Ameristar Fence Products
Architectural Metal Fences & Gates

Ornamental Steel • Ornamental Welded
High Security Steel • Anti-Ram Barrier System • Ornamental Aluminum
Color Chain Link Framework • Galvanized Chain Link Framework
Swing & Slide Gates
Ameristar® manufactures a wide variety of Architectural Metal Fence Systems to ensure a quality fence for every design need. Whether for high security, heavy industrial, or commercial business applications, Ameristar® has the answer.

<table>
<thead>
<tr>
<th>Product</th>
<th>Pages</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aegis II® Industrial</td>
<td>6-11</td>
</tr>
<tr>
<td>Ornamental Steel Fence System</td>
<td></td>
</tr>
<tr>
<td>Aegis Plus® Commercial</td>
<td>12-13</td>
</tr>
<tr>
<td>Ornamental Steel Fence System</td>
<td></td>
</tr>
<tr>
<td>Montage II® Industrial</td>
<td>14-17</td>
</tr>
<tr>
<td>Ornamental Steel Fusion Welded</td>
<td></td>
</tr>
<tr>
<td>Fence System</td>
<td></td>
</tr>
<tr>
<td>Montage Plus® Commercial</td>
<td>18-19</td>
</tr>
<tr>
<td>Ornamental Steel Fusion Welded</td>
<td></td>
</tr>
<tr>
<td>Fence System</td>
<td></td>
</tr>
<tr>
<td>Impasse® High Security</td>
<td>20-25</td>
</tr>
<tr>
<td>Steel Fence</td>
<td></td>
</tr>
<tr>
<td>Stalwart® High Security</td>
<td>26-27</td>
</tr>
<tr>
<td>Anti Ram fence Barrier System</td>
<td></td>
</tr>
<tr>
<td>Echelon II® Industrial</td>
<td>28-33</td>
</tr>
<tr>
<td>Ornamental Aluminum Fence</td>
<td></td>
</tr>
<tr>
<td>System</td>
<td></td>
</tr>
<tr>
<td>Echelon Plus® Commercial</td>
<td>34-35</td>
</tr>
<tr>
<td>Ornamental Aluminum Fence</td>
<td></td>
</tr>
<tr>
<td>System</td>
<td></td>
</tr>
<tr>
<td>PermaCoat® Industrial</td>
<td>36-39</td>
</tr>
<tr>
<td>and Commercial</td>
<td></td>
</tr>
<tr>
<td>Color Chain Link Framework</td>
<td></td>
</tr>
<tr>
<td>GalvOnAll™ Industrial</td>
<td>40-41</td>
</tr>
<tr>
<td>and Commercial</td>
<td></td>
</tr>
<tr>
<td>Galvanized Chain Link Framework</td>
<td></td>
</tr>
<tr>
<td>Delta Force® Barbed Tape</td>
<td>42-43</td>
</tr>
<tr>
<td>Obstacle and Entanglement System</td>
<td></td>
</tr>
<tr>
<td>Architectural Metal Swing Gates</td>
<td>44-47</td>
</tr>
<tr>
<td>for All Fence Systems</td>
<td></td>
</tr>
<tr>
<td>Estate™ Arched Aluminum Entry</td>
<td></td>
</tr>
<tr>
<td>Gates</td>
<td></td>
</tr>
<tr>
<td>TransPort™ Aluminum Cantilever</td>
<td>48-49</td>
</tr>
<tr>
<td>Gates for All fence Systems</td>
<td></td>
</tr>
<tr>
<td>PassPort™ Steel Roll Gates</td>
<td>50-51</td>
</tr>
<tr>
<td>for All Fence Systems</td>
<td></td>
</tr>
</tbody>
</table>
DEFINING FEATURES

Any truly great product must have a defining feature that sets it apart from all others; Ameristar® fence systems have several features that make them superior to those of competing manufacturers.

DESIGN INNOVATION

Ameristar® has developed unique (patented or patents pending) product designs that simultaneously expand structural capabilities and increase aesthetic value of its architectural fence systems.

**ForeRunner™ Rail**

The primary differentiating factor in Ameristar’s Aegis II®, Aegis Plus®, and Echelon II® ornamental fence systems is the ForeRunner™ internal retaining rod picket-to-rail joining system. Panels employing this unique system present an attractive “good neighbor” look with no exposed fasteners.

**Stalwart® Cables**

In Ameristar’s high security Impasse® anti-ram fence barrier, the differentiating concept is the integrated Stalwart® cable system. The posts and horizontal rails are designed to double as conduits to carry high-strength anti-ram cables without compromising the excellent aesthetic appearance of the fence.

TOTAL PROCESS CONTROL

Ameristar® is America’s only architectural metal fence manufacturer who controls all manufacturing processes and all quality criteria from receipt of raw material to completion of finished product, totally inside the factory. This direct manufacturing throughput system coupled with the fast pace of Ameristar’s Speed of Business™ ensures a very **competitive initial cost**, while Ameristar’s superior structural design and premium PermaCoat® finish guarantee a **significantly lower long-term cost**.

ARCHITECTURAL BINDER COMPACT DISC INTERNET WEBSITE

The shop drawing shown is one of several shop drawings contained in the Ameristar® Architectural Binder, which is available upon request. Ameristar’s standard technical information in the form of drawings, specifications, photographic examples, and warranties, is provided in hard copy format. The binder addresses all Ameristar® high security, industrial, and commercial architectural metal fence and gate systems including Impasse®, Stalwart®, Aegis Plus® & Aegis II®, Montage Plus® and Echelon Plus® & Echelon II®, as well as PermaCoat® and GalVOnAll™ chain link fence products.

**Compact Disc**

All Ameristar® high security, ornamental, and chain link fence system technical data is also available on CD format. On the new CD, architects will find digital photographs and electronic specifications and drawings pertaining to all of Ameristar’s architectural metal fence and gate systems, as well as relevant data on the multi-stage electrostatic coating process for high security and industrial/commercial applications.

**Internet Website**

The Ameristar® architectural website (http://www.ameristarfence.com) enables the user to browse all of Ameristar’s product lines. The site is complete with photos, drawings, specifications and installation procedures.

Ameristar’s electronic media enable architects and specifiers to simply download specification information directly into the appropriate section of their CSI-formatted project specifications; they also enable the direct downloading of product drawings onto project blueprints.
DEFINING FEATURES
SUPERIOR COATING PROCESS

Impasse® High Security Fences, Aegis II® Industrial Ornamental Steel Fences, Aegis Plus® Commercial Ornamental Steel Fences, and PermaCoat® Industrial and Commercial Color Chain Link Framework are all protected with Ameristar’s unique PermaCoat double coating process. The steel base material has a hot-dip galvanized coating, specially developed for subsequent application of powder coating. The galvanized substrate is subjected to the PermaCoat® process, a complete thermal stratification (multi-stage, high-temperature, multi-layer) electrostatic powder application system of both epoxy and polyester. The PermaCoat® powder coating system results in finished surfaces with unmatched performance. The base coat of epoxy powder far surpasses the corrosion resisting abilities of painted surfaces. The “no-mar” polyester powder top coat dramatically increases weathering resistance (color and gloss retention) and reduces scratches and burnishing marks normally encountered during shipping.
Zinc compounds are used in the phosphatizing process because they add a significant amount of sacrificial cathodic protection. The zinc is much more active than steel; therefore, the zinc must oxidize before the steel is free to corrode. Iron phosphate, by contrast, provides no sacrificial cathodic advantage when applied to steel.

**DEFINING FEATURES**

**SUPERIOR PERMACOAT® PROCESS**

**11 Stage PermaCoat® Double-Coating Process**

- **7 STAGE PRE-TREATMENT**
  - Alkaline Wash
  - Pickling Rinse
  - Zinc Phosphate
  - Clear Water Rinse
  - Non-Chromate Seal
  - Clear Water Rinse
  - Drying Oven

- **DOUBLE COATING & CURING**
  - Epoxy Powder Booth
  - Intermediate Curing Oven
  - Polymer Powder Booth
  - Finish Curing Oven

All fence parts, gates and accessories are given complete PermaCoat® application.

Zinc compounds are used in the phosphatizing process because they add a significant amount of sacrificial cathodic protection. The zinc is much more active than steel; therefore, the zinc must oxidize before the steel is free to corrode. Iron phosphate, by contrast, provides no sacrificial cathodic advantage when applied to steel.

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**TYPICAL COMPETITOR PROCESSES**

**CONVENTIONAL POLYESTER (ONE COAT)**

- **Clear & Phosphate**
- **Iron Phosphate**
- **Polyester**

Simultaneous cleaning and phosphatizing significantly decreases the effectiveness of both treatments.

**CONVENTIONAL PVC (ONE COAT)**

- **Acid Wash**
- **Water Rinse**
- **Iron Phosphate**
- **Clear Water Rinse**
- **Forced Air Dry**
- **Polyester Powder Booth**
- **Finish Curing Oven**

Curing is by a melt and quench process wherein the PVC material solidifies against the base metal surface. Adhesion is suspect and can vary greatly with small ambient changes.

**PAINT SYSTEM**

- **Wipe or Rinse**
- **Spray Primer**
- **Spray Paint**
- **Air Dry**

Welded steel fences are frequently painted or single-coated without pre-treatment. No transition protection between base material and paint with this process.

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**SUPERIOR CORROSION RESISTANCE**

PermaCoat® significantly exceeds paint, polyolefin, PVC, and one coat polyester finishes in its ability to resist corrosion. ASTM B117 test results below show the dramatic difference.

**SUPERIOR UV RESISTANCE**

PermaCoat® is far superior to PVC in resistance to the harmful effects of UV radiation, as shown below using South Florida exposure tests.
Aegis® - A revolutionary system of fence posts, framework and mounting accessories that are easily assembled to form an attractive “good neighbor” appearance with no exposed fasteners. Any truly great product must have a defining feature that sets it apart from all others; Ameristar’s Aegis® fences, including Aegis II® Industrial and Aegis Plus® Commercial, has two such features:

- NO RIVETS
- NO SCREWS
- NO WELDS

FORERUNNER™ RAIL
(Patent No. 5,443,244)
Double-walled “U” Channel - Specially formed high strength architectural shape. Inside galvanized. Open on ends enabling air circulation and moisture evaporation.

GROMMET
Gives finished appearance and prevents moisture collection.

INTERNAL RETAINING ROD
Variable pitch connection system for ease of installation, high angle biasability and elimination of unsightly external fasteners.

SECURITY FASTENER
One-way action secures rail and eliminates removal by normal tools.

PANEL BRACKET
Specially designed stainless steel bracket allows simultaneous 45° rotation side to side and up and down.

MOST PREVALENTLY SPECIFIED
8 out of 10 industrial ornamental fence specifications call for Aegis II® by Ameristar.

MOST PROFESSIONALLY INSTALLED
Ameristar ensures that only the best professional fence contractors install Aegis II®. Contractor experience is supplemented by special training presented at Ameristar’s Tulsa training facility.

MOST FUNCTIONAL DESIGN
Biasability a minimum of 25% No Stair Stepping Required

Industrial swivel bracket
Bracket allows simultaneous 45° rotation side to side and up and down.


**RAIL STRENGTH**

<table>
<thead>
<tr>
<th>ForeRunner™ (Steel)</th>
<th>ForeRunner™ (Steel)</th>
<th>Structural Parameters</th>
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<tbody>
<tr>
<td>Aegis II</td>
<td>Aegis Plus</td>
<td></td>
</tr>
<tr>
<td>6' Span</td>
<td>8' Span</td>
<td></td>
</tr>
<tr>
<td>675#</td>
<td>506#</td>
<td></td>
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<tr>
<td>446#</td>
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<td>673#</td>
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<tr>
<td>2,500</td>
<td>50,000</td>
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</tr>
<tr>
<td>S_v = Section Modulus (IN) Vertical</td>
<td>S_h = Section Modulus (IN) Horizontal</td>
<td>W = Rail Weight (LBS/FT)</td>
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<td>.095</td>
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<td>.188</td>
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<td>35,000</td>
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<tr>
<td>F_y = Yield Strength (PSI)</td>
<td>6' Span Vertical Load Data</td>
<td>8' Span Horizontal Load Data</td>
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<td>523#</td>
<td>320#</td>
<td>652#</td>
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<tr>
<td>392#</td>
<td>239#</td>
<td>425#</td>
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<tr>
<td>PH_y = Horizontal Design Load @ .66 F_y</td>
<td>PH_v = Vertical Design Load @ .66 F_v</td>
<td></td>
</tr>
<tr>
<td>345#</td>
<td>211#</td>
<td>425#</td>
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<td>259#</td>
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<tr>
<td>6' Span</td>
<td>8' Span</td>
<td></td>
</tr>
</tbody>
</table>

* Vertical Design Loads are per rail; for capacity of fence panel, multiply by number of rails.

* Recommended load value for safe structural design (Allowable Strength = .66 F_y).

**ATTACHMENT SECURITY**

**Picket To Rail**
ForeRunner™ Rail with Enclosed Retaining Rod

Rod is completely enclosed. Attachment cannot be compromised.

**Rail To Bracket**
Security Fastener

One-way fastener cannot be loosened by normally available tools.

**PERMACOAT® FINISH**

Ameristar’s production facilities include a state-of-the-art polyester powder coating system providing Aegis II® fences with a finish that is far superior to other coatings in durability and scratch-resistance. Powder coating has become the fastest growing form of finishing technology. It does not emit hazardous volatile organic compounds as is the case with wet paints. Aegis II® fence components coated with PermaCoat® can endure over 3,500 hours of salt spray testing; proving the claim of long-lasting durability. With Aegis II® Industrial Steel, a maintenance-free, environmentally-friendly fence is guaranteed. See Pages 4 and 5 for a detailed discussion of the PermaCoat® process and its comparative advantages over other coating systems.
Shipping
Aegis II® Industrial Ornamental Fence components (e.g., pickets, rails, etc.) and TransPort™ Cantilever Gates are carefully packaged in heavy duty cardboard boxes to ensure the most economical damage-free shipping.

Ordering Information
To order, simply specify the fence or gate design series, color and height desired. Then figure and provide the quantities needed. Contact Ameristar® (888-333-3422) for the nearest distributor or if any other assistance is needed.

Warranty
A written 10 year limited warranty is extended on Ameristar’s Aegis II® fence systems. Call Ameristar® for a copy.

Maintenance
Little or no maintenance is required for the fence and gate systems supplied by Ameristar®. The PermaCoat® coated galvanized steel in Aegis II® and Aegis Plus® and the polyester coated aluminum in TransPort™ gates will remain corrosion free for years to come. If pickets or rails are damaged by accidental impact, the affected components can be easily replaced. Damages to coated surfaces can be readily covered with Ameristar’s matching custom finishes (either spray or paint pen application).
Ameristar’s spear-pointed picket extends through the ForeRunner™ top rail to form the attractive traditional Classic™ design. The picket spear is formed with a 3/8” diameter rounded tip rather than a sharp point.

The Majestic™ design is formed to a configuration of contemporary simplicity that maintains a stately look of dignity.
The Genesis™ style offers extended pickets similar to the Classic™, but is differentiated by having a flat rather than spear-shaped picket top. Genesis™ is becoming increasingly popular as a perimeter for apartments and condominiums. Available in both 2 and 3-Rail styles.

Security and protection are combined with the beauty of ornamental fencing in the Invincible™ design. Each picket is spear-topped and extends 18” above the top rail, curving outward to make this fence very difficult to overcome, as the name implies.
PART 1 - GENERAL
1.01 WORK INCLUDED
The contractor shall provide all labor, materials and appurtenances necessary for installation of the industrial ornamental steel fence system defined herein at (specify project site).

1.02 RELATED WORK
Section 022 - Earthwork
Section 030 - Concrete

1.03 SYSTEM DESCRIPTION
The manufacturer shall supply a total industrial ornamental steel fence system of the Ameristar® Aegis II® (specify Classic™, Majestic™, Genesis™ or Invincible™) design. The system shall include all components (i.e., pickets, rails, posts, gates and hardware) required.

1.04 QUALITY ASSURANCE
The contractor shall provide laborers and supervisors who are thoroughly familiar with the type of construction involved and materials and techniques specified.

1.05 REFERENCES

1.06 SUBMITTAL
The manufacturer’s submittal package shall be provided prior to installation.

1.07 PRODUCT HANDLING AND STORAGE
Upon receipt at the job site, all materials shall be checked to ensure that no damage occurred during shipping or handling. Materials shall be stored in such a manner to ensure proper ventilation and drainage, and to protect against damage, weather, vandalism and theft.

PART 2 - MATERIALS
2.01 MANUFACTURER
The industrial ornamental steel fence system shall conform to Ameristar® AEGIS II® (specify Classic™, Majestic™, Genesis™ or Invincible™) design. The frame system shall be manufactured by Ameristar® Fence Products, Inc., in Tulsa, Oklahoma.

2.02 MATERIAL
A. Steel material for fence framework (i.e., tubular pickets, rails and posts), when galvanized prior to forming, shall conform to the requirements of ASTM A525/A525M, with a minimum yield strength of 45,000 psi (314 MPa). The steel shall be hot-dip galvanized to meet the requirements of ASTM A653/A653M with a minimum zinc coating weight of 0.80 oz./ft2 (27 g/m2). Coating Designation G-90.

