform with ASTM F1487-Latest Rev. standards.

Slides: Spiral and straight slides shall be constructed of either stainless steel or rotationally molded polyethylene as shown on the drawing. Rotationally molded polyethylene shall have ultraviolet (UV) light stabilizers and color molded in; it shall comply with ASTM D 1248, Type 2, Class A and Federal Specification LP-390C, Type 1, Class M. Grade 2, Category 3; it shall have a 8 mm (5/16") minimum wall thickness. Stainless steel slides shall be constructed of 16 gauge or better stainless steel with a 2B finish. The underside of the stainless steel slide shall be constructed such that there are no projections, sharp or rough edges. Slide bed and enclosure shall conform to CPSC guidelines for spiral slides. The slide bed and sides shall be shaped and dimensioned such that the rider will not tip or slide over outside edge of the slide. Gaps between the slide and main support post are not acceptable. Gaps shall be closed through either mechanical fasteners, welding, or methods approved by the Engineer. Spiral slide chutes shall either be installed by manufacturers factory trained certified installers, or completely assembled at the factory and shipped to site ready for field erection.

1 (One) - Installation And Maintenance Manual, complete, as provided by manufacturer.

Extra Materials: Furnish and deliver, to the State, additional new materials obtained from the approved play equipment manufacturer. Furnish to Resident Engineer any catalogs, invoices, statements, etc. for verification that a complete set of all maintenance and operations manuals, tools, extra paint, materials, etc. have been furnished. All furnished material shall be properly identified with the installation location.

192 oz. - Graffiti Remover, for polyester power coated (painted) steel surfaces - 5.44 kg (192) ounces in spray bottles: six (6) 0.91 kg (32) ounce spray bottles; or twelve (12) 0.45 kg (16) ounce spray bottles of:
Go Away Graffiti Remover Hilti So Safe Gametime Graffiti Remover
NEXGEN Hilti Gametime
North Hollywood, CA Long Island City, NY Fort Payne, AL
Each container shall be clearly labeled on front, using minimum of 6 mm (1/4-inch) ± high lettering; "For Play Equipment".

90 oz. - Touch-Up Paint, complete for all color surfaces, as provided by manufacturer. Twenty (20) cans of custom spray paint .13 kg (4.5 oz.) each can or a minimum of 2.55 kg (90 ounces) of paint (total all colors) shall be provided.

1 (One) - Tools And Hardware Maintenance Repair Kit, complete with tool box, fastener wrench and hardware (nuts, bolts screws etc.), including fifteen (15) bottles Loctite No. 242, manufactured by Loctite North America, 1001 Trout Brook Crossing, Rocky Hill, CT 06067, in ten (10) milliliter size or approved equal, to be provided by manufacturer. The repair Kit shall be clearly marked with the Contract Number and the Playground name. Marking shall be done with permanent magic marker or other method approved by the Engineer.

ITEM 11615.2803 M – STEEL PLAY EQUIPMENT (NYCDPR)

80 (eighty) Chain shackles with hexdrive flush pins in (2) boxes of forty (40) each, Suncor # S0115-NS10 or approved equal.

4 oz (each color) Vinyl Repair Kit in color(s) to match vinyl covered steel decks, complete in bottles or tubes (2) .05 kg (2 oz.) Bottles of Plast-O-Meric as manufactured by Gametime, Fort Payne, Alabama or approved equal; or (1) 0.11 kg (4 oz.) bottle of Sinclair & Rust RTV as manufactured by Miracle Recreation Equipment Company, PO Box 420 Monett, MO 65708, or approved equal. Front face of each container shall be clearly labeled using minimum of 6 mm (1/4 inch) high lettering; “For Vinyl-Coated Steel Decks”.

Insurance Certificate: The Contractor shall furnish the Manufacturer’ Certificate of Product Liability Insurance for \$ one (1) million.

CONSTRUCTION DETAILS

Equipment shall be assembled to the configuration as shown on the approved shop drawings. All fastenings shall be made as shown on the drawings and shall be securely tightened with an impact and/or torque wrench (as per manufacturer’s specification). A manufacturer’s applied high-strength Loctite #204 Dri- Lock patch adhesive or approved equal shall be applied prior to final tightening of nuts and bolts. The Contractor shall take precautions while trimming bolt projections to prevent metallic contamination (rust bloom) of the corrosion resistant bolts to the satisfaction of the Engineer. These precautions include the use of previously unused grinding wheels, and applying zinc rich paint on trimmed galvanized bolts. All work shall be done so that no hazardous projections or rust bloom shall be left in the finished work.

