

CHAIN LINK FENCE AND GATES

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Fence Framework, fabric and accessories
- B. Gates and related hardware
- C. Installation of fences and gates including excavation and concrete anchorage
- D. Backstops, batting cage, and tennis court fencing
- E. Windscreens and practice boards associated with tennis court fencing

1.2 RELATED SECTIONS

- A. NONE

1.3 REFERENCES

- A. ASTM A153 – Standard specification for zinc-coating (hot-dip) on iron and steel hardware.
- B. ASTM A392 - Standard specification for zinc-coated steel chain-link fence fabric.
- C. CHAIN LINK FENCE MANUFACTURERS INSTITUTE (CLFMI) – Product manual. (current edition)
- D. ASTM F626 – Standard specification for fence fittings.
- E. ASTM F 1043 - Strength and protective coatings on metal industrial chain link fence framework.
- F. ASTM F900-5 -

1.4 SYSTEM DESCRIPTION

- A. Fence height: As shown on contract drawings.
- B. Backstops: See contract drawings for height and location.

1.5 SUBMITTALS

- A. Product Data:
 - 1. Provide data on fabric, posts and fittings.
 - 2. Contractor shall provide manufacturer's certification of compliance with material specifications for major components after material purchase.

1.6 QUALITY ASSURANCE

- A. Contractor shall possess a valid Nevada State Contractor's License with the proper designation and have a minimum of three (3) years' experience in the installation of chain link fencing.
- B. Perform work in accordance with CLFMI – Product Manual.
- C. Manufacturer: Company specializing in manufacturing the products specified in this section with minimum three (3) years' experience.

PART 2 PRODUCTS

2.1 MATERIALS

- A. Like items of materials provided hereafter shall be the end products in order to achieve standardization for appearance, maintenance, and replacement.
- B. Framework: Steel pipe conforming to standard specifications ASTM F1043 Group 1A (Schedule 40); external coatings per F1043 type A; internal coatings Type A; or high strength steel pipe triple coated per standard specification ASTM F1043 Group 1C (SS40 as manufactured by Allied Tube & Conduit or approved equal); external coating per F1043 Type B; Internal coating per F1043 Type D.
- C. All coatings to be applied after welding.
- D. Pipe shall be straight, true to section and confirm to the following weight:

TABLE 1

Pipe Size <u>Outside Diameter</u>	Group Schedule 40 IA <u>Weight Lbs./Ft.</u>	Group SS 40 IC <u>Weights Lbs./Ft.</u>
1-5/8"	2.27	1.84
1-7/8"	2.72	2.28
2-3/8"	3.65	3.12
2-7/8"	5.79	4.64
3-1/2"	7.58	5.71
4"	9.11	6.56
6-5/8"	18.97	Use Sch 40
8-5/8"	29	Use Sch 40

- E. Zinc coated fabric: Fabric to be 9 gauge-galvanized steel, ASTM A-392, class 1 (1.2oz. zinc) wires woven in a 2' diamond mesh, tennis court fencing shall include 1-3/4 inch diamond mesh). Top and bottom selvage to be knuckled unless otherwise noted.

2.2 CAGES, BACKSTOPS AND ATHLETIC COURTS

- A. Thirty-foot high fence or baseball backstop:
 - 1. 6-5/8 inch O.D. Sch 80 galvanized steel posts, 10 feet O.C.
 - 2. Concrete footings: See Table 2.
 - 3. Welded continuous top and mid rails, 1-5/8 inch O.D. galvanized steel pipe.
 - 4. 6 gauge galvanized steel, chain link fabric at lower than 10 feet, 1 piece wire, and 2 inch mesh.
 - 5. 9 gauge galvanized steel, chain link fabric above 10 feet, 1 piece wire, and 2 inch mesh.

6. Fabric tied to frame with 12 gauge galvanized steel ties, typical.

B. Fifteen foot high fence or softball backstop:

1. 4 inch O.D., galvanized steel posts, 10 feet O.C.
2. Concrete footings: See Footing Depth Table.
3. First row 8 feet, mid rail welded 1-5/8 inch, with 6 gauge one piece galvanized steel chain link fabric.
4. Second row 7 feet, top rail welded 1-5/8 inch with 9 gauge one piece galvanized steel chain link fabric.

