System SECURITE

PART I - GENERAL

1.01 SCOPE OF THE WORKS:

Works described in this section are the supply, the labor, the transportation, the installation, and the guarantee for the installation of the fence, the gates and the accessories.

1.02 RELATED WORKS (Sections to consult)

A. Section 02200 - Landscaping.
B. Section 02500 - Paving and surface
C. Section 03000 - Concrete work.
D. Section 04200 - Masonry.

1.03 REFERENCES

American Society for Testing and Materials (ASTM), Fifth edition.

A 446 (1987)	Standard Specification for Steel Sheet, Zinc Coated (Galvanized) by the Hot-Dip Process, Structural (physical) Quality.
A500 (1993)	Standard Specification for Cold formed welded and seamless carbon steel structural tubing in round shapes.
A 641 (1989)	Standard Specification for Zinc-Coated (Galvanized) Carbon Steel Wire.
B 6 (1987)	Standard Specification for Zinc
B 117 (1990)	Standard Test Method of Salt Spray (Fog) Testing.
B 221 (1995)	Standard Specification for Aluminum and aluminum-alloy extruded bars, rods, wire, shapes and tubes.
D 2247 (1988)	Standard Practice for Testing Water Resistance of Coatings in 100% Relative Humidity.
D 2794 (1990)	Standard Test Method for Resistance of Organic Coatings to the Effects of Rapid Deformation (Impact).
D 3359 (1990)	Standard Test Methods for Measuring Adhesion by Tape.
F 900 (1984)	Standard Specification for industrial and commercial swing gates.
F 934 (1989)	Standard Specification for Standard Colors for Polymer-Coated Chain Link Fence Materials.
F 1184 (1988)	Standard Specification for industrial and commercial horizontal slide gates.
F 1234 (1989)	Standard Specification for protection coatings on steel framework for fences.

1.04 DOCUMENTS REQUIRED

A. Shop drawings accordings to section 01300 (five copies).
Supply a clear description on the drawings of each components, dimensions, accessories and anchors.

B. Installation procedures and instructions by manufacturer describing all details for a typical fence and gates.

PART II - THE PRODUCT

2.01 MANUFACTURER:

A. MFR Manufacturing Corp, Inc., 1065 Sill Ave, 60506, Tel: 815-552-3333, Fax 815-552-3315, Website www.mfrcorp.com, e-mail info@mfrcorp.com

2.02 COATINGS

A. Zinc coating :

1. The wire meshes shall be coated with 150 g/m^2 (0.5 on./$ft.^2$) zinc in conformity with ASTM A 641 (1989), Class I.

2. The posts shall be pre-coated with a 275 g/m^2 (0.9 on./$ft.^2$) zinc in conformity with ASTM A 446 (1987) Grade A, with a G90 coating.
Gate Frames and gate posts shall be coated with a minimum of 550 g/m^2 (1.8 on./$ft.^2$) of zinc.

B. The polyester surface coating shall be black green white or any optional color required. Polyester coating to be a minimum 4 mils applied by an electrostatic method. Coating shall cover all surfaces of the wire and post sections. Coating shall be capable of withstanding the following tests:

1. Mechanical adhesion test as per ASTMD 3359 (1990) - Method B.
2. Shock resistance tests as per ASTM D 2794 (1990).
3. Salt spray testing with a minimum of 1,200 hours without red rust appearance, as per ASTM B 117 (1990).
4. Humidity resistance in a weatherometer chamber as per ASTM D 2247 (1988).

2.03 MATERIALS

2.03.1 FENCE AND ACCESSORIES

A. Height shall be: 1220mm (4 ft.), 1525mm (5 ft.), 1830mm (6 ft.), or 2450mm (8 ft.) or a multiple of panels.

B. Mesh sections: the wire mesh panels shall be 2356 mm (92 ¾ in. or ± ¼ in.) wide, manufactured with 5 gauge pre-galvanized steel wire forming rectangles of 76 mm x 12 mm (3 in. x 1/2 in.). Panels shall have a number of folds according to table 1 depending on the respective height of the section. Wire shall be 6 gauge, 4 mm (0.18") o.d., with a 0.5 ounce per square foot (150g/m2) zinc coating applied conforming to the ASTM A 641 (1989) Class 1. Wire shall have a 13400 kg/cm^2 (75,000 lb/po^2) tensile strength and a 985 kg (2,172 lb.) break strength. The exterior surface shall have a 4 mil polyester coating, applied after fabrication. The vertical wires of the mesh shall exceed 25 mm (1 in.) from the last or first horizontal wire thereby creating a spiked top or bottom depending of its position when installed.

