

ITEM 11615.2801M - STEEL PLAY EQUIPMENT

DESCRIPTION:

Under this Item, the Contractor shall furnish all materials and provide for all work required for the fabrication and installation of steel play equipment in accordance with the Plans and Specifications and as directed by the Engineer.

MATERIALS:

Safety Standards: All equipment specified herein shall conform to:

U.S. Consumer Product Safety Commission, *Handbook for Public Playground Safety*, latest edition. American Society for Testing and Materials Designation: F 1487, *Standard Consumer Safety Performance Specification for Playground Equipment for Public Use*, latest edition.

Support Posts: Support Posts shall be fabricated from one 9.3mm x 75mm steel flat stock sandwiched between two 6.25mm angles in the sizes necessary to form the post configuration as shown on the shop drawings. Posts shall have slotted holes as required for the connection of all walls and platforms. Connection hardware shall be 12mm stainless steel machine bolts. Posts shall be cut to the length required for proper installation.

Steel: Angles, C channels, flat stock, plates, punched sheets and tees shall be hot rolled steel, conforming to *ASTM Designation A 36*. Round pipe shall be schedule 40 steel pipe conforming to *ASTM Designation A-120* or SS40 steel pipe conforming to *ASTM Designation A-569*. 37.5mm square tubing shall have a wall thickness of 4.7mm and shall conform to *ASTM Designation 500*. All sharp edges and corners shall be ground smooth.

Dimensional Material: Dimensional Material shall be used for platform planks, stair treads and other play components as herein specified. Dimensional Material shall be a composite plastic, cellulose-polymer composite material, gray in color. Dimensional Material shall be 75mm x 150mm nominal unless otherwise specified herein. The intersection of the planes of faces, edges and ends of all materials shall be eased to a minimum 6.25mm radius. Dimensional Material shall possess the following minimum properties:

Modules of Rapture - 9,811.2392 kilopascals

Modules of Elasticity - 1,020,424 kilopascals

Ultimate Shear Strength - 758.42327 kilopascals

Hardness - 49,999.7768N

Screw Withdrawal - 1,387.8384N

Coefficient of Friction*

Dry/Wet (ASTM C 1028) - 0.68/0.66

Dry/Wet (ASTM D 2394) - 0.336/0.645.

*Values obtained meet ADA requirements for slip resistance.

Termite Resistance - 9.6 rating

Fungus Resistance - no decay rating

Flash Ignition Temperature - 340° C

Flame Spread - 135

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Hardware: All bolts, lag screws, hexagonal nuts, washers, pins, rivets, screws and 'T' nuts shall be stainless steel. Components, platforms, roofs and walls shall use machine bolts in lengths from 31.25mm to 43.75mm as shown on the shop drawings. Dimensional Material shall be fastened to Bridge Frames, Platform Supports and Support Straps using 9.3mm x 50mm stainless steel, dome head, threaded lag screws. All hexagonal nuts shall be self-locking type.

SUBMITTALS :

- a. Shop drawings of the Layout of Work clearly showing all materials, finishes, connecting and joining methods and relationship to adjoining work by others.
- b. Technical Data Sheets for all paint materials as well as color chips for exterior coats of paint.

PRODUCTS:

Components: Design Criteria

Rings: Rings shall be triangular, 150mm polished cast aluminum, with a cast eyelet for attachment. Rings shall be attached to tabs on Support Beam(s) or Rails with chain. Chain shall be 9.3mm galvanized proof coil chain. Shackles shall be used to attach rings to chains. 9.3mm bolts with bearing sleeves shall be used to attach chains to Support Beams or Rails.

Bridges

Sloped Bridge (200mm, 400mm & 600mm elevation change): Bridge Planks shall be fabricated from Dimensional Material. Bridge Frame shall be fabricated from 6.25mm x 62.5mm steel flat stock, welded to 32.8mm OD steel pipe truss frame wall. Steel pipe truss wall shall be bolted to Support Posts.

Overheads

Overhead Ladder (Curved, Short & Straight): Side and Mid Supports shall be fabricated from 87.5mm OD steel pipe. Rungs shall be fabricated from 32.8mm OD steel pipe. Side Supports shall be bent as shown on the shop drawings. Side Supports shall bolt to Support Posts.