C. Tennis Court:

1. 12 foot minimum height.
2. 4 inch O.D., galvanized steel posts at 10 foot O.C.
3. 4 inch O.D. galvanized steel pipe end, corner and pull posts.
4. Concrete footings: See Footing Depth Table.
5. 9 gauge galvanized steel chain link fabric, one piece, and 1-3/4 inch mesh. Fabric is to be on the inside (court side) of posts.
6. 1-5/8 inch galvanized steel, top, middle and bottom rail.
7. Gates shall have a fixed transom panel above, extended to the top of the adjacent fencing. Provide same frame and fabric as for fence. Gates shall swing out and not swing in over the tennis court.

D. Tennis Court Windscreen: As indicated on contract drawings.

1. Polypropylene open mesh, (90 percent mesh) 9' overall height.
2. Fibers used to manufacture fabric shall consist of UV resistant synthetic polypropylene systematically woven, Lathe-Leno method. They shall be formed into a stable network such that the filaments or yarns retain their dimensional stability to each other
3. Provide reinforced sewn hems with brass grommets at 12 inches O.C. at perimeter and centerline with brass grommets sewn on back of windscreen panel at 24 inches O.C. at row heights of 4 feet 6 inches.
4. Color as selected by Architect/Engineer from manufacturer's standard colors.

E. Tennis Court Practice Board:

1. 4' x 8' x 3/4" exterior grade Oriented Strand Board (OSB) with waterproof glue.
2. Install boards as located on contract drawings.
3. Paint all wood surfaces with one coat of primer and two coats of high gloss enamel.

F. Batting Cage:

1. Same as Tennis Court Fence (Para. C above).

2.3 COMPONENTS

A. Fence Posts:

Fabric Height	Line Post O.D.	Terminal Post O.D.
Up to 6'	1-7/8"	2-3/8"
> 6' to 8'	2-3/8"	2-7/8"
> 8' to 12'	3-1/2"*	4"

***Tennis court line post to be 4" O.D.**

B. Swing Gate Posts:

Single Gate Width	Double Gate Width *	Post O.D. *
Up to 6'	Up to 12'	2-7/8"
> 6' to 12'	13' to 24'	4"
> 12' to 18'	25' to 36'	6-5/8"
Over 18'	Over 36'	8-5/8"

***Increase one size if gate is 8' or taller, and two sizes if gate is 10' or taller.**

C. Rails and Braces: 1-5/8" O.D. galvanized steel O.D.

1. Top Rail: Manufacturer's longest lengths, with couplings, approximately 6 inches long, for each joint. Provide means for attaching rails securely to each gate, corner, pull and end post. 1.66-inch diameter high strength galvanized steel pipe.
2. Middle and Bottom Rail:
 - a. Fence up to and including 5' high will have top and bottom rails.
 - b. Fence over 5' to 12' high add mid rail.
 - c. Fence over 12' high add rails spaced no more than 5' O.C.

D. Gates:

1. Frame assembly of 1-7/8" galvanized steel O.D. pipe with welded joints. Weld areas repaired with zinc-rich coating applied per manufacturer's directions. Gate fabric to match fence fabric. Gate accessories, two hinges per gate panel (unless otherwise noted), latches, center stops, keepers, and necessary hardware of quality required for industrial and commercial application. Latches shall permit padlocking.
2. All personnel gates in fences taller than 7 feet shall have transoms.
3. Chain and lock: Provide a Master Lock (key code _ _ _ _) welded to 30 inches length of 3/8 inch chain welded to the gate frame at approximately the height of the latch. Weld shall not interfere with operation of latch.
4. Double Gate Hardware: Industrial latch pressed steel galvanized (Master Halco Part # 017202. Box industrial hinges malleable iron galvanized (Master Halco Part # 015751 – 015757) and 180° offset adapter (Master Halco Part # 015715).
5. Single Gate Hardware: Fork Latch assembly malleable iron galvanized (Master Halco Part # 106601 – 016609) galvanized (Master Halco Part # 015751 – 015757) and 180° offset adapter (Master Halco Part # 016609).

E. Fittings:

1. Post Caps: Hot dipped galvanized pressed steel or hot dipped galvanized cast iron designed to fit snugly over posts to exclude moisture. Supply dome style caps for terminal posts and loop type for line posts.
2. Rail and Brace Ends: Pressed steel or cast iron cup-shaped to receive tail and brace ends.
3. Tension Bars: Steel strip, 3/4 inch wide x 1/4 inch thick.
4. Tension and Brace Bands: Presses steel, 14 gauge thickness x 3/4 inch wide.
5. Truss Rods: Galvanized steel rod, 3/8-inch diameter with galvanized steel turnbuckle.
6. Tension wire: Marcellled 7 gauge steel wire with minimum coating of 0.80 ounces of zinc per square foot of wire surface.
7. Tire Wires: Steel, 12-gauge.
8. Hog Rings: Steel wire, 9-gauge, with a minimum zinc coating of .080 ounces per square foot of wire surface.

