

DIVISION 2 – SITEWORK

SECTION 02821

COMMERCIAL COLOR CHAIN-LINK FENCES

PART - 1 GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General Conditions and Division 1 Specification Sections, apply to this Section.

1.02 SUMMARY

- A. This Section includes the following:
 - 1. Color Coated Galvanized steel chain-link fabric.
 - 2. Color Coated Galvanized steel framework.
 - 3. Grout and threaded anchors.
 - 4. Color Coated Swing gates.

1.03 SUBMITTALS

- A. Product Data: Material descriptions, construction details, dimensions of individual components and profiles, and finishes for the following:
 - 1. Color Coated Fence and gate posts, rails, and fittings.
 - 2. Color Coated Chain-link fabric, reinforcements, and attachments.
 - 3. Color Coated Gates and hardware.
- B. Shop Drawings: Show locations of fence, each gate, posts, rails, and tension wires and details of extended posts, extension arms, gate swing, or other operation, hardware, and accessories. Indicate materials, dimensions, sizes, weights, and finishes of components. Include plans, elevations, sections, gate swing and other required installation and operational clearances, and details of post anchorage and attachment and bracing.

1.04 QUALITY ASSURANCE

- A. Installer Qualifications: An experienced installer who has completed chain-link fences and gates similar in material, design, and extent to those indicated for this Project and whose work has resulted in construction with a record of successful in-service performance.
- B. Source Limitations for Chain-Link Fences and Gates: Obtain each color, grade, finish, type, and variety of component for chain-link fences and gates from one source with resources to provide chain-link fences and gates of consistent quality in appearance and physical properties.

1.05 PROJECT CONDITIONS

- A. Contractor coordination: Contractor shall verify all equipment sizes and clearances of all equipment to be placed within the fenced and furnish to fencing installer.
- B. Field measurement: Verify dimensions by field measurements.

PART 2 - PRODUCTS

2.01 Available Manufacturer

- A. For the purposes of these specifications the manufacturer specified shall be Master Halco, Inc. Commercial Color Chain Lin Fence and Gate, 4000 W. Metropolitan Drive, Suite 400, Orange, CA 92868 (800 229-5615).

Equal manufacturers shall be subject to prior approval within the prescribed procedure for submittal, review and approval for equal manufacturers as called for in Division 1, Section 01001 Basic Requirements.

2.01 CHAIN-LINK FENCE FABRIC

- A. Type: Permafused II Polyolefin fused and adhered to zinc-coated steel wire per ASTM F668 Class 2b.
- B. Gauge: 9 gauge galvanized core wire.
- C. Mesh: 2 inch.
- D. Height: 6 feet.
- E. Selvage: Twisted and knuckled tip and bottom 5 ft. to 20 ft. high.
- F. Color: Midnight Black.

2.02 INDUSTRIAL FENCE FRAMING

- A. Round Steel Pipe: Permafused II Polyolefin, 10 mils minimum over Standard weight, Schedule 40, galvanized steel pipe complying with ASTM F 1083. Comply with ASTM F 1043, Material Design Group IA, external and internal coating Type A, consisting of not less than 1.8-oz./sq. ft. zinc; and the following strength and stiffness requirements:
- B. Top Rail: Type 1: 1 5/8" O.D. Permafused II polyolefin standard weight pipe (0.140" wall thickness, 2.27 lb./ft.)
- C. Line Posts: Type 1: 2-3/8" O.D. Permafused II standard weight pipe (0.154" wall thickness, 3.65 lb./ft.)
- D. Terminal Posts: Type 1: 2 7/8" O.D. Permafused standard weight pipe (0.203" wall thickness, 5.79 lb./ft.)
- E. Vertical Post Base Plates: Permafused II Polyolefin 1/2" thick, 6" x 6" galvanized steel plates welded to bottom of each fence and gate post member. Four holes per plate for anchoring to slab. Plates are to be polyolefin coated and welded to posts. Industry standard calls for the installing contractor to weld plates to posts which have been cut to specific length for fence on site and cold galvanize paint at welds and paint as necessary with matching color.
- F. Post Brace Rails: Match top rail for coating and strength and stiffness requirements. Permafused II coating, 6 mils min., over hot dipped galvanized pressed steel. Provide brace rail with truss rod assembly for each gate, end, and pull post. Provide two brace rails extending in opposing directions, each with truss rod assembly, for each corner post and for pull posts. Provide rail ends and clamps for attaching rails to posts.
- G. Bottom Rails: Match top rail for coating and strength and stiffness requirements.
- H. Caps, Eye tops, Rail Ends: Permafused II coating, 6 mils min., over hot dipped galvanized pressed steel.
- I. Sleeves: Permafused II coating, 6 mils min., over hot dipped galvanized pressed steel.
- J. Tie Wires: Permafused II coating, 6 mils min. over zinc-coated steel wire.

2.03 INDUSTRIAL SWING GATES

- A. General: Comply with ASTM F 900 for single swing-gate types.
- B. Gate Frames: Fabricate members from round galvanized steel pipe with outside dimension and weight according to ASTM F 900 for the following gate fabric height: 5 feet.
 - 1. Comply with ASTM F 1083 and ASTM F 1043 for materials and protective coatings.
 - 2. Provide 5/16-inch minimum diameter, adjustable truss rods.

3. Frame Corner Construction: Welded.
 4. Fabric: Same mesh and gauge as chain-link selected.
 5. Framework: 1 5/8" for gates up to 5 ft. or less.
- C. Gate Posts: Fabricate members from round galvanized steel pipe with outside dimension and weight According to ASTM F 900 for the following gate fabric heights and leaf widths: 5 feet high by 4 feet wide.
- D. Hardware: Latches permitting operation from both sides of gate, hinges. Fabricate latches with integral eye openings for padlocking; padlock accessible from both sides of gate.

