ITEM 615.0800NN11 - TYPE 'A' BENCH (NYCDPR "WORLD'S FAIR")

DESCRIPTION

This work includes furnishing and installing the specified type of Type 'A' Bench (NYCDPR "World's Fair") in accordance with the contract documents and as directed by the Engineer. Unless otherwise noted, bench shall conform to NYCDPR Type 'A' Bench Standard Details.

MATERIALS :

Benches shall be:

No. 6737 or 6736 (Backless)
Manufactured by
Kenneth Lynch & Sons,
114 Willenbrock Road
Oxford, CT 06478
203-264-2831
www.klynchandsons.com

"Liberty Bench"
Manufactured by
Kevin G. Lindelow Associates
495 N. Bridge Street
Bridgewater, NY 08807
800-722-0331

"Worlds Fair Bench"
Manufactured by
All City Play Equipment, Inc.
940 Amboy Ave; Suite 102
Edison, NY 08837
888-258-9600
www.allcityproducts.com
or equal as approved by Engineer.

Standards: Bench standards shall be of cast ductile iron. The tensile strength shall meet a minimum of 448,000 kPa, in accordance with ASTM A536-84(2009), Grade 65-45-12. Standards shall be either painted or powdercoated, as per this specification.

Finishes for Cast Ductile Iron Standards: The Contractor shall supply either powder coated or painted bench standards, both types of finishes are outlined below:

1. Powder Coating**:** All surfaces of the cast iron bench standards, bars and brace rods shall be powder coated with a polyester thermosetting Powder Coating such as manufactured by:

Tiger Drylac
3855 Swenson Ave.
St. Charles, IL 60174
800-243-8148
www.tiger-coatings.us

Spraylat Corporation
143 Sparks Ave.
Pelham, NY 10803
914-438-1600
www.spraylat.com

Alesta Powder Coatings
Manufactured by
DuPont Coating Solutions

1007 Market Street.
Wilmington, DE 19898
www2.dupont.com/Powder/en-us
or equal as approved by Engineer.

Color of the finish coat shall be Gloss Black or as specified in the contract documents. Powder coating shall be applied to the metal in such a manner that the coating will not peel off. Ensure surfaces to be coated are clean and dry and free of grease, dust, rust, etc. All surfaces shall first receive phosphating and chromatizing treatments to improve the adhesion of the surface coating.

Powder coating shall be applied at a film thickness of 75 to 100 µm by electrostatic spray process and bake finished per the manufacturer's directions. It shall be applied without voids, tears or cuts that reveal the substrate and shall thoroughly adhere to the metal without peeling when scratched with a pick device or knife blade point. Nuts, washers and ends of all bolts shall be painted with touch-up paint as described below.

Touch-up and Repair: For minor damage caused by installation or transportation, touch-up finish in conformance with manufacturer's recommendations. Provide touch-up such that repair is not visible from a distance of two meters.

Laboratory Test For TGIC-Polyester Powder Coat: At the discretion of the Engineer, a sample TGIC-Polyester powder coated bench standard may be laboratory tested for bonding of the powder coating to the metal. Test shall be the Cross Hatch test per ASTM D3359-09e2, Method B. Failure to satisfactorily pass this test shall be a basis for rejection.

2. Painting: All surfaces of the cast iron bench standards, hardware, bars and brace rods shall receive three (3) coats of shop applied paint. All paints and thinners used shall be selected from the Approved List for Structural Steel Paints – Shop Applied. All coats of paint used shall be produced by the same manufacturer. Selection of undercoat colors is left to the discretion of the Contractor except that each single paint coat shall be a color different from the others and shall be approved by the Engineer.

   Immediately prior to painting, all surfaces shall be thoroughly clean. All surfaces that are rust free shall be cleaned in accordance with SP-1, Solvent Cleaning. Cleaning shall be performed with a solvent such as mineral spirits, xylol, or turpentine to remove all dirt, grease, and foreign matter. Surfaces that show evidence of scale and rust shall be cleaned in accordance with SP-2, Hand Tool Cleaning, a method generally confined to wirebrushing, sandpaper, hand scrapers, or hand impact tools, or SP-3, Power Tool Cleaning, a method generally confined to power wirebrushes, impact tools, power sanders, and grinders in order to achieve a sound substrate. After the standards have been cleaned and prepared, they shall be painted as follows:

ITEM 615.0800NN11 - TYPE 'A' BENCH (NYCDPR "WORLD'S FAIR")

First Coat:	Primer shall be a phenolic alkyd flat finish coating having a dry film thickness of 50 µm. Paint requires one (1) to two (2) hours drying time before recoating
Second And Third Coats:	Primer be a D.T.M.(Direct to Metal) Alkyd semi gloss. The coating is a modified alkyd having a dry film thickness of 50 µm for each coat. Paint requires eight (8) hours drying time before recoating.

