

SECTION 32 31 13

CHAIN LINK FENCES AND GATES

PART 1 – GENERAL

1.1 SUMMARY

- A. Fence framework, fabric, and accessories.
- B. Excavation for post bases; concrete foundation for posts.
- C. Manual gates and related hardware.
- D. Pipe gates and related hardware.
- E. Privacy Slats.

1.2 RELATED SECTIONS

- A. Division 32 – Concrete Paving: Concrete anchorage for posts.
- B. Division 01 Specifications.

1.3 REFERENCES

- A. ASTM A 116 - Standard Specification for Zinc-Coated (Galvanized) Steel Woven Wire Fence Fabric; 1995.
- B. ASTM A 123/A 123M - Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products; 2000.
- C. ASTM A 153/A 153M - Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware; 2000.
- D. ASTM A 392 - Standard Specification for Zinc-Coated Steel Chain-Link Fence Fabric; 1996.
- E. ASTM C 94/C 94M - Standard Specification for Ready-Mixed Concrete; 2000.
- F. ASTM F 567 - Standard Practice for Installation of Chain-Link Fence; 2000.
- G. ASTM 900 – Standards Specifications for Industrial and Commercial Swing Gates.
- H. ASTM F 1043 – Standard Specifications for Strength and Protective Coatings on Metal Industrial Chain Link Fence Framework.
- I. ASTM F 1083 - Standard Specification for Pipe, Steel, Hot-Dipped Zinc-Coated (Galvanized) Welded, for Fence Structures; 1997.
- J. CLFMI CLF 2445 - Product Manual; Chain Link Fence Manufacturers Institute; 1997.

1.4 SUBMITTALS

- A. Product Data: Provide data on fabric, posts, accessories, fittings and hardware.
- B. Shop Drawings: Spacing of components, post foundation dimensions, hardware anchorage, gate hardware and schedule of components.
- C. Manufacturer's Installation Instructions: Indicate installation requirements and recommended methods.

1.5 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Company specializing in manufacturing products specified in this section, with not less than five (5) years of documented experience.
- B. Installer's Qualifications: Installer specializing in the installation of products and work specified in the section with not less than five (5) years of documented experience.

1.6 WARRANTY

- A. Contractor shall warrant work as provided by the General and Supplementary Conditions and Division 01 Specifications.

PART 2 – PRODUCTS

2.1 MATERIALS

- A. General: Substitutions or equivalent products shall be in accordance with Division 01 Specifications.
- B. 14' Backstop Fencing:
 - 1. Posts, Rails, and Frames: ASTM F 1083 Schedule 80 steel pipe. Hot Dipped Galvanized.
 - 2. Wire Fabric: 2-inch mesh, 9 gauge, ASTM A 392 zinc coated steel chain link fabric with 1.2 oz. per square foot.
 - 3. Selvage edges: **Fabric shall be knuckled at top and bottom.**
 - 4. Concrete: Type specified in Division 32.
 - 5. Recycled plastic planking as shown on the drawings.
- C. 10', 6' & 4' Fencing:
 - 1. Posts, Rails, and Frames: ASTM F 1083 Schedule 40 steel pipe, 25 ksi; OR ASTM F 1043 IC SS40 steel pipe, 50 ksi. Standard Hot Dipped Galvanized.
 - 2. Wire Fabric: 2-inch mesh, 9 gauge, ASTM A 392 zinc coated steel chain link fabric with 1.2 oz. per square foot.
 - 3. Selvage edges: **Fabric shall be knuckled at top and bottom.**
 - 4. Concrete: Type specified in Division 32.
- D. 10' & 3' Tennis Court Fencing:
 - 1. Posts, Rails, and Frames: ASTM F 1083 Schedule 40 steel pipe, 25 ksi; OR ASTM F 1043 IC SS40 steel pipe, 50 ksi. Standard Hot Dipped Galvanized.
 - 2. Wire Fabric: 1.75-inch mesh, 9 gauge, ASTM A 392 zinc coated steel chain link fabric with 1.2 oz. per square foot.
 - 3. Selvage edges: **Fabric shall be knuckled at top and bottom.**
 - 4. Concrete: Type specified in Division 32.
- E. Footings shall be sized as follows:

Fence Height	Footing Depth (from finished surface)	Footing Diameter
3-foot	30-inch	9-inch
4-foot	30-inch	9-inch
6-foot	30-inch	9-inch
10-foot	42-inch	12-inch
14-foot	54-inch	24-inch
- F. Pipe Gates: As indicated on the Drawings.

2.2 COMPONENTS (finish to match post and fabric)

- A. Gate Posts (Hinge and Latch Posts): All post dimensions are outside diameter.
 - 1. 2.875 inch O.D. for gate leaf 6 feet and under.
 - 2. 4 inch O.D. for gate leaf 6 feet to 9 feet.
 - 3. 6.625 inch O.D. for gate leaf 10 feet to 20 feet.
- B. Gates:
 - 1. All gates shall be width noted on plans, height to match adjacent fencing.
 - 2. Tennis court gates width as noted on drawings, 7'-6" height with transom panel

