

## SECTION 323113 – CHAIN LINK FENCING AND GATES

### PART 1 - GENERAL

#### 1.1 SUMMARY

- A. This work consists of the supply and installation of galvanized chain link fencing as called out on the plans and details.

#### 1.2 SUBMITTALS

- A. Comply with all provisions of Section 013323, Shop Drawings, Product Data and Samples.
- B. Product Data: For the following:
  - 1. Submit manufacturer's technical data, and installation instructions for fencing, fabric, gates and accessories, for approval by the Owner's Representative.
  - 2. Samples for verification of PVC color in the form of 6" lengths of actual fabric wire to be used in color selection, for approval by the Owner's Representative.

#### 1.3 QUALITY ASSURANCE

- A. Any subcontracted fence work shall be performed by a qualified firm specializing in fence work.

### PART 2 - PRODUCTS

#### 2.1 GENERAL

- A. Dimensions indicated for pipe and roll-formed are outside dimensions, exclusive of coatings.
- B. Products: Subject to compliance with requirements, fence is to be provided from one of the following sources:
  - 1. Galvanized Steel Fencing and Fabric:
    - a. Allied Tube and Conduit Corp.
    - b. Master – Halco
    - c. Engineer Approved Equal

#### 2.2 STEEL FABRIC

- A. Fabric: Comply with Chain Link Manufacturer's Institute (CLFMI) Product Manual. Furnish one-piece fabric widths for fencing up to 16' high. Wire size includes zinc coating with 2.0 oz. per square foot of surface, galvanized after weaving, or .4 oz. aluminized coating.

1. Tank Site: 2" mesh, 9 gage; 6' high fencing.
- B. Selvage: Fabric shall be knuckled at both selvages.

## 2.3 FRAMING AND ACCESSORIES

- A. Steel Framework, General: Galvanized Steel, ASTM A 120 or A 123 with not less than 1.8 oz. zinc per square foot of surface. All framework shall match fabric.
  1. Fittings and Accessories: Galvanized Steel, ASTM A 153. All fittings and accessories shall match fabric.
- B. End, Corner, and Pull Posts:
  1. Up to 12' fabric height: 2.875" OD schedule 40 pipe weighing 5.79 pounds per linear foot, galvanized inside and out.
- C. Line Posts:
  1. 1.5' to 12' fabric height: 2.375" OD schedule 40 pipe weighing 3.65 pounds per linear foot, galvanized inside and out.
  2. Up to 4' fabric height: 1.9" OD schedule 40 pipe weighing 2.75 pounds per linear foot, galvanized inside and out.
- D. Top Mid-rail and Bottom Rail: In twenty-one or twenty-four foot lengths with expansion type couplings, approximately 6" long, for each joint. Provide means for attaching top and bottom rail securely to each gate corner, pull and end post.
  1. 1.66" OD pipe, 2.27 pounds per linear foot.
  2. Mid-Rail: Same as top and bottom rail and used when fence fabric is 10' and higher.
  3. Provide manufacturer's standard galvanized steel rail end cup for each end.
- E. Tension Wire: 7 gage, coated coil spring wire.
  1. Locate at bottom of fabric if bottom rail is not specified.
- F. Fabric Ties: 9-gage aluminum wire.
- G. Hog Rings: 11-gage galvanized steel.
- H. Post Brace Assembly: Manufacturer's standard adjustable brace at end and gate posts and at both sides of corner and pull posts, with horizontal brace located at mid-height of fabric. Use same material as top rail for brace, and truss to line posts with 0.375" diameter rod and adjustable tightener.
- I. Post and line Caps: Provide weather tight closure cap for each post. Provide line caps with loop to receive tension wire or top rail.

- J. Tension or Stretcher Bar: One-piece lengths equal to full height of fabric, with minimum cross-section 3/16" x 3/4". Provide one for each gate and end post, and two for each corner and pull post.
- K. Tension or Stretcher Bar Bands: Space not over 15" o.c., to secure bars to end, corner, pull, and gate posts
- L. Concrete for footers: ODOT items 499 and 511 (Class C, F, or S).

