

SECTION 32 31 00 - ORNAMENTAL & CHAIN LINK FENCING

PART 1 - GENERAL

1.01 DESCRIPTION

- A. Furnish and install ornamental metal picket fencing and gates.  
1. The extent of ornamental fencing is shown on the drawings.

- ~~B. Furnish and install chain link fencing and gates.  
1. The extent of chain link fencing is shown on the drawings.  
2. Install privacy slats when opaque screening is required by municipality or Walgreens.~~

1.02 QUALITY ASSURANCE

- A. Ornamental Fencing:  
1. All ornamental fencing work to be performed by a single firm specializing in ornamental fences.  
2. All ornamental fence materials shall be manufactured by a single source.

- ~~B. Chain Link Fencing:  
1. All chain link fencing work to be performed by a single firm specializing in chain link fencing.  
2. All chain link fence materials shall be manufactured by a single source.  
3. Comply with the recommendations of the Chain Link Manufacturers Institute and ASTM F 668  
4. Install fencing in compliance with ASTM F 567.~~

1.03 WARRANTY

- A. Ornamental Fencing:  
1. Manufacturer's fifteen-(15) year warranty against material defects, cracking, peeling, blistering and workmanship.

PART II - PRODUCTS

2.01 ORNAMENTAL FENCING

- A. Manufacturers:
1. Ameristar Fence, P.O. Box 581000, Tulsa, OK 74158-1000, phone 918-835-0898, 800-321-8724.  
Ornamental Picket Fence, Aegis II™:  
Style: Majestic™ 3 rail.
  2. Monumental Iron Works, - by Master-Halco. 110 E. LaHabra Blvd. LaHabra, CA 90631, phone 1-800-MH-FENCE.  
Ornamental Picket Fence:  
Style: "Imperial B".
  3. Boundary Fence & Railing Systems, Inc., 131-02 Jamaica Ave., Richmond Hill, NY 11418, phone 718-847-3400.  
Ornamental Picket Fence:  
Style: "Royal"

4. Merchants Metals: 400 Sam Houston Pkwy. E., Houston, TX 77060, phone 1-866-888-5611.  
Ornamental Picket Fence:  
Style: Basic Guardsman™, “The Monroe”, 3 rail with pickets terminating in top rail.

B. Ornamental Picket Fence:

1. Pickets: Galvanized square tubular steel, complying with ASTM A-787.
  - a. Yield Strength: 45,000 psi (310 Mpa).
  - b. Zinc Coating: G-90 zinc 0.90 oz/ft<sup>2</sup>.
  - c. Size: ¾ inch, wall thickness 18-Ga.
  - d. Picket Spacing: 3-5/16 inches face to face.
2. Rails: Galvanized steel “U” channel, complying with ASTM A-653.
  - a. Yield Strength: 50,000 psi (344Mpa).
  - b. Zinc Coating: G-90 zinc 0.90 oz/ft<sup>2</sup>.
  - c. Size: 1-1/2 inch by 1-3/8 inch, wall thickness 11-Ga.
3. Posts: Galvanized square tubular steel, complying with ASTM A-787.
  - a. Yield Strength: 45,000 psi (310 Mpa).
  - b. Zinc Coating: G-90 zinc 0.90 oz/ft<sup>2</sup>. Note, posts must be galvanized on inside and outside surfaces.
  - c. Size: 2 inch square 14-Ga. min., 2.164 lbs./ft. intermediate posts, 4 inch square 12 Ga. min., 5.770 lbs./ft. corner and end posts.
  - d. Spacing: 8’ - 0” o.c. maximum.
4. Attachment: Use ¼ inch size #4 industrial drive rivets to attach pickets to rails and rails to posts.
5. Finish: All pickets, channels, posts fittings and accessories shall receive a baked on polyester resin based coating applied by electrostatic spray, 2.5 mils thick, color; black. Apply coating to individual components prior to assembly.
6. Post Tops: Flat style weather-tight ornamental closure cap, fitting over each post.