[Note to the spec-writer: *Select the desired post model and delete the reference to the other.*]

C. The profiled posts shall be made of 19 gauge cold-rolled pre-galvanized steel with 275 g/m^2 (0.9 ounce/ft.^{2}) coating of zinc, conforming to ASTM A 446 (1987) - Grade A G90. The shape of the post, as seen from one end, has the same shape as the Greek letter . The 90° attachment bracket and the SPF bracket with plates made of pre-galvanized steel of gauge 16 and 12 are designed to attach the panels on masonry wall or other types.

D. Square post shall be made of hot-dip galvanized steel of gauge cold rolled in conformity with ASTM B 6 (1987) High Grade and special High Grade Zinc.

POST PERFORMANCE SELECTION CHART

	Maximum Horizontal Load (lbs) at			
Typical available posts	**4'**	**5'**	**6'**	**8'**
Steel Profile Post	388	312	261	194
Aluminum Security Post	698	561	469	349

E. Gate posts shall be made of hot-dip galvanized steel in dimension of : 50 mm X 50 mm (2 in. X 2 in.); 76 mm X 76 mm (3 in. X 3 in.); 102 mm X 102 mm (4 in. X 4 in.); 152 mm X 152 mm (6 in. X 6 in.), corresponding with the gate dimensions. Post conformity with ASTM B 6 (1987) High Grade and Special High Grade Zinc. The lenth of the posts are minimum 840 mm (33 po.) more than the actuel height of the fence for installation in the ground. Panels are attached to gate posts using a 90° attachment bracket or SPF bracket with plates.

F. Tensioning device for profile post: made of polyester plastic.

G. Post caps made of : Polyester plastic for the profile post

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H. Gate hardware : Hinges, latches, drop rods, as needed shall be hot-dip galvanized steel, and sized to assure proper gate operation. It shall be polyester powder coated.

I. Concrete: mixture to achieve minimum compression of 3000 p.s.i. (25 Mpa) at 28 days. To contain " coarse aggregate " of a minimum diameter of 5 mm (1/5 in.) to a maximum of 20 mm (3/4 in.). A 5% to 7% air sweep or according to recommendation of section 03000.

2.03.2 SWING GATES :

A. Gate frames: swing gates shall be made in accordance with ASTM F900 (1984) using galvanized square steel tube 50 mm X 50 mm (2 in. X 2 in.) vertical and horizontal parts shall be welded at intersections to create a rigid frame.

B. Mesh section: (see article 2.03.1B).

C. Gate hardware : in conformity with ASTM F900 (1984) for Hinges, latchs, drops rods, shall be hot-dip galvanized steel, and sized to assure proper gate operation. Non moving parts shall be powder coated.

D. Hinge: structurally design to support all gates without deformation during opening and closing.

E. Latch: Clamp-on gravety system that is self latching.

F. Keeper : provide keeper for each gate leaf over 5 feet (1524 mm) wide. Gate keeper consist of mechanical device for securing free of gate when in full open position.

G. Double gates: Provide drop rod to secure in clised position one of the gate. Provide gate stop pipe to engage center drop rod. Provide locking device and padlock eyes as an integral part of latch, requiring one padlock for locking both gate leaves.

