

Item 11607.7301M – Galvanized Powder Coated Steel Diamond Mesh Fence 2.44M High

Item 11607.7302M – Galvanized Powder Coated Single Steel Diamond Mesh Gate 2.44M High, 1.22M Opening

Item 11607.7303M – Galvanized Powder Coated Double Steel Diamond Mesh Gate 2.44M High, 2.44M Opening

DESCRIPTION: This work shall consist of furnishing and erecting GALVANIZED POWDER COATED STEEL FENCES and GATES of the types and sizes shown in the Contract Documents and directions of the Engineer.

MATERIALS: Materials for this work shall meet the requirements of the New York State Steel Construction Manual and the following subsections of NYSDOT Standard Specification Section 700 – Materials:

701-05 Concrete Grouting Material.

715-01 Structural Steel: Certified copies of the results of tests conducted by the manufacturer shall be furnished to the Engineer in accordance with this specification.

715-02 Steel Castings.

715-05 Iron Castings.

715-02 Steel Forgings.

715-09 Malleable Iron Castings.

715-14 High Strength Bolts, Nuts and Washers.

719-01 Galvanized Coatings and Repair Methods.

721-03 Epoxy Polysulfide Grout.

Additional materials needed include the following:

LOCK BOLT: The lock bolt shall be a drop rod bar arranged to engage the gate stop and shall include a locking device that will prevent the drop rod from being raised when the gate is locked. The locking bolt catch hardware shall be constructed as shown on the drawings. The locking device shall have provisions for a padlock.

GATE STOP: The gate stop shall be as shown on the drawings.

GATE LATCH: The gate latch shall be a lockable stirrup type. The latch shall be constructed of steel bars and blocks with a stainless steel pin as shown on the drawings. The ends of stirrups shall be treated with a heavy – duty flexible, rubberized coating.

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PADLOCK: The Contractor shall furnish one padlock for each single gate and each leaf of double gates. All padlocks shall be keyed alike with a master key, with 50mm wide by 19mm thick brass body, maximum security, five (5) pin tumblers with hardened alloy steel chrome plated shackle no less than 9.5mm diameter and 50mm clearance (elongated shackle). A galvanized steel chain, 228mm long shall be fastened to the gate and body of the lock. The chain shall be 8mm by 35mm.

CONSTRUCTION DETAILS:

FABRICATION: Fences and Gates shall be fabricated in strict accordance with the plans and approved shop drawings. Diamond mesh expanded plates, casting, frame, posts, and rails shall be formed into panels of the sizes and shapes shown on the plans and joints completely welded with welds of proper size and shape; all welds ground smooth to a neat finish. Connection shall be proved as indicated on the plans. Welding shall conform to the requirements of the D1.1 Structural Steel Welding Code of the American Welding Society (AWS).

1. The Contractor shall submit finished sample fence parts to the Engineer for approval. The workmanship and finish of the final product shall be equal to the approval samples.
2. Posts shall be truly vertical (plumb). Rails shall be parallel to grade unless specifically shown otherwise in the Construction
3. Do not install bent, bowed, or otherwise damaged panels. Damaged panels and/or components shall be removed and replaced.
4. Touch-up damaged finish with paint supplied by approved manufacturer and match original coating.

GALVANIZATION AND POWDER COATING: All components of the fencing including Diamond mesh expanded plates, casting, frame, posts, and rails shall be hot dipped galvanized in accordance with the provisions of the NYSDOT Standard Specifications with the following, additional criteria:

- Hot-dipped galvanized components shall not receive a water quench or chromate quench.
- All drainage spikes and surface defects shall be removed.

Galvanized components shall not be left outside, shall not be allowed to get wet, and shall not be transported uncovered - diesel fumes will contaminate the surface. If surface contamination has occurred or is suspected, the galvanizing shall be cleaned with a proprietary solvent/detergent designed for pre-cleaning prior to powdercoating and rinsed with clean fresh water. Powder coating shall occur within 24 hours of galvanizing.

All galvanized surfaces will be given thermo-setting polyester powder finish using DEGASSING GRADE POLYESTER POWDER ONLY for extra protection and added aesthetic appeal. The

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coating shall be lead free and without solvents. The final color shall be as approved by the Engineer.

The Powder Coating Process

The Powder coating process shall consist of the following steps unless directed otherwise by the Engineer:

- The material shall be suspended on Transport Beams
- The material shall be alkaline cleaned and then rinsed
- The material shall be pickled in a bath with inhibited phosphoric acid and then rinsed.
- An active anti-corrosive layer of zinc phosphate shall be applied and rinsed
- The material shall be rinsed with e-ionized water to remove any remaining salts which can cause osmosis.
- All material shall be preheated in an oven to assist bringing heavier components up to temperature to assist in avoidance of pinholing during powder cure.
- The powder shall be charged to 80000 volts and then sprayed onto the grounded steel
- The material shall then be heated to a temperature between 180°-200° C and held for a sufficient amount of time, in accordance with the powder manufacturer's specifications, to ensure that sufficient stoving time is allowed to meet the curing specifications of the powder.
- The final product shall be inspected and tested by NYSDOT designated inspectors.
- Check for correct cure by solvent testing.
- Adjust pre-heating and line speed to ensure full cure.

The approved product shall be carefully packed to prevent damages during shipping and unapproved product shall be removed at the Contractor's expense.

INSTALLATION: The Contractor shall form or drill post holes in concrete or stone footings, curbs, or walls in the approved locations and as required by the Contract Documents. The Contractor shall support each fence or gate post in a manner that will keep it plumb, smoothly aligned with the other posts, and at the elevation required by the Contract Documents. The space surrounding each post shall be filled to the depth shown in the details with 701-05 concrete grouting material. After the concrete grout has hardened, 721-03 epoxy polysulfide grout shall be tooled in to fill the remaining space, seal the post hole from water entry, and form a 6 mm high slope away from the post. Application of both grouts shall be in strict accordance with the manufacturer's instructions.

Fence and gate rails shall be set at slopes conforming to the slope of the finished grade beneath the fence or gate unless specifically shown otherwise in the Contract Documents or ordered otherwise by the Engineer. Fences and gates not set plumb and true to line and grade shall be removed and replaced at no cost to the State.

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CONTRACTOR’S LIABILITY: If the Contractor damages or defaces any existing or newly installed pavements, structures or plants in the process of carrying out this work, the Contractor shall repair or replace the damaged object at no cost to the State as required by the Engineer. All metal scraps, and metal fillings shall be removed from the site before the work will be accepted.

SUBMITTALS: Shop Drawings shall be submitted to the Engineer in accordance with the requirements of the NYSDOT Steel Construction Manual (S.C.M.). The Contractor shall also submit finished sample parts of the fences for the approval of the Engineer. The workmanship and finish of the final product shall be equal to the approved samples.

METHOD OF MEASUREMENT: The work will be measured for payment as the number of linear meters of 2.44 M HIGH GALVANIZED POWDER COATED STEEL DIAMOND MESH FENCE satisfactorily installed.

The work will be measured for payment as the number of GALVANIZED POWDER COATED STEEL DIAMOND MESH GATES of each size satisfactorily furnished and installed.

BASIS OF PAYMENT: The unit price bid for GALVANIZED POWDER COATED STEEL DIAMOND MESH FENCE and GATES shall include the cost of all labor, material and equipment necessary to satisfactorily perform the work.

Concrete and excavation shall be paid for separately under the respective Items.