## 2.4 SWING GATES

- A. Fabrication: Fabricate perimeter frames of gates from metal and finish to match fence framework. Assemble gate frames by welding for rigid connections, providing security against removal or breakage connections. Provide horizontal and vertical members to ensure proper gate operation and attachment of fabric, hardware and accessories. Space frame members maximum of 8" apart unless otherwise indicated.
  - 1. Provide same fabric as for fence, unless otherwise indicated. Install fabric with stretcher bars at vertical edges and at top and bottom edges. Attach stretcher bars to gate frame at not more than 15" on center.
  - 2. Install diagonal cross bracing consisting of 3/8" diameter adjustable length truss rods on gates to ensure frame rigidity without sag or twist.
  - 3. Fabricate perimeter frames of minimum 1.90" OD pipe.
  - 4. All gates with a 6" opening or larger shall be double swing.
- B. Gate Posts: Furnish posts for supporting single gate leaf, or one leaf of a double gate installation, for nominal gate widths as follows:

<u>Leaf Width</u>	<u>Gate Post</u>	<u>lbs./lin. ft.</u>
Up to 6'	2.875" OD Pipe	5.79
Over 6' to 13'	4.000" OD Pipe	9.11
Over 13' to 18'	6.625" OD Pipe	18.97
Over 18'	8.625" OD Pipe	28.55

- C. Gate Hardware: Provide hardware and accessories for each gate, galvanized per ASTM A 153, and in accordance with the following:
  - 1. Hinges: Size and material to suit gate size, non-lift-off type, offset to permit 180-degree gate opening.
  - 2. Latch: Forked type or plunger-bar type to permit operation from either side of gate, with padlock eye as integral part of latch.
  - 3. Keeper: Provide keeper for vehicle gates, which automatically engages gate leaf and holds it in open position until manually released.

## PART 3 - EXECUTION

### 3.1 INSTALLATION

- A. Do not begin installation and erection before final grading is completed, unless otherwise permitted.
  - 1. Fabric shall be applied to the 'security' side of framework. For sports facilities, the 'security' side is the playing side of the framework. For other applications, the 'security' side is the outside of the framework.
- B. Excavation: Drill or hand excavate (using posthole digger) holes for posts to diameters and spacing shown.
  - 1. Posts shall be spaced a maximum of 10' on center.
  - 2. If not indicated on drawings, excavate holes for each post to minimum diameters as recommended by fence manufacturer, but not less than 4 times largest cross-section of post.
  - 3. Unless otherwise indicated, excavate hole depths approximately 3" lower than post bottom, with bottom of posts set not less than 36" below finish grade surface.
- C. Setting Posts: Center and align posts in holes 3" above bottom of excavation.
  - 1. Place concrete around posts and vibrate or tamp for consolidation. Check each post for vertical and top alignment, and hole in position during placement and finishing operations.
    - a. Unless otherwise indicated, extend concrete footings 2" above grade and trowel to a crown to shed water.
- D. Top Rails: Run rail continuously through post caps, bending to radius for curved runs. Provide one expansion coupling every five couplings.
- E. Mid-Rails: Provide mid-rails as indicated. Install in one piece between posts using line rail clamps where necessary.
- F. Bottom Rail: Provide as indicated. Install in one piece between posts using line rail clamps where necessary.
- G. Brace Assemblies: Install braces so posts are plumb when diagonal rod is under proper tension.
- H. Tension Wire: Install tension wire at bottom of fabric. Fasten fabric to tension wire using hog rings 24" on center.
- I. Fabric: Leave approximately 1" between finish grade and bottom selvage, unless otherwise indicated. Pull fabric taut and tie to posts, rails, and tension wires. Install fabric on security side of fence, and anchor to framework so that fabric remains in tension after pulling force is released.

- J. Tension or Stretcher Bars: Thread through and clamp to fabric and secure to posts with metal bands spaced 15" on center.
- K. Swing Gates: Install gates plumb, level, and secure for full opening without interference. Install ground-set items in concrete for anchorage. Adjust hardware for smooth operation and lubricate where necessary.
- L. Tie Wires: Tie fabric to line posts, with wire ties spaced 12" on center. Tie fabric to rails and braces, with wire ties spaced 24" on center. Tie fabric to tension wires, with hog rings spaced 24" on center.
- M. Fasteners: Use 5/16" x 1-1/4" galvanized carriage bolts with hex nut. Install so head of carriage bolt is on the 'secure' side of the fence.

END OF SECTION 323113