Section 02831

Galvanized Chain Link Fence Framework with Aluminized Fabric

**Part 1 General**

1.01 Section Includes:
   A. Aluminized steel chain link fabric.
   B. Galvanized steel pipe framework.
   C. Galvanized Gates.
   D. Hardware.
   E. Fence Style Choices
   F. Installation.

1.02 Scope of Work:
   A. Summary: This section covers the work necessary to complete the chain link fence and gate installation.
   B. General: Like items of materials provided hereinafter shall be the end products of one manufacturer in order to achieve standardization for appearance, maintenance and replacement.
   C.

1.03 Submittals:
   A. Shop Drawings: Submit layout of fencing and gates with dimensions, details and finishes of components, accessories and post foundations.
   B. Product Data: Submit manufacturers catalog cuts when requested by owner.
   C. Samples: Submit manufacturer’s samples of materials (fabric, pipe and accessories) when requested by owner.
   D. Qualification Data: If requested, include lists of completed projects with project names, addresses and contact information. Installation personnel must have 3 years experience with similar types of projects.

1.04 Related Work Specified Elsewhere:
   A.
   B.
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Part 2 Products

2.01 Manufacturer:

A. Products from qualified manufacturers who have five years or more experience in manufacturing chain link fence products.

2.02 Chain link Fence Fabric:

A. Aluminized (Aluminum Coated) fabric shall conform to ASTM A491. Fabric shall be coated before weaving with a minimum of 0.4 ounces of aluminum per square foot of surface area. The steel wire and coating shall conform to ASTM A817. Fabric to be 9 gauge wire woven in a 2” diamond mesh. The selvage of the fence fabric shall be as follows (unless specified otherwise):

- Fabric heights up to and including 5’ high – knuckled selvage top and bottom
- Fabric heights 6’ high and over shall be knuckled at the bottom and twisted at the top.
- Ballfields, playgrounds and other areas where children or public safety is a concern shall have a knuckled selvage on the top and bottom for all fence heights.

Other gauges (11, 10 and 6) and mesh openings (3/8”, 1”, 1 ¾” and 2 ¼”) are available.

2.03 Galvanized Steel Fence Framework:

A. Group 1A steel pipe (Schedule 40) per ASTM F1043, having a minimum yield strength of 30,000 psi. Pipe to be coated inside and outside with Type A coating (hot dipped methods). Minimum 1.8 oz./ft² of surface.

or

B. Group 1C steel pipe per ASTM F1043, having a minimum, yield strength of 50,000 psi. External coating type B zinc with organic overcoat 0.9 oz/ft² minimum zinc with a verifiable polymer film. Internal coating type B or type D with an 81% nominal zinc pigmented coating 0.3 mils minimum thickness. All coatings to be applied after welding.

Pipe shall be straight, true to section and conform to the following weights:

<table>
<thead>
<tr>
<th>Pipe size Outside diameter</th>
<th>Group 1A weight lbs./ft.</th>
<th>Group 1C weight lbs./ft.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 5/8&quot;</td>
<td>2.27</td>
<td>1.84</td>
</tr>
<tr>
<td>1 7/8&quot;</td>
<td>2.72</td>
<td>2.28</td>
</tr>
<tr>
<td>2 3/8&quot;</td>
<td>3.65</td>
<td>3.12</td>
</tr>
<tr>
<td>2 7/8&quot;</td>
<td>5.79</td>
<td>4.64</td>
</tr>
<tr>
<td>3 ½”</td>
<td>7.58</td>
<td>5.71</td>
</tr>
<tr>
<td>4”</td>
<td>9.11</td>
<td>6.56</td>
</tr>
<tr>
<td>6 5/8”</td>
<td>18.97</td>
<td>--</td>
</tr>
<tr>
<td>8 5/8”</td>
<td>24.70</td>
<td>--</td>
</tr>
</tbody>
</table>
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2.04 Galvanized Steel Fence Framework:

