

ARTICLE 20
CHAIN LINK FENCE

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The work specified in this ARTICLE consists of furnishing and erecting chain link fence in accordance with this Manual, and Section 02444 of the Chain Link Manufacturers Institute's Specifications. The placement of any fence shall not interfere with the clear sight distance of intersections or driveways. Driveway gates shall be positioned to allow the length of one standard size vehicle behind the right-of-way line.

Section	20.02	<u>MATERIALS</u>
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	20.02.01	<u>General</u>
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The fabric, posts, fastenings, fittings and other accessories for chain link fence shall meet the requirements of AASHTO M-181 with the following changes:

- A) ANSI/ASTM A-123 - Zinc (Hot Galvanized) Coatings of Products Fabricated from Rolled, Pressed, and Forged Steel Shapes, Plates, Bars and Strips.
- B) ANSI/ASTM F-567 - Installation of Chain-Link Fence.
- C) ASTM A-120 - Black and Hot-dipped Zinc-coated (Galvanized) Welded and Seamless Steel Pipe, for Ordinary Uses.
- D) ASTM C-94 - Ready-mixed Concrete.
- E) ASTM A-120 - Schedule 40 steel or SS-40 pipe, standard weight, welded joints permitted. Size and weight as specified.
- F) FS RR-F-191 - Type I: Zinc-coated steel.
Type IV(A): Extruded vinyl coated steel.
Type IV(B): Fusion bonded vinyl coated steel.

20.02.02 Concrete Mix

Concrete shall meet ASTM C-94 and be of normal sulphate resisting Portland Cement, 3,000 psi minimum at 28 days with a 3 inch slump, and ½ inch sized aggregate.

20.02.03 Framing Materials

	<u>Type I</u>	<u>Round</u>
<u>Framing Members</u>	<u>Size/in(O.D.)</u>	<u>Wt/plf</u>
A) End, Corner and Pull Posts		
12 ft and less	2.875	5.80
Over 12 ft	4.50	11.00
B) Line Posts (fabric height)	2.375	3.65
C) Rails and Braces (fabric heights)	1.660	2.27
This includes Horizontal brace, Top Rail, Center and Bottom Rail.		
D) Gate Posts (width of leaf)		
6 ft and less	2.875	5.80
Over 6 ft to 13 ft	4.50	11.0
Over 13 ft to 18 ft	6.625	19.0
Over 18 ft	Design to be approved and certified	
E) Gate Frame (size of leaf)		
8 ft high OR 8 ft wide	2.375	3.65
Over 8 ft high OR 10 ft wide	Design to be approved and certified	
Plus additional structural members	Design to be approved and certified	
Stretcher Bars	3/16"x3/4"	
Color coating shall be applied to match fabric		

20.02.04 Chain Link Fabric (Fences and Gates)

PVC Coated Galvanized Steel shall be of steel wire, conforming to ASTM A-641, a tensile strength 75,000 psi, galvanized (0.30 oz/sf), and coated as follows:

- A) Coating type I extruded polyvinyl chloride.
- B) Coating type II FUSION BONDED PVC of 7 mils.

The standard material shall be Standard Industrial 2 inch mesh, 9 gauge, 0.148 inch diameter, not including vinyl coating.

The color of fabric, gates, and posts shall be as approved by the City Engineer in either medium green, dark green, black, or brown, as applicable.

20.02.05 Manual Operating Gates

A) Fabrication

Gate frames shall be assembled by welding connections. The same fabric as for the fence shall be used unless otherwise specified. Fabric shall be installed with stretcher bars, or tie wires at the top and bottom if stretcher bars are not used. Stretcher bars shall be attached to the gate frame not more than 14 inches off center. Hardware shall be attached with rivets or by other means which provide security against removal or breakage.

- 1) For sections over 8 feet in height and 10 feet in width, horizontal and vertical members shall be provided to ensure proper gate operation and for attachment of fabric, hardware and accessories.
- 2) Diagonal cross-bracing consisting of 3/8 inch diameter adjustable truss rods on gates shall be used where four-sided tension rods are not used. Frame rigidity shall be achieved without sag or twist.

B) Gate hardware shall be galvanized per ASTM A-153.