All three (3) coats shall be shop painted. All paints shall be applied when the ambient air temperature is seven (7) degrees C rising and when surfaces to be painted are moisture free. No painting will be allowed below the minimum ambient air temperature. In addition, no painting will be allowed below the temperature at which moisture will condense on surfaces.

Bench Slats: Bench slats shall be Recycled Plastic Lumber or Reinforced Plastic Lumber that shall be capable of bearing a five hundred pound (500 lb.) load for a minimum twenty four hours (24 hrs.) with a maximum deflection of one-quarter inch (1/4") with the weight in place and one-sixteenth inch (1/16") with the weight removed.

1. Recycled Plastic Lumber – Recycled plastic lumber slats shall be fabricated from a minimum ninety percent (90%) post consumer recycled high density polyethylene (HDPE). Materials shall contain no toxic substances. Recycled plastic lumber shall contain UV inhibited pigment and shall not absorb moisture, corrode, rot, warp, splinter, or crack and shall not contain fiberglass or any material that will be irritating in contact with skin. Color to be Cedar or Weathered Wood.

   Recycled plastic lumber slats shall be internally reinforced or externally supported with additional steel bar and channel supports. The Contractor shall submit shop drawings showing all external supports if non-reinforced plastic lumber is used. Both types of plastic lumber shall meet the requirements specified below.

   Recycled plastic lumber slats (without reinforcement) shall comply with or be tested in accordance with provisions of the following:

ASTM D6108-09	Standard Test Method for Compressive Properties of Plastic Lumber and Shapes
ASTM D6109-10	Standard Test Methods for Flexural Properties of Unreinforced and Reinforced Plastic Lumber and Related Products
ASTM D6111-09	Standard Test Method for Bulk Density and Specific Gravity of Plastic Lumber and Shapes by Displacement

ITEM 615.0800NN11 - TYPE 'A' BENCH (NYCDPR "WORLD'S FAIR")

ASTM D6112-10 Standard Test Methods for Compressive and Flexural Creep and Creep Rupture of Plastic Lumber and Shapes

ASTM D6117-10 Standard Test Methods for Mechanical Fasteners in Plastic Lumber and Shapes

Composition and mechanical properties shall be as follows:

Minimum Recycled Content	90%
Minimum High Density Polyethylene	70%
Maximum Percentage of Materials other than Polyolefins	5%
Minimum Specific Gravity (ASTM D6111)	554 kilograms/meter^3
Minimum Flexural Modulus (ASTM D6109)	59 MPa
Minimum Nail Pull-out Strength (ASTM D6117)	318 kilograms

Flame Spread, Class C or better, tested in accordance with ASTM E84-12b.

Coefficient of Thermal Expansion (ASTM D6341-10), in the range of -10° C to 30° C shall not exceed 70 x 10^{-6}/°F.

The State reserves the right to independently test samples of slats from the job site. Random samples must be supplied to the State for identification, at the request of the Engineer. Should the slats provided on the job site not be as previously approved, the Contractor shall replace all the incorrect slat lumber at no extra cost to the State.

2. Reinforced Plastic Lumber: Reinforced plastic slats shall be precision machined to receive the internal steel support bars and allow expansion and contraction of the slats, such as Second Site Systems slats, Patent No. 5,660,907, as manufactured by Victor Stanley, Inc., Dunkirk, MD, or approved equal. The slats, with supports on minimum 1.170 M centers and a thirty seven millimeters by six millimeters (37 mm x 6 mm) steel support strap midway between the legs, shall be capable of bearing a two hundred twenty-seven (227 kg.) load for a minimum twenty four hours (24 hrs.) with a maximum deflection of six millimeters (6 mm) with the weight in place and one and a half millimeters (1.5 mm) with the weight removed. As-equal submittals will require test data confirming this tolerance.