C. ~~Cantilever Slide Gates (at curb cuts):~~

- ~~1. Frames: Two 2 inch square aluminum members complying with ASTM B 221, alloy and temper 6063-T6 weighing 1.88 lbs./ft. Weld members together to form one piece frame integral with top track. Provide two truck assemblies for each gate leaf. Bottom rail shall be a 2” x 4” aluminum member weighing 1.71 lbs./ft.~~

Gate leaf openings over 15 ft wide, provide 1" x 2" Aluminum internal uprights in gate frame spaced 6' 2" max. face to face, subdividing frame into equal panels.

Gate leaf openings 25 ft. to 32 ft. weld two top track/rails together forming a dual enclosed track. Provide two truck assemblies for each track for each gate leaf (total 4 truck assemblies). Bottom rail shall be 2"x 4" aluminum member weighing 1.71 lbs./ft.

Gate leaf openings over 32 ft., consult manufacturer.

2. Gate Picket Infill: 11 Ga. aluminum "U" channel rails 1 3/8" wide x 1 1/2" deep. Pickets to be galvanized steel sized to match fence.

3. Bracing: Provide diagonal adjustable length truss rods of 3/8" galvanized steel in each panel of gate frame.

4. Top Track/Rail: Enclosed, combination one piece track and rail, aluminum extrusion weighing 3.72 lbs./ft. Track to withstand 2,000 lb. reaction load.

5. Truck Assembly: Swivel type, zinc die cast, with 4 sealed lubricated ball bearing rollers 2" in dia. x 9/16" width and 2 side rolling wheels to ensure truck alignment in track. Mount trucks on post brackets using 7/8" dia. ball bolts with 1/2" shank. Truck assembly to withstand same reaction load as track.

6. Gate hangers, latches brackets guide assemblies and stops: Malleable iron or steel, galvanized after fabrication. Provide positive latching with provisions for padlocking.

7. Bottom Guide Wheel Assembly: Provide two 4" dia. rubber wheels, straddling bottom horizontal gate rail, allowing adjustment to maintain gate frame plumb and properly aligned. Attach one assembly to each guidepost.

8. Gate Posts: 4" square galvanized steel weighing 5.77 lbs./ft. Provide 1 latch post and 2 support posts for single slide gates and 4 support posts for double slide gates.

9. Accessories: Pre assemble panels with ornamental accessories attached with industrial drive rivets to prevent removal and vandalism.

10. Finish: All components shall have galvanized interior and exterior surfaces and shall receive a baked on polyester resin based coating applied by electrostatic spray, 2.5 mils thick, color, black. Apply coating to individual components prior to assembly.

#### D. Swing Gates (pedestrian access)

1. Gate Frames:

a. ASTM A 283 square galvanized steel.

b. Tensile Strength: 45,000 psi, (310 Mpa).

c. Zinc Coating: G 90 zinc 0.90oz./ft.<sup>2</sup>.

- d. ~~Size: 2 inch min. vertical uprights with 13 Ga. wall thickness.~~
- e. ~~Weld members together using stainless steel welds to form rigid one piece unit (no substitutions).~~
- 2. ~~Ornamental Picket Infill: 11 Ga. hot rolled structural steel "U" channel rails 1 3/8" wide x 1 1/2" deep. Pickets to be galvanized steel sized to match fence. Punch rails to receive pickets, weld inside gate frame.~~
- 3. ~~Bracing: Provide diagonal adjustable length truss rods of 3/8" galvanized steel in each panel of gate frame.~~
- 4. ~~Hardware: Galvanized steel or malleable iron shapes to suite gate size.~~
- 5. ~~Hinges: Non lift off types, 180<sup>o</sup> swing, capable of supporting gate leaf and allow opening/closing without binding.~~
- 6. ~~Latch: Double sided captive drop leafs with padlock a provision that pivots down around each side of gatepost.~~
- 7. ~~Gate Posts: Square structural steel, ASTM A 787.~~
  - a. ~~Tensile Strength: 45,000 psi (310 Mpa).~~
  - b. ~~Zinc Coating: G 90 zinc 0.90oz. /ft.<sup>2</sup>.~~
  - c. ~~Size: provide 3 inch square (gates 3 ft. to 4 ft. wide), 4 inch square (gates 4 ft. to 8 ft. wide).~~
- 8. ~~Finish: All components shall have galvanized interior and exterior surfaces and shall receive a baked on polyester resin based coating applied by electrostatic spray, 2.5 mils thick, color; black. Apply coating to individual components prior to assembly.~~