Asphalt pavement shall be neatly saw-cut prior to excavation for footings. All tubular steel posts shall be set square and plumb in concrete footings as shown on the approved shop drawing to grade required assuring level installation of platform angle frames and rails. Footings shall have the top surface finished so as to provide sheet drainage away from steel uprights, level and free of surface fluctuations that could contribute to an uneven surface in overlying safety surfacing.

Final installation of the steel play equipment shall not proceed until the Contractor has demonstrated to the satisfaction of Engineer that the use zones comply with ASTM 1487-Latest Rev., and CPSC guidelines. The safety surfacing shall be installed as soon as possible after the play equipment installation is complete. The Contractor shall be responsible for temporarily barricading the Play Equipment prior to completion of the safety surfacing installation.

The work under this item shall be performed by a Contractor with experience erecting steel play equipment in accordance with ASTM 1487-Latest Rev. and CPSC guidelines. If the general contractor lacks this experience, a subcontractor certified by the manufacturer shall be hired to perform this work. Final installation of the steel play equipment shall not proceed until the Contractor has demonstrated to the satisfaction of Engineer that the use zones and the no-encroachment zones comply with ASTM 1487-Latest Rev. and CPSC guidelines.

All play equipment construction shall meet or exceed the Latest Rev. requirements as published in the

ITEM 11615.2803 M – STEEL PLAY EQUIPMENT (NYCDPR)

Handbook for Public Playground Safety for the U.S. Consumer Product Safety Commission, and ASTM Designation F1487-Latest Rev., Standard Consumer Safety Performance Specification for Playground Equipment for Public Use. Play equipment design and construction shall also comply with the Guide To ADA Accessibility Guidelines for Play Areas, Final Ruling (ADA). Each Playground Equipment Manufacturer must be a member of the International Play Equipment Manufacturers Association (IPEMA) a third party certification inspection organization, which continually validates a manufacturer's compliance with CPSC guidelines and ASTM 1487-Latest Rev.; or demonstrate that the standards and experience required for membership are possessed.

Age Appropriate Signage: Play equipment units shall have age appropriate signage in a clearly conspicuous place near or on the equipment at the entry point. This signage shall state one of the following: 1) "This play equipment is designed for Preschool Children Ages 2 to 5 years. Adult supervision is required"; or 2) "This play equipment is designed for School Age Children ages 5 to 12 years. Adult supervision is recommended". Details of the signs shall be as shown on the plans or as determined by the Engineer.

Submittals: The Contractor shall submit the following for the Engineer's review and approval prior to manufacture:

Shop Drawings: The Contractor shall submit shop drawings. The shop drawings shall be submitted no later than three (3) months prior to the scheduled completion of the project. The shop drawings shall indicate as a minimum: the play equipment layout, the required minimum limits of the use zone, elevations, footings layout, materials, finishes, supports, hardware, fastener torque schedule, fittings, accessories, and compliance with ADA requirements including access details and the ratio of elevated versus ground level events. The shop drawings shall show the distance in meters and linear feet from outside edge of the safety surfacing to a minimum of three (3) closest adjacent fixed outside structures such as curbs, fences, benches or trees.

Deviations From Layout: Any deviations from the contract drawings must be submitted for review and approval by the Engineer.

Color Samples: Color samples shall be submitted for approval by the Engineer before any powder coating is done.

Document of Acceptance: An authorized representative of the steel play equipment manufacturer must inspect and approve the completed installation. The play equipment will not be accepted by the play equipment manufacturer or the Engineer until they are satisfied with the installation. Any necessary corrective work shall be done by the Contractor at no expense to the State. A document of acceptance signed by the authorized Manufacturers' representative must be submitted to the Engineer before the final 20% payment is made to the Contractor for this item.

All work shall be done by skilled mechanics in a workmanlike manner.

METHOD OF MEASUREMENT

The work under Steel Play Equipment (NYCDPR) will be measured for payment on the lump sum basis.

BASIS OF PAYMENT

The lump sum bid for Steel Play Equipment (NYCDPR) shall include the cost of all labor, materials and equipment necessary to satisfactorily perform the work.

Progress payments. Steel Play Equipment (NYCDPR) will be eligible for progress payments in accordance with the following:

- 3% upon submission and approval of the required shop drawings.
- Partial payment for stored materials will be paid (77%).
- The remaining 20% upon satisfactory submission of all specified certificates and Document of Acceptance.