2.04 INDUSTRIAL ELECTRONIC SLIDE GATES: (Not Applicable)

- A. See Section 02822 for Horizontal Sliding Gate Operators.

2.05 FITTINGS

- A. General: Provide fittings for a complete fence installation, including special fittings for corners. Comply with ASTM F 626.
- B. Post and Line Caps: Hot-dip galvanized pressed steel. Provide weathertight closure cap for each post. Permafused II coating, 6 mils min., over hot dipped galvanized pressed steel.
- C. Rail and Brace Ends: Hot-dip galvanized pressed steel. Provide rail ends or other means for attaching rails securely to each gate, corner, pull, and end post. Permafused II coating, 6 mils min., over hot dipped galvanized pressed steel.
- D. Rail Fittings: Provide the following:
1. Top Rail Sleeves: Hot-dip galvanized pressed steel or round steel. Not less than 6 inches long.
 2. Retain subparagraph above if top rails are retained and subparagraph below if intermediate or bottom rails are retained in "Residential Fence and Gate Framing" or "Industrial Fence Framing" Article.
 3. Rail Clamps: Hot-dip galvanized pressed steel. Provide brace bands and rail end cups at all terminal post connections for connecting bottom rails in the fence line to line posts.
- E. Tension and Brace Bands: Hot-dip galvanized pressed steel.
- F. Tension Bars: Hot-dip galvanized steel, length not less than 2 inches shorter than full height of chain-link fabric. Provide one bar for each gate and end post, and two for each corner and pull post, unless fabric is integrally woven into post.
- G. Truss Rod Assemblies: Hot-dip galvanized steel rod and turnbuckle or other means of adjustment.
- H. Tie Wires, Clips, and Fasteners: Provide the following types according to ASTM F 626:
1. Standard Round Wire Ties: For attaching chain-link fabric to posts, rails, and frames, complying with the following:
 - a. Hot-Dip Galvanized Steel: 0.106-inch diameter 11 gauge 8 1/4" wire; galvanized coating thickness matching coating thickness of chain-link fence fabric. Permafused II coating, 6 mils min. over zinc-coated steel wire.

2.06 GROUT AND ANCHORING CEMENT

- A. Nonshrink, Nonmetallic Grout: Premixed, factory-packaged, nonstaining, noncorrosive, nongaseous grout complying with ASTM C 1107. Provide grout, recommended in writing by manufacturer, for exterior applications.

PART – 3 EXECUTION

3.01 EXAMINATION

- A. Examine areas and conditions, with Installer present, for compliance with requirements for other conditions affecting performance.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.02 PREPARATION

- A. Coordinate with Contractor and other trades to confirm locations of equipment to be placed inside fencing. Proceed with installation after all items have been laid out on the floor by Contractor..

3.03 INSTALLATION, GENERAL

- A. General: Install chain-link fencing to comply with ASTM F 567 and more stringent requirements specified.
- B. Post Setting: Set posts with bottom welded plates onto threaded anchors set in the slab. Verify that posts are set plumb, aligned, and at correct height and spacing, and hold in position during placement and finishing operations until concrete is sufficiently cured.

3.04 CHAIN-LINK FENCE INSTALLATION

- A. Terminal Posts: Locate terminal end, corner, and gate posts per ASTM F 567.
- B. Line Posts: Space line posts uniformly at 8 feet o.c., maximum.
- C. Post Bracing Assemblies: Install according to ASTM F 567, maintaining plumb position and alignment of fencing. Install braces at end and gate posts and at both sides of corner and pull posts. Locate horizontal braces at midheight of fabric on fences with top rail and at two-thirds fabric height on fences without top rail. Install so posts are plumb when diagonal rod is under proper tension.
- D. Top Rail: Install according to ASTM F 567, maintaining plumb position and alignment of fencing. Run rail continuously through line post caps, bending to radius for curved runs and terminating into rail end attached to posts or post caps fabricated to receive rail at terminal posts. Provide expansion couplings as recommended by fencing manufacturer.
- E. Bottom Rails: Install, spanning between posts, using fittings and accessories.
- F. Chain-Link Fabric: Apply fabric to outside of enclosing framework. Leave 1 inch between finish floor and bottom selvage, unless otherwise indicated. Pull fabric taut and tie to posts, rails, and tension wires. Anchor to framework so fabric remains under tension after pulling force is released.
- G. Tension or Stretcher Bars: Thread through fabric and secure to end, corner, pull, and gate posts with tension bands spaced not more than 15 inches o.c.
- H. Tie Wires: Use wire of proper length to firmly secure fabric to line posts and rails. Attach wire at one end to chain-link fabric, wrap wire around post a minimum of 180 degrees, and attach other end to chain-link fabric per ASTM F 626. Bend ends of wire to minimize hazard to individuals and clothing.
 - 1. Maximum Spacing: Tie fabric to line posts 12 inches o.c. and to braces 24 inches o.c.
- I. Fasteners: Install nuts for tension bands and carriage bolts on the side of the fence opposite the fabric side.

3.05 GATE INSTALLATION

- A. General: Install gates according to manufacturer's written instructions, level, plumb, and secure for full opening without interference. Attach fabric as for fencing. Attach hardware using tamper-resistant or concealed means. Install ground-set items in concrete for anchorage. Adjust hardware for smooth operation and lubricate where necessary.

3.06 ADJUSTING

- A. Gate: Adjust gate to operate smoothly, easily, and quietly, free from binding, warp, excessive deflection, distortion, nonalignment, misplacement, disruption, or malfunction, throughout entire operational range. Confirm that latches and locks engage accurately and securely without forcing or binding.
- B. Lubricate hardware and other moving parts.

END OF SECTION 02821