B. The manufactured galvanized framework shall be subjected to the PermaCoat® thermal stratification coating process (high-temperature, in-line, multi-stage, multi-layer) including, as a minimum, a six-stage pretreatment/wash (with zinc phosphate), and electrostatic spray application of an epoxy base, and a separate electrostatic spray application of a polyester finish. The base coat shall be a thermostetting epoxy powder coating (gray in color) with a minimum thickness of 2 mils (0.00508mm). The topcoat shall be a “no-mar” TGIC polyester powder coat finish with a minimum thickness of 2 mils (0.00508mm). The topcoat shall be a thermosetting epoxy powder coating (gray in color) with a minimum thickness of 2 mils (0.00508mm). The color shall be (specify Black, Bronze, White or Desert Sand) .

C. Material for fence pickets shall be 1 square x 14 Ga. tubing. The cross-sectional shape of the rails shall conform to the manufacturer’s ForeRunner™ design with outside cross-section dimensions of 1.75” square and a minimum thickness of 14 Ga. Picket holes in the ForeRunner™ rail shall be spaced 4.715” o.c. except for Invincible™ style 6’ long which shall be spaced 4.98” o.c. Picket retaining rods shall be 0.125” diameter galvanized steel. Posts shall be a minimum of 2-1/2” square x 12 Ga. High quality PVC grommets shall be supplied to seal all picket-to-rail intersections.

PART 3 - EXECUTION
3.01 PREPARATION
All new installation shall be laid out by the contractor in accordance with the construction plans.

3.02 INSTALLATION
Fence posts shall be set in accordance with the spacings shown in Table 2, plus or minus 1/2", depending on the nominal span specified. Gate posts shall be spaced according to the gate openings specified in the construction plans. The “Earthwork” and “Concrete” sections of this specification shall govern post base material requirements. AEGIS II® panels shall be attached to posts using mechanically fastened panel brackets supplied by the manufacturer.

3.03 CLEANING
The contractor shall clean the jobsite of excess materials; post hole excavations shall be scattered uniformly away from posts.

Table 1 - Coating Performance Requirements

<table>
<thead>
<tr>
<th>Quality Characteristics</th>
<th>ASTM Test Method</th>
<th>Performance Requirements</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adhesion</td>
<td>D3359 - Method B</td>
<td>Adhesion (Retention of Coating) over 90% of test area (Tape and knife test).</td>
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<tr>
<td>Corrosion Resistance</td>
<td>B117 &amp; D1654</td>
<td>Corrosion Resistance over 3,500 hours (Scched per D1654, failure mode is accumulation of 1/8” coating loss from scribe or medium #8 blisters).</td>
</tr>
<tr>
<td>Impact Resistance</td>
<td>D2794</td>
<td>Impact Resistance over 60 inch lb. (Forward impact using 0.625” ball).</td>
</tr>
<tr>
<td>Weathering Resistance</td>
<td>D282, D244, D253 (60° Method)</td>
<td>Weathering Resistance over 1,000 hours (Failure mode is 60% loss of gloss or color variance of more than 3 delta-E color units).</td>
</tr>
</tbody>
</table>

Table 2 - Post Spacing Requirements

<table>
<thead>
<tr>
<th>Span</th>
<th>6' Nominal (67-3/4” Rail)</th>
<th>8' Nominal (92-5/8” Rail)</th>
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</thead>
<tbody>
<tr>
<td>Post Size</td>
<td>2-1/2”</td>
<td>3”</td>
</tr>
<tr>
<td>Bracket</td>
<td>Rigid</td>
<td>Swivel</td>
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<tr>
<td>Straight Picket Post Settings +/- 1/2” O.C.</td>
<td>71-1/2”</td>
<td>71”</td>
</tr>
<tr>
<td>Curved Picket Post Settings +/- 1/2” O.C.</td>
<td>75”</td>
<td>75-1/2”</td>
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</tbody>
</table>
**Aegis Plus®**

**Just the Right Size for Commercial Applications**

Commercial businesses finally have a high quality, competitively priced alternative to welded steel, aluminum and chain link. Painted steel that has been welded can rust soon after installation; ultra light aluminum fencing can be easily deformed by small climbing loads or impact loads. Aegis Plus® combines strength greater than most industrial steel fences with a surface finish that is essentially maintenance-free. The size also works well for residential users seeking greater strength and a more substantial look without the extremely high cost of heavy industrial fencing.

**COMPONENT SIZES**

<table>
<thead>
<tr>
<th>System</th>
<th>Pickets</th>
<th>Rails</th>
<th>Posts</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aegis Plus® Commercial</td>
<td>3/4&quot; x 16 GA.</td>
<td>1-1/2&quot; x 14 GA.</td>
<td>See Table To The Right</td>
</tr>
</tbody>
</table>

*Special Roll-Formed ForeRunner™ Shape*

**STYLES**

- **CLASSIC™**
  - Style C2 (2-Rail)
  - Style C3 (3-Rail)

- **GENESIS™**
  - Style G2 (2-Rail)
  - Style G3 (3-Rail)

- **MAJESTIC™**
  - Style M2 (2-Rail)
  - Style M3 (3-Rail)

- **WARRIOR™**
  - Style W2 (2-Rail)
  - Style W3 (3-Rail)

**ADORNMENTS**

- Quad Flare
- Triad
- Ring
- Ball Cap

**WIND LOADING**

<table>
<thead>
<tr>
<th>Height (FT)</th>
<th>Rail Length</th>
<th>Post Size</th>
<th>Aegis Plus® Wind Load Capacity Factor (PSF)</th>
<th>Typical Wind Load Capacity (mph)</th>
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</thead>
<tbody>
<tr>
<td>4</td>
<td>6</td>
<td>2-1/2&quot; x 12 GA.</td>
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<tr>
<td>7</td>
<td>6</td>
<td>2-1/2&quot; x 12 GA.</td>
<td>41.5</td>
<td>150</td>
</tr>
<tr>
<td></td>
<td>6</td>
<td>3&quot; x 12 GA.</td>
<td>49.6</td>
<td>164</td>
</tr>
<tr>
<td>8</td>
<td>6</td>
<td>2-1/2&quot; x 12 GA.</td>
<td>32.2</td>
<td>132</td>
</tr>
<tr>
<td></td>
<td>6</td>
<td>3&quot; x 12 GA.</td>
<td>38.4</td>
<td>144</td>
</tr>
<tr>
<td></td>
<td>6</td>
<td>4&quot; x 12 GA.</td>
<td>23.4</td>
<td>113</td>
</tr>
<tr>
<td>9</td>
<td>6</td>
<td>3&quot; x 12 GA.</td>
<td>27.9</td>
<td>123</td>
</tr>
<tr>
<td>10</td>
<td>6</td>
<td>4&quot; x 11 GA.</td>
<td>36.8</td>
<td>141</td>
</tr>
</tbody>
</table>

Note: Mph calculated using ANSI/ASCE 7-02, “American Society of Civil Engineers Minimum Design Loads for Buildings and Other Structures” Exposure Category C (open terrain with scattered obstructions having lengths generally less than 30 feet). For wind loading applicable to a particular specification, consult the appropriate Building Code.

**COLORS, AVAILABILITY, WARRANTY & MAINTENANCE**

Aegis Plus® color choices are the same as for Aegis II® (see Page 8). The availability, warranty and maintenance information of Aegis II® also applies to Aegis Plus® (see Page 8).

**BIASABILITY**

No Stair Stepping Required

Depending on style, some panels can be biased to follow a grade change of up to 25% (2 feet in 8 feet).

**PERMACOAT® FINISH**

See Pages 4 and 5 for a detailed discussion of the PermaCoat® process and its comparative advantages over other coating systems.

**GATES**

Contact the Ameristar Architectural Department for detailed information and literature on gates.
CONSTRUCTION SPECIFICATION

SECTION 32 31 00 - ORNAMENTAL METAL FENCING SYSTEM
Aegis Plus® - Commercial Weight
(Meets “BUY AMERICAN” Domestic Procurements)

PART 1 - GENERAL

1.01 WORK INCLUDED
The contractor shall provide all labor, materials and appurtenances necessary for installation of the commercial ornamental steel fence system defined herein at [specify project site].

1.02 RELATED WORK
Section 022 - Earthwork
Section 030 - Concrete

1.03 SYSTEM DESCRIPTION
The manufacturer shall supply a total commercial ornamental steel fence system of the Ameristar® Aegis Plus® (specify Classic™, Majestic™, Genesis™ or Warrior™) design. The system shall include all components (i.e., pickets, rails, posts, gates and hardware) required.

1.04 QUALITY ASSURANCE
The contractor shall provide laborers and supervisors who are thoroughly familiar with the type of construction involved and materials and techniques specified.

1.05 REFERENCES

1.06 SUBMITTAL
The manufacturer’s submittal package shall be provided prior to installation.

1.07 PRODUCT HANDLING AND STORAGE
Upon receipt at the job site, all materials shall be checked to ensure that no damage occurred during shipping or handling. Materials shall be stored in such a manner to ensure proper ventilation and drainage, and to protect against damage, weather, vandalism and theft.

PART 2 - MATERIALS

2.01 MANUFACTURER
The commercial ornamental steel fence system shall conform to Ameristar® Aegis Plus® (specify Classic™, Majestic™, Genesis™ or Warrior™) design. The system shall be hot-dip galvanized to meet the requirements of ASTM A653/A653M with a minimum zinc coating weight of 0.60 oz/ft² (184 g/m²). The steel shall be hot-dip galvanized to meet the requirements of ASTM A653/A653M with a minimum zinc coating weight of 0.60 oz/ft² (184 g/m²). Coating Designation G-60.

B. The manufactured galvanized framework shall be subjected to the PermaCoat® thermal stratification coating process (high-temperature, in-line, multi-stage, multi-layer) including, as a minimum, a six-stage pretreatment wash (with zinc phosphate), an electrostatic spray application of an epoxy base, and a separate electrostatic spray application of a polyester finish. The base coat shall be a thermostatic epoxy powder coating (gray in color) with a minimum thickness of 2 mils (0.0508mm). The topcoat shall be a “no-mar” TGIC polyester powder coat finish with a minimum thickness of 2 mils (0.0508mm). The color shall be [specify color or color range]. The specification shall govern post base material requirements. Aegis Plus® panels shall be attached to posts using mechanically fastened panel brackets supplied by the manufacturer.

2.02 MATERIAL
A. Steel material for fence framework (i.e., tubular pickets, rails and posts), when galvanized prior to forming, shall conform to the requirements of ASTM A924/A924M, with a minimum yield strength of 45,000 psi (344 MPa). The steel shall be hot-dip galvanized to meet the requirements of ASTM A653/A653M with a minimum zinc coating weight of 0.60 oz/ft² (184 g/m²), Coating Designation G-60.

C. Completed panels shall be capable of supporting a 400 lb. load (applied at midspan) without permanent deformation. Panels without rings shall be biasable to a 25% change in grade; panels with rings shall be biasable to a 12.5% change in grade.

D. Swing gates shall be fabricated using Aegis Plus® panel material and gate ends having the same outside cross-section dimensions as the ForeRunner™ rail. All rail and upright intersections shall be jointed by welding. All picket and rail intersections shall also be jointed either by welding or by the same retaining rod process used for panel assembly.

PART 3 - EXECUTION

3.01 PREPARATION
All new installation shall be laid out by the contractor in accordance with the construction plans.

3.02 INSTALLATION
Fence posts shall be set in accordance with the post holes specified in the construction plans. The “Earthwork” and “Concrete” sections of this specification shall govern post base material requirements. Aegis Plus® panels shall be attached to posts using mechanically fastened panel brackets supplied by the manufacturer.

3.03 CLEANING
The contractor shall clean the job of excess materials; post-hole excavations shall be scattered uniformly away from posts.

Table 1 - Coating Performance Requirements

<table>
<thead>
<tr>
<th>Quality Characteristics</th>
<th>ASTM Test Method</th>
<th>Performance Requirements</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adhesion</td>
<td>D3359 - Method B</td>
<td>Adhesion (Retention of Coating) over 90% of test area (Tape and knife test).</td>
</tr>
<tr>
<td>Corrosion Resistance</td>
<td>B117 &amp; D1654</td>
<td>Corrosion Resistance over 3,500 hours (Scribed per D1654; failure mode is accumulation of 1/8&quot; coating loss from scribe or medium #8 blisters).</td>
</tr>
<tr>
<td>Impact Resistance</td>
<td>D2794</td>
<td>Impact Resistance over 60 inch b. (Forward impact using 0.625&quot; ball).</td>
</tr>
<tr>
<td>Weathering Resistance</td>
<td>D622, D2244, D525 (60° Method)</td>
<td>Weathering Resistance over 1,000 hours (Failure mode is 60% loss of gloss or color variance of more than 3 delta-E color units).</td>
</tr>
</tbody>
</table>

Table 2 - Post Spacing Requirements

<table>
<thead>
<tr>
<th>Span</th>
<th>6' Nominal (73-1/4&quot; Rail)</th>
<th>8' Nominal (92&quot; Rail)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Post Size</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2-1/2&quot;</td>
<td>3&quot;</td>
<td>2-1/2&quot;</td>
</tr>
<tr>
<td>Post Settings</td>
<td>1/2&quot; O.C.</td>
<td>76-3/4&quot;</td>
</tr>
<tr>
<td></td>
<td></td>
<td>77-1/4&quot;</td>
</tr>
<tr>
<td></td>
<td></td>
<td>95-1/2&quot;</td>
</tr>
</tbody>
</table>
Montage II®
Welded Steel Ornamental Fence

COMPONENT SIZES

<table>
<thead>
<tr>
<th>System</th>
<th>Pickets</th>
<th>Rails</th>
<th>Posts</th>
</tr>
</thead>
<tbody>
<tr>
<td>Montage II®</td>
<td>1&quot; x 14 Ga.</td>
<td>1-3/4&quot; x 1-3/4&quot; x 0.105&quot;</td>
<td>2-1/2&quot; Sq. x 12 Ga. min. for fences up to &amp; including 6' tall; 3&quot; Sq. x 12 Ga. min. for 7' &amp; 8' tall fences</td>
</tr>
<tr>
<td>Heavy Industrial</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

20 YEAR WARRANTY

The E-Coat combination of galvanized steel, zinc phosphate pre-treatment, and epoxy and acrylic double coating provide the protection necessary to withstand adverse weathering effects and justify the ‘best-in-the-business’ 20 Year Warranty.

STYLES

CLASSIC™
- Style C2 (2-Rail)
- Style C3 (3-Rail)
- Style C4 (4-Rail)

GENESIS™
- Style G2 (2-Rail)
- Style G3 (3-Rail)
- Style G4 (4-Rail)

MAJESTIC™
- Style M2 (2-Rail)
- Style M3 (3-Rail)
- Style M4 (4-Rail)

INVINCIBLE®
- Style I2 (2-Rail)
- Style I3 (3-Rail)
- Style I4 (4-Rail)

The extended spear top of the Classic™ style gives the secure structure an added touch of elegance. Classic™ is available in 2-rail, 3-rail and 4-rail designs.

The Genesis™ acts as a foundation for creation of multiple custom looks by the addition of decorative finials. Genesis™ is available in 2-rail, 3-rail and 4-rail designs.

Majestic™ is a simple, yet elegant style with a smooth top rail, available in 2-rail, 3-rail and 4-rail designs. It is ideally suited for public pools, recreational areas, schools and other institutions.

Invincible® means ‘incapable of being overcome’. The gradual outward curve of the pickets makes this style a superior alternative to the chain link and barbed wire fences of the past. 2-rail, 3-rail and 4-rail profiles are available in 7’ and 8’ heights.

DESIGN ADVANTAGES

Maintenance-Free
Montage II® panels are subjected to a thorough cleaning and zinc phosphate pretreatment and then, in Ameristar’s state-of-the-art E-Coat system, are completely submerged twice, first in a moisture-resistant epoxy and secondly in a weather-resistant acrylic, to ensure protection over all exposed surfaces. Ameristar® uses the same cyclic testing technology, developed in the automotive industry, to ensure that Montage II® fences will endure harsh environments.

Fusion-Welded
Montage II® fence panels are fabricated using Ameristar’s revolutionary ProFusion process that combines fusion and laser technology to automatically weld strong, virtually invisible, structural connections without unsightly or insecure fasteners. This rigid welded construction not only suits Montage II® for rigorous environments, but also makes it a popular choice for commercial applications like businesses, schools, and public parks and playgrounds.

ADORNMENTS

Quad Flare
Triad
Ball Cap

COLORS, AVAILABILITY & MAINTENANCE
Montage II® is available in black and bronze; color chip samples can be requested for actual color. Availability and maintenance information are the same as for the Aegis II® and Aegis Plus® steel fence systems.
**CONSTRUCTION SPECIFICATION**

**SECTION 32 31 00 - ORNAMENTAL WELDED FENCING SYSTEM**

**Montage II®, Heavy Industrial Weight**

**PART 1 - GENERAL**

1.01 WORK INCLUDED

The contractor shall provide all labor, materials and apparatuses necessary for installation of the welded ornamental steel fence system defined herein at (specify project site).

