SECTION 32 3113
CHAIN LINK FENCES AND GATES

PART 1 - GENERAL

1.1 SUMMARY

A. Includes But Not Limited To:
   1. Furnish and install complete fence and gates as described in Contract Documents.

B. Products Supplied But Not Installed Under This Section:
   1. Chain link gate complete with mounting hardware to be built into masonry enclosure.

C. Related Sections:
   1. Section 03 3053: Mow strips at fencing and setting sleeves in retaining walls.
   2. Sections Under 04 2000 Heading: Installation of gate and hardware built into masonry mechanical equipment enclosures.
   3. Section 05 0503: Priming and galvanizing repair.
   4. Section 05 0523: Welding requirements.

1.2 REFERENCES

A. American Society For Testing And Materials:
   2. ASTM A 153-01a, 'Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware.'
   3. ASTM A 392-03, 'Standard Specification for Zinc-Coated Steel Chain-Link Fence Fabric.'
   4. ASTM A 1011-03a, 'Standard Specification Steel, Sheet and Strip, Hot-Rolled, Carbon, Structural, High-Strength Low-Alloy and High-Strength Low-Alloy with Improved Formability.'

1.3 SUBMITTALS

A. Samples: Types of vision slats and colors for Architect's selection.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Post Setting Grout at Sleeves:
   1. Commercial nonshrink grout conforming to requirements of ASTM C 1107, Type B or C.
2. Type Two Approved Products:
   c. NS Grout by Euclid Chemical Co, Cleveland, OH  www.euclidchemical.com.
   j. Equal as approved by Architect before use.  See Section 01 6000.

2.2 COMPONENTS

A. Fabric:
   1. Chain link fabric of 9 ga 3.7 mm wire, galvanized before or after weaving with 1.2 ounce zinc coating conforming to requirements of ASTM A 392, Class I
   2. 2 inch 50 mm square or 3-1/2 inch by 5 inch 88 mm by 125 mm mesh as selected by Architect or as required by specified vision slat.
   3. Knuckle both selvages.

B. Framework:
   1. Posts and rails shall be roll-formed, self-draining shapes meeting strength requirements of ASTM F 669, Table 3, and with 2 ounce zinc coating per sq ft of surface area conforming to ASTM A 123.
   2. Line Posts:
      a. 1.875 by 1.625 inch 48 by 41 mm C-section roll formed from steel conforming to ASTM A 570, Grade 45, with minimum theoretical bending strength of 247 pounds under 6 foot cantilever load.
      b. 2.375 inch 60 mm outside diameter Schedule 40 tubular section weighing 3.65 lbs/lin ft meeting requirements of ASTM F 1083.
      c. 2.375 inch 60 mm outside diameter Schedule 40 tubular section weighing 3.12 lbs/lin ft formed from steel meeting requirements of ASTM A 1011.
      d. 2.25 by 1.70 inch 57 by 43 mm C-section meeting other requirements given above.
      e. 2.875 inch 48 mm outside diameter Schedule 40 tubular section weighing 5.79 lbs/lin ft meeting requirements of ASTM F 1083.
      f. 2.875 inch 48 mm outside diameter Schedule 40 tubular section weighing 4.64 lbs/lin ft formed from steel meeting requirements of ASTM A 1011.
   3. Terminal And Gate Posts:
      a. 3.5 by 3.5 inch 88 by 88 mm roll formed section with minimum theoretical bending strength of 486 pounds under 6 foot cantilever load.
      b. 3 inch 76 mm outside diameter Schedule 40 pipe weighing 5.79 pounds per lineal foot meeting requirements of ASTM F 1083.
      c. 3 inch 76 mm outside diameter Schedule 40 tubular section weighing 4.64 pound per lineal foot formed from steel meeting requirements of ASTM A 1011.
      d. Gate Posts for supporting single gate leaf, or one leaf of a double gate installation, for nominal gate widths over 6 feet:
         | Leaf Width | Post Outside Diameter | Lbs / lin ft |
         |------------|-----------------------|-------------|
         | Over 6 Ft to 13 Ft | 4 Inches | 9.11 |
         | Over 13 Ft to 18 Ft | 6.625 Inches | 18.97 |
         | Over 18 Ft | 8.925 Inches | 28.55 |
   4. Top And Brace Rail:
      a. 1.625 by 1.25 inch 41 by 32 mm roll formed section of 45,000 psi yield strength channel shaped rail with minimum theoretical bending strength of 247 pounds on 10 foot midpoint load.
      b. 1.660 inch 42 mm outside diameter Schedule 40 pipe weighing 2.27 lbs/lin ft meeting requirements of ASTM F 1083.
c. 1.660 inch 42 mm outside diameter Schedule 40 tubular section weighing 1.84 lbs/lin ft formed from steel meeting requirements of ASTM A 1011.

5. Fittings: Pressed steel or malleable iron, hot-dip galvanized conforming to ASTM A 153. Tie wires shall be 12 ga 4 mm minimum galvanized steel or 9 ga 3 mm minimum aluminum wire.

