

SECTION 32 31 13
CHAIN LINK FENCES AND GATES

PART 1 – GENERAL

1.01 RELATED SECTIONS

- A. Coordinate the work of this section with DIVISION 00: PROCUREMENT / CONTRACTING REQUIREMENTS and DIVISION 01: GENERAL REQUIREMENTS, the Technical Specifications, and the Contract Drawings.
1. Division 03 Section 03 30 53 Cast-In-Place Concrete
 2. Division 31 Section 31 20 00 Earth Moving

1.02 DESCRIPTION OF WORK

- A. Provide labor, materials, and equipment necessary to complete the work in place, as described in this Section, including but not limited to the following:
1. Salvaged: 6'-foot-high Black Vinyl Chain Link Fence with horizontal rails and PVC-coated wire mesh.
 2. New (if required): 6'-foot-high **Black** Vinyl Chain Link Fence with horizontal rails and PVC Coated wire mesh. (all components to match existing fence).
 3. Salvaged: 6'-foot-high, 10'-wide Black Vinyl Chain Link Double Swing Gate complete.
 4. New: 6'-foot-high, 5'-wide **Black** Vinyl Chain Link Swing Gate to match existing fence components.
 5. New hardware, gate, and fence components as necessary to install the salvaged fence and gates.
 6. Repair and paint touch-ups as necessary for existing and relocated fences and gates.

1.03 STANDARDS

- A. ASTM B 6 Slab Zinc
- B. ASTM F567 Installation of Chain Link Fence
- C. ASTM F668 Standard Specification for Polyvinyl Chloride (PVC) and Other Organic Polymer-Coated Steel Chain Link Fence Fabric, Class 2a
- D. Federal Specification RR-F-191K/ID Fencing, Wire and Post Metal (Chain-Link Fence

Fabric), Type IV

- E. AASHTO – 181 Chain Link Fence, Type IV, Class A
- F. Chain Link Fence Manufacturer’s Institute

1.04 SUBMITTALS

- A. For New Gate- Contractor shall submit shop drawings or catalog cuts, including details illustrating gate height, sizes of posts, rails, braces, footings, and all accessories for approval by the Owner’s Representative.
- B. For Relocated Fence and Double Swing Gate- Contractor shall submit fence post layout spacing (if different from Contract drawings) and, if required, (3) samples of new components as necessary to install the relocated fence and gate as described below.
- C. Samples - Contractor shall submit **three (3)** samples of fence fabric 6-inch long and 6-inch square feet of fabric ties, post with cap, latch, hinges, and all connectors for approval by the Owner’s Representative.

1.05 PRODUCT DELIVERY, STORAGE, AND HANDLING

- A. Deliver material in manufacturer’s original packaging with all tags and labels intact and legible. Handle and store material in such a manner as to avoid damage.

PART 2 – PRODUCTS

2.01 GENERAL

- A. This work includes the installation of galvanized, aluminized, and/or polymer-coated fence framework and fabric of height to match existing playground and court perimeter fence, and per these specifications and conformity with the details, lines, and grades shown on the plans or established. The new single swing gate shall bear an imprint branded at each link with the manufacturer's trade name, country of origin (USA), gauge size, and tensile strength. Prior to installment and at the request of the Owner’s Representative, the Contractor shall supply the manufacturer’s certification that all materials used fully comply with the specifications.

2.02 CHAIN LINK FENCE AND GATES **6’ IN HEIGHT**

- A. Chain Link Fabric

1. Chain link fabric shall have a fusion-bonded polyvinyl coating. Vinyl color for fabric shall be **black** to match existing perimeter fabric.
2. Fabric shall be #9 (nine) gauge galvanized wire core with a two (2) inch mesh.
3. The base metal shall be commercial-quality medium-carbon, hot-dipped galvanized steel wire. The finished core wire shall have a minimum breaking strength of 650 lbs. per ASTM F668. The vinyl coating shall be continuously bonded (not sprayed or dipped) over the galvanized steel wire by the Extrusion Bonding process under pressure of 5,000 psi to ensure a dense and impervious covering free of voids, having a smooth and lustrous surface appearance. An additional adherent shall be applied to bind the vinyl coating to the steel wire. The coating thickness over the galvanized steel mesh shall be 6 mils, minimum. The wire shall be vinyl-coated before weaving and free and flexible at all joints. The mesh size shall be measured by the distance between the wire forming parallel sides of the mesh, with a permissible variation of plus or minus 0.250 inches.
4. The fabric shall be knuckle selvage on top and bottom and shall have a permissible variation of plus or minus one inch. The fabric shall also be one (1) inch maximum above the finish grade.