1.02 RELATED WORK

Section _____ - Earthwork

Section _____ - Concrete

1.03 SYSTEM DESCRIPTION

The manufacturer shall supply a total fence system of Montage II ATF® Welded Ornamental Steel (specify Invincible®, Classic™, Majestic™, or Genesis™) design. The system shall include all components (i.e., panels, posts, gates and hardware) required.

1.04 QUALITY ASSURANCE

The contractor shall provide laborers and supervisors who are thoroughly familiar with the type of construction involved and materials and techniques specified.

1.05 REFERENCES


1.06 SUBMITTAL

The manufacturer’s literature shall be submitted prior to installation.

1.07 PRODUCT HANDLING AND STORAGE

Upon receipt at the job site, all materials shall be checked to ensure that no damage occurred during shipping or handling. Materials shall be stored in such a manner to ensure proper ventilation and drainage, and to protect against damage, weather, vandalism and theft.

**PART 2 - MATERIALS**

2.01 MANUFACTURER

The fence system shall conform to Montage II ATF® Welded Ornamental Steel, (specify Invincible®, Classic™, Majestic™, or Genesis™) design. (specify extended picket or flush) bottom rail treatment. (specify 2-Rail, 3-Rail or 4-Rail) style manufactured by Ameristar Fence Products, Inc., in Tulsa, Oklahoma.

2.02 MATERIAL

A. Steel material for fence panels and posts shall conform to the requirements of ASTM A653/A653M, with a minimum yield strength of 45,000 psi (344 MPa) and a minimum zinc (hot-dip galvanized) coating weight of 0.80 oz/ft² (27.6 g/m²), Coating Designation G-90.

B. Material for pickets shall be 1” square x 14 Ga. tubing. The rails shall be steel channel, 1.75” x 1.75” x 0.105”. Picket holes in the rail shall be spaced 4.715” o.c. For fence systems up to and including 6 feet tall, posts shall be a minimum of 2-1/2” square x 12 Ga. For fence systems 7 feet tall and 8’ tall, posts shall be a minimum of 3” square x 12 Ga. Gate posts shall meet the minimum requirements of Table 1.

2.03 FABRICATION

A. Pickets, rails and posts shall be pre-cut to specified lengths. Rails shall be pre-punched to accept pickets.

B. Pickets shall be inserted into the pre-punched holes in the rails and shall be aligned to standard spacing using a specially calibrated alignment fixture. The aligned pickets and rails shall be joined at each picket-to-rail intersection by Ameristar’s proprietary fusion welding process, thus completing the rigid panel assembly (Note: The process produces a virtually seamless, spatter-free good-neighbor appearance, equally attractive from either side of the panel).

C. The manufacturer’s panels shall be subjected to an inline electrodeposition coating (E-Coat) process consisting of a multi-stage pretreatment wash (with zinc phosphate), followed by a duplex application of an epoxy primer and an acrylic topcoat. The minimum cumulative coating thickness of epoxy and acrylic shall be 2 mils (0.008 mm). The color shall be (specify Black or Bronze). The coated panels shall be capable of meeting the performance requirements for each quality characteristic shown in Table 2.

D. Gates shall be fabricated using welded ornamental panel material and gate ends having a 1-3/4” square cross-sectional size. All rail and upright intersections shall be joined by welding. All picket and rail intersections shall also be joined by welding.

**PART 3 - EXECUTION**

3.01 PREPARATION

All new installation shall be laid out by the contractor in accordance with the construction plans.

3.02 INSTALLATION

Fence posts shall be set according to Table 3, plus or minus 1/2”. Fence panels shall be attached to posts with brackets supplied by the manufacturer. Gate posts shall be spaced according to the gate openings specified in the construction plans. The “Earthwork” and “Concrete” sections of this specification shall govern post base material requirements.

3.03 CLEANING

The contractor shall clean the jobsite of excess materials; post-hole excavations shall be scattered uniformly away from posts.

---

**Table 1** - Minimum Sizes for Montage II Gate Posts

<table>
<thead>
<tr>
<th>Gate Opening</th>
<th>Gate Height</th>
<th>Material Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>Up to 6'</td>
<td>Up to &amp; Inclining 4'</td>
<td>Over 6'</td>
</tr>
<tr>
<td>2-1/2” x 12 Ga.</td>
<td>3” x 12 Ga.</td>
<td>4” x 11 Ga.</td>
</tr>
<tr>
<td>3” x 12 Ga.</td>
<td>4” x 11 Ga.</td>
<td></td>
</tr>
<tr>
<td>10’ - 12’ x 10”</td>
<td>4” x 11 Ga.</td>
<td>6” x 3/8”</td>
</tr>
<tr>
<td>12’ - 14’ x 10”</td>
<td>4” x 11 Ga.</td>
<td>6” x 3/8”</td>
</tr>
<tr>
<td>14’ - 16’ x 10”</td>
<td>4” x 11 Ga.</td>
<td>6” x 3/8”</td>
</tr>
</tbody>
</table>

**Table 2** - Coating Performance Requirements

<table>
<thead>
<tr>
<th>Quality Characteristics</th>
<th>ASTM Test Method</th>
<th>Performance Requirements</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adhesion</td>
<td>D3359 - Method B</td>
<td>Adhesion (Retention of Coating) over 95% of test area (Drips and knives used)</td>
</tr>
<tr>
<td>Corrosion Resistance</td>
<td>B117, D165 &amp; B154</td>
<td>Corrosion Resistance over 1,500 hours (Stabilized by D154, Failure mode is accumulation of 1” coating loss from sides or pinholes 95% of coating)</td>
</tr>
<tr>
<td>Impact Resistance</td>
<td>D2318</td>
<td>Impact Resistance over 60 inch lbs. (forward impact using 60287T tool)</td>
</tr>
<tr>
<td>Weathering Resistance</td>
<td>D618, D249, D2244 Method C</td>
<td>Weathering Resistance over 1,000 hours (Failure mode is 85% loss of gloss or visual estimate of more than 1 defect color units)</td>
</tr>
</tbody>
</table>

**Table 3** - Montage II - Post Spacing by Bracket Type

<table>
<thead>
<tr>
<th>Bracket Type</th>
<th>Post Size</th>
<th>Breaker Size</th>
<th>Post Spacing</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indoor</td>
<td>2-1/2”</td>
<td>3”</td>
<td>8”</td>
</tr>
<tr>
<td>Outdoor</td>
<td>2-1/2”</td>
<td>3”</td>
<td>9”</td>
</tr>
<tr>
<td>Industrial</td>
<td>2-1/2”</td>
<td>3”</td>
<td>9”</td>
</tr>
<tr>
<td>Commercial</td>
<td>2-1/2”</td>
<td>3”</td>
<td>9”</td>
</tr>
<tr>
<td>Municipal</td>
<td>2-1/2”</td>
<td>3”</td>
<td>9”</td>
</tr>
<tr>
<td>Industrial</td>
<td>2-1/2”</td>
<td>3”</td>
<td>9”</td>
</tr>
</tbody>
</table>

*Note: When using 60287T tool bracket on either or both ends of a panel installation, care shall be taken to ensure the spacing between post and adjoining pickets meets applicable codes. This will require trimming one or both ends of the panel.*

---

**• All Terrain Flexibility (ATF)**

Unlike conventional welded panels that require stair-stepping along grades (leaving gaps and open areas below the fence), the all-terrain flexibility (ATF) of eight-foot long Montage II® Heavy Industrial panels allows racking up to 48” on Classic, Majestic and Genesis styles; up to 18” on Invincible® curved picket style.

**• Flush Bottom Rail Option**

For some applications, a flush bottom rail may be necessary to meet local building codes or simply to meet an aesthetic preference.
Fusion-Welded
To Meet Any Application

Bedford City Schools

Otterbein College

El Segundo Park

Primrose School

Fanchawe College

Greyhound Terminal

E-Coated To Withstand Any Climate
Styled To Add Value To Any Property

Heritage Investment

Dale Mabry Elementary

Gatorade Facility

Principal Insurance

Van Andel Arena

Backed By 20-Year Warranty
Montage Plus® is crafted with an inherent beauty that adds a decorative touch to any landscape. The fusion welded steel construction makes it applicable for all types of commercial installations such as retail businesses, storage facilities, schools, health care facilities and golf courses and recreational parks. The curved pickets of the Invincible® style provide a superior look to chain link and barbed wire. The maintenance-free electro-deposition coating (E-Coat) makes Montage Plus® suitable for any climate, hot or cold, wet or dry; Ameristar® uses the same cyclic testing technology used in the automotive industry to ensure that the coating will withstand repeated shifts in temperature and humidity.

**COMPONENT SIZES**

<table>
<thead>
<tr>
<th>System</th>
<th>Pickets</th>
<th>Rails</th>
<th>Posts</th>
</tr>
</thead>
<tbody>
<tr>
<td>Montage Plus® Commercial</td>
<td>3/4&quot; x 16 Ga. for fences up to 6' tall; 3/4&quot; x 14 Ga. for 7' &amp; 8' tall fences</td>
<td>1-7/16&quot; x 0.072 Top 1-1/2&quot; x 0.072' Sides</td>
<td>2-1/2&quot; Sq. x 16 Ga. min. for fences up to 6' tall; 2-1/2&quot; Sq. x 14 Ga. min. for 7' &amp; 8' tall fences</td>
</tr>
</tbody>
</table>

**STYLES**

- CLASSIC™
  - Style C2 (2-Rail)
  - Style C3 (3-Rail)

- GENESIS™
  - Style G2 (2-Rail)
  - Style G3 (3-Rail)

- INVINCIBLE™
  - Style I2 (2-Rail)
  - Style I3 (3-Rail)

- MAJESTIC™
  - Style M2 (2-Rail)
  - Style M3 (3-Rail)

**ADORNMENTS**

- Quad Flare
- Triad
- Ball Cap
- Ring

**GATES**

Gates are fabricated by welding Montage Plus® panel material to 1-3/4" square gate ends.

**DESIGN ADVANTAGES**

- **All Terrain Fence (ATF)™ Panel Design**
  Architectural design and construction technology have progressed to enable new facility construction on rough and uneven terrain that was previously considered unfeasible for permanent structures. Montage Plus® ATF maintains its rigid strength, while adapting to slopes as severe as a 30 inch rise in an 8 foot run.

- **Pool, Pet & Play (PPP)™ Picket Space Option**
  In many cases related to child care, public swimming pools, and containment, a narrower space may be desired or required for added safety or security. Montage Plus® offers the optional 3" space.

- **Flush Bottom Rail Option**
  For some applications, a flush bottom rail may be necessary to meet local building codes or simply to meet an aesthetic preference.

**WARRANTY**

The E-Coat combination of galvanized steel, zinc phosphate pre-treatment, and epoxy and acrylic double coating provide the protection necessary to withstand adverse weathering effects and justify the ‘best-in-the-business’ 20 Year Warranty.

**COLORS, AVAILABILITY & MAINTENANCE**

Montage Plus® color chip samples can be requested for actual color. Availability and maintenance information are the same as for the Aegis II® and Aegis Plus® steel fence systems.
PART 1 - GENERAL

1.01 WORK INCLUDED

The contractor shall provide all labor, materials and appurtenances necessary for installation of the welded ornamental steel fence system defined herein (specify project site).

1.02 RELATED WORK

Section ___  - Earthwork
Section ___  - Concrete

1.03 SYSTEM DESCRIPTION

The manufacturer shall supply a total fence system of (specify Montage Plus® style, length, and picket space) or Montage Plus® Pool, Pet & Play® air space). The fence system shall conform to (specify Montage Plus ATF® standard picket space, specify Invincible®, Majestic™, or Genesis™ for standard picket space, specify Classic™, Majestic™, or Genesis™ for 3" air space, specify Classic™, Majestic™, or Genesis™) design. The system shall include all components (i.e., panels, posts, gates and hardware) required.

1.04 QUALITY ASSURANCE

The contractor shall provide laborers and supervisors who are thoroughly familiar with the type of construction involved and materials and techniques specified.

1.05 REFERENCES


1.06 SUBMITTAL

The manufacturer's literature shall be submitted prior to installation.

1.07 PRODUCT HANDLING AND STORAGE

Upon receipt at the job site, all materials shall be checked to ensure that no damage occurred during shipping or handling. Materials shall be stored in such a manner to ensure proper ventilation and drainage, and to protect against damage, weather, vandalism and theft.

PART 2 - MATERIALS

2.01 MANUFACTURER

The fence system shall conform to (specify Montage Plus® style, length, and picket space) or Montage Plus® Pool, Pet & Play® air space). The fence system shall conform to (specify Montage Plus® style, length, and picket space) or Montage Plus® Pool, Pet & Play® air space). The fence system shall conform to (specify Montage Plus® style, length, and picket space) or Montage Plus® Pool, Pet & Play® air space).

Table 1 - Minimum Sizes for Montage Plus Gate Posts

<table>
<thead>
<tr>
<th>Gate Opening</th>
<th>Gate Height</th>
</tr>
</thead>
<tbody>
<tr>
<td>Up to &amp; Including 4'</td>
<td>Up To &amp; Including 4'</td>
</tr>
<tr>
<td>0-1/2' x 14 Ga.</td>
<td>3' x 12 Ga.</td>
</tr>
<tr>
<td>3' x 12 Ga.</td>
<td>3' x 12 Ga.</td>
</tr>
<tr>
<td>4' x 12 Ga.</td>
<td>6' x 12 Ga.</td>
</tr>
</tbody>
</table>

2.02 MATERIAL

A. Steel material for fence panels and posts shall conform to the requirements of ASTM A653/A653M, with a minimum yield strength of 45,000 psi (344 MPa) and a minimum zinc (hot-dip galvanized) coating weight of 0.60 oz/ft² (18.4 g/m²), Coating Designation G-60.

B. For fence systems up to and including 6' tall, material for pickets shall be 3/4" square x 16 Ga. tubing. For fence systems 7' and 8' tall, material for pickets shall be 3/4" square x 14 Ga. tubing. The rails shall be steel channel, 1.5" x 1.4375" x 14 Ga. Picket holes in the rail shall be spaced (specify 4.575" o.c. for standard picket space or 3.500" o.c. for 3" air space). For fence systems up to and including 6' tall, posts shall be a minimum of 2-1/2" square x 16 Ga. For fence systems 7' and 8' tall, posts shall be a minimum of 2-1/2" square x 14 Ga. Gate posts shall meet the minimum requirements of Table 1.

2.03 FABRICATION

A. Pickets, rails and posts shall be pre-cut to specified lengths. Rails shall be pre-cut to accept pickets.

B. Pickets shall be inserted into the pre-punched holes in the rails and shall be aligned to standard spacing using a specially calibrated alignment fixture. The aligned pickets and rails shall be joined at each picket-to-rail intersection by Ameristar's proprietary fusion welding process, thus completing the rigid panel assembly (Note: The process produces a virtually seamless, spatter-free good-neighbor appearance, equally attractive from either side of the panel.).

C. The manufactured panels and posts shall be subjected to an inline electrodeposition coating (E-Coat) process consisting of a multi-stage pretreatment/wash (with zinc phosphate), followed by a duplex application of an epoxy primer and an acrylic topcoat. The minimum cumulative coating thickness of epoxy and acrylic shall be 2 mils (0.058 mm). The color shall be (specify Black or Bronze). The coated panels and posts shall be capable of meeting the performance requirements for each quality characteristic shown in Table 2.

D. Gates shall be fabricated using welded ornamental panel material and gate ends having a 1-3/4" square cross-sectional size. All rail and upright intersections shall be joined by welding. All picket and rail intersections shall also be joined by welding.

PART 3 - EXECUTION

3.01 PREPARATION

All new installation shall be laid out by the contractor in accordance with the construction plans.

3.02 INSTALLATION

Fence posts shall be set according to Table 3, plus or minus 1/2". Fence panels shall be attached to posts with brackets supplied by the manufacturer. Gate posts shall be spaced according to the gate openings specified in the construction plans. The “Earthwork” and “Concrete” sections of this specification shall govern post base material requirements.

3.03 CLEANING

The contractor shall clean the job site of excess materials; post-hole excavations shall be scattered uniformly away from posts.

Table 2 - Coating Performance Requirements

<table>
<thead>
<tr>
<th>Quality Characteristics</th>
<th>ASTM Test Method</th>
<th>Performance Requirements</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adhesion</td>
<td>D3359 - Method B</td>
<td>Adhesion (Retention of Coating) over 90% of test area (Tape and knife test).</td>
</tr>
<tr>
<td>Corrosion Resistance</td>
<td>B117 &amp; D1654</td>
<td>Corrosion Resistance over 1,500 hours (Scribed per D1654, failure mode is accumulation of 1/8&quot; coating loss from scribe or medium #8 blisters).</td>
</tr>
<tr>
<td>Impact Resistance</td>
<td>D2794</td>
<td>Impact Resistance over 60 inch lb. (Forward impact using 0.625&quot; ball).</td>
</tr>
<tr>
<td>Weathering Resistance</td>
<td>D822, D2244, D523</td>
<td>Weathering Resistance over 1,000 hours (Failure mode is 60% loss of gloss or color variance of more than 3 delta-E color units).</td>
</tr>
</tbody>
</table>
Traditional security fences of chain-link or wire mesh and barbed razor tape are no longer enough to meet today's increased security demands. They do not delay serious attacks or intrusion attempts for more than a few seconds. Ameristar's (Patent Pending) Impasse Security Fence offers the resistive strength of heavy-duty steel spears secured vertically to a framework of specially formed steel rails and I-beam posts. The stylish design of the Impasse, combined with its strength and security, provides a successful first line of defense. The structural configuration of the Impasse system not only delays aggressive attacks, but also allows for the seamless integration of additional security features such as anti-ram cables, sensors and alarm systems.

