SECTION 32 31 13 – chain link fencing and gates

1. General
   1. Summary
      1. Supply and install chain link fencing, complete with [swing][sliding] gates, as indicated in this Section.
      2. Related Requirements:
      3. Section 03 30 00 – Cast-in-Place Concrete.
      4. Section 32 16 26 – Concrete Curbs and Sidewalks.
      5. Section 32 31 19 – Ornamental Metal Fencing and Gates.
   2. Submittals
      1. Provide submittals in accordance with Section 01 33 00 – Submittal Procedures.
      2. Shop Drawings:
         1. Submit fully dimensional shop drawings to Consultant showing construction, assembly, elevations, sections, and interfacing with work of other Sections.
         2. No work of this Section shall be fabricated until shop drawings and all other related submittals, documentation, certifications, and samples as required by this Section, have been reviewed by Consultant.
         3. Details shall indicate metal thicknesses, fasteners and welds, all anchorage assemblies and components and erection details.
      3. Samples:
         1. Submit to Consultant for approval, samples of materials and components to be used in the systems, prior to fabrication of work together with name of manufacturer and technical literature. Submit 12" x 12" samples of chain link fence fabric in colour as selected by the Consultant.
   3. QUALITY ASSURANCE
      1. Qualifications:
         1. Manufacturer and tradesmen executing the work of this Section shall have had a minimum five (5) years continuous Canadian experience in successful manufacture and installation of work of type and quality shown and specified. Submit proof of experience upon Consultant's request.
         2. Erection of chain link fencing and gates shall be by workers especially trained and experienced in this type of work. Have a senior, qualified representative at the job site to direct the work of this Section at all times.
2. Products
   1. APPROVED manufacturers
      1. Subject to compliance with specifications, use products of one of the following:
         1. McGowan Fence and Supply Ltd.
         2. Lundy Fence, Division of IVACO Inc.
         3. Peel Fence Systems Inc.
         4. Approved equal.
   2. MATERIALS
      1. Steel Pipe: Conforming to CAN/CGSB-138.2-M80.
      2. Fabric: No.9 gauge (0.148" nominal) ultraviolet light resistant, P.V.C. coated, galvanized steel wire in 2" mesh, with both top and bottom selvages twisted and barbed, conforming to CAN/CGSB-138.1-M80.
      3. End, Corner, and Pull Posts: Galvanized steel, minimum sizes and weights as follows:
         1. Up to 6'-0" Fabric Height: 2.375" outside diameter pipe, 3.65 lbs/lin. ft.
         2. Over 6'-0" Fabric Height: 2.875" outside diameter pipe, 5.79 lbs/lin. ft.
      4. Line Posts: Galvanized steel, minimum sizes and weights as follows:
         1. Up to 6'-0" Fabric Height: 1.90" outside diameter pipe, 2.70 lbs/lin. ft.
         2. Over 6'-0" to 8'-0" Fabric Height: 2.375" outside diameter pipe, 3.65 lbs/lin. ft.
         3. Over 8'-0" Fabric Height: 2.875" outside diameter pipe, 5.79 lbs/lin. ft.
      5. Gate Posts: Galvanized steel, for single gate or double leaf gate as follows:
         1. Up to 6'-0" Fabric Height: 2.875" outside pipe diameter, 5.79 lbs/lin. ft.
         2. Over 6'-0" Fabric Height: 4" outside diameter pipe, 9.11 lbs/lin. ft.
      6. Top Rail and Intermediate Rails: Galvanized steel, manufacturer's longest lengths as follows:
         1. Typical: 1.66" outside diameter pipe, 2.27 lbs/lin. ft.
         2. Couplings: Expansion type, approximately 6" long.
         3. Attaching Devices: Means of attaching top rail securely to each gate, corner, pull, and end post.
      7. Sleeves: Galvanized steel pipe with inside diameter not less than 1/2" greater than outside diameter of pipe. Provide steel plate closure welded to bottom of sleeves of width and length not less than 1" greater than outside diameter of sleeve as follows:
         1. Up to 6'-0" Fabric Height: Provide sleeve not less than 12" long.
         2. Over 6'-0" Fabric Height: Provide sleeve not less than 24" long.
      8. Tension Wire: Minimum No. 7 gauge galvanized steel, coated coil spring wire, located at bottom of fence fabric.
      9. Wire Ties: Minimum No. 11 gauge galvanized steel.
      10. Post Brace Assembly: Manufacturer's standard adjustable brace at end posts and at both sides of corner and pull posts, with horizontal brace located at mid height of fabric. Use same materials as top rail for brace, and truss to line posts with 0.375" diameter rod and adjustable tightener.
      11. Post Tops: Galvanized steel, weather tight closure cap for tubular posts, one cap for each post. Furnish cap with openings to permit passage of top rail.
      12. Stretcher Bars: Galvanized steel, one-piece lengths equal to full height of fabrics with minimum cross section of 3/16" x 3/4" inch. Provide one stretcher bar for each gate and end post, and two for each corner and pull post.