B. Wire Coating

1. Plasticized Polyvinyl Chloride (PVC) with low temperature (-20 degrees C) plasticizer, no filter, extenders, or extraneous matter other than the necessary stabilizers and pigments shall be used. Colors will be stabilized and have a light fastness that shall withstand a minimum WEATHER-O-METER exposure of 1,5000 hours without any deterioration (Test Equipment Operating Light and Water Exposure Apparatus Carbon - Arc Type ASTM D1499.E42 Type E). The vinyl coating shall also resist attack from prolonged exposure to dilute solutions of most common mineral acids, seawater, and most salts and alkalis.

C. Posts, Gate Frames, Rails, and Braces

1. All posts, rails gate frames, and braces to match existing and conform to Federal Specifications RR-F-191/3C and be fabricated of Class I (round steel sections), Grade A (hot-dipped galvanized), seamless steel pipe, per ASTM A120 (Schedule 40) shall not be PVC coated, and be of the following minimal sizes:

End or Corner Posts: 3" / 2.875" O.D. schedule 40

Line Posts: 2 1/2" / 2.375" O.D. schedule 40

Rails and Braces: 1 5/8" / 1.66" O.D. schedule 40

Gate Posts: 2 1/2" / 2.375" O.D. schedule 40

(For gates with leaf **less than 6' in width**)

Gate Posts: 4" O.D. pipe or 9.11 lbs.per foot.

(For gates with leaf **wider than 6'**)

Gate Frame: 1 5/8" / 1.66" O.D schedule 40

2. Rails shall be joined at posts with boulevard clamps.
3. Gate posts shall be of sufficient length to allow for an installation depth of approximately 4' (four feet) below grade level.
4. Gate frame shall have welded joints protected by applying zinc-rich paint per ASTM Practice A780.

D. Fittings

1. Fittings and other appurtenances, including nuts and bolts, shall be an aluminum alloy, galvanized pressed steel, malleable, or cast steel. **No malleable iron or ductile iron materials will be accepted.**
2. Fence fabric shall be attached to the framework with stainless self-locking metal bands, "Band-it Ties," or equal to match existing. Bands shall be folded back against rails so no sharp edges, ends, or corners protrude.
3. Heavy-duty drop fork positive lockable gate latch shall be a Fulcrum-type latch fabricated with the same in-kind finish.
4. Cane Bolt/Drop Rod latch shall be provided at each gate and shall be lockable with a padlock. Drop Rod shall be 1 3/8" tubing with a 1 3/8" post cap. The Cane Bolt/Drop Latch guide shall be 1 5/8" and bolted to the gate frame. Drop Rod shall have a stop welded to the bottom of the rod for theft prevention.
5. Gate Hinges at **Relocated double swing gates** shall allow a **360-degree** outward/inward swing. Hinges shall be heavy-duty with die-cast aluminum housing. Hinge pin shall be stainless steel. Gate hinge tension shall be adjustable with a flat-head screwdriver. Provide **fulcrum latch and catch** for the **Relocated double swing gates**.
6. All gates shall be equipped with one gate stop.

PART 3 – EXECUTION

3.01 INSTALLATION OF RELOCATED/NEW FENCE

- A. General: Fencing installation shall meet the requirements of ASTM F 567. Erect fencing in straight lines between angle points by skilled mechanics experienced in this type of construction. Erect fencing per the manufacturer's recommendations,

as approved, and per these Specifications.