Standard security features of the Impasse® fence include the unique roll-formed Impasse® I-beam which acts as a strong barrier to support the entire fence system. The mounting bracket, a solid steel flat bar, fits through slotted holes pre-punched into the post. Heavy stainless steel tamperproof nuts and bolts attach adjacent rails to either end of the mounting bracket, ensuring a solid and secure connection. Tamperproof carriage bolts fit snugly into the recessed depression on the face of each pale, deterring attempts to pry or chisel the bolt head.

The Impasse® Pale (picket) is designed with a special corrugated shape to ensure greater resistance to bending loads, particularly with attempts at pale separation.
Ameristar® security fence components (e.g., pales, rails, posts, etc.) are carefully layered in bulk on special pallets to ensure the most economical damage-free shipping.

**Ordering Information**

To order, simply specify the fence or gate design series, color and height desired. Then figure and provide the quantities needed. Contact Ameristar® for the nearest distributor or if any other assistance is needed.

**WARRANTY**

A written 15 year limited warranty is extended on Ameristar’s Impasse® fence systems. Call Ameristar® for a copy.

**MAINTENANCE**

Little or no maintenance is required for the fence and gate systems supplied by Ameristar®. The PermaCoat® epoxy and polyester coated steel in Impasse® will remain corrosion free for years to come. Damages to coated surfaces can be readily covered with Ameristar’s matching custom finishes (either spray or paint pen application).

### COMPONENT SIZES

<table>
<thead>
<tr>
<th>System</th>
<th>Pales</th>
<th>Rails</th>
<th>Posts</th>
</tr>
</thead>
<tbody>
<tr>
<td>Impasse®</td>
<td>3/4” x 2-3/4”</td>
<td>2” x 2-1/2”</td>
<td>1-3/4” x 4”</td>
</tr>
</tbody>
</table>

### STYLES

- **TRIDENT™**
  - Style T2 (2-Rail)
  - Style T3 (3-Rail)

- **STRONGHOLD™**
  - Style S2 (2-Rail)
  - Style S3 (3-Rail)

- **GAUNTLET™**
  - Style G2 (2-Rail)
  - Style G3 (3-Rail)

Also available 4-Rail and 5-Rail

### COLORS

- Black
- Bronze
- White
- Desert Sand

Request Color Chip samples for actual color

### BIASABILITY

No Stair Stepping Required

Panel will rack over 30 degrees without special drilling or assembly operations.

### WIND LOADING

<table>
<thead>
<tr>
<th>Height (FT)</th>
<th>Rail Length</th>
<th>Rail Size</th>
<th>Impasse® Wind Load Capacity Factor (PSF)</th>
<th>Wind Speed Capacity (3 Second Gust) (MPH)</th>
</tr>
</thead>
<tbody>
<tr>
<td>6</td>
<td>1-3/4x4x12Ga</td>
<td>100.3</td>
<td>206.8</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>1-3/4x4x12Ga</td>
<td>75.3</td>
<td>179.1</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>1-3/4x4x12Ga</td>
<td>73.8</td>
<td>177.4</td>
<td></td>
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<tr>
<td>8</td>
<td>1-3/4x4x12Ga</td>
<td>55.3</td>
<td>153.5</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>1-3/4x4x12Ga</td>
<td>42.4</td>
<td>134.4</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>1-3/4x4x12Ga</td>
<td>44.6</td>
<td>137.9</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>1-3/4x4x12Ga</td>
<td>33.5</td>
<td>119.5</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>1-3/4x4x12Ga</td>
<td>36.1</td>
<td>124.1</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>1-3/4x4x12Ga</td>
<td>27.1</td>
<td>107.5</td>
<td></td>
</tr>
</tbody>
</table>

Note: Mph calculated using ANSI/ASCE 7-02, “American Society of Civil Engineers Minimum Design Loads for Buildings and Other Structures” Exposure Category C (open terrain with scattered obstructions having lengths generally less than 30 feet). For wind loading applicable to a particular specification, consult the appropriate Building Code.

### PERMACOAT® FINISH

See Pages 4 and 5 for a detailed discussion of the PermaCoat® process and its comparative advantages over other coating systems.

### AVAILABILITY

Contact the Ameristar Architectural Department for detailed information and literature on gates.

Contact the Ameristar Architectural Department for detailed information and literature on gates.
The Impasse® Trident™ is designed for high-risk security applications. It is the most suited first line of defense to surround a military installation, a government complex, an airport or seaport, a nuclear or chemical plant, a munitions facility or armory, a reservoir, or any other facility in need of the utmost protection from the possibility of attack. High-tensile steel corrugated pales rise above the topmost rail and terminate with a menacing triple-pointed and splayed spear tip.

The Impasse Trident is made of high-tensile steel corrugated pales that rise above the topmost rail and terminate with a menacing triple-pointed and splayed spear tip.
The blunt slightly rounded tip of the Stronghold™ is ideal for facilities like schools, hospitals, sports complexes, racetracks and other public situations where strength is necessary, but safety of the general populace is also an important design consideration.
The Gauntlet® is the most serious Impasse® design as it couples the fearsome triple point with an outward curve that discourages attempts to gain entry by climbing. Barbed tape can be attached to make an even more difficult obstacle.
CONSTRUCTION SPECIFICATION
SECTION 32 31 00 - ARCHITECTURAL METAL FENCE
Impasse® - For High-Risk Security Assets and Facilities

(Meets "Buy American" Domestic Procurements)

PART 1 – GENERAL
1.01 WORK INCLUDED
The contractor shall provide all labor, materials and appurtenances necessary for installation of the steel corrugated pale fence system defined herein at (specify project site).

1.02 RELATED WORK
Section 022 __ - Earthwork
Section 030 __ - Concrete

1.03 SYSTEM DESCRIPTION
The manufacturer shall supply a total steel corrugated pale fence system of the Ameristar® Impasse® (specify Trident™, Stronghold™ or Gauntlet®) (specify number of rails) design. The system shall include all components (i.e., pales, rails, posts, gates and hardware) required.

1.04 QUALITY ASSURANCE
The contractor shall provide laborers and supervisors who are thoroughly familiar with the type of construction involved and materials and techniques specified.

1.05 REFERENCES

1.06 SUBMITTAL
The manufacturer's literature shall be submitted prior to installation.

1.07 PRODUCT HANDLING AND STORAGE
Upon receipt at the job site, all materials shall be checked to ensure that no damage occurred during shipping or handling. Materials shall be stored in such a manner to ensure proper ventilation and drainage, and to protect against damage, weather, vandalism and theft.

PART 2 – MATERIALS
2.01 MANUFACTURER
A. The steel corrugated pale fence system shall conform to Ameristar® Impasse® (specify Trident™, Stronghold™ or Gauntlet®) style manufactured by Ameristar Fence Products, Inc., in Tulsa, Oklahoma.
B. The entire fence system, and all associated gates, accessories, fittings, and fasteners shall be obtained from a single source.

2.02 MATERIAL
A. Steel material for fence framework (i.e., corrugated pales, rails and posts) when galvanized prior to forming, shall conform to the requirements of ASTM A924/A924M, with a minimum yield strength of 45,000 psi (344 MPa). The steel shall be hot-dip galvanized to meet the requirements of ASTM A653/A653M with a minimum zinc coating weight of 0.90 oz/ft² (276 g/m²), Coating Designation G-90.
B. The manufactured galvanized framework shall be subjected to the PermaCoat® thermal stratification coating process (high-temperature, in-line, multi-stage, multi-layer) including, as a minimum, a six-stage pretreatment/wash (with zinc phosphate), an electrostatic spray application of an epoxy base, and a separate electrostatic spray application of a polyester finish. The base coat shall be a thermosetting epoxy powder coating (gray in color) with a minimum thickness of 2 mils (0.0508mm). The topcoat shall be a “no-mar” TGIC polyester powder coat finish with a minimum thickness of 2 mils (0.0508mm). The color shall be (specify Black, Bronze, White or Desert Sand). The stratification-coated framework shall be capable of meeting the performance requirements for each quality characteristic shown in Table 1.

2.03 FABRICATION
A. Pales, rails and posts shall be pre-cut to specified lengths. Impasse® rails shall be pre-punched to accept the tamperproof security fasteners.
B. Completed panels shall be capable of supporting a 400 lb. load (applied at midspan) without permanent deformation. Panels shall be blasable to a 30 degree change in grade.
C. Gates shall be fabricated using Impasse® pales. All rail and upright intersections shall be joined by welding. All picket and rail intersections shall also be joined by welding.

PART 3 - EXECUTION
3.01 PREPARATION
All new installation shall be laid out by the contractor in accordance with the construction plans.

3.02 INSTALLATION
Fence posts for 8’ nominal spans shall be set 96” O.C. plus or minus 1/2”. Fence posts for 6’ nominal spans shall be set 72” O.C. plus or minus 1/2”. Gate posts shall be spaced according to the gate openings specified in the construction plans. The “Earthwork” and “Concrete” sections of this specification shall govern post base material requirements. Impasse® panels shall be attached to posts using mounting brackets and tamperproof security fasteners supplied by the manufacturer.

3.03 CLEANING
The contractor shall clean the jobsite of excess materials; post-hole excavations shall be scattered uniformly away from posts.
Ameristar’s Stalwart® cabling system provides an anti-ram defense against forced entry or vehicular impact. The Impasse rail provides a concealing tray for the cables. The Impasse™ posts and horizontal rails accept the Stalwart integrated cable system for added perimeter security. This system has successfully tested to the US Department of State K12 rating, stopping a 15,000 pound truck traveling at 50 mph. This system can be used with a variety of vertical materials such as Impasse pales, standard square ornamental pickets, welded wire, etc. to meet site aesthetic requirements. DOS K8 systems also available.

**Intrusion Detection System (IDS)**

In several systems, the rails function as conduit trays that eliminate the need to trench for underground runs. This enables quicker installation and lowers the overall construction cost.

**Anti-Scale Screening System**

**Barbed Tape**

**Anti-Climb Fence System**

45mm (1-3/4”) between pales

**CCTV and Lighting Systems**

**And More…**

- Access Control
- Entrance Containment
- Bollards/Wedges/Planters
- Welded Wire Anti-Climb Inserts
- Biometrics/Card Readers
- Retina & Print Scans
CONSTRUCTION SPECIFICATION
SECTION 32 31 00 - STAND-ALONE ANTI-RAM BARRIER
K-12 Rated Stalwart™ Post & Rail Cable System
To Protect High-Risk Security Assets and Facilities Per DOS Requirements
(MEETS “BUY AMERICAN” DOMESTIC PROCUREMENTS)

PART 1 – GENERAL
1.01 WORK INCLUDED
The contractor shall provide all labor, materials and appurtenances necessary for installation of the anti-ram barrier system defined herein at (specify project site).

1.02 RELATED WORK
Section ___ ___ - Earthwork
Section ___ ___ - Concrete

1.03 SYSTEM DESCRIPTION
The manufacturer shall supply a total anti-ram cable barrier system of the Ameristar® Post & Rail Stalwart™ design. The system shall include all components (i.e., cables, supports, steel reinforcing, and hardware) required.

1.04 QUALITY ASSURANCE
The contractor shall provide laborers and supervisors who are thoroughly familiar with the type of construction involved and materials and techniques specified.

1.05 REFERENCES

1.06 SUBMITTAL
The manufacturer’s literature shall be submitted prior to installation.

The Gauntlet® shown above uses two additional Impasse® rails placed between the top and bottom rails to accept the Stalwart® integrated cable system. The Stalwart® cable system combined with the Impasse® fence can be sized to meet various levels of anti-ram barrier capability from passenger cars to heavily loaded trucks. The system shown has been proven, in independent testing, to successfully stop 15,000 pound trucks traveling at 40/50 mph within 10 feet. This means a perimeter barrier can be easily designed to balance security and budget constraints.
Echelon II® - A revolutionary fence system of aluminum posts, framework and mounting accessories that is easily assembled to form an attractive “good neighbor” appearance with no exposed fasteners. Any truly great product must have a defining feature that sets it apart from all others; Ameristar’s Echelon II® fence has the revolutionary ForeRunner™ rail.

- **NO RIVETS**
- **NO SCREWS**
- **NO WELDS**

**INTERNAL RETAINING ROD**
Variable pitch connection system for ease of installation, high angle biasability and elimination of unsightly external fasteners.

**INTERIOR GUIDE CHANNEL**
Channel forms lower limit of raceway for retaining rod. Slides left or right as panel is biased up or down slopes.

**REINFORCED POST**
Center rib increases strength against wind loading as well as other horizontally applied forces.

**GROMMET**
Gives finished appearance and prevents moisture collection.

**FORERUNNER™ RAIL**
(Patent Pending)
“U” Channel - Specially formed high strength architectural shape.

**SECURITY FASTENER**
One-way action secures rail and eliminates removal by normal tools.

**PANEL BRACKET**
Specially designed universal boulevard bracket enables easy installation and allows “fine tuning” of panel height and positioning.

**AMERISTAR® ECHELON II® WITH FORERUNNER™ RAIL & RETAINING ROD**

**SECURITY**
ForeRunner™ Rail with Enclosed Retaining Rod
Attachment cannot be compromised.
(No Fasteners are Exposed)

**BEAUTY**
“Good Neighbor Design” Rod Follows ForeRunner™ Centerline
Clean uninterrupted look.
(No Screws or Rivets)

**FUNCTIONALITY**
Biasability a minimum of 25%
No Stair Stepping Required

**Universal mounting bracket**
Enables accurate adjustment during installation

(Exposure Invites Tampering)
(Exposure Invites Tampering)
(Exposure Invites Tampering)
A comparison of the Echelon II® reinforced post with standard punched posts used by other aluminum fence manufacturers shows several Echelon II® advantages.

- The Echelon II® post is made stronger by the reinforcing web; the conventional post is weakened by removing material from its cross-section.

- Echelon II® requires only one non-punched post; the punched system requires four different posts (line, end, corner, and gate).

- Punched holes allow moisture build-up and potential freeze expansion.

- Echelon II® boulevard brackets allow for fine tuning of fence alignment.

- The wrap-around bracket, secured to the rail with Ameristar’s tamperproof fastener, ensures far greater security than the single screw in punched posts.

