ITEM 615.4098 11 - BACKSTOP ON CONCRETE CURB WITH CHAIN LINK FENCE EXTENSIONS

DESCRIPTION

This work shall consist of furnishing and installing BACKSTOP ON CONCRETE CURB WITH CHAIN LINK FENCE EXTENSIONS in accordance with the contract documents and as directed by the Engineer.

MATERIALS

Unless otherwise specified herein, all materials for this work shall meet the requirements of the NYSDOT Standard Specifications. All materials for this work shall be new stock free from defects impairing strength, durability, and appearance.

Posts, Rails, Sleeves, and Bracing: shall be galvanized and powder coated steel pipe of the sizes shown on the plans. Except where indicated below posts rails sleeves and bracing shall conform with ASTM Specifications A-120, except the pipe shall be unthreaded and untested for water pressure, except as otherwise herein specified or shown on the plans. Fittings shall be of the best quality malleable iron castings or pressed steel and provided with pin connections, and shall be galvanized in accordance with appropriate ASTM A-123 and powder coated per this specification. Malleable iron fittings shall be galvanized in accordance with ASTM A-338 and powder coated per this specification.

Surface Coatings: All posts, rails, and fittings shall be powder coated with either polyvinyl chloride (PVC) or TGIC-Polyester, with the exception of nuts and bolts that shall be sprayed with powder coat touch-up after installation.

Galvanizing of all components shall provide an acceptable substrate for applied powder coatings. No lacquer, urethane, or other coatings, which would prevent proper adhesion of powder coating, shall be applied to the pipe.

The powder coating shall be applied to the galvanized surfaces in such a manner that the coating will not peel off. Insure surfaces to be coated are clean and dry and free of grease, dust, rust, etc. All coated parts shall first receive phosphating and chromatizing treatments to improve the adhesion of the surface coating. Color to be black unless otherwise indicated on the plans.

The entire installation shall be coated with one of the two following types of powder coating with the exception of fabric which shall always be PVC coated. All Fence components shall be coated on all surfaces, in a color to match the framework. All coated surfaces shall comply with the adhesion specifications listed in ASTM F1043.

TGIC-Polyester Powder-Coating: TGIC-Polyester Powder shall be applied to the galvanized steel or iron in such a manner that the coating will not peel off. The TGIC-Polyester shall be applied at a film thickness of 3 to 6 mils by electrostatic spray process and bake finished per manufacturer's directions. The TGIC-Polyester 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.

Field Test For PVC Powder-Coating: As per ASTM F668, three (3) sample sections of the PVC powder- coated framework shall be tested for bonding of the powder coat to the metal. Each test will consist of approximately. making two (2) cuts parallel to the axis of the pipe or fitting through the coating. One-sixteenth inch (1/16" or 1.6 mm) apart, at least one-half inch (1/2" or

12.7 mm) long. With a knife, peel back a section of the coating between one-eighth inch (1/8" or 3.2 mm) and one-quarter inch (1/4" or 6.4 mm) long to produce a tab. Attempt to remove the one-sixteenth inch (1/16") strip of coating by pulling the tab. The fence shall be deemed acceptable if the coating breaks rather than separates from the metal on all three (3) samples.

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

Touch-up and Repair: For minor damaged caused by installation or transportation and field welded metal powder coated surfaces, clean welds, bolted connections, and abraded areas, then:

1. On damaged galvanized surfaces, apply organic zinc repair paint complying with ASTM A780, then repair powder coating per number 2 below. Galvanizing repair paint shall have 65 percent zinc by weight. Thickness of repair paint shall be not less than that required by ASTM A123.

2. On damaged powder-coated surfaces, touch-up finish in conformance with manufacturer's recommendations. Provide touch-up paint such that repairs are not visible from a distance of (6') six feet.

Fabric: shall be hot dip galvanized steel wire mesh in accordance with ASTM - 641 Fabric will have a thermally fused polyvinyl chloride powder coating of 7 to 12 mils thick as per ASTM F668 class 2b. Color to match framework. Fabric shall be produced by methods recognized as good commercial practices. Core wire tensile strength shall be 537791 Kilopascals (78,000 psi).