- B. Grounding: All chain link fences and gates shall be grounded. Provide ground rods per Contract Documents for all gate posts, corners, or angles in fencing, terminal posts, and a minimum of 250 feet (75 m) on center if not required otherwise. Provide flexible grounding connection for gates in accordance with Contract Documents. Abrade vinyl fence fabric coating where necessary to make mechanical grounding connections.
- C. Post Footings: See Construction Documents for sizes of post holes. Set posts plumb. Work concrete thoroughly into the post holes to leave no voids.
 - 1. Allow concrete to cure a minimum of one week before installing fence fabric or fittings. NOTE: The system for installing fence post footings shall be limited to auguring foundation holes to the minimum size and depth required for the form and backfilling with concrete, except that the top six inches from the finished grade shall be formed round. The top surface of post-hole concrete shall have a crowned surface to pitch water away from the posts.
 - 2. Coordinate footings with the construction of required finished work, including paving, mowing curb, and other edgings, as applicable.
- D. Post spacing shall be uniform, with a maximum spacing of 9 feet in fences erected along straight lines. All posts shall be placed plumb and centered in concrete foundations.
- E. If solid ledge is encountered without overburden of soil, posts shall be set into the rock at a minimum depth of 12 inches for line posts and 18 inches for terminal posts. Post holes shall be at least 1 inch greater in diameter than the post, and the grout shall be thoroughly worked into the hole not to leave voids and crowned at the top to pitch water away from the posts. Where solid rock is covered by an overburden of soil, the total setting depth shall not exceed the depths required for setting into the soil, and the posts shall be grouted into the rock as previously described.
- F. A change in the direction of the fence line of 30 degrees or more shall be considered corners. Pull or Corner Posts shall be used at any abrupt change in grade.
- G. Maximum area of an un-braced fence shall not exceed 1,500 square feet.
- H. Terminal posts shall be braced to adjacent posts with horizontal brace rails and diagonal truss rods, brought to proper tension so that posts are plumb. All rails, braces, tension bars, and truss rods shall be installed on the side of the fence least visible to the public unless otherwise noted in the Contract Documents. Coordinate

with Owner's Representative.

- I. The fence framework shall have no loose connections or sloppy fits. The fence framework shall withstand all wind and other forces due to the weather.
- J. Fabric shall be stretched taut and tied to posts and rails. The fabric shall be installed on the security side of the fence and anchored to the framework so that the fabric remains in tension after the pulling force is released. The fabric shall be attached to line posts with steel self-locking fabric bands ("Band-it Ties"), spaced to line posts at not more than 15-inch intervals and to rails and braces at not more than 24-inch intervals. Fabric bands shall be fusion color to match fabric color per ASTM F668 class 2b. The fabric shall be securely fastened to all terminal and gate posts with 1/4-inch x 3/4-inch stretcher bars with heavy No. 11 gauge pressed steel tension bands spaced approximately 12 inches apart. All bands, wires, and tension bars shall conform to Federal Specification RR-F- 191/4C.
- K. The Contractor shall promptly remove from the site all excess excavated materials and other debris resulting from the fence construction and lawfully dispose of such materials at the direction of the Owner.

3.02 INSTALLING NEW GATES

- A. Gate posts shall be plumb, level, and centered for full opening without interference.
- B. Gate posts and hardware: Set stops and sleeves into concrete. Check each post for vertical and top alignment and maintain in position during placement and finishing operations. Test swing and latch and adjust as necessary for proper and smooth operation. Touch up hardware using approved PVC paint per the manufacturer's recommendations.
- C. Contractor shall take careful measurements of the finish grade around the proposed swing gates and shall account for finish grade changes in elevation on shop drawing submittals.

3.03 TESTING OF FENCE FABRIC + ACCEPTABLE STANDARDS

- A. Each fence panel shall be constructed to pass the following test: Deflection of fence fabric shall be no greater than 2 inches when a force of 30 pounds is applied in the center of the panel, perpendicular to the plane of the fence fabric. Fabric shall return to its original position when force is released.
- B. Fence layout and construction shall conform to the requirements of the

Contract Documents. Straight runs of fencing shall be straight and true without visible deviation. Curved fencing sections shall have a smooth, continuous arc without kinks or broken backs.

- C. Rails shall form a continuous smooth line parallel with the grade unless otherwise described in the Contract Documents.
- D. All posts shall be plumbed and cut to the same height above grade.
- E. All other fence components shall be placed on standard on-center spacing consistent between posts.
- F. **Post caps shall be completely secure, and threaded connections shall be drawn up tightly. Threads shall be deformed to prevent loosening, and all bolts/external pointed hardware shall be cut off/sanded off to avoid any potential protrusion hazards within the play area.**

END OF SECTION

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