**SUPERIOR FINISH**

Ameristar’s production facilities include a state-of-the-art polyester powder coating system providing Echelon II® fences with a finish that is far superior to other coatings in durability and scratch-resistance. Powder coating has become the fastest growing form of finishing technology. It does not emit hazardous volatile organic compounds as is the case with wet paints. The Echelon II® fence components can endure over 1,000 hours of salt spray testing; proving the claim of long-lasting durability. With Echelon II® Industrial Aluminum, a maintenance-free, environmentally-friendly fence is guaranteed.
**COMPONENT SIZES**

<table>
<thead>
<tr>
<th>System</th>
<th>Pickets</th>
<th>Rails</th>
<th>Posts</th>
</tr>
</thead>
<tbody>
<tr>
<td>Echelon II® Industrial</td>
<td>1” x 1” x .065”</td>
<td>1-3/4” x 1-3/4” (1/16” top wall / .120” side walls)</td>
<td>2-1/2” x 2-1/2”</td>
</tr>
</tbody>
</table>

**STYLES**

CLASSIC™
- Style C2 (2-Rail)
- Style C3 (3-Rail)
- Style C4 (4-Rail)

MAJESTIC™
- Style M2 (2-Rail)
- Style M3 (3-Rail)
- Style M4 (4-Rail)

GENESIS™
- Style G2 (2-Rail)
- Style G3 (3-Rail)
- Style G4 (4-Rail)

INVINCIBLE™
- Style I3 (3-Rail)
- Style I4 (4-Rail)

**WIND LOADING**

<table>
<thead>
<tr>
<th>Height (FT)</th>
<th>Rail Length</th>
<th>Post Size</th>
<th>Echelon II® Wind Load Capacity Factor (PSF)</th>
<th>Typical Wind Load Capacity (mph)</th>
</tr>
</thead>
<tbody>
<tr>
<td>4</td>
<td>6</td>
<td>2-1/2” Square</td>
<td>112</td>
<td>206</td>
</tr>
<tr>
<td></td>
<td></td>
<td>3” Square</td>
<td>213</td>
<td>285</td>
</tr>
<tr>
<td>8</td>
<td>2-1/2” Square</td>
<td>84</td>
<td>178</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>3” Square</td>
<td>160</td>
<td>246</td>
</tr>
<tr>
<td>5</td>
<td>6</td>
<td>2-1/2” Square</td>
<td>76</td>
<td>170</td>
</tr>
<tr>
<td></td>
<td></td>
<td>3” Square</td>
<td>145</td>
<td>235</td>
</tr>
<tr>
<td></td>
<td>8</td>
<td>2-1/2” Square</td>
<td>57</td>
<td>147</td>
</tr>
<tr>
<td></td>
<td></td>
<td>3” x Square</td>
<td>109</td>
<td>203</td>
</tr>
<tr>
<td>6</td>
<td>6</td>
<td>2-1/2” Square</td>
<td>52</td>
<td>141</td>
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<td></td>
<td></td>
<td>3” Square</td>
<td>99</td>
<td>194</td>
</tr>
<tr>
<td></td>
<td>8</td>
<td>2-1/2” Square</td>
<td>40</td>
<td>123</td>
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<td>3” Square</td>
<td>76</td>
<td>171</td>
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<td>6</td>
<td>2-1/2” Square</td>
<td>38</td>
<td>120</td>
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<td>3” Square</td>
<td>73</td>
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<td></td>
<td>8</td>
<td>2-1/2” Square</td>
<td>28</td>
<td>104</td>
</tr>
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<td>3” Square</td>
<td>55</td>
<td>144</td>
</tr>
<tr>
<td>8</td>
<td>6</td>
<td>2-1/2” Square</td>
<td>29</td>
<td>105</td>
</tr>
<tr>
<td></td>
<td></td>
<td>3” x Square</td>
<td>56</td>
<td>145</td>
</tr>
<tr>
<td></td>
<td>8</td>
<td>2-1/2” Square</td>
<td>22</td>
<td>91</td>
</tr>
<tr>
<td></td>
<td></td>
<td>3” Square</td>
<td>42</td>
<td>126</td>
</tr>
<tr>
<td></td>
<td></td>
<td>4” Square</td>
<td>78</td>
<td>172</td>
</tr>
<tr>
<td>9</td>
<td>6</td>
<td>4” Square</td>
<td>82</td>
<td>176</td>
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<tr>
<td>10</td>
<td>6</td>
<td>4” Square</td>
<td>66</td>
<td>159</td>
</tr>
</tbody>
</table>

Note: Mph calculated using ANSI/ASCE 7-02, “American Society of Civil Engineers Minimum Design Loads for Buildings and Other Structures” Exposure Category C (open terrain with scattered obstructions having lengths generally less than 30 feet). For wind loading applicable to a particular specification, consult the appropriate Building Code.

**AVAILABILITY**

Echelon II® Industrial Ornamental Fence components (e.g., pickets, rails, etc.) and TransPort™ Cantilever Gates are carefully packaged in heavy duty cardboard boxes to ensure the most economical damage-free shipping.

**Ordering Information**

To order, simply specify the fence or gate design series, color and height desired. Then figure and provide the quantities needed. Contact Ameristar® for the nearest distributor or if any other assistance is needed.

**WARRANTY**

A written lifetime limited warranty is extended on Ameristar’s Echelon II® fence systems. Call Ameristar® for a copy.

**MAINTENANCE**

Little or no maintenance is required for the fence and gate systems supplied by Ameristar®. The polyester coated aluminum in Echelon II® will remain corrosion free for years to come. If pickets or rails are damaged by accidental impact, the affected components can be easily replaced. Damages to coated surfaces can be readily covered with Ameristar’s matching custom finishes (either spray or paint pen application).
Echelon II® Classic™ style ornamental fences feature the traditional extended picket culminating with an arrow-shaped spear point that conveys a subtle warning message to would-be intruders.

The contemporary Echelon II® Majestic™ style utilizes a flush top rail to produce the stately and streamlined look that blends well with flowers, shrubbery, and trees used in border landscapes.
The Echelon II® Genesis™ style highlights the sleek lines of unaltered square pickets reminiscent of solid vertical bar fences. The extended flat-topped tip does not detract from architecture or landscape.

The imposing Echelon II® Invincible™ style features an outwardly curving picket to warn potential intruders and make access by climbing virtually impossible.
CONSTRUCTION SPECIFICATION

SECTION 32 31 00 - ORNAMENTAL METAL FENCE SYSTEM

Echelon II®, Industrial Aluminum

PART 1 - GENERAL

1.01 WORK INCLUDED

The contractor shall provide all labor, materials and appurtenances necessary for installation of the industrial ornamental aluminum fence system defined herein at [specify project site].

1.02 RELATED WORK

Section 022 _ _ - Earthwork

Section 030 _ _ - Concrete

1.03 SYSTEM DESCRIPTION

The manufacturer shall supply a total industrial ornamental aluminum fence system of the Ameristar® Echelon SP (specify Classic™, Majestic™, Genesis™ or Invincible™) design. The system shall include all components (i.e., pickets, rails, posts, gates and hardware) required.

1.04 QUALITY ASSURANCE

The contractor shall provide laborers and supervisors who are thoroughly familiar with the type of construction involved and materials and techniques specified.

1.05 REFERENCES


1.06 SUBMITTAL

The manufacturer’s submittal package shall be provided prior to installation.

1.07 PRODUCT HANDLING AND STORAGE

Upon receipt at the job site, all materials shall be checked to ensure that no damage occurred during shipping or handling. Materials shall be stored in such a manner to ensure proper ventilation and drainage, and to protect against damage, weather, vandalism and theft.

PART 2 - MATERIALS

2.01 MANUFACTURER

The industrial ornamental aluminum fence system shall conform to Ameristar® Echelon II®, [specify Classic™, Majestic™, Genesis™ or Invincible™] design. The system shall include all components (i.e., pickets, rails, posts, gates and hardware) required.

2.02 MATERIAL

A. Aluminum material for fence framework (i.e., tubular pickets, rails and posts) shall conform to the requirements of ASTM B221. The aluminum extrusions for posts and rails (outer channel) shall be Alloy and Temper Designation 6065-T5. The aluminum extrusions for pickets and rail inner slide channels shall be Alloy and Temper Designation 6063-T5.

B. The manufactured framework shall be subjected to the Ameristar® thermal stratification coating process (high-temperature, in-line, multi-stage, multi-layer) including, as a minimum, a six-stage pretreatment/wash and an electrostatic spray application of a polyester finish. The topcoat shall be a “no-mar” TGIC polyester powder coat finish with a minimum thickness of 2 mils (0.0050mm). The color shall be [specify Black, Bronze, White or Desert Sand]. The stratification-coated framework shall be capable of meeting the performance requirements for each quality characteristic shown in Table 1.

C. Material for fence pickets shall be 1” square x 0.065” thick extruded tubing. The cross-sectional shape of the rails shall conform to the manufacturer’s ForeRunner™ design with outside cross-section dimensions of 1.75” square. The top wall of the outer channel of the rail shall be 0.100” thick; the side walls shall be 0.120” thick for superior vertical load strength. The inner slide channel of the rail shall be 0.080” thick. Picket holes in the ForeRunner™ rail shall be spaced 4.715” o.c., except for Invincible™ pickets, rails and posts. The inner slide channel of the rail shall be 0.120” thick for superior vertical load strength. The manufactured framework shall be capable of supporting a 25% change in grade.

D. All fasteners shall be stainless steel. Bracket to rail attachments shall be made using specially designed one-way tamperproof security bolts with inverted “t-nuts”. Bracket to post connections shall be made using fasteners supplied by the manufacturer.

E. Aluminum castings shall be used for all rings, post caps, finials, and miscellaneous adornments.

2.03 FABRICATION

A. Pickets, rails and posts shall be pre-cut to specified lengths. ForeRunner™ rails shall be pre-punched to accept pickets.

B. Grommets shall be inserted into the pre-punched holes in the rails, and pickets shall be inserted through the grommets so that pre-drilled picket holes align with the internal raceway of the two-part ForeRunner™ rails. (Note: This can best be accomplished by using an alignment template). Retaining rods shall be inserted into each ForeRunner™ rail so that they pass through the pre-drilled holes in each picket, thus completing the panel assembly.

C. Completed panels shall be capable of supporting a 500 lb. load (applied at midspan) without permanent deformation. Panels shall be biasable to a 25% change in grade.

D. Gates shall be fabricated using ForeRunner™ rail material and gate ends having the same outside cross-section (1.75” Square) as the rail. Gate ends shall be 0.125” thick; gate pickets shall be 0.125” thick. All rail and upright intersections shall be joined by welding. All picket and rail intersections shall also be joined either by welding or by the same retaining rod process used for panel assembly.

PART 3 - EXECUTION

3.01 PREPARATION

All new installation shall be laid out by the contractor in accordance with the construction plans.

3.02 INSTALLATION

Fence posts shall be set in accordance with the spacings shown in Table 2, plus or minus 1/2”, depending on the nominal span specified. Gate posts shall be spaced according to the gate openings specified in the construction plans. The “Earthwork” and “Concrete” sections of this specification shall govern post base material requirements. Echelon II® panels shall be attached to posts using mechanically fastened panel brackets supplied by the manufacturer.

3.03 CLEANING

The contractor shall clean the jobsite of excess materials; post-hole excavations shall be scattered uniformly away from posts.

Table 1 - Coating Performance Requirements

<table>
<thead>
<tr>
<th>Quality Characteristic</th>
<th>ASTM Test Method</th>
<th>Performance Requirements</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adhesion</td>
<td>D3359 - Method B</td>
<td>Adhesion (Retention of Coating) over 90% of test area (Tape and knife test).</td>
</tr>
<tr>
<td>Corrosion Resistance</td>
<td>B117 &amp; D1654</td>
<td>Corrosion Resistance over 1,000 hours (Scribed per D1654; failure mode is accumulation of 1/8” coating loss from scribe or medium #8 blisters).</td>
</tr>
<tr>
<td>Impact Resistance</td>
<td>D2794</td>
<td>Impact Resistance over 60 inch lb. (Forward impact using 0.625” ball).</td>
</tr>
<tr>
<td>Weathering Resistance</td>
<td>D622, D2244, D603 (60° Method)</td>
<td>Weathering Resistance over 1,000 hours (Failure mode is 60% loss of gloss or color variance of more than 3 delta-E color units).</td>
</tr>
</tbody>
</table>

Table 2 - Post Spacing Requirements

<table>
<thead>
<tr>
<th>Post Size</th>
<th>2-1/2”</th>
<th>3”</th>
<th>2-1/2”</th>
<th>3”</th>
<th>2-1/2”</th>
<th>3”</th>
<th>2-1/2”</th>
<th>3”</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bracket</td>
<td>Rigid</td>
<td>Swivel</td>
<td>Rigid</td>
<td>Swivel</td>
<td>Rigid</td>
<td>Swivel</td>
<td>Rigid</td>
<td>Swivel</td>
</tr>
<tr>
<td>Straight Picket Post Settings +/- 1/2”OC.</td>
<td>71-1/2”</td>
<td>72”</td>
<td>73-1/2”</td>
<td>73”</td>
<td>96”</td>
<td>96-1/2”</td>
<td>97-1/2”</td>
<td>98”</td>
</tr>
<tr>
<td>Curved Picket Post Settings +/- 1/2”OC.</td>
<td>75”</td>
<td>75-1/2”</td>
<td>76-1/2”</td>
<td>77”</td>
<td>94-1/2”</td>
<td>95”</td>
<td>96”</td>
<td>96-1/2”</td>
</tr>
</tbody>
</table>
See why Echelon Plus® is considered the “better value” when compared to conventional aluminum products. The pickets, rails, and posts provide a stronger structure. The all-welded gate construction with thicker component walls ensures years of use with no sag. Echelon Plus® fences are polyester powder coated with a finish that is far superior to other coatings in durability and scratch-resistance. With Echelon Plus®, a maintenance-free, environmentally-friendly fence is guaranteed.

### COMPONENT SIZES

<table>
<thead>
<tr>
<th>Pickets</th>
<th>ForeRunner™ Rails</th>
<th>Posts</th>
<th>Heights</th>
</tr>
</thead>
<tbody>
<tr>
<td>3/4” x .050”</td>
<td>1-1/4” x 1-7/16”</td>
<td>&quot;2-1/2&quot; x .060</td>
<td>36”, 42”, 48”, 60”, 72” (and 54” for Majestic &amp; Conqueror pool panels)</td>
</tr>
</tbody>
</table>

*The Echelon Plus® post has an interior reinforcement web which adds to the overall strength of the post.

### WIND LOADING

<table>
<thead>
<tr>
<th>Height (FT)</th>
<th>Rail Length</th>
<th>Post Size</th>
<th>Echelon Plus® Wind Load Capacity Factor (PSF)</th>
<th>Typical Wind Load Capacity (mph)</th>
</tr>
</thead>
<tbody>
<tr>
<td>4</td>
<td>6</td>
<td>2-1/2” x 2-1/2” Tube w/reinforced web</td>
<td>85</td>
<td>215</td>
</tr>
<tr>
<td>8</td>
<td>8</td>
<td>2-1/2” x 2-1/2” Tube w/reinforced web</td>
<td>68</td>
<td>193</td>
</tr>
<tr>
<td>5</td>
<td>8</td>
<td>2-1/2” x 2-1/2” Tube w/reinforced web</td>
<td>47</td>
<td>159</td>
</tr>
<tr>
<td>6</td>
<td>8</td>
<td>2-1/2” x 2-1/2” Tube w/reinforced web</td>
<td>42</td>
<td>151</td>
</tr>
</tbody>
</table>

Note: Mph calculated using ANSI/ASCE 7-02, “American Society of Civil Engineers Minimum Design Loads for Buildings and Other Structures” Exposure Category C (open terrain with scattered obstructions having lengths generally less than 30 feet). For wind loading applicable to a particular specification, consult the appropriate Building Code.

### STYLES

- **CLASSIC™**
  - Style C3 (3-Rail)
  - *Style C4 (4-Rail)
- **GENESIS™**
  - Style G3 (3-Rail)
  - *Style G4 (4-Rail)
- **WARRIOR™**
  - Style W3 (3-Rail)
  - *Style W4 (4-Rail)
- **CONQUEROR™**
  - Style R3 (3-Rail)
  - *Style R4 (4-Rail)
- **POOL STYLES**
  - **MONARCH™**
    - Style M2P (2-Rail)
  - **MAJESTIC™**
    - Style M3P (3-Rail)
  - **CONQUEROR™**
    - Style R3P (3-Rail)

* 6’ HIGH ONLY

### COLORS

Request Color Chip samples for actual color

- Black
- Bronze
- White

### ADORNMENTS

- Quad Flare
- Triad
- Ball Cap
- Butterfly Scroll
- Florentine Scroll
- Rings

### AVAILABILITY, WARRANTY & MAINTENANCE

The availability, warranty, and maintenance information of Echelon II® also applies to Echelon Plus® (see Page 24).

### GATES

Contact the Ameristar Architectural Department for detailed information and literature on gates.
PART 1 – GENERAL
1.01 WORK INCLUDED
The contractor shall provide all labor, materials and
apparatuses necessary for installation of the ornamental metal fence system defined herein (specify project site).

1.02 RELATED WORK
Section 022 _ _ - Earthwork
Section 030 _ _ - Concrete

1.03 SYSTEM DESCRIPTION
The manufacturer shall supply a total ornamental metal fence system of the Ameristar® Echelon Plus™ (specify Classic™, Majestic™, Genesis™, Warrior™ or Conqueror™) design. The system shall include all components (i.e., pickets, rails, posts, gates and hardware) required.

1.04 QUALITY ASSURANCE
The contractor shall provide laborers and supervisors who are thoroughly familiar with the type of construction involved and materials and techniques specified.

1.05 REFERENCES

1.06 SUBMITTAL
The manufacturer’s literature shall be submitted prior to installation.

1.07 PRODUCT HANDLING AND STORAGE
Upon receipt at the job site, all materials shall be checked to ensure that no damage occurred during shipping or handling. Materials shall be stored in such a manner to ensure proper ventilation and drainage, and to protect against damage, weather, vandalism and theft.

PART 2 – MATERIALS
2.01 MANUFACTURER
The ornamental aluminum fence system shall conform to Ameristar® Echelon Plus™ (specify Classic™, Majestic™, Genesis™, Warrior™ or Conqueror™) (specify number of rails) - Rail style, (if ornamental aren't applicable, add with clips), manufactured by Ameristar Fence Products, Inc., in Tulsa, Oklahoma.

2.02 MATERIAL
A. Aluminum material for fence framework (i.e., tubular pickets, rails and posts) shall conform to the requirements of ASTM B221. The aluminum extrusions for posts and rails (outer channel) shall be Alloy and Temper Designation 6060-T6. The aluminum extrusions for pickets and rail inner slide channels shall be Alloy and Temper Designation 6065-T5. The aluminum extrusions for pickets and rail inner slide channels shall be Alloy and Temper Designation 6065-T5.
B. The manufactured framework shall be subjected to the Ameristar® thermal stratification coating process (high-temperature, in-line, multi-stage) including, as a minimum, a six-stage pretreatment/wash and an electrostatic spray application of a polyester finish. The topcoat shall be a “no-mar” TGIC polyester powder coat finish with a minimum thickness of 2 mils (0.0059mm). The color shall be (specify Black, Bronze, or White). The stratification-coated framework shall be capable of meeting the performance requirements for each quality characteristic shown in Table 1.