C. Post and rail sizes for various heights of fence:

<table>
<thead>
<tr>
<th>Fence Height</th>
<th>Line Post</th>
<th>Terminal Post</th>
<th>Top, Brace, Middle or Bottom Rail</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Heavy Construction:</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3'</td>
<td>1 7/8&quot;</td>
<td>2 3/8&quot;</td>
<td>1 5/8&quot;</td>
</tr>
<tr>
<td>3'6&quot;</td>
<td>1 7/8&quot;</td>
<td>2 3/8&quot;</td>
<td>1 5/8&quot;</td>
</tr>
<tr>
<td>4'</td>
<td>2 3/8&quot;</td>
<td>2 7/8&quot;</td>
<td>1 5/8&quot;</td>
</tr>
<tr>
<td>5'</td>
<td>2 3/8&quot;</td>
<td>2 7/8&quot;</td>
<td>1 5/8&quot;</td>
</tr>
<tr>
<td>6'</td>
<td>2 3/8&quot;</td>
<td>2 7/8&quot;</td>
<td>1 5/8&quot;</td>
</tr>
<tr>
<td>7'</td>
<td>2 3/8&quot;</td>
<td>2 7/8&quot;</td>
<td>1 5/8&quot;</td>
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<tr>
<td>8'</td>
<td>2 3/8&quot;</td>
<td>2 7/8&quot;</td>
<td>1 5/8&quot;</td>
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<tr>
<td>10'</td>
<td>2 3/8&quot;</td>
<td>2 7/8&quot;</td>
<td>1 5/8&quot;</td>
</tr>
<tr>
<td>12'</td>
<td>2 7/8&quot;</td>
<td>2 7/8&quot;</td>
<td>1 5/8&quot;</td>
</tr>
<tr>
<td>15'</td>
<td>2 7/8&quot;</td>
<td>2 7/8&quot;</td>
<td>1 5/8&quot;</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Fence Height</th>
<th>Line Post</th>
<th>Terminal Post</th>
<th>Top, Brace, Middle or Bottom Rail</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Light Construction:</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3'</td>
<td>1 5/8&quot;</td>
<td>1 7/8&quot;</td>
<td>1 5/8&quot;</td>
</tr>
<tr>
<td>3'6&quot;</td>
<td>1 5/8&quot;</td>
<td>1 7/8&quot;</td>
<td>1 5/8&quot;</td>
</tr>
<tr>
<td>4'</td>
<td>1 7/8&quot;</td>
<td>1 7/8&quot;</td>
<td>1 5/8&quot;</td>
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<tr>
<td>5'</td>
<td>1 7/8&quot;</td>
<td>2 3/8&quot;</td>
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<td>2 3/8&quot;</td>
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<tr>
<td>12'</td>
<td>2 3/8&quot;</td>
<td>2 7/8&quot;</td>
<td>1 5/8&quot;</td>
</tr>
</tbody>
</table>
2.05  Hardware

A.  Chain link fence fittings per ASTM F626.  All ferrous metal fittings to be galvanized.  All fittings to be steel or cast iron.
B.  Tie wires to be aluminum, minimum 9 gauge.  6 gauge aluminum to be used for ballfields, school districts and higher security installations.
C.  Barbed Wire to be aluminized, double strand, 13 gauge, twisted line wire with aluminized steel, 4 point barbs, spaced approximately 5” on center as per ASTM A121.
D.  Tension wire (top or bottom) shall be aluminized 7 gauge having a tensile strength of 75,000 psi as per ASTM A817

2.06  Galvanized Steel Swing Gates:

A.  Chain link swing gates – ASTM F900.
B.  Pipe, fabric and hardware to match adjacent fencing.
C.  Gates to have welded corners.  Welds to be finished with cold galvanizing compound.
D.  Outside gate framework to be a minimum of 1 5/8”OD for gates 6’ high or less.  1 7/8”OD for gates over 6’ high.  Interior bracing to be 1 5/8”OD or 1 7/8”OD.
E.  Gate post dimensions are as follows:

Gate height 6’ or less:
Width of gate frame up to and including 4’ wide – 2 3/8”OD gate post
Over 4’ up to and including 10’ wide – 2 7/8”OD gate post
Over 10’ to 18’ – 4”OD gate post

Gate height over 6’:
Width of gate frame up to and including 6’ wide – 2 7/8”OD
Over 6’ up to and including 12’ wide – 4”OD
Over 12’ up to and including 18’ wide – 6 5/8”OD
Over 18’ up to and including 24’ wide – 8 5/8”OD

Note:  The above dimensions are per leaf.  For double swing gates use the proper post per leaf.
F.  Single swing gates receive a fork type latch.
G.  Double swing gates can use either a drop rod (center locking device) or a strongarm latch (recommended).
H.  Add gate holdbacks as necessary.
2.07  Slide Gates:

Chain link slide gates – ASTM – 1184. Fabric to match adjacent fencing.
- Type I – Overhead slide gate (up to 40’ opening) – Include required beam clearance.
- Type II – Cantilever slide (up to 30’ opening) – Class 1: Steel frame gates and aluminum frame gates using external rollers. Class 2: Steel frame gates and aluminum frame gates using internal rollers. It is recommended that one of the following are chosen:
  - Class 1 – galvanized steel frame with external rollers (standard).
  - Class 2 – aluminum frame with internal rollers (high end).