6. Tension Wire: 7 ga minimum galvanized spring steel.

C. Gate Leafs Wider Than 6 Feet:
   1. Fabricate perimeter frames from metal and finish to match fence framework. Assemble frames by welding or with special fittings and rivets, for rigid connections, providing security against removal or breakage connections.
      a. Provide same fabric as for fence. Install fabric with stretcher bars at vertical edges and at top and bottom edges. Attach stretcher bars to frame at not more than 15 inches on center.
      b. Install diagonal cross-bracing consisting of 3/8 inch diameter adjustable length truss rods to ensure frame rigidity without sag or twist.
      c. Where barbed wire is indicated above gates, extend end members of gate frames one foot above to member and prepare to receive three strands of wire. Provide necessary clips for securing wire to extensions.
   2. Swing Gates: Fabricate perimeter frames of minimum 1.90 inch OD pipe.
   3. Gate Hardware: Provide hardware and accessories for each gate, galvanized per ASTM A 153, and in accordance with following:
      a. Hinges: Size and material to suit gate size, non-lift-off type, offset to permit 180 degree gate opening. Provide 1-1/2 pair of hinges for each leaf over 6 foot nominal height.
      b. Latch At Paving: Forked type or plunger-bar type to permit operation from either side of gate, with padlock eye as integral part of latch.
   4. Keeper: Provide keeper for vehicle gates, which automatically engages gate leaf and holds it in open position until manually released.
   5. Double Gates: Provide gate stops for double gates, consisting of mushroom type flush plate with anchors, set in concrete, and designed to engage center drop rod or plunger bar. Include locking device and padlock eyes as integral part of latch, permitting both gate leaves to be locked with single padlock.
   6. Sliding Gates: Provide Manufacturer's standard heavy-duty inverted channel track, ball-bearing hanger sheaves, overhead framing and supports, guides, stays, bracing, hardware, and accessories as required.

D. Vision Slats:
   1. High-density polyethylene (HDPE), double-walled, self-locking or with locking feature that prevents slats from being removed.
   2. Color: As selected by Architect from Manufacturer's standard colors.
   3. When installed, slats will provide 75 percent minimum visual privacy / security.
   4. Approved Products:
      a. Winged Slat.
      b. Top-Locking Slat.
      c. Bottom-Locking Slat.
      d. FeatherLock Slat.
      e. Fin 2000 Slat.
   5. When installed, slats will provide 98 percent minimum visual privacy / security. On portion of fence between As-Is Sales area and Service Area, orient fencing slats so 100 percent minimum visual privacy / security are provided when fence is viewed from pavement area.
   6. Category Four Approved Product. See Section 01 6000 for definitions of Categories.
   7. Type Two Acceptable Manufacturers:
      c. Equal as approved by Architect before installation. See Section 01 6000.

2.3 MIXES

A. Post Foundation Concrete:
1. One cu ft cement, 2 cu ft sand, 4 cu ft gravel, and 5 gallons minimum to 6 gallons maximum water.
2. Mix thoroughly before placing.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Fence shall be installed by mechanics skilled and experienced in erecting fences of this type and in accordance with Contract Documents.
1. When general ground contour is to be followed, make changes of grade in gradual, rolling manner.
2. Evenly space posts in line of fence a maximum of 10 feet 3000 mm center to center.

B. Post Foundations:
1. Except atop retaining walls, set posts with concrete post foundations as specified below:
   a. Line Posts Diameter 8 inches Depth 36 inches
   b. Gate, End, And Corner Posts Diameter 12 inches Depth 42 inches
   c. Line Posts Diameter 200 mm Depth 900 mm
   d. Gate, End, And Corner Posts Diameter 300 mm Depth 1050 mm
   e. At mow strips, set top of post foundation below grade sufficient to allow for placing of mow strip. Measure post foundation depth from top of mow strip.
   f. Where fences are incorporated into slabs, measure post foundation depth from top of slab. Extend bottom of slab footing sufficient to allow specified amount of concrete around post. At existing slabs, install fence outside perimeter of slab.
   g. For fences on retaining walls, provide 12 inch 300 mm long sleeves to be cast into retaining wall. Set pipe in sleeve and grout space between sleeve and post full.

C. Fence:
1. After posts have been permanently positioned and concrete cured for one week minimum, install framework, braces, and top rail. Join top rail with 6 inch 450 mm minimum couplings at not more than 21 foot 6300 mm centers.
2. Stretch fabric by attaching one end to terminal post and supplying sufficient tension to other end of stretch so slack is removed.
   b. Place one tie as close to bottom of fabric as is possible with additional ties equally spaced between top and bottom band on approximately equal spacing not to exceed 14 inches 350 mm on center.
   d. Hold fabric approximately 2 inches 50 mm above finish grade line.
   e. On top rail, space tie wires at no more than 24 inches 600 mm on center.
   f. Securely attach fittings and firmly tighten nuts.
3. Slats may either be installed by hand, or pre-inserted in fabric during manufacture.

D. Gates:
1. Weld gate frames and provide for free and easy operation.
2. Provide gate latching device with padlocking capabilities. Provide cane bolt to engage sleeve set in concrete at double gates.
3. Align top bar of gates with top rail of fence.
4. Gates shall be plumb and on same plane as fence, both vertically and horizontally.
5. Set gate stops and other catches in concrete.
3.2 CLEANING

A. Spread dirt from foundation excavations evenly around surrounding area unless otherwise directed. Leave area free of excess dribbles of concrete, pieces of wire, and other scrap materials.

END OF SECTION