C. Material for fence pickets shall be 3/4” square x 0.050” thick extruded tubing. The cross-sectional shape of the rail shall conform to the manufacturer’s ForeRunner™ design with outside cross-section dimensions of 1.4375” x 2.500”. The top wall of the outer channel of the rail shall be 0.055” thick; the side walls shall be 0.070” thick for superior vertical load strength. The inner slide channel of the rail shall be 0.070” thick. Picket holes in the ForeRunner™ rails shall be 0.125” diameter galvanized steel. Posts shall be a minimum of 0.625” square with a perimeter wall thickness of 0.060” and an interior reinforcing web. Cast aluminum post caps shall be affixed to all posts. High quality PVC grommets shall be supplied to seal all picket-to-rail intersections.
D. Gates shall be fabricated using ForeRunner™ rail material and 1.75” square gate ends. Gate ends shall be 0.125” thick; gate pickets shall be 0.080” thick. All rail and upright intersections shall be joined by welding. All picket and rail intersections shall also be joined by welding.

2.03 FABRICATION
A. Pickets, rails and posts shall be pre-cut to specified lengths. ForeRunner™ rails shall be pre-punched to accept pickets.
B. Grommets shall be inserted into the pre-punched holes in the rails, and pickets shall be inserted through the grommets so that pre-drilled picket holes align with the internal raceway of the two-part ForeRunner™ rails. (Note: This can best be accomplished by using an alignment template). Retaining rods shall be inserted into each ForeRunner™ rail so that they pass through the pre-drilled holes in each picket, thus completing the panel assembly.
C. Completed panels shall be capable of supporting a 200 lb. load (applied at midspan) without permanent deformation. Panels shall be biaxial to a 25% change in grade.
D. Gates shall be fabricated using ForeRunner™ rail material and 1.75” square gate ends. Gate ends shall be 0.125” thick; gate pickets shall be 0.080” thick. All rail and upright intersections shall be joined by welding. All picket and rail intersections shall also be joined by welding.

PART 3 – EXECUTION
3.01 PREPARATION
All new installation shall be laid out by the contractor in accordance with the construction plans.

3.02 INSTALLATION
Fence posts (2-1/2” square) shall be set 95” on center, plus or minus 1/2”. Gate posts shall be spaced according to the gate openings specified in the construction plans. The “Earthwork” and “Concrete” sections of this specification shall govern post base material requirements. Echelon Plus™ panels shall be attached to posts using mechanically fastened panel brackets supplied by the manufacturer.

3.03 CLEANING
The contractor shall clean the jobsite of excess materials; post-hole excavations shall be scattered uniformly away from posts.

<table>
<thead>
<tr>
<th>Quality Characteristics</th>
<th>ASTM Test Method</th>
<th>Performance Requirements</th>
</tr>
</thead>
<tbody>
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<td>Adhesion (Retention of Coating) over 90% of test area (Tape and knife test).</td>
</tr>
<tr>
<td>Corrosion Resistance</td>
<td>B117 &amp; D1654</td>
<td>Corrosion Resistance over 1,000 hours (Scribed per D1654: failure mode is 1/8” coating loss from scribe or medium #8 blisters).</td>
</tr>
<tr>
<td>Impact Resistance</td>
<td>D2794</td>
<td>Impact Resistance over 60 inch lb. (Forward impact using 0.625” ball).</td>
</tr>
<tr>
<td>Weathering Resistance</td>
<td>D622, D2244, D523 (60° Method)</td>
<td>Weathering Resistance over 1,000 hours (Failure mode is 60% loss of gloss or color variance of more than 3 delta-E color units).</td>
</tr>
</tbody>
</table>
Contemporary color fence systems from Ameristar® can be artfully blended into the natural environment to dramatically enhance any chain link fence installation, whether the application is commercial, recreational, industrial or high security. A PermaCoat® chain link fence adds the creative flair that reflects a well designed aesthetically pleasing project. The PermaCoat® system features a tough durable finish coat (see Pages 4 and 5) that resists severe weather conditions and maintains an attractive appearance year after year.

DETAILED PRODUCT DATA
Ameristar’s electronic media enable architects and specifiers to simply download specification information directly into the appropriate section of their CSI-formatted project specifications; they also enable the direct downloading of product drawings onto project blueprints.

DEFINING FEATURES
The fence framework was designed and developed to answer the need for a more durable, attractive and affordable framing product. It is produced from high yield strength galvanized steel, using state-of-the-art mill forming and in-line welding techniques. It is coated with the PermaCoat® powder coating system, with its double layer of protection (actually powder coated twice). The base coat is a epoxy moisture barrier that is thermally fused to the galvanized substrate and is known for its outstanding corrosion resistance. The finish coat is a thermo-setting TGIC “no-mar” polyester with enhanced UV resistance to maintain a beautiful color finish for a lifetime of maintenance-free enjoyment.
DEFINING FEATURES

SUPERIOR STRENGTH

PERMACOAT® PC-40™ VS. SCHEDULE 40 & “C” SECTION
BENDING STRENGTH COMPARISON

SUPERIOR SYSTEM

<table>
<thead>
<tr>
<th>APPLICATION</th>
<th>INDUSTRIAL ASTM F668/F1043 &amp; ASTM F1712</th>
<th>COMMERCIAL ASTM F668/F1043 &amp; F1934</th>
<th>TENNIS COURT ASTM F1609</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Terminal Posts up to 6’</td>
<td>Terminal Posts over 6’</td>
<td>Terminal Posts over 10’</td>
</tr>
<tr>
<td>PERMACOAT® FRAMEWORK</td>
<td>2.375” O.D. x .130” Wall 3.12 lb./ft.</td>
<td>2.875” O.D. x .160” Wall 4.64 lb./ft.</td>
<td>N/A</td>
</tr>
<tr>
<td>15 Year Warranty</td>
<td>2.375” O.D. x .095” Wall 2.31 lb./ft.</td>
<td>2.875” O.D. x .110” Wall 3.25 lb./ft.</td>
<td>N/A</td>
</tr>
<tr>
<td>Heights from 3’ to 20’</td>
<td>2.375” O.D. x .160” Wall 6.56 lb./ft.</td>
<td>N/A</td>
<td>2.875” O.D. x .090” Wall 1.74 lb./ft.</td>
</tr>
<tr>
<td>Black, Green or Brown PermaCoat® Epoxy &amp; Polyester Powder Coating No-Mar Finish</td>
<td>1.900” O.D. x .120” Wall 2.28 lb./ft.</td>
<td>1.900” O.D. x .090” Wall 1.74 lb./ft.</td>
<td>N/A</td>
</tr>
<tr>
<td>Type B Tubular Steel Framework With Supplemental Color Coating As Per ASTM F1043</td>
<td>2.375” O.D. x .130” Wall 3.12 lb./ft.</td>
<td>2.375” O.D. x .090” Wall 2.31 lb./ft.</td>
<td>N/A</td>
</tr>
</tbody>
</table>

PERMACOAT® FRAMEWORK

- 15 Year Warranty
- Heights from 3’ to 20’
- Black, Green or Brown PermaCoat® Epoxy & Polyester Powder Coating No-Mar Finish

INDUSTRIAL ASTM F668/F1043 & ASTM F1712

- Sports Complexes
- Recreational Facilities
- Industrial Plant Facilities
- Government Facilities
- Department of Transportation
- Prisons

COMMERCIAL ASTM F668/F1043 & F1934

- Nurseries
- Min-Storages
- Golf Courses
- Apartments
- Office Complexes
- Swimming Pools

TENNIS COURT ASTM F1609

- Sports Complexes
- Recreational Facilities
- Industrial Plant Facilities
- Government Facilities
- Department of Transportation
- Prisons

Rails & Bracing

- 1.660” O.D. x .111” Wall 1.84 lb./ft.
- 1.660” O.D. x .090” Wall 1.43 lb./ft.

Page 37
COMPONENT SIZES
Structural component sizes are shown in Table 1 to the Construction Specification on Page 33.

STYLES
PermaCoat® PC-40™ and PC-20™ Color Chain Link fences are available with or without barbed wire.

COLORS
Request Color Chip samples for actual color
- Black
- Brown
- Green

CANTILEVER GATES
Cantilever gate information is provided in the TransPort™ Cantilever Gate Section (Pages 46-47).

WIND LOADING
Consult the Chain Link Fence Manufacturers Institute Guide CLFMI-WLG 2445, “Guide for Selection of Line Post Spacings for Chain Link Fence”.

AVAILABILITY
Shipping
PermaCoat® PC-40™ and PC-20™ Color Chain Link fence framework is carefully wrapped and bundled to ensure the most economical damage-free shipping.

Ordering Information
To order, simply specify the items and color desired. Then figure and provide the quantities needed. Contact Ameristar® for the nearest distributor or for any other assistance needed.

WARRANTY
A written 15 year limited warranty is extended on Ameristar's PermaCoat® PC-40™ and PC-20™ Color Chain Link framework. Call Ameristar® for a copy.

MAINTENANCE
Little or no maintenance is required for the fence and gate systems supplied by Ameristar®. The PermaCoat® coated galvanized metal in PC-40™ and PC-20™ framework and the polyester coated aluminum in TransPort™ gates will remain corrosion free for years to come. Damages to coated surfaces can be readily covered with Ameristar's matching custom finishes (either spray or paint pen application).

PermaCoat® PC-40™
Ameristar's PermaCoat® PC-40™ industrial color chain link fence not only controls access, as one would expect from an industrial fence; it also enhances the beauty of the facilities and properties it surrounds. Using Perma-coated framework makes the PC-40™ Industrial Fence the most attractive and durable industrial chain link fence that can be installed anywhere.

PermaCoat® PC-20™
Security and protection are blended into an attractive appearance with the PermaCoat®PC-20™ commercial color chain link fence system.

Tennis Court Perimeters
The appropriate combination of framework materials from Ameristar's PermaCoat® PC-40™ and PC-20™ works best for tennis court perimeters (see Page 31).
PART 1 - GENERAL

1.01 WORK INCLUDED
The contractor shall provide all labor, materials, and apparatuses necessary for the installation of the color chain link fencing system defined herein (see Design and Style). The system shall include all components (i.e., framework, chain link fabric, gates and fittings) required.

1.02 RELATED WORK
Section 02500 - Paving and Surfacing
Section 03300 - Case-In-Place Concrete
Section 04020 - Unit Masonry

1.03 SYSTEM DESCRIPTION
The contractor shall supply a total color chain link fencing system of the design, style, and strength defined herein. The system shall include all components (i.e., framework, chain link fabric, gates and fittings) required.

1.04 QUALITY ASSURANCE
The contractor shall provide laborers and supervisors who are thoroughly familiar with the type of construction involved and materials and techniques specified.

1.05 REFERENCES
A. American Society for Testing and Materials (ASTM) Standards:
   - A90/A90M - Test Method for Weight (Mass) of Coating on Iron and Steel Articles with Zinc or Zinc-Alloy Coatings
   - A653/A653M - Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvalume) by the Hot-Dip Process
   - B217 - Practice for Operating Salt Spray (Fog) Apparatus
   - D164 - Practice for Operating Light- and Water-Exposure Apparatus

B. American Society for Testing and Materials (AASHTO) Standards
   - M181 - Standard Specification for Chain-Link Fence
   - F969 - Practice for Installation of Chain-Link Fence
   - F567 - Practice for Installation of Chain-Link Fence
   - D3359 - Operating Light- and Water-Exposure Apparatus

C. Federal Standards
   - A924/A924M - Specification for General Requirements for the Use of Aluminum Alloys for Exposed Highway and Monorail System Applications
   - A653/A653M - Specification for Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvalume) Steel Sheet
   - F1184 - Standard Specification for Chain-Link Fence

D. Corresponding class AASHTO/AWS class 3 (Class 3) Steel

E. The minimum thickness of the base coat shall be two (2) mils. The material used for the finish coat shall be a thermally sprayed coating process (multi-stage, high-temperature, multi-layer) including, as a minimum, a six-stage pretreatment wash (with zinc phosphate), an electrolytic spray application of an epoxy base, and a separate electrolytic spray application of a polyester finish.

2.01 MANUFACTURER
The framework for the chain link fence systems shall conform to Ameristar® PermaCoat® (specify PC-40™ Industrial Weight or PC-20™ Commercial Weight) Fence Pipe or Ameristar® PermaCoat® Products in Tulsa, Oklahoma.

2.02 MATERIAL - STEEL FRAMEWORK
A. The steel material used to manufacture Ameristar® PermaCoat® (specify PC-40™ Industrial Weight or PC-20™ Commercial Weight) Fence Pipe shall be zinc-coated or galvanized by the hot-dip process conforming to the criteria of ASTM A653/ A653M and the general requirements of ASTM A924/A924M.

B. The zinc used in the galvanizing process shall conform to ASTM B6. Weight of zinc shall be determined using the test method described in ASTM F969. Fence posts shall be set in accordance with ASTM F900. Slide gates shall be manufactured and coated to meet the requirements of ASTM F914. The strength of all gates shall be (specify Black, Green or Brown) in accordance with ASTM F934.

C. The framework shall be fabricated in accordance with the minimum strengths as defined herein at (specify Black, Green or Brown) in accordance with ASTM F934.

D. The steel framework shall be manufactured in accordance with commercial standards to meet the strength (50,000 psi minimum yield strength) and coating requirements: Ameristar® PermaCoat® (specify PC-40™ Industrial Weight or PC-20™ Commercial Weight) Fence Pipe shall conform to the requirements of ASTM F1043, Group IC, Electrical Resistance Welded Round Steel, and shall be recoated with the same type of material and coating process used in the PermaCoat® process. The framework shall be manufactured in accordance with commercial standards to meet the strength (50,000 psi minimum yield strength) and coating requirements of the following standards: 1.) ASTM F1043, Group IC, Electrical Resistance Welded Round Steel, and shall be recoated with the same type of material and coating process used in the PermaCoat® process.

2.03 MATERIAL - FENCE FABRIC
A. The material for chain link fence fabric shall be manufactured from galvanized steel wire. The weight of zinc shall meet the requirements of ASTM F668, Table 4. Galvanized wire shall be PVC-coated to meet the requirements of ASTM F668. The class of the fence fabric shall be specified (Class 1, Extruded, Class 2A, Extruded and Bonded, Class 2B, Fused and Bonded).

B. Selvage: Top edge (specify knuckled or twisted) and bottom edge (specify knuckled or twisted) shall be two (2) mils. The stratification coated pipe shall demonstrate the ability to withstand exposure to the PermaCoat® process, a complete thermal strip of zinc coating and a minimum of two (2) mils. The stratification coated pipe shall be recoated with the same type of material and coating process used in the PermaCoat® process.

C. Color: The coating color for the fence fabric shall be (specify Black, Green or Brown). Reference ASTM F668 and ASTM F934.

D. Wire Size: The size of the steel core wire shall be (specify gauge) gauge. (See Table 2). The finished size of the coated wire shall be (specify gauge) (See Table 2).

E. Height and Mesh Size: The fabric height shall be (specify height) feet high with a mesh size of (specify mesh size) inches. (See Table 2).

2.04 MATERIAL - GATES
Swing gates shall be manufactured and coated to meet the requirements of ASTM F914. Side gates shall be manufactured to meet the requirements of ASTM F718. The color of all gates shall be (specify Black, Green or Brown) in accordance with ASTM F934.

3.01 PREPAN
All new installation shall be laid out by the contractor in accordance with the construction plan.

3.02 INSTALLATION
Installation shall be performed in accordance with ASTM F567. Chain link fence systems, install in accordance with ASTM F567. Post supports shall be set at spacings of a multiple of 10 feet o.c. Gate posts shall be spaced according to the gate openings specified in the contract documents. The opening for "Cast-In-Place Concrete" and "Unit Masonry" sections of this specification shall govern post base placement and material requirements. The top base of each post shall be placed on the ground side and attach with wire ties or clip to line posts at 15 inches o.c. and to rails, braces and tension wire at 24 inches o.c.

3.03 CLEANING
The contractor shall clean the jobsite of excess materials. Post hole excavations shall be scattered uniformly away from posts.