H. Gate Posts: Gate posts shall be hot-dipped galvanized steel square sections in conformity to ASTM B-6 (1987). The steel shall meet the requirements of hot-rolled structural quality steel with a 45,000 psi (310 MPa) tensile strength, in conforming with ASTM A-500 (1993). The size of the posts shall be as shown below for the various gate dimensions :

Gate leaf single width	**Square pipe size**
2440 mm (8 ft.) or less	76 mm X 76 mm (3 in. X 3 in.)
2441 mm (8 ft.) to 4876 mm (16 ft.)	101.6 mm by 101.6 mm (4 in. par 4 in.)
4876 mm (16 pi.) and more are custom	Custom by manufaturer

I. Polyester powder coating : (see article 2.02 B).

J. Concrete: (Voir article 2.03.1-I).

2.03.3 CANTILIVER SLIDE GATE

A. cantilever slide gates shall be fabricated in accordance with ASTM F1184, Class 2, using 50 mm (2 in.) square aluminum members, ASTM B221, alloy and temper 6063-T6, weighing 1.39 kg/m (0.94 lb/ft). Members shall be welded together forming a rigid one-piece frame integral with top track. Provide 2 track and wheel assemblies for each gate leaf, except as indicated for gates larger than 9144 mm (30 feet). Gates over 8230 mm (27 feet) in single opening shall be shipped in 2 parts and field spliced with special attachments provided by manufacturer. Vertical uprights: 50 mm X 50 mm (2 in. X 2 in.) shall be made of aluminum welded to the gate frame, at approximately 2440mm (8 ft.) apart and dividing the frame into equal sections.

Gate leaf single width	**Cantilever support (overhang)**
1830 mm (6 ft.) to 3040 mm (10 ft.)	1980 mm (6.5 ft.)
3350 mm (11 ft.) to 4270 mm (14 ft.)	2290 mm (7.5 ft.)
4570 mm (15 ft.) to 6710 mm (22 ft.)	3040 mm (10 ft.)

For gate leaf sizes 7010mm (23 ft.) to 9140mm (30ft.), weld an additional 50 mm (2 in.) square lateral support shall be welded to top horizontal rail. Bottom rail shall consist of 50mm X 100mm (2 in. X 4 in.) aluminum member weighing 1.71 lb/ft (2.54 kg/m).

Gate leaf single width	**Cantilever support (overhang)**
7010 mm (23 ft.) to 9010 mm (30 ft.)	3660 mm (12 ft.)

For gate leaf sizes 9450mm (31 feet) to 12190mm (40 feet), weld 2 top track/rails together forming a dual enclosed track. Provide 2 truck assemblies for each track for each gate leaf, total 4 truck assemblies. Bottom rail shall consist of 50mm X 100mm (2 in. X 4 in.) aluminum member weighing 2.54 kg/m (1.71 lb/ft).

Gate leaf single width	**Cantilever support (overhang)**
9450 mm (31 ft.) to 10670 mm (35 ft.)	4120 mm (13.5 ft.)
10970 mm (36 ft.) to 12190 mm (40 ft.)	4880 mm (16 ft.)

For gate leaf sizes 12500mm (41 ft.) to 15240mm (50 ft.), fabricate 610mm (24 in.) wide rigid box frame truss. Truss shall consist of dual side frames, constructed similar to standard single leaf gates, separated by square cross members and diagonal truss rod bridging. Dual side frames shall each contain top track/rail to provide support for truss from both sides. Provide 4 trucks for each track, total 8 for each gate leaf. Weld steel plate between top of support posts to maintain truck assemblies in alignment with tracks.

Gate leaf single width	**Cantilever support (overhang)**
12500 mm (41 ft.) à 15240 mm (50 ft.)	Custom made

2.03.4 SLIDING GATE

B. Mesh section: (see article 2.03.1B).

C. Bracing: Provide diagonal adjustable length truss rods, of 9.5mm (3/8 in.) galvanized steel, in each panel of gate frames.

D. Top Track/Rail: Enclosed, combination one-piece track and rail, aluminum extrusion with weight of 5.54 kg/m (3.72 lb/ft). Track to withstand reaction load of. 907 kg (2,000 lb) Track does not receive Polymer coating.