      13. Stretcher Bar Bands: Manufacturer's standard.
      14. Gate Hardware:
          1. Swinging Gate Hardware:
             1. Hinges: Offset type hinges to permit 180E gate opening. Provide 1-1/2 pair of hinges for each gate leaf over 6'-0" height.
             2. Latches: Forked or plunger bar type to permit operation from both sides of gate, with padlock eye.
          2. Double Leaf Gate Hardware:
             1. As specified herein for swinging gate hardware and in addition provide "mushroom" type flush plate gate stops with anchors set in concrete to engage centre drops rod/plunger bar. Arrange stops for use with one padlock to lock both gate leaves.
          3. Sliding Gate Hardware:
             1. Manufacturer's standard heavy-duty track, ball bearing hanger sheaves, overhead framing and supports, guides, stays bracing and accessories as required.
      15. Gate Cross-Bracing: 3/8" diameter galvanized steel adjustable length truss rods.
   3. SETTING GROUT
      1. Concrete: Minimum 20 MPa. Refer to Section 03 30 00 – Cast-In-Place Concrete.
      2. Grout: Premixed, factory packaged, non staining, non-corrosive grout. Refer to Section 03 30 00 – Cast-In-Place Concrete. Provide type especially formulated for exterior application.
   4. FINISHES
      1. Galvanize as follows:
         1. Fabric: Not less than 1.2 oz zinc/sq ft.
         2. Framing: Not less than 1.8 oz zinc/sq ft.
      2. P.V.C. Coating:
         1. Ultraviolet light resistant, polyvinyl chloride (PVC) coating shall be applied by field bed method to preheated substrate, to 10 to 14 mils dry film thickness (DFT) on pipe and 7 to 10 mils dry film thickness (DFT) on fence fabric.
         2. Clean and pretreat surfaces as required to thermally bond the P.V.C. coating to surfaces.
         3. Colour shall be as selected later by Consultant from manufacturer's full available colour range.
   5. FABRICATION
      1. Fabricate swing gate perimeter frames of 1.90" outside diameter galvanized steel pipe. Provide horizontal and vertical members to ensure proper gate operation and for attachment of fabric, hardware, and accessories. Gates shall conform to CAN/CGSB-138.4-M82. Space frame members maximum 8'-0" apart.
      2. Assemble gate frames rigidly by welding or with special fittings and rivets. Use same fabric as specified for fence. Install fabric with stretcher bars at vertical edges. Bars may also be used at top and bottom edges. Attach stretchers to frame at 12" O.C. Install diagonal cross-bracing on gates as required to ensure frame rigidity without sag or twist.
      3. Attach hardware to provide security against removal or breakage.
      4. Fabricate swing gates, double gates and sliding gates as indicated on Drawings.
3. Execution
   1. INSTALLATION
      1. Install chain link fencing in strict accordance with CAN/CGSB-138.3-M80 and as specified herein.
      2. Space line posts at 10'-0" O.C. maximum.
      3. Methods for Setting Posts:
         1. Grade-Set Posts: Drill holes for post with auger or hand excavate. Excavate each post hole to minimum 12" diameter, or not less than 4 times the post diameter. Excavate to 4" below bottom of post. Set bottoms of posts 6" below "frost line". Hold, brace posts plumb, level while placing, consolidating, and finishing concrete.
         2. Sleeve Set Posts In Concrete: Anchor posts in concrete by means of pipe sleeves preset and anchored into concrete. Insert posts into sleeves and fill annular space between post and sleeve solid with grout. Mix and place grout in accordance with manufacturer's written instructions.
      4. Intermediate Rails: Provide centre rails where indicated. Install in one piece between posts and flush with post on fabric side, using offset fittings where necessary.
      5. Brace Assemblies: Install braces so posts are plumb with rod in tension.
      6. Tension Wire: Install tension wires through post cap loops before stretching fabric and tie to each post cap with minimum No.6-gauge galvanized wire. Fasten fabric to tension wire using No. 11 gauge galvanized steel hog rings at 24" O.C.
      7. Fabric: Leave approximately 2" between finish grade and bottom selvage. Pull fabric taut and tie to posts, rails, and tension wires. Install fabric on security side of fence, and anchor to framework so fabric remains in tension after pulling force is released.
      8. Stretcher Bars: To secure end, and pull posts, thread through or clamp to fabric 4" O.C. and secure to posts with metal bands spaced on 12" O.C.
      9. Tie Wires:
         1. Use U shaped wire conforming with diameter of pipe to which attached, clasping pipe and fabric firmly with ends twisted two full turns. Bend wire ends to minimize hazards to persons or clothing.
         2. Tie fabric to line posts with wire ties spaced 12" O.C. Tie fabric to rails and braces with wire ties spaced 24" O.C. Manufacturer's standard procedure will be accepted if of equal strength and durability.
      10. Fasteners: Install nuts for tension bands and hardware bolts on side of fence opposite fabric side. Peen ends of bolts or score threads to prevent removal of nuts.
      11. Install swing gates, double gates and sliding gates plumb, level and secure for full openings, without interference. Set all ground set hardware in concrete for secure anchorage. Adjust and lubricate all gate hardware for smooth and efficient operation.

END OF SECTION