---

**TABLE 1 - FRAMEWORK**

<table>
<thead>
<tr>
<th>Structural Application</th>
<th>Fence Industry O.D.</th>
<th>Decamal O.D. Equivalent</th>
<th>Pipe Wt Thickness</th>
<th>Weight</th>
<th>Section Modulus (inches)</th>
<th>Min. Yield Strength (ksi)</th>
<th>Max. Bending Moment (lb-in)</th>
<th>Calculated Load (lbs)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-1/8”</td>
<td>1.950</td>
<td>1.950</td>
<td>0.111</td>
<td>2.52</td>
<td>0.034</td>
<td>0.034</td>
<td>0.034</td>
<td>0.034</td>
</tr>
<tr>
<td>2”</td>
<td>2.000</td>
<td>2.000</td>
<td>0.120</td>
<td>2.05</td>
<td>0.034</td>
<td>0.034</td>
<td>0.034</td>
<td>0.034</td>
</tr>
<tr>
<td>2-1/2”</td>
<td>2.575</td>
<td>2.575</td>
<td>0.130</td>
<td>2.12</td>
<td>0.034</td>
<td>0.034</td>
<td>0.034</td>
<td>0.034</td>
</tr>
<tr>
<td>3”</td>
<td>2.875</td>
<td>2.875</td>
<td>0.160</td>
<td>2.12</td>
<td>0.034</td>
<td>0.034</td>
<td>0.034</td>
<td>0.034</td>
</tr>
<tr>
<td>4”</td>
<td>4.000</td>
<td>4.000</td>
<td>0.200</td>
<td>2.60</td>
<td>0.034</td>
<td>0.034</td>
<td>0.034</td>
<td>0.034</td>
</tr>
<tr>
<td>5”</td>
<td>5.000</td>
<td>5.000</td>
<td>0.250</td>
<td>3.12</td>
<td>0.034</td>
<td>0.034</td>
<td>0.034</td>
<td>0.034</td>
</tr>
<tr>
<td>6”</td>
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<td>6.000</td>
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<td>0.034</td>
<td>0.034</td>
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**TABLE 2 - FABRIC**

<table>
<thead>
<tr>
<th>Structural Application</th>
<th>Finished OD (INCH)</th>
<th>Finish OD (INCH)</th>
<th>Core Diameter (INCH)</th>
<th>PVC Coating (lb/ft)</th>
<th>Mesh Sizes (Avail Available)</th>
<th>Fabric (End Cap)</th>
<th>Minimum Weight (lbs)</th>
</tr>
</thead>
<tbody>
<tr>
<td>40” (Industrial)</td>
<td>1-1/8”</td>
<td>1.950</td>
<td>0.111</td>
<td>2.52</td>
<td>0.034</td>
<td>0.034</td>
<td>0.034</td>
</tr>
<tr>
<td>40” (Commercial)</td>
<td>1.950</td>
<td>1.950</td>
<td>0.111</td>
<td>2.52</td>
<td>0.034</td>
<td>0.034</td>
<td>0.034</td>
</tr>
<tr>
<td>3-1/2”</td>
<td>2.000</td>
<td>2.000</td>
<td>0.120</td>
<td>2.05</td>
<td>0.034</td>
<td>0.034</td>
<td>0.034</td>
</tr>
<tr>
<td>3”</td>
<td>2.575</td>
<td>2.575</td>
<td>0.160</td>
<td>2.12</td>
<td>0.034</td>
<td>0.034</td>
<td>0.034</td>
</tr>
<tr>
<td>2-1/2”</td>
<td>4.000</td>
<td>4.000</td>
<td>0.200</td>
<td>2.60</td>
<td>0.034</td>
<td>0.034</td>
<td>0.034</td>
</tr>
<tr>
<td>2”</td>
<td>5.000</td>
<td>5.000</td>
<td>0.250</td>
<td>3.12</td>
<td>0.034</td>
<td>0.034</td>
<td>0.034</td>
</tr>
<tr>
<td>1-1/8”</td>
<td>6.000</td>
<td>6.000</td>
<td>0.312</td>
<td>3.65</td>
<td>0.034</td>
<td>0.034</td>
<td>0.034</td>
</tr>
</tbody>
</table>

---

**www.ameristarfence.com**
SUPERIOR STRENGTH
Comparison of GalvOnAll™ GBR-40™ Fence Pipe against Schedule 40 Pipe & “C” Section Framework shows GBR-40™ to be far superior in strength (Note: The comparative strengths are identical to those shown for PC-40™ on Page 35).

COMPONENT SIZES
Structural component sizes are shown in Table 1 in the Construction Specification on Page 35.

STYLES
GalvOnAll™ GBR-40™ and GBR-20™ Chain Link fences are available with or without barbed wire.

CANTILEVER GATES
Cantilever gate information is provided in the Trans-Port™ Cantilever Gate Section (Pages 46-47).

WIND LOADING
Consult the Chain Link Fence Manufacturers Institute Guide CLFMI-WLG 2445, “Guide for Selection of Line Post Spacings for Chain Link Fence”.

AVAILABILITY
GalvOnAll™ GBR-40™ and GBR-20™ Chain Link fence framework is carefully bundled to ensure the most economical damage-free shipping. To order, simply specify the items and lengths desired. Then figure and provide the quantities needed. Contact Ameristar® for the nearest distributor or for any other assistance needed.

MAINTENANCE
Little or no maintenance is required for chain link fence framework supplied by Ameristar®. The GalvOnAll™ GBR-40™ and GBR-20™ framework will remain corrosion free for years to come.

GalvOnAll™ GBR-40™
The high-tensile steel and advanced roll-forming process used to produce GalvOnAll™ GBR-40™ fence framework results in a strength superior to Schedule 40 pipe. Ameristar’s GalvOnAll™ manufacturing process utilizes a full layer (0.90 oz. per sq. ft. nominal) of hot-dip galvanized on both the outside and inside surfaces. GalvOnAll’s total protection process achieves much greater corrosion and exposure resistance than conventional galvanized framework employing a painted interior.

GalvOnAll™ GBR-20™
The high-tensile steel used in the manufacture of GalvOnAll™ GBR-20™ commercial fence pipe is designed to retain 80% of the strength of heavy industrial GalvOnAll™ GBR-40™ fence pipe. GalvOnAll™ GBR-20™ is a strong, yet economical alternative for endless applications such as tennis courts, baseball and softball fields, and sports complexes, and a host of institutional and business perimeter installations.
PART 1 - GENERAL
1.01 WORK INCLUDED
The contractor shall provide all labor, materials and appurtenances necessary for installation of the galvanized chain link fence system defined herein (specify project site).

1.02 RELATED WORK
Section 02500 - Paving and Surfacing
Section 03500 - Coat-in-Place Concrete
Section 04000 - Unit Masonry

1.03 SYSTEM DESCRIPTION
The contractor shall install a total galvanized chain link fence system of the design, style and strength defined herein. The system shall include all components (i.e., framework, chain link fabric, gates and fittings) required.

1.04 QUALITY ASSURANCE
The contractor shall provide labors and supervisors who are thoroughly familiar with the type of construction involved and materials and techniques specified.

1.05 REFERENCES

1.06 SUBMITAL
The manufacturer's literature shall be submitted prior to installation.

1.07 PRODUCT HANDLING AND STORAGE
Upon receipt at the job site, all materials shall be checked to ensure that no damages occurred during shipping or handling. Materials shall be stored in such a manner to ensure proper ventilation and to protect against damage, weather, vandalism and theft.

PART 2 - MATERIALS
2.01 DESCRIPTION
Framework for galvanized chain link fence systems shall conform to Ameristar® GalvOne™ GBR-40™ - Industrial Weight or GBR-20™ - Commercial Weight Fence Pipe shall be zinc-coated steel strip, galvanized by the hot dip process conforming to the criteria of ASTM A653 / A653M and the general requirements of ASTM A924/A924M.

2.02 MATERNAL - STEEL FRAMEWORK
A. The steel material used to manufacture Ameristar® GalvOne™ GBR-40™ - Industrial Weight or GBR-20™ - Commercial Weight Fence Pipe shall be a hot-dipped galvanizing weight ASTM A392 and specified as one of the following: 1.) ASTM A139, 2.) ASTM A120-11. Thermally treated weight shall not be less than 2.0 oz./ft2 [610 g/m2] of uncoated wire surface, on wire used in fabric coating before welding; on fabric coated after welding, the weight of the zinc coating shall not be less than 2.0 oz./ft2 [610 g/m2] of uncoated wire surface as determined from the average of two or more specimens, and not less than 1.8 oz./ft2 [500 g/m2] of uncoated wire surface for any individual specimen.

B. Wire Size: The finished wire size shall be specified (see Table 2).

C. Height and Mesh Size: The fabric height shall be specified for the height with a mesh size of (specify mesh size) inches (see Table 2).

D. Salvage: Top edge (specify knuckled or knitted) and bottom edge (specify knuckled or knitted).

2.04 MATERIAL - FENCE FITTINGS
The material for fence fittings shall be manufactured to meet the requirements of ASTM F928.

2.05 MATERIAL - GATES
Swing gates shall be manufactured and coated to meet the requirements of ASTM F920. Slide gates shall be manufactured and coated to meet the requirements of ASTM F1184.

PART 3 - EXECUTION
3.01 PREPARATION
All new installation shall be laid out by the contractor in accordance with the construction plans.

3.02 INSTALLATION
Install chain link fence in accordance with ASTM F567. For chain link tennis court fences, install in accordance with ASTM F939. Fence posts shall be set at spacings of a maximum 10’ o.c. Gate posts shall be spaced according to the gate openings specified in the construction plans. The “Paving and Surfacing,” “Casts-In-Place Concrete” and “Lay Masonry” sections of this specification shall govern post base placement and material requirements. Install fabric on security side and attach with wire ties or clip to live posts at 15 inches o.c. and to rails, braces and tension wire at 24 inches o.c.

3.03 CLEANING
The contractor shall clean the jobsite of excess materials. Post hole excavations shall be scattered uniformly away from posts.

---

**TABLE 1 - FRAMEWORK**

<table>
<thead>
<tr>
<th>Structural Application</th>
<th>Fence Industry O.D.</th>
<th>Decimal O.D. (inches)</th>
<th>Wall Pipe Thickness</th>
<th>Weight</th>
<th>Section Modulus (inches)</th>
<th>Min. Yield Strength (ksi)</th>
<th>Max. Bending Moment (lb. ft.)</th>
<th>Calculated Load (lbs.)</th>
<th>Cantilever</th>
</tr>
</thead>
<tbody>
<tr>
<td>GBR-40 (Industrial)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>4'</td>
</tr>
<tr>
<td>I-6/8”</td>
<td>1.660</td>
<td>46.26</td>
<td>111</td>
<td>2.82</td>
<td>1.84</td>
<td>2.74</td>
<td>1961 x 5000</td>
<td>9,605 x 5000</td>
<td>327</td>
</tr>
<tr>
<td>2”</td>
<td>1.900</td>
<td>46.26</td>
<td>120</td>
<td>3.05</td>
<td>2.28</td>
<td>3.50</td>
<td>2810 x 5000</td>
<td>14,050 x 5000</td>
<td>238</td>
</tr>
<tr>
<td>2”</td>
<td>2.137</td>
<td>60.33</td>
<td>130</td>
<td>3.10</td>
<td>3.12</td>
<td>4.64</td>
<td>4881 x 5000</td>
<td>24,405 x 5000</td>
<td>508</td>
</tr>
<tr>
<td>3”</td>
<td>2.875</td>
<td>73.03</td>
<td>160</td>
<td>4.06</td>
<td>4.64</td>
<td>6.90</td>
<td>8778 x 5000</td>
<td>43,890 x 5000</td>
<td>914</td>
</tr>
<tr>
<td>4”</td>
<td>4.000</td>
<td>107.60</td>
<td>160</td>
<td>4.06</td>
<td>5.65</td>
<td>9.17</td>
<td>17819 x 5000</td>
<td>89,460 x 5000</td>
<td>1016</td>
</tr>
<tr>
<td>1-3/8”</td>
<td>1.315</td>
<td>33.40</td>
<td>0.80</td>
<td>2.53</td>
<td>1.06</td>
<td>1.57</td>
<td>5090 x 5000</td>
<td>45,000 x 5000</td>
<td>526</td>
</tr>
<tr>
<td>1-5/8”</td>
<td>1.680</td>
<td>46.26</td>
<td>0.85</td>
<td>2.16</td>
<td>1.43</td>
<td>2.13</td>
<td>1574 x 5000</td>
<td>7,870 x 5000</td>
<td>104</td>
</tr>
<tr>
<td>2”</td>
<td>1.900</td>
<td>46.26</td>
<td>1.00</td>
<td>2.34</td>
<td>1.77</td>
<td>2.58</td>
<td>2208 x 5000</td>
<td>26,820 x 5000</td>
<td>154</td>
</tr>
<tr>
<td>2”</td>
<td>2.375</td>
<td>60.33</td>
<td>0.95</td>
<td>2.41</td>
<td>2.32</td>
<td>3.45</td>
<td>3734 x 5000</td>
<td>48,070 x 5000</td>
<td>359</td>
</tr>
<tr>
<td>3”</td>
<td>2.875</td>
<td>73.03</td>
<td>1.11</td>
<td>2.82</td>
<td>3.26</td>
<td>4.85</td>
<td>6045 x 5000</td>
<td>61,325 x 5000</td>
<td>442</td>
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</table>

| GBR-20 (Commercial)   |                     |                       |                    |       |                         |                         |                           |                        | 6’        |

**TABLE 2 - FABRIC**

<table>
<thead>
<tr>
<th>Structural Application</th>
<th>Fabric Height and Diamond Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>Industrial</td>
<td></td>
</tr>
<tr>
<td>Height</td>
<td>36” (910 mm) 42” (1070 mm) 48” (1220 mm)</td>
</tr>
<tr>
<td>Weight</td>
<td>60” (1520 mm) 72” (1830 mm) 84” (2130 mm)</td>
</tr>
<tr>
<td>84” (2130 mm)</td>
<td>96” (2400 mm) 120” (3050 mm) 144” (3660 mm)</td>
</tr>
<tr>
<td>Mesh Size</td>
<td>2” (50.8 mm) 4” (1016 mm) 6” (152.4 mm) 8” (203.2 mm)</td>
</tr>
<tr>
<td>Wire Diameter</td>
<td>9 ga. 12 ga. 14 ga. 18 ga.</td>
</tr>
<tr>
<td>Nominal Diameter</td>
<td>9 ga. 12 ga. 14 ga. 18 ga.</td>
</tr>
<tr>
<td>Minimum Tensile Strength</td>
<td>9 ga. 12 ga. 14 ga. 18 ga.</td>
</tr>
</tbody>
</table>

---

**CONSTRUCTION SPECIFICATION**

SECTION 32 31 00 - GALVANIZED CHAIN LINK FENCE SYSTEM

Utilizing GalvOnAll™ GBR-40” (Industrial) or GBR-20” (Commercial) Fence Pipe

(MEETS “BUY AMERICAN” DOMESTIC PROCUREMENTS)

32 31 00/AME
Buyline 5862

GalvOnAll™ Chain Link

www.ameristarfence.com
## Barbed Tape Obstacle Systems

### Selection Guide

#### BTH

<table>
<thead>
<tr>
<th>Item Number</th>
<th>Diameter</th>
<th>Loops</th>
<th>Loop Spacing</th>
<th>Length per Roll</th>
<th>Weight per Roll</th>
</tr>
</thead>
<tbody>
<tr>
<td>7555000020</td>
<td>18&quot; (450 mm)</td>
<td>33</td>
<td>18&quot; (450 mm)</td>
<td>50' (15 m)</td>
<td>11 lbs (5 kgs)</td>
</tr>
<tr>
<td>7555000050</td>
<td>24&quot; (600 mm)</td>
<td>33</td>
<td>18&quot; (450 mm)</td>
<td>50' (15 m)</td>
<td>17 lbs (7.7 kgs)</td>
</tr>
<tr>
<td>7555000080</td>
<td>30&quot; (750 mm)</td>
<td>33</td>
<td>18&quot; (450 mm)</td>
<td>50' (15 m)</td>
<td>22 lbs (10 kgs)</td>
</tr>
</tbody>
</table>

Tape Strip: AISI 430 Stainless Steel (ASTM A 653 Galvanized Steel Also Available) • 1" Wide Prior To Forming
Core Wire: AISI 301 Stainless Steel (ASTM A 764 Galvanized Steel Also Available) • .098" Diameter
Barb Clusters: Long Barbs • 2.4" (± .10") Tip-To-Tip • 4" On Center  • Loop Profile: Circular

#### DefCon Alpha®

<table>
<thead>
<tr>
<th>Item Number</th>
<th>Diameter</th>
<th>Loops</th>
<th>Loop Spacing</th>
<th>Length per Roll</th>
<th>Weight per Roll</th>
</tr>
</thead>
<tbody>
<tr>
<td>7555100010</td>
<td>18&quot; (450 mm)</td>
<td>31</td>
<td>12&quot; (300 mm)</td>
<td>45' (14 m)</td>
<td>11 lbs (5 kgs)</td>
</tr>
<tr>
<td>7555100040</td>
<td>24&quot; (600 mm)</td>
<td>31</td>
<td>12&quot; (300 mm)</td>
<td>45' (14 m)</td>
<td>17 lbs (7.7 kgs)</td>
</tr>
<tr>
<td>7555100070</td>
<td>30&quot; (750 mm)</td>
<td>31</td>
<td>12&quot; (300 mm)</td>
<td>45' (14 m)</td>
<td>22 lbs (10 kgs)</td>
</tr>
<tr>
<td>7555100100</td>
<td>36&quot; (900 mm)</td>
<td>31</td>
<td>12&quot; (300 mm)</td>
<td>45' (14 m)</td>
<td>25 lbs (11 kgs)</td>
</tr>
</tbody>
</table>

Tape Strip: AISI 430 Stainless Steel (ASTM A 653 Galvanized Steel Also Available On Alpha® & Bravo®) • 1" Wide Prior To Forming
Barb Clusters: Long Barbs (Alternately Offset, .15" - .45" Also Available) • 2.4" (± .10") Tip-To-Tip • 4" On Center  • Loop Profile: Circular (Elliptical Also Available For Alpha® & Niko®)