For larger openings consult Allegheny Fence.
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Part 3 Chain Link Style Options

Choose from the following fence styles:

A. General Fence Style
   □ No barbed wire.
   □ Add 3 strands barbed wire (adds 12” to fence height).
     □ Face barbed wire in.
     □ Face barbed wire out.
   □ Add 6 strands barbed wire – V type (adds 12” to fence height).

B. Top of fence framework
   □ Top rail
   □ Top tension wire (no top rail).

C. Brace Rail
   □ Brace rail located at mid height of the fence at terminal posts only – 1 at each end and two at each corner. Brace rails are not used on fence less than 6’ high. Recommended for all fence 6’ high and higher.
   □ Brace rail with diagonal truss rod. Brace rail with rod are not used on fence under 6’ high. (optional)
   □ Middle rail – continuous center rail on fence. (optional)
   □ Continuous rail at fence overlap. A continuous rail is placed at the overlap for fences over 12’ high where the lower and upper fabrics overlap.

D. Bottom of fence framework
   □ None required
   □ Bottom tension wire (recommended)
   □ Bottom rail

E. Fence Vision Barrier
   □ PVT Tube slats (70% coverage - choose color)
   □ Winged Tube slats (90% coverage – choose color)
   □ Windscreen
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Part 4 Installation

4.01 Examination

A. Examine areas and conditions before proceeding with installation. Verify that clearing, earthwork, pavement work and any other conditions that may affect the proper placement of the fence are complete by others. Do not begin installation until final grading is completed by others, unless given permission to proceed by the owner, architect or superintendent.

B. Fence corners are to be located by others. Owners shall also mark private utilities. A PA One Call shall be made for public utilities.

C. Install chain link fence to comply with ASTM F567 and more stringent requirements if specified.

4.02 Post installation

A. All posts to be set in concrete footers.

B. Space line posts equal distant 10 maximum center to center of posts.

C. Set terminal posts at the beginning and end of each continuous length of fence and where abrupt changes in grade or direction of fence occur (30° or more).

D. Post excavation: Drill or hand excavate holes for posts to diameters and spacing indicated, in firm, undisturbed or compacted soil. Diameter and depth of footings are as follows (in normal conditions):
The diameter shall be 4 times the largest cross section or diameter of the fence post. The depth shall be 24" for 4' high and an additional 3" in depth for each additional foot in fence height up to a maximum of 4’ deep for 15’ high fence. Should solid concrete be encountered the depth of the hole shall be 3 times the post diameter with the hole diameter 1” larger than the largest cross section of the post.

E. Post setting: Set posts in concrete footers. Footer shall extend 6” deeper then the bottom of the post (post is 6” shorter than the post excavation). Protect portion of post above ground from concrete splatter. Verify that posts are plumb, aligned and at correct height and spacing. Crown the concrete to shed water with a 2” crown. An alternative method is to leave the footing 2” low and cover with sod, blacktop or other materials.

F. Concrete shall be 1:2:4 mix with a minimum 28 day compressive strength of 3000 psi.

G. To install posts in a solid concrete pad or wall core drill or place a sleeve. The diameter of the hole should be 1” larger than the largest cross section of the post. The depth of the hole should be 3 times the post diameter with a 6” minimum depth. Grout shall be non shrink, nonmetallic, premixed, factory packaged, non staining, non corrosive, nongaseous complying with ASTM C1107. Provided grout recommended by manufacturer for exterior applications.
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4.03 Framework
   A. Securely attach all rails and tension wire to terminal and line posts.

4.04 Fabric
   A. Install fabric on security side and attach so that fabric remains in tension after pulling force is released. Leave approximately 2" between finish grade and bottom selvage. Attach fabric with wire ties to line posts at 15" on center and to rails, braces and tension wire at 24" on center. Thread tension bar through fabric and attach to terminal posts with bands spaced maximum of 15" on center.

4.05 Accessories
   A. Barbed Wire – Uniformly space parallel rows of barbed wire on security side of fence. Pull wire taut and attach to each extension arm.

4.06 Gates
   A. Install gates including any required hardware and holdbacks.

4.07 Cleaning
   A. Clean up debris and remove from the site.