F. Plastic vision slats to be PDS brand or equal.

G. All materials available through Tiberti Fence Company 702-382-7070.

2.4 FINISHES

- A. Components: Galvanized to ASTM F626; 1.2 oz/sq ft coating.
- B. Fabric: Galvanized, ASTM A392, Class I with not less than 1.2 oz zinc per sq. ft. of surface.
- C. Hardware: Galvanized or zinc plated.
- D. Accessories: Same finish as hardware.

2.5 MIXES

- A. Concrete: IQAC approved mix using sulfate resistant Type V cement with a water cement ratio of .45 and a compressive strength of 4500 psi in 28 days.

PART 3 EXECUTION

3.1 INSTALLATION - FENCING

- A. General: Installation to conform to the following chart unless otherwise specified on the plans.

Post Diameter

Footing Diameter	$\frac{1\ 7/8''}{12''}$	$\frac{2\ 3/8''}{12''}$	$\frac{2\ 7/8''}{12''}$	$\frac{3\ 1/2''}{14''}$	$\frac{4''}{16''}$	$\frac{6\ 5/8''}{24''}$	$\frac{8\ 5/8''}{24''}$
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Height of Post

Footing Depth	$\frac{4'}{30''}$	$\frac{5'}{30''}$	$\frac{6'}{30''}$	$\frac{7'}{33''}$	$\frac{8'}{36''}$	$\frac{9'}{39''}$	$\frac{10'}{42''}$	$\frac{11'}{45''}$	$\frac{12'}{48''}$	$\frac{13'}{48''}$	$\frac{14'}{48''}$	$\frac{15'}{48''}$	$\frac{16'}{60''}$	$\frac{17'}{60''}$	$\frac{18'}{60''}$
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***All gate hinge and latch post footings shall be a minimum of 36" deep.**

- B. Install framework, fabric, accessories, and gates in accordance with approved shop drawings and contract drawings.
- C. Space line posts at intervals not exceeding 10 feet O.C., up to 12' heights.
- D. Set intermediate, terminal, and gate posts plumb, in concrete footings. Slope top of concrete for water runoff.
- E. Provide 8-inch diameter by 12-inch deep concrete footing for center and drop rod retainers at center of double gate openings.
- F. Brace each gate and corner post to adjacent line post with horizontal center brace rail and diagonal truss rods if shown on drawings.
- G. Provide top rail through line post tops and splice with rail sleeves.
- H. Adjust gates for proper operation, freedom of movement with no binding and lubricate hinges. All gates around tennis court shall swing outside of courts.
- I. Tack weld single gate fork latch assembly to prevent rotation. Tack weld all double gate drop rod clips to gate frame to prevent rotation.
- J. Do not attach gates to walls; provide gate posts adjacent to walls.
- K. All field welds are to be cleaned and painted with galvanized paint.

3.2 INSTALLATION – FABRIC

- A. Place fabric on outside posts and rails, except tennis courts and baseball backstops or otherwise noted.
- A. Do not stretch fabric until concrete foundation has cured.
- B. Stretch fabric between terminal posts to provide a taut fence.
- C. Position bottom of fabric 1-1/2" min. to 2" max. above finished grade. At tennis courts, position bottom of fabric one (1) inch above finished asphalt grade.
- D. Fasten fabric to rails, line posts and braces with tie wire and bottom tension wire with hog rings every 18" or as noted.
- E. Attach fabric to end, corner and gateposts with tension bars and tension bands.
- F. Install bottom tension wire stretched taut between terminal posts where shown on drawings.

3.3 INSTALLATION – ACCESSORIES

- A. Tennis Court Windscreens
 - 1. Secure tennis court windscreen to fence with 9 gauge galvanized steel hog ties at every grommet.
 - 2. Install windscreen per contract drawings.

3.4 ERECTION TOLERANCE

- A. Maximum Variation from Plumb: 1/4 inch.
- B. Maximum Offset from True Position: 1 inch.
- C. Components shall not infringe on adjacent property lines.

3.5 COMPLETION

- A. The area of installation shall be left free of debris caused by the installation of the fence.
- B. Clean dirt and debris from drop latch post holes.
- C. Remove cement from all fence and posts.