## 2.02 CHAIN LINK FENCING

- A. ~~Fence Fabric:~~
  - 1. ~~Fabric: 9 gage (0.148") steel wires, 2" mesh with top selvages knuckled and bottom selvages twisted and barbed.~~
    - a. ~~Breaking strength: 1,290 lb minimum.~~
    - b. ~~Weight of metallic coating; 0.30 oz./ft.<sup>2</sup> minimum zinc or zinc 5% aluminum alloy coating.~~
  - 2. ~~Fabric Finish: Class 2a PVC coated steel chain link.~~
    - a. ~~PVC coating: 0.015 in. minimum thickness at any point, 0.025 in. maximum thickness at any point~~
    - b. ~~Color: Black.~~
- B. ~~Framing and Accessories:~~
  - 1. ~~Steel Framework, General: Galvanized steel, ASTM A 123.~~

- a. Pipe: Type 1 or Type 2 round galvanized pipe.
- b. Zinc Coating: ASTM A 90.
  - 1. Type 1 not less than 1.8 oz./ft<sup>2</sup>;
  - 2. Type 2 not less than 2 oz./ft<sup>2</sup>.
- 2. Terminal, Corner, Pull and Gate Posts: 2.375" dia. (nom. o.d.) pipe.
- 3. Rails and Post Braces: Not less than 1.66" dia. (nom. o.d.) pipe. Top rails in a continuous run shall not be less than 18 ft. long.
- 4. Intermediate Posts: Not less than 1.90" dia. (nom. o.d.) pipe spaced not exceeding 8' 0" o.c.
- 5. Gate Frames: Not less than 1.90" dia. (nom. o.d.) pipes with welded corners.
- 6. Post Tops: Weathertight ornamental closure caps, fitting over each post, provide caps with loop to receive top rails.
- 7. Tension Bars: Not less than  $\frac{3}{16}$ " x  $\frac{3}{4}$ " and not less than 2" shorter than normal height of fabric being attached. Provide one for each end and gatepost, two at each corner of pull post.
- 8. Tension Wire: 9-gage (0.148 in.) metallic coated core wire, breaking strength 1,290 lb, with class 2a PVC coating, color to match fence fabric.
- 9. Ties or Clips: Sufficient quantity and strength to support fabric, but not exceeding 15" intervals at posts nor 24" intervals at top rails. Tie wire shall be 11-gage galvanized steel wire, finish to match fabric.
- 10. Bands or Clips: ASTM F 626 galvanized steel in sufficient quantity to attach fabric and stretcher bars to all terminal posts at intervals not exceeding 15".
  - a. Tension bands shall be flat or beveled steel, min. thickness after galvanizing of 0.078", min. width of  $\frac{3}{4}$ " for posts 4" o.d. or less. Min. thickness after galvanizing of 0.108", min. width of  $\frac{7}{8}$ " for posts larger than 4" o.d.
  - b. Brace bands shall be flat or beveled steel, min. thickness after galvanizing of 0.108", min. width of  $\frac{3}{4}$ ". Attachment bolts shall be  $\frac{5}{16}$ " x 1  $\frac{1}{4}$ " galvanized carriage bolts with nuts.
- 11. Top Rail Couplings: Galvanized, 6" min. length.
- 12. Privacy Slats: Semi-rigid tubular PVC (polyvinyl chloride) or HDPE (high density polyethylene) inserts, with Ultraviolet inhibitors, installed vertically, each slat secured top or bottom with self locking track or continuous tubular insert. Winged inserts not acceptable.
  - Width: Slat shall be sized to fill the entire void between fence fabric links and block not less than 75% of the view through the fence fabric.
  - Tensile Strength: 3,700 psi.
  - Flexural strength: 12,000 psi.