Wire used for the manufacture of fabric shall meet the requirements of ASTM F668 and shall be capable of being woven into fabric without the PVC coating cracking or peeling. PVC coating shall be a dense impervious covering free of voids. Excessive roughness, bubbles, blisters, bruises and flaking will be a basis for rejection. PVC shall be thermally fused. Bonded or extruded and glued surface coating will not be permitted. Fabric shall be stretched to provide a smooth, taut, uniform appearance free from sag.

Field Test: PVC coating on fabric shall be field-tested for adherence to the metal as outlined elsewhere in this specification. Tensile strength shall have a test minimum of 22753 Kilopascals (3300 psi) in accordance with ASTM D-412.

Mesh Sizes: Fabric shall be woven diamond mesh openings determined by taking the mean of two dimensions at right angles to each other. Size shall be 50mm (2 inches).

Fabric Thickness: Wire for side and ends shall have an uncoated wire dimension of 5mm (.192 inches) in diameter. Zinc coating shall be 12ml (0.40 ounces) per 300 square mm (square foot) of wire surfaces. Vinyl coating shall be not less than 6mm (.022 inches). Total diameter of wire to be not less than 6mm (.236 inches.)

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Wire for top shall be 4mm (.148 in) in diameter. Zinc coating shall be 0.40 ounces per square foot of wire surfaces. Vinyl coating shall not be less than 6mm (.022 inches.) Total diameter of wire to be not less than 5 mm (.192 inches.)

Tension Bands: Tension bands shall be 3mm (1/8") x 25m (m1") pressed steel.

Tension Bars: Tension bars shall be 6mm (1/4") x 19mm (3/4") galvanized steel.

TIES: Tie-wire core thickness shall be 9 gauge (.148") wrought aluminum alloy 1100-H16 wire with an extruded vinyl coating in accordance with ASTM A641 Class 3. PVC shall be applied to a film thickness of 20 to 22 mils. Ties shall be spaced fifteen (15) inches apart on rails and twelve (12) inches apart on posts. The ends of ties shall be wound in a telegraph twist two and one half turns. Color to match mesh. Contractor shall touch-up PVC coating on ties damaged as result of installation.

Fittings: Single steel clamps shall be one-quarter inch (1/4") by one-half inch (1/2") galvanized steel with one-half inch (1/2") pins. Double steel clamps shall be one-quarter inch (1/4") by one-half inch (1-1/2") galvanized steel with one-half inch (1/2") pins.

Elbows: Welded galvanized pipe elbows consist of standard weight 76mm (3") .D. galvanized steel pipe, with ends cut and welded in such a manner as to properly receive the 64mm (2 1/2") pipe hood framework rails, as indicated on the plans. For the two side elbows, a plug consisting of 50mm (2") O.D. galvanized pipe and approximately 180mm (7") in length, is slipped into the elbow and has a flat steel cap welded to its end. A 10mm (3/8") thick lug with drilled hole is then welded to the cap, allowing a malleable iron pipe end to be attached to the elbow. The elbows and plugs are attached to the pipe rails by means of pin connections. For the center elbow, the plug-cap-lug welded piece is to be omitted. All welds shall be ground smooth, and shall be galvanized after fabrication.

Malleable Iron Pipe Ends: Malleable iron pipe end shall be 10mm (3/8") thick malleable iron.

Post Caps: Shall be malleable iron with 5mm (3/16") wall thickness throughout. Cap shall fit tightly over post and shall be fixed in place with two #14 stainless steel drive or setscrews.

Fasteners: All fastenings shall be as indicated on the plans and the Contractor shall furnish and install all required bolts, drive and machine screws, pins, rivets and other fastenings necessary to complete the work, whether specifically indicated on the plans, or not. All pins shall be 13mm (1/2") diameter with counter-sunk heads and upset ends. All hex heads bolts are to be 13mm (1/2") diameter; carriage bolts are to be 10mm (3/8") diameter. All bolts are to be supplied with appropriate lock washers and nuts. Bolts, nuts, and pins shall be hot-dipped galvanized steel; drive and set screws shall be stainless steel 18-8.

