

ARTICLE XIII – FENCE REPAIRS

13.1 GENERAL - The work to be done under this Article consists of furnishing all labor, materials, equipment and other expenses necessary to remove the existing chain link fencing and personnel gates and install new PVC coated chain link fencing and gates at the ferry terminal area, Kaunakakai Harbor.

13.2 MATERIALS

- A. Chain link fabric for fence shall be PVC coated over zinc coated steel wire, with exception to the 5 ¼' fence along concrete walkway which shall be PVC coated over aluminum chain-link fencing. For all fencing, the wires used in the fabric shall be No. 9 gage with a zinc coating of 0.30 ounces per square foot minimum. Mesh size shall be two inches. The PVC coating shall be applied by thermal fusion bonding and shall have a minimum thickness of seven mils. The color of the PVC coating shall be dark green. The minimum breaking strength of the zinc coated wire shall be 1,200 pounds. The mesh shall be woven with twisted and barbed selvage at both top and bottom. Fabric shall comply with ASTM F-668 Class 2.b.
- B. Posts, top rails and braces shall be fabricated from Schedule 40 galvanized steel pipe conforming to ASTM F-1083, with exception to the 4" diameter gate posts, post straps, post brackets, frame and middle rails along the concrete walkway which will be 316 type stainless steel and shall conform to the requirements of stainless steel, Type 316 ASTM A276.
- C. Fittings shall be pressed steel or cast iron and painted as described in Article XV - PAINTING. All posts shall be fitted with approved tops and barb arms designed to fit securely over the posts, and the top rail shall pass through the base of these tops. All components of the fence except for the fabric, barbs, bolts, washers and nuts shall be prepared and painted as described in Article XV - PAINTING. Fittings shall comply with ASTM F-626. Bolts, washers and nuts shall be stainless steel, Type 316.
- D. Barbed wires shall consist of three (3) 12 ½ gage galvanized wire with 14-gage 4-point barbs spaced approximately five inches apart. Strands (except barbs) shall be coated with a seven (7) mil minimum thickness PVC coating. Barbed wire shall conform to the requirements of ASTM A-121.
- E. Tension wire shall be 9-gage galvanized steel wire with a 0.30 ounces per square foot minimum weight of zinc coating. The wire shall be coated with a seven (7) mil minimum thickness PVC coating.
- F. Tie wire shall be 9-gage galvanized steel wire with a 0.30 ounces per square foot minimum weight of zinc coating. The wire shall be coated with a seven (7) mil minimum thickness PVC coating. The tie wires shall be spaced on line posts at

intervals of approximately 14 inches, and on top rails, brace rails and tension wires at intervals of approximately 24 inches.

- G. Fence post straps, gate post and frame hinges, and fence gate fork latch, shall conform to the requirements of stainless steel, Type 316 ASTM A276. Anchor bolt fasteners shall be Type 316 stainless steel, ASTM A193 Grade B8M and sized accordingly.

13.3 CONSTRUCTION

- A. The existing chain link fencing and personnel gate including posts and signs shall be removed up to the locations as specified on the drawing. The Construction Engineer shall designate which components are to be salvaged including the existing signs. The salvaged components shall be carefully disassembled and delivered to and stored in an area designated by the Construction Engineer. All other removed materials shall be properly and lawfully disposed of by the Contractor away from the project site.
- B. The Contractor shall core new holes in the existing concrete wall face to accommodate the new fence post straps. In coring new holes in the existing concrete face, the Contractor shall avoid damaging existing steel reinforcement and prevent debris from falling into harbor waters. The new holes shall be offset from the existing fence posts and shall be determined in the field by the Construction Engineer. The remaining bolts shall be removed if damaging the existing wall face is not required, otherwise cut the bolt below wall face surface and completely fill with new epoxy grout and finished flush with the existing wall face. The new fence posts shall be secured to the existing concrete face with the new stainless steel post straps as shown on the drawing.
- C. The new fence post straps shall be fabricated according to the dimensions shown on the drawing.
- D. The new personnel gates including new fence panels, latches, and hinges shall be fabricated as shown on the drawing. Welding shall be in accordance with the latest standards of the American Welding Society. All components of the fence except for the barbs, bolts, washers and nuts shall be prepared and painted as described in Article XV - PAINTING.
- E. The new chain link fence and gates shall be installed in accordance with Section 607 of the Standard Specifications. The new chain link fabric, tension wires, eye tops with barb arms, and barbed wires shall be installed using tie wires and new posts and top rails. Installation shall include new connecting hardware such as truss rods and tighteners, tension bars, tension bands, bolts, washers, nuts, etc.
- F. The new fence gate fork latch shall fit securely onto the new 1-7/8" fence gate frame and the fork shall straddle the adjacent fence gate post as designed when

closed. If the new latch does not include a locking mechanism or facilitate a padlock, a separate security hasp is to be installed. The security hasp shall require a locking mechanism or facilitate a padlock.

- G. For the chain link gate post and gate frame hinges, the pin size connecting the two hinges shall be 5/8" O.D. and the nut & bolt shall be 3/8" 16 course thread. The size of the existing gate post shall be measured in field and a proper sized hinge shall be attached to facilitate the freely moving and complete opening of the new gate. All components of the fence except for the barbs, bolts, washers and nuts shall be prepared and painted as described in Article XV - PAINTING.
- H. Existing signs shall be reinstalled in their previous locations and fastened with appropriate stainless-steel hardware.
- I. New uncoated fence members shall be prepared and painted as described in Article XV – PAINTING.

13.4 PAYMENT- Payment for fence repairs shall be made as described in Article X of these Specifications.