~~Impact strength: 4.0 ft-lb./inch @ 23° C (73° F).~~

~~Acceptable styles: Hoover Fence Co. "Lock Top Slat", Privacy Link Co. "Lite Link~~

~~Slat", "Bottom Lock Slat", "Top Lock Slat" or equal.~~

~~Color: To be selected by Walgreens.~~

~~C. Gates:~~

~~1. Frames: Zinc coated conforming to ASTM F 1043 and/or ASTM F 1083. Coat welded joints in accordance with ASTM A 780. Install diagonal cross bracing to ensure rigidity.~~

~~2. Gate fabric shall match fence fabric.~~

~~3. Gate Hinges shall structurally support gate without sag, and allow gate to swing 180° without binding. Provide 1½ pair per leaf.~~

~~4. Gate Latches: Fork or plunger bar type for operation from either side of gate, with integral padlock eye. Single latch shall retain gate in closed position.~~

~~Double gate latches shall be a drop rod or plunger bar, designed to engage a gate stop. Both leaves to be locked with single padlock.~~

### PART III - EXECUTION

#### 3.01 INSTALLATION

A. Ornamental ~~& Chain Link~~ Fencing:

1. Terminal Posts (end, corner and gate): shall be set at beginning and end of each continuous length of fence or horizontal alignments.

2. Post Foundations: concrete, with hole diameters as shown, but not less than four times the largest cross section of post and hole bottom not less than 48" below finish grade. Crown concrete to shed water.

- a. Concrete: 3,000 psi at 28 days  
Portland Cement: ASTM C-150.  
Aggregates: ASTM C-33, 1" max. size.  
Water: Drinkable.  
Slump: 3"  
Air Entrainment: 2% to 4%.

b. Set bottom of posts 3" above bottom of hole.

3. Posts; set vertically, plumb and properly aligned and evenly spaced.

B. Ornamental Fencing:

1. Surface mount (wall mount) posts with mounting plates where indicated. Fasten with lag bolts and shields.

2. Align fence panels between posts; attach rail brackets to posts with ¼ inch bold and lock nut. Ensure that panels and posts remain plumb.

C. Chain Link Fencing:

- ~~1. Top Rails: Run continuously through post caps, support at each end to form continuous brace from end to end, provide expansion couplings as necessary.~~
- ~~2. Fence Fabric: Place on outside of enclosed area. Provide tension to remove slack and create a smooth uniform, sag free appearance. Secure to posts at intervals not exceeding 15" o.c. and to rails at intervals not exceeding 24" o.c. Install fabric bottom 4" above finished grade. Fabric shall be continuous between terminal posts.~~
- ~~3. Brace Assemblies: Install so posts are plumb when diagonal rod is under proper tension.~~
- ~~4. Stretcher Bars: Thread through or clamp to fabric at 4" o.c. and secure to posts with metal bands spaced 15" o.c. max.~~
- ~~5. Tie Wires: U shaped conforming to diameter of pipe to which attached. Firmly clasp pipe and fabric and twist ends 2 full turns. Bend wire ends to minimize hazard to persons/clothing.~~

3.02 GATES

- ~~A. Install gates plumb, level and secure for full opening without interference.~~
- ~~B. Attach hardware by means, which will prevent unauthorized removal.~~
- ~~C.A. Adjust hardware for smooth operation.~~

3.03 CLEANING

- A. Remove all debris and unused material from site.

END OF SECTION