   The different coefficients of expansion require sufficient play in the slot and spacing of fasteners to prevent cracking and splitting. Internal steel reinforcement bars shall be made of A36 electric furnace mild steel from recycled steel scrap. Steel dimension shall be six millimeters by twenty-five millimeters (6 mm x 25 mm), secured with stainless steel set screws, countersunk, with the resulting cavity filled with recycled plastic plugs.

   The steel bars shall be hot dipped galvanized and powdercoated as described in Finishes for Cast Ductile Iron Standards to match the color of the recycled plastic lumber slats.

ITEM 615.0800NN11 - TYPE 'A' BENCH (NYCDPR "WORLD'S FAIR")

Fabrication Tolerances: Ends shall be smooth with clean cuts, cross-sections shall not have voids greater than 12 mm dia. Voids of 12 mm dia. or less shall be filled with a matching color of silicone caulk, as per manufacturer's specifications. All edges shall be eased. Maximum variation from flat surface across section shall be 3 mm

Delivery and Storage: Keep materials protected at all times against exposure to extreme heat or impact. All material shall be bundled and fully supported during shipping and storage to prevent creep. Any lumber that is damaged or excessively scratched will be rejected and replaced with new. All slat material must be straight and true when bolted to the standards.

Hardware: Bolts, locknuts, and washers used to secure slats to standards shall be stainless steel. Bolt or wood screw used for mid section steel support strap (RPL only) shall be a vandal resistant type, either stainless steel or hot-dipped galvanized. Type and dimensions of all bolts, nuts, and washers shall be as indicated on the plans. Anchor bolts used to secure the benches to pavements may be either stainless steel or hot-dipped galvanized steel. Bolts for securing slats shall be provided with nylon lock nuts so as to render the connection vandal resistant. Steel support straps shall be secured with 10 mm hot dipped galvanized or stainless steel screws with vandal resistant heads.

Extra Materials: The Contractor shall furnish (supply and deliver only, not install) extra materials and deliver as follows:

Fifteen (15) - 50 mm x 75 mm (Nominal Size) by 2.4 M length Reinforced Recycled

Plastic Lumber Bench Slats per this specification, undrilled.

The above materials shall be delivered before Final Inspection.

Submittals:

1. Foundry Certificates - Certifying Ductile Iron used in bench standards shall be submitted. The certificate shall be on foundry letterhead, dated and signed by the manufacturer with the Contract No., Contractor name, and Class of Ductile Iron provided.

2. Sample - The Contractor shall submit a 300 mm sample of the recycled plastic lumber slat for surface and color approval. Required test results shall be submitted for unreinforced recycled plastic lumber slats.

3. Paint Submission - A written request for any paint substitution must be submitted to the Engineer. The Contractor shall submit manufacturer's Data Sheets and installation instructions for approval of any proposed as-equal product no less than two (2) weeks prior to application.

ITEM 615.0800NN11 - TYPE 'A' BENCH (NYCDPR "WORLD'S FAIR")

CONSTRUCTION DETAILS

Assembly And Installation: Benches shall be pre-assembled before being installed in their final location in the work. After assembly, benches shall be installed in their final position and properly secured in place, as indicated on the Plans.

Submittals:

1. Shop Drawings - The Contractor shall submit Shop Drawings when required, in accordance with the requirements of the General Provisions.

ITEM 615.0800NN11 - TYPE 'A' BENCH (NYCDPR "WORLD'S FAIR")

METHOD OF MEASUREMENT

This work will be measured as the number of meters of Type 'A' Bench (NYCDPR "World's Fair"), measured in place along the front slat, satisfactorily furnished and installed.

BASIS OF PAYMENT

The unit price bid per linear meter of each type of bench shall include the cost of all labor, materials, equipment, and incidentals necessary, including, but not limited to, recycled plastic lumber, reinforced plastic lumber, hardware, submittals, and all finishes, necessary to satisfactorily complete the work.

Excavation and concrete for footings or concrete slab shall be paid for separately under their respective items.

Payment will be made under:

Item No.	Item	Pay Unit
615.08000111	Type 'A' Bench (NYCDPR "World's Fair") – RPL Slats	Meter
615.08000211	Type 'A' Bench – Backless (NYCDPR "World's Fair") – RPL Slats	Meter