- above gate extended full height of fence.
 - 3. Submit rolling gate shop drawings for approval.
- C. Pipe Gates:
 - 1. All gates shall be width noted on plans, height to match adjacent fencing.
 - 2. Submit pipe gate shop drawings for approval.
- D. Terminal Posts: Corner/End/Pull - All post dimensions are outside diameter.
 - 1. 2.375 inch for 3', 4' & 6' high.
 - 2. 2.875 inch for 10' high.
 - 3. 4.5 inch for 14' high.
- E. Line Post: All post dimensions are outside diameter.
 - 1. 1.9 inch for 6' height, max spacing 10' o.c.
 - 2. 1.9 inch for 3' & 4' height, max spacing 8' o.c.
 - 3. 2.875 inch for 10' height, max spacing 10' o.c.
 - 4. 2.875 inch for 14' high, max spacing 10' o.c..
- F. Brace Rail: 1.66 inch O.D., plain end, sleeve coupled, unless otherwise indicated on the drawing. Manufacturer's longest lengths.
- G. Top Rail: 0.065 tubing at all fencing locations and fencing heights.
- H. Mid Rails at 14' fencing: 1.66 inch O.D., Schedule 40 or SS40.
- I. Bottom Rail: 0.065 tubing at 3' and 10' tennis court fencing locations.
- J. Bottom Tension Wire: zinc coated steel tension wire, 7 gauge complying with ASTM A824.
- K. Tie Wire: Aluminum alloy steel wire, 9-gauge or 11-gauge, galvanized steel, to match fabric core material.
- L. Post Brace Assembly: Install per manufacturer's recommendations
 - 1. Horizontal Brace: 1.66 inch diameter, length and fittings as required.
 - 2. Truss Rod: 0.375 inch diameter steel rod, length adjusted as required.
- M. Gate Frame: 1.625 inch O.D., steel pipe for welded fabrication. Provide corner reinforcing gusset plates to prevent twist when damaged. Gate frames in leaf 10' or greater shall have vertical member truss rods and 3/8" adjustable truss rods with turn buckles.

2.3 ACCESSORIES (finish to match post and fabric)

- A. Caps: Cast steel galvanized; sized to post diameter, set screw retainer, finish to match post.
- B. Fittings: Sleeves, bands, clips, rail ends, tension bars, fasteners and fittings; steel, finish to match post and fabric.
- C. Hardware for Single Swinging Gates: 180 degree hinges, 2 for gates up to 60 inches high, 3 for taller gates; fork latch with gravity drop and padlock hasp. Finish to match post and fabric. Hinge must allow for gate to swing as shown on the drawings.
- D. Hardware for Double Swinging Gates: Greater than 180 degree hinges, 2 for gates up to 60 inches high, 3 for taller gates. Finish to match post and fabric. Gate frame shall have Vertical member truss rods and 3/8" adjustable truss rods with turn buckles.
- E. Gate Latch for Double Swinging Gates and Pipe Gates: Fulcrum Double Gate Latch, Hoover or equal.
- F. Pipe Gate Hinge: Bulldog Hinge, Hoover or equal.
- G. Privacy Slats: Litelink privacy slats by PDS Fence or approved equal. Color to be selected from manufacturer's standard options at the time of submittals. Provide at location indicated on drawings.

2.4 FINISHES

- A. Components (Other than Fabric): Galvanized in accordance with ASTM A 123/A 123M, at 2.0 oz/sq ft.

- B. Hardware: Hot-dip galvanized to weight required by ASTM A 153/A 153M.
- C. Accessories: Same finish as framing.

PART 3 – EXECUTION

3.1 INSTALLATION

- A. Verify finished grades are complete prior to installation.
- B. Install framework, fabric, accessories and gates in accordance with ASTM F 567.
- C. Place fabric on inside of posts and rails.
- D. Set intermediate posts plumb, in concrete footings with top of footing 2 inches above finish grade or as shown on the drawings. Slope top of concrete for water runoff.
- E. Line Post Footing per Part 2 of this Specification. Submit shop drawings for review.
- F. Corner, Gate and Terminal Post Footing Depth Below Finish Grade per Part 2 of this Specification. Submit shop drawings for review.
- G. Brace each gate and corner post to adjacent line post with horizontal center brace rail and diagonal truss rods. Install brace rail one bay from end and gateposts.
- H. Provide top rail through line post tops and splice with 6 inch long rail sleeves.
- I. Install center brace rail on corner gate leaves and on backstop fencing.
- J. Do not stretch fabric until concrete foundation has cured 7 days.
- K. Stretch fabric between terminal posts or at intervals of 500 feet maximum, whichever is less
- L. Position bottom of fabric 2 inches above finished grade or 1 inch above mow strip or concrete flatwork or wall cap.
- M. Fasten fabric to top rail, line posts, braces, mid rail and bottom rail with tie wire at maximum 15 inches on center. Bend ends to minimize hazard to persons or clothing.
- N. Attach fabric to end, corner, and gateposts with tension bars and tension bar clips.
- O. Do not attach the hinged side of gate to building wall; provide gateposts.
- P. Install gate with fabric to match fence. Install hardware, finish to match fence.
- Q. Adjust gate to operate smoothly, easily, and quietly, free from binding, wrap, excessive deflection, distortion, non-alignment, or malfunction throughout the entire operational range. Confirm that latches and locks engage accurately and securely without forcing or binding. Lubricate hardware and other moving parts.
- R. Latch, catches, returns, locking clamp, etc. shall be track welded to the pipe and painted with two coats of "galviron" at weld.
- S. Coordinate with Notes, Plan sheet C2.00 for welding of Hot Dip Galvanized components.
- T. Coordinate with drawings for post footings adjacent to masonry walls.

3.2 ERECTION TOLERANCES

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

END OF SECTION 32 31 13