Nuts and bolts shall be galvanized but not powder coated. Cans of TGIC-Polyester or PVC touch-up powder coating shall be used to paint the nuts and bolts per manufacturer's recommendations. The ends of all bolts shall be peened after tightening. Bolts which are installed 1830mm (6') or less above grade shall not protrude more than 6mm (1/4") beyond the nut after tightening. All rough edges resulting from the cutting of bolts to achieve this requirement shall be filed smooth to the satisfaction of the Engineer.

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Backstop shall consist of a frame constructed of standard weight galvanized and powder coated pipe and rails, except for the 10mm (4") O.D. posts, which shall be double extra strong.

The side and back of the baseball backstop and chain link fence consists of a framework of vertical galvanized and powder coated steel posts set in a concrete pier, and horizontal galvanized and powder coated steel pipe rails, of varying sizes and outer diameters as specified in the detail sheets. The rails are connected to the posts with either single steel clamps or double steel clamps, and malleable iron pipe ends with appropriate fastenings. Chain link fabric, consisting of 50mm (2") vinyl-clad galvanized steel wire mesh, tension bars, tension bands, tie wires, and attendant fastenings, is stretched tightly over each frame section and attached to the frame.

Backstop Hood consists of a series of galvanized and powder coated steel pipe rails, of varying lengths and O.D.'s as specified in the detail sheets, and placed either vertically, horizontally, or on angles. The rails form the main food frame, hood modification, and hood bracing, as shown in the detail sheets, and are fastened together with either single steel clamps or double steel clamps, together with malleable iron pipe ends, or welded pipe elbows. The fastenings connect fittings and steel clamps to the rails and to each other. Once the hood framework, modification and bracing is constructed, 50mm (2") chain link fabric, consisting of vinyl-coated galvanized steel wire, is cut to fit each hood section and fastened to the frame by means of tension bands, tension bars, tie wires, and attendant fastenings.

Concrete for Curb: All of the provisions of NYSDOT Standard Specifications Section 555 shall apply.

Steel Bar Reinforcement for Curb: All of the provisions of NYSDOT Standard Specifications Section 556 shall apply.

Fence Framework: One piece of each pipe size, 300mm (12") long.
Fence Fabric: One-piece 300mm (12") square.

Installation on Curb: The curb shall be constructed of footing concrete and steel bar reinforcement as shown on the detail sheets. The curb shall have holes formed in it, each being 50 mm (2") larger in diameter than the pipe post, which shall be set in them.

Installation of Posts: The backstop and chain link fence frame posts shall be set in holes, which shall have been formed in the concrete piers to receive them and shall be firmly grouted in place using a mortar or grout composed of one (1) part Portland cement and two (2) parts sand or approved equal. The posts shall be erected vertical.

CONSTRUCTION DETAILS

The Contractor shall verify the quantity, location, and details of each backstop with the Engineer, in consultation with the Regional Landscape Architect or designee, prior to construction.
All submittals shall be submitted prior to manufacture and in accordance with the requirements of the NYSDOT specifications.

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Shop Drawings: Before the work in the shop is started, the Contractor shall submit Shop Drawings for approval, including complete details of installation and construction of the hooded backstop, concrete curb and chain link fence extensions.

Samples: The Contractor shall submit the following for approval:
Fence Framework: One piece of each pipe size, 300mm (12") long.
Fence Fabric: One piece 300mm (12") square.

Installation on Curb: The curb shall be constructed of footing concrete and steel bar reinforcement as shown on the detail sheets. The curb shall have holes formed in it, each being 50 mm (2") larger in diameter than the pipe post which shall be set in them.

Installation of Posts: The backstop and chain link fence frame posts shall be set in holes, which shall have been formed in the concrete piers to receive them and shall be firmly grouted in place using a mortar or grout composed of one (1) part Portland cement and two (2) parts sand or approved equal. The posts shall be erected vertical.

METHOD OF MEASUREMENT

This work will be measured as the number of BACKSTOP ON CONCRETE CURB WITH CHAIN LINK FENCE EXTENSIONS satisfactorily furnished and installed.

BASIS OF PAYMENT

The unit price bid shall include the cost of furnishing all labor, materials, and equipment necessary to satisfactorily complete the work.