Ring Beam Assembly (Curved): Center Support Beam(s) shall be fabricated from 100mm OD steel pipe. Side and Mid Supports shall be fabricated from 87.5mm OD steel pipe. Each ring chain shall be attached to two 3.1mm x 25mm x 37.5mm steel tabs welded to Support Beam. 9.4mm diameter bolts with plastic bushings shall be used to bolt chains to tabs. End Supports shall be bolted to Support Posts.

Platforms

Triangle Platform: Platform Frame shall be fabricated from 25mm x 62.5mm x 62.5mm steel angle with a 6.25mm x 62.5mm steel reinforcement rib. Platform Planks shall be fabricated from Dimensional Material. Platform shall be as shown on the shop drawings. Platform Frame shall be bolted to Support Posts.

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Walls

Bridge Wall: Wall shall consist of a Pipe Framework with two Wire Mesh In-fills. Pipe Framework shall be fabricated from 32.8mm OD steel pipe. Wire Mesh In-fill shall be fabricated from 7.9mm diameter wire, 37.5mm on center & welded to pipe frame. Pipe Framework shall have steel tabs for wall to wall attachment.

Triangular Platform/Roof Wall: Wall shall consist of a Pipe Framework with Wire Mesh In-fills. Pipe Framework shall be fabricated from 32.8mm OD steel pipe. Wire Mesh In-fill, shall be fabricated from 7.9mm diameter wire, 37.5mm on center & welded to pipe frame. Pipe Framework shall have steel tabs for post and platform attachment as shown on the shop drawings.

Concrete: All concrete shall meet the requirements of item 555.0105M- Concrete for Structures, Class A. No separate payment will be made for the concrete.

Reinforcement: The reinforcement shall be deformed steel bars of the sizes shown on the plans. Bars shall be set and accurately maintained in place. No portion of the reinforcement shall be less than 25mm from the exterior surface of the concrete. Reinforcement shall meet the requirements for Steel Bar Reinforcement under 556.0202M. No separate payment will be made for the reinforcement.

Packaging & Shipping: Products are to be strapped to reusable wood pallets then covered with recyclable shrink-wrap. Playground Environments' shipments are made via side loaded flatbed trucks. Purchaser shall be responsible for unloading unless other arrangements have been made. Pallets can be unloaded by forklift or dismantled and hand unloaded.

Welding: Welding shall be in complete accordance with the standards of the American Welding Society. All welds shall be ground smooth. No field welding shall be permitted.

Galvanizing: All welded steel components shall be fully assembled prior to galvanizing. After fabrication, all steel shall be shot blasted to a white metal finish. The cleaned surface shall have an angular surface profile of 50.8 to 101.6 micrometers. After shot blasting, all steel shall be galvanized by the Zinc Rich Powder Process. The Zinc Rich Powder coating is to be applied to a thickness of 50.8 micrometers & cured at 200° C for 2 minutes minimum. The coating shall be firmly adhered and free of spots, lumps or blisters.

Powder Coating: The Powder Coating shall be applied to the Zinc Rich prepared surface in such a manner that the coating will not peel off. The coating shall be TGIC-Polyester Powder applied to the Zinc coated steel via the Powder Coating Process. The Powder Coating shall be applied at a film thickness of 101.6 to 152.4 micrometers. The Powder Coating shall conform to the following *ASTM Designations*:

Adhesion D 3359-B

Pencil Hardness (H-2H) D 3363

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Flexibility D 522 (Mod)

Impact Resistance D 2794 (Mod)

Abrasion Resistance D 4060 (Mod)

Salt Spray Resistance B 117

Humidity Resistance D 2247

Immediately prior to painting, all surfaces of framework shall be thoroughly free of debris. All surfaces that are rust free shall be treated in accordance with SP-1, Solvent Cleaning. Treating shall be performed with a solvent such as mineral spirits, xylol or turpentine to remove all dirt, greases and foreign matter.

All connectors shall meet the requirements of Section 715-16, *Stainless Steel Connecting Products* of the current NYSDOT Standard Specifications.

CONSTRUCTION DETAILS:

Set the posts at the angles shown on the plans to hold them to line and grade. Pour the footing with structural concrete as shown on the Plans or directed by the Engineer. Fill interior sleeves with concrete. Furnish and install extra long sleeve posts and other incidental items of structural steel, required for proper installation.

METHOD OF MEASUREMENT:

This item shall be measured for payment on a lump sum basis for the work completed in accordance with the Contract Documents and as ordered by the Engineer.

BASIS OF PAYMENT:

The lump sum price shall include the cost of furnishing all labor, materials, equipment and appliances necessary to complete the work as indicated on the drawings and as specified under this item.