- 1) Hinges shall be pressed steel or malleable iron to suit gate size, of non lift off type, and offset to permit 180° gate opening. One pair of hinges per leaf, up to 12 feet in height, shall be provided.
- 2) Latches shall be the forked type to permit operation from either side of gate. A padlock eye shall be provided as an integral part of the latch.
- 3) The keeper for the gates, which automatically engages the gate leaf and holds it in the open position until manually released, shall be provided.
- 4) For double gates, a drop rod to hold the inactive leaf shall be provided. A pipe to engage the center drop rod shall be provided in the pavement. Locking devices and padlock eyes shall be provided as an integral part of the latch thereby requiring one padlock for locking both gate leaves.

20.02.06 Accessories

- A) All items shall be galvanized to comply with ASTM A-153 (except tie wires) plus finished to match framing.
- B) Tension and tie wire
 - 1) Tension wire shall be 7 gauge galvanized wire.
 - 2) Fabric to line posts, rails and braces shall be 9 gauge minimum.
 - 3) Fabric to tension wire shall use 11 gauge hog rings.
- C) Post tops shall be pressed steel, or malleable iron, designed as a drive fit, weather tight closure cap on tubular posts. Where top rails are used, tops shall permit passage of the top rail.
- D) Stretcher bars shall be one piece lengths to full height of the fabric with a minimum cross section of $\frac{3}{16}$ inch x $\frac{3}{4}$ inch or equivalent fiberglass rod. Stretcher bars shall be provided for each gate, end, corner and pull post. Stretcher bar bands and clips shall be heavy pressed steel or malleable iron. At square posts, special design clips shall be provided.

Section 20.03 INSTALLATION

- A) Framework, fabric, accessories and gates shall be installed in accordance with ANSI/ASTM F-567.
- B) Fence shall be of the height and length indicated on the approved plans.
- C) Line posts intervals shall not exceed 10 feet.
- D) Terminal gate and posts shall be set plumb, in concrete footings with the top of the footing 2 inches below the finished grade. Slope top of concrete for water runoff. Excavate depth as required by ANSI/ASTM F-567.
- E) Top rail shall pass through line post tops and be spliced with 7 inch long rail sleeves.
- F) Each gate and corner post shall be braced back to the adjacent line post with horizontal center brace rails and diagonal truss rods. Brace rails shall be installed one bay from end and gate posts.
- G) Center and bottom brace rails shall be installed on corner and gate leaves.
- H) Fabric shall be stretched between terminal posts or at intervals of 100 feet maximum, whichever is less.
- I) The bottom of the fabric shall be positioned 2 inches above the finished grade.

- J) The fabric shall be fastened to the top rail, line posts, braces, and bottom tension wire with wire ties at a maximum of 15 inches on centers.
- K) The fabric shall be attached to the end, corner, and gate posts with tension bars and bar clips.
- L) The bottom tension wire shall be stretched taut between terminal posts.
- M) Gates with fabric overhang shall match fence. Three hinges per leaf, latch, catches, drop bolt, foot bolts and sockets, torsion spring retainer, and locking clamp shall be installed.
- N) Concrete center drop shall be installed to the depth of the foundation. Drop rod retainers shall be placed at the center of double gate openings.

Section 20.04 ELECTRICAL GROUNDS

Wherever a power line passes over the fence, a ground shall be installed directly below the point of crossing. The ground rod shall consist of an aluminum or galvanized rod, with connection of similar metal if required, or of other appropriate material, 8 feet in length and at least ½ inch in diameter. The rod shall be driven vertically until the top of the rod is approximately 6 inches below the ground surface. A No. 6 conductor shall be used to connect the rod and all fence elements. The conductor shall be connected to each fence element and the ground rod by means of electrical-type clamps which will prevent corrosion.

Section 20.05 DECORATIVE GATES

Where a Developer/Owner proposes decorative entry gates for a “Gated Community” for access control, all conditions required in the City’s LDC shall be met including the provisions for “Knox Box’ and/or ‘opticon’ control. The Knox Box and all associated appurtenances shall be as approved by the City of Ocoee Fire Department. All automated swing gates shall be installed to provide gate swing in the direction of the vehicular flow.