E. Truck Assembly: Swivel type, zinc die cast, with 4 sealed lubricant ballbearing rollers, 50mm (2 in.) in diameter by 14mm (9/16 in.)in width, and 2 side rolling wheels to ensure truck alignment in track. Mount trucks on post brackets using 22mm (7/8 in.) diameter ball bolts with 13mm (1/2 in.) shank. Design truck assembly to withstand same reaction load as trackTruck Assembly: Swivel type, zinc die cast, with 4 sealed lubricant ballbearing rollers, 50mm (2 in.) in diameter by 14mm (9/16 in.) in width, and 2 side rolling wheels to ensure truck alignment in track. Mount trucks on post brackets using 22mm (7/8 in.) diameter ball bolts with 13mm (1/2 in.) shank. Design truck assembly to withstand same reaction load as track.

F. Gate Hangers, Latches, Brackets, Guide Assemblies, and Stops: Malleable iron or steel, galvanized after fabrication. Provide positive latch with provisions for padlocking. These fittings do not receive Polymer coating.

G. Bottom Guide Wheel Assemblies: Each asembly shall consist of two 100mm (4 in.) diameter rubber wheels, straddling bottom horizontal gate rail, allowing adjustment to maintain gate frame plumb and in proper alignment. Attach one assembly to each guide post. These fittings do not receive Polymer coating.

H. Gate Posts: Gate posts shall be 76.2mm (3 in.) hot-dipped galvanized steel square sections weighing 10.8 kg/m (7.04 lb/ft.) Pipe shall have a minimum 1.8 ounce/ft zinc coating meeting ASTM F1234. The steel shall meet requirements of ASTM A500, Grade B with a minimum yeild strength of 40,000 psi. Provide 1 latch post and 2 support posts for single slide gate and 4 support posts for double slide gates.

I. Polyester powder coating : (see article 2.02 B).

J. Concrete: (Voir article 2.03.1-I).

PART III EXECUTION

3.01 GRADING

The ground shall be graded to an easy even slope all along the length of the area where the fence is to be installed.

3.02 FENCE INSTALLATION

A. Install the fence along the specified area. The fence shall be installed a distance of minimum of 30 mm (1-1/5 in.) and maximun of 50 mm (2 in.) above the ground surface. Post hole shall be a minimum of 200 mm (8 in.) in diameter and 1070 mm (42 in.) in depth.

B. Profile posts installation : Insert the first post vertically in quick-set concrete at its proper height. The post needs to be a minimum of 460 mm (18 in.) in concrete. Once the concrete is set the mesh section is then hooked on the post and held in place with 2 tensioning devices. The second post, placed in the hole pre-filled with concrete is then hooked onto the other side of the mesh sections. The end section is fixed with two tensioning devices and held until the concrete sets. The procedure continues until completed. Post spacing are 2416 mm (95-1/8 in.) c/c of the profile post.

C. Square posts installation 2 in. or 3 in.: Insert all the posts vertically at its proper height in concrete. Once the concrete is set, the mesh sections are installed with the attachment kits 2 in. or 3 in. at each folds. Post spacing are for 2 in. post 2464 mm (97 in.) c/c with a adjustment of ± 32 mm (1-1/4 in.) and for the 3 in. post 2490 mm (98 in.) c/c of the post with a adjustment of ± 32 mm (1-1/4 in.).

D. When any posts or wire mesh section is field cut or trimmed for fit, a zinc rich primer must be applied to the exposed ends, and after an Touch-up paint matching the proper color shall be used.

E. The mesh shall be installed according to owners instructions with the following options

1) Spikes up or down

2) Folds facing inside or outside.

3.03 GATE INSTALLATION :

A. Install gate posts in accordance with manufacturer's instructions.

B. Concrete Set Gate Posts: Drill holes in firm, undisturbed or compacted soil. Holes shall have a diameter 4 times greater than outside dimension of post, and depths approximately 152mm (6 in.) deeper than frost level. Excavate deeper as required for adequate support in soft and loose soils, and for posts with heavy lateral loads. Set post bottom 36 inches (914mm) below surface when in firm, undisturbed soil. Place concrete around posts in a continuous pour, tamp for consolidation. Trowel finish around post and slope to direct water away from posts. Check each post for vertical and top alignment, and maintain in position during placement and finishing operations.

C. Install gates perfectly horizontal and leveled (at junction).

D. Attach hardware by means which will prevent unauthorized removal.

E. Adjust hardware for smooth operation.