#### DefCon Bravo®

<table>
<thead>
<tr>
<th>Item Number</th>
<th>Diameter</th>
<th>Loops</th>
<th>Loop Spacing</th>
<th>Length per Roll</th>
<th>Weight per Roll</th>
</tr>
</thead>
<tbody>
<tr>
<td>7555101010</td>
<td>30&quot; (750 mm)</td>
<td>51</td>
<td>12&quot; (300 mm)</td>
<td>25' (7.5 m)</td>
<td>32 lbs (15 kgs)</td>
</tr>
<tr>
<td>75551010190</td>
<td>30&quot; (750 mm)</td>
<td>81</td>
<td>24&quot; (600 mm)</td>
<td>25' (7.5 m)</td>
<td>40 lbs (18 kgs)</td>
</tr>
<tr>
<td>7555102010</td>
<td>36&quot; (900 mm)</td>
<td>51</td>
<td>12&quot; (300 mm)</td>
<td>25' (7.5 m)</td>
<td>48 lbs (22 kgs)</td>
</tr>
<tr>
<td>7555102020</td>
<td>36&quot; (900 mm)</td>
<td>81</td>
<td>24&quot; (600 mm)</td>
<td>25' (7.5 m)</td>
<td>56 lbs (26 kgs)</td>
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#### DefCon Niko®

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<tr>
<th>Item Number</th>
<th>Diameter</th>
<th>Loops</th>
<th>Loop Spacing</th>
<th>Length per Roll</th>
<th>Weight per Roll</th>
</tr>
</thead>
<tbody>
<tr>
<td>7555100020</td>
<td>40&quot; (1000 mm)</td>
<td>51</td>
<td>12&quot; (300 mm)</td>
<td>25' (7.5 m)</td>
<td>44 lbs (20 kgs)</td>
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<tr>
<td>7555100030</td>
<td>40&quot; (1000 mm)</td>
<td>81</td>
<td>24&quot; (600 mm)</td>
<td>25' (7.5 m)</td>
<td>52 lbs (24 kgs)</td>
</tr>
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</table>

#### DefCon Victor®

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<thead>
<tr>
<th>Item Number</th>
<th>Diameter</th>
<th>Loops</th>
<th>Loop Spacing</th>
<th>Length per Roll</th>
<th>Weight per Roll</th>
</tr>
</thead>
<tbody>
<tr>
<td>7555100010</td>
<td>60&quot; (1500 mm)</td>
<td>51</td>
<td>12&quot; (300 mm)</td>
<td>25' (7.5 m)</td>
<td>60 lbs (30 kgs)</td>
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<tr>
<td>7555100020</td>
<td>60&quot; (1500 mm)</td>
<td>81</td>
<td>24&quot; (600 mm)</td>
<td>25' (7.5 m)</td>
<td>72 lbs (33 kgs)</td>
</tr>
</tbody>
</table>

#### DefCon Zulu®

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<thead>
<tr>
<th>Item Number</th>
<th>Diameter</th>
<th>Loops</th>
<th>Loop Spacing</th>
<th>Length per Roll</th>
<th>Weight per Roll</th>
</tr>
</thead>
<tbody>
<tr>
<td>7555100030</td>
<td>80&quot; (2000 mm)</td>
<td>101</td>
<td>12&quot; (300 mm)</td>
<td>50' (15 m)</td>
<td>127 lbs (58 kgs)</td>
</tr>
</tbody>
</table>

#### BTO

<table>
<thead>
<tr>
<th>Item Number</th>
<th>Diameter</th>
<th>Loops</th>
<th>Loop Spacing</th>
<th>Length per Roll</th>
<th>Weight per Roll</th>
</tr>
</thead>
<tbody>
<tr>
<td>7555400010</td>
<td>28&quot; (710 mm)</td>
<td>56</td>
<td>21&quot; (535 mm)</td>
<td>50' (15 m)</td>
<td>23 lbs (10.5 kgs)</td>
</tr>
<tr>
<td>7555400020</td>
<td>38&quot; (960 mm)</td>
<td>56</td>
<td>21&quot; (535 mm)</td>
<td>50' (15 m)</td>
<td>34 lbs (15.5 kgs)</td>
</tr>
</tbody>
</table>

#### ReCoil Alpha®

<table>
<thead>
<tr>
<th>Item Number</th>
<th>Diameter</th>
<th>Loops</th>
<th>Loop Spacing</th>
<th>Length per Roll</th>
<th>Weight per Roll</th>
</tr>
</thead>
<tbody>
<tr>
<td>7555400030</td>
<td>28&quot; (710 mm)</td>
<td>56</td>
<td>21&quot; (535 mm)</td>
<td>50' (15 m)</td>
<td>57 lbs (26 kgs)</td>
</tr>
</tbody>
</table>

#### ReCoil Bravo®

<table>
<thead>
<tr>
<th>Item Number</th>
<th>Diameter</th>
<th>Loops</th>
<th>Loop Spacing</th>
<th>Length per Roll</th>
<th>Weight per Roll</th>
</tr>
</thead>
<tbody>
<tr>
<td>7555400030</td>
<td>38&quot; (965 mm)</td>
<td>56</td>
<td>21&quot; (535 mm)</td>
<td>50' (15 m)</td>
<td>57 lbs (26 kgs)</td>
</tr>
</tbody>
</table>

Tape Strip: ASTM A 653 Galvanized Steel • .68" Wide Prior To Forming
Core Wire: ASTM A 764 Galvanized Steel • .098" Diameter
Barb Clusters: Medium Barbs • 82" (± .10") Tip-To-Tip • 1.375" On Center  • Loop Profile: Circular (Elliptical Also Available On ReCoil Alpha®)

NOTE: Upon request, selected Delta Force® products can be ordered with a larger or smaller quantity of loops per coil or with additional attachments per loop.
PART 1 - GENERAL
1.01 WORK INCLUDED
The contractor shall provide all labor, materials and appurtenances necessary for installation of the tactical barbed tape obstacle and entanglement system defined herein at (specify project site).

1.02 SYSTEM DESCRIPTION
Section 022 - Earthwork
Section 030 - Concrete

1.03 SYSTEM DESCRIPTION
The manufacturer shall supply a total barbed tape obstacle and entanglement system of Ameristar® Delta Force® design. The system shall include all components (i.e., coils and related accessories) required.

1.04 QUALITY ASSURANCE
The contractor shall provide laborers and supervisors who are thoroughly familiar with the type of deployment involved and materials and techniques specified.

1.05 REFERENCES

1.06 SUBMITTAL
The manufacturer’s literature shall be submitted prior to installation.

1.07 PRODUCT HANDLING AND STORAGE
Upon receipt at the job site, all materials shall be checked to ensure that no damage occurred during shipping or handling. Materials shall be stored in such a manner to ensure proper ventilation and drainage, and to protect against damage, weather, vandalism and theft.

PART 2 - MATERIALS
2.01 MANUFACTURER
A. The tactical barbed tape entanglement system shall conform to Delta Force (specify Whiplash® style barbed tape helix - BTH, reinforced tape with long barbs, simple helical configuration, DefCon® style barbed tape obstacle - BTO, reinforced tape with long barbs, concertina configuration or ReCoil Alpha® style barbed tape coil - BTC, flangeless tape with medium barbs, concertina configuration) manufactured by Ameristar Fence Products, Inc., in Tulsa, Oklahoma.

B. The entire tactical entanglement system, and all associated accessories, shall be obtained from a single source.

2.02 MATERIALS
A. Barbed tape obstacle systems shall be designed to meet or exceed the requirements of (specify ASTM F 1910 for BTH, BTO, or CID A-A-55522 for BTC systems).

B. Steel strip material for tape shall be (specify applicable steel strip material criteria).

C. The barbed tape system shall be designed to be spread to a loop spacing of (specify the spacing between loops), when fully deployed.

(For double coil BTO and BTC systems, add following)
To ensure a uniform spacing for both inner and outer coils, they shall be fastened together by attaching a jacketed stainless steel wire rope, 7 by 7 strand, 3/64” by 5/64”, at alternating loops throughout the double coil roll.

PART 3 - EXECUTION
3.01 PREPARATION
All new deployments shall be laid out by the contractor in accordance with the applicable project plans.

3.02 DEPLOYMENT (For BTH and BTC systems, specify the following):
The reinforced (specify BTH helical or BTO concertina) entanglement system is designed for use in a variety of permanent tactical deployment formations. Coils deployed in conjunction with standing fence systems or walls shall be firmly affixed using the fastening system specified in the manufacturer’s instructions for the specific formation or combination of formations chosen. Each coil of barbed tape shall be extended a maximum of (specify coil length in feet) ± 1 foot. Adjacent coils shall be permanently spliced together by overlapping two barb clusters from each coil and splicing with steel tie wires placed around the shanks of the two coils between the barb clusters.

(For BTC systems, specify the following):
The BTC flangeless reinforced concertina entanglement system is designed for use in a variety of permanent and temporary deployment tactical formations. Coils deployed in conjunction with standing fence systems or walls shall be firmly affixed using the fastening system specified in the manufacturer’s instructions for the specific formation or combination of formations chosen. Coils running along ground surfaces shall have their free end pinned to the ground or tied to some other fixed point and then be spread until entirely deployed. Each coil of barbed tape shall be extended a maximum of 50’ ± 1 foot. Adjacent coils shall be permanently spliced together by overlapping one cluster of each adjacent coil and splicing with two new steel tie wires placed around the shanks of the two coils between the barb clusters.

3.03 CLEANING
The contractor shall clear the deployment area of excess remnant materials upon completion of the deployment operation.
Architectural Metal Swing Gates
Better Gate Design and Rigid Welded Construction Means No Sag

OPENING SIZES
Impasse®, Aegis II®, Aegis Plus®, and Echelon II® Single and Double Gates are available in standard sizes up to openings of 16’ and 32’ respectively. Echelon Plus® Single and Double Gates are available in standard sizes up to openings of 7’ and 14’ respectively. For larger openings, special engineering may be needed or other options may be recommended.

REINFORCEMENT
For Gate Leaves 42” In Width Or Less:
Gusset plates are welded in all 4 corners of all gates (except Echelon Plus®) for added strength. Truss cables not included.

For Gate Leaves More Than 6 Feet In Width:
Gusset plates are welded in all 4 corners; an intermediate upright is added in center of leaf; and truss cables are attached for strength.

HINGE SELECTION CHART

<table>
<thead>
<tr>
<th>Hinge Type</th>
<th>Size of Gate Leaf</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pin Hinge w/2-1/2” Male</td>
<td>Gate Leaves up to 4’ long (under 90 lbs.)</td>
</tr>
<tr>
<td>Pin Hinge w/3” Male</td>
<td>Gate Leaves from 4” to 6’ (under 90 lbs.)</td>
</tr>
<tr>
<td>Box Hinge</td>
<td>All Gate Leaves</td>
</tr>
<tr>
<td>180° Hinge</td>
<td>All Gate Leaves; fits 4” and 6” Sq. Posts</td>
</tr>
</tbody>
</table>

COLORS
Color choices are the same as for Estate™ gates on Page 44, except that Echelon Plus® gates are not available in desert sand.

WARRANTY
Warranties on Architectural Metal Swing Gates match the applicable warranty for the fence of the same type.

ALL IMPASSE®, AEGIS II®, AEGIS PLUS®, MONTAGE PLUS®, ECHELON II®, AND ECHELON PLUS® SINGLE SWING AND DOUBLE SWING GATES ARE WELDED AT ALL JOINTS TO PREVENT SAG AND ENSURE PROPER FIT AND ALIGNMENT. ELECTROSTATIC APPLICATION OF POWDER COATING FOLLOWS THE WELDING OPERATION. ALUMINUM GATES ARE SUBJECTED TO THE FULL PRE-TREATMENT FOLLOWED BY POLYESTER COATING; GALVANIZED STEEL GATES ARE GIVEN BOTH THE FULL PRE-TREATMENT AND FULL PERMACOAT® EPOXY AND POLYESTER COATING (SEE PAGES 4 AND 5 FOR DETAILS).

AVAILABILITY
Shipping
Architectural Metal Swing Gates are completely shrink-wrapped to ensure economical damage-free shipping.

Ordering Information
To order, simply specify the fence type for the gate to match along with the color and dimensions desired. The outside-to-outside width of the finished gate leaf must be specified. Then figure and provide the quantities needed. Contact Ameristar® for the standard leaf widths available or if any other assistance is needed.

MAINTENANCE
Little or no maintenance is required for Architectural Metal Swing Gates, supplied by Ameristar®. The coated finish will remain corrosion-free for years to come. Damages to coated surfaces can be readily covered with Ameristar’s matching custom finishes (either spray or paint pen application).

Page 44
CONSTRUCTION SPECIFICATION
SECTION 32 31 00 - GATE SYSTEMS
Architectural Metal Swing Gates

PART 1 - GENERAL
1.01 WORK INCLUDED
The contractor shall provide all labor, materials and appurtenances necessary for installation of the architectural metal swing gate system defined herein at (specify project site).

1.02 RELATED WORK
Section 022 - Earthwork
Section 030 - Concrete

1.03 SYSTEM DESCRIPTION
The manufacturer shall supply a total (specify material as aluminum or galvanized steel) swing gate system of Ameristar® (specify fence type as Impasse® Security, Aegis III® or Echelon II® Industrial Ornamental, or Aegis Plus®, Montage Plus® or Echelon Plus® Ornamental) design and (specify the style from those listed in the manufacturer's literature for the applicable fence type) style defined herein. The system shall include all components (i.e., pickets or pales, rails, gate uprights and hardware) required.

1.04 QUALITY ASSURANCE
The contractor shall provide laborers and supervisors who are thoroughly familiar with the type of construction involved and the materials and techniques specified.

1.05 QUALITY ASSURANCE
Ameristar® Deadbolt Lock
Eliminates need for weld-on lock boxes

PART 2 - MATERIALS
2.01 MANUFACTURER
The architectural metal swing gate system shall conform to the Ameristar® (specify material as aluminum or galvanized steel) (specify fence type as Impasse® Security, Aegis III® or Echelon II® Industrial Ornamental, or Aegis Plus®, Montage Plus® or Echelon Plus® Ornamental) design and (specify the style from those listed in the manufacturer's literature for the applicable fence type) style.

2.02 MATERIAL REQUIREMENTS
A. If material for gate framework (i.e. tubular pickets, rails and gate ends) is steel that is galvanized prior to forming, it shall conform to the requirements of ASTM A653, with a minimum yield strength of 45,000 psi (344 MPa). The steel shall be hot-dip galvanized to meet the requirements of ASTM A653 with a minimum zinc coating weight of 0.60 oz/ft² (176 g/m²), Coating Designation G-90.

B. If material for gate framework (i.e. tubular pickets, rails and gate ends) is steel that is galvanized after forming, it shall conform to the requirements of ASTM A1011A/1011M, with a minimum yield strength of 45,000 psi (344 MPa). The exterior shall be hot-dip galvanized with a 0.45 oz/ft² (138 g/m²) minimum zinc weight. The interior surface shall be coated with a minimum of 81% nominal zinc pigment coated, 0.3 mils (0.0076 mm) minimum thickness.

C. If material for gate framework (i.e. tubular pickets, rails and gate ends) is aluminum, it shall conform to the requirements of ASTM B221. The aluminum extrusions for posts and rails shall be Alloy and Temper Designation 6005-T5. The aluminum extrusions for pickets and rail inner slide channels shall be Alloy and Temper Designation 6063-T5.

D. Material, dimensions and spacings for gate pales or pickets and rails for gate rails shall be the same as that used for fence panels of the (specify fence type as Impasse® Security, Aegis III® or Echelon II® Industrial Ornamental, or Aegis Plus®, Montage Plus® or Echelon Plus® Ornamental) design and (specify the style from those listed in the manufacturer's literature for the applicable fence type) style. Gate uprights shall be (specify 2 square x 16 ga. galvanized steel for Impasse® Security. 1.75” square x 18 ga. galvanized steel for Aegis III® Commercial Ornamental, or Aegis Plus®, Montage Plus® or Echelon Plus® Ornamental) type and (specify the style from those listed in the manufacturer’s literature for the applicable fence type) style.

2.03 FABRICATION
A. Pickets or pales, rails and uprights shall be precut to specified lengths and predrilled or prenotched as necessary to accept inserted components, rods or fasteners.

PART 3 - EXECUTION
3.01 PREPARATION
All new installation shall be laid out by the Contractor in accordance with the construction plans.

3.02 INSTALLATION
Gate post(s) shall be spaced according to the gate openings specified in the construction plans. The “Earthwork” and “Concrete” sections of this specification shall govern post base placement and material requirements.

3.03 CLEANING
The Contractor shall clean the jobsite of excess materials. Post hole excavations shall be scattered uniformly away from post(s).

Table 1 - Coating Performance Requirements

<table>
<thead>
<tr>
<th>Quality Characteristics</th>
<th>ASTM Test Method</th>
<th>Performance Requirements</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adhesion</td>
<td>D3359 - Method B</td>
<td>Adhesion (Retention of Coating) over 90% of test area (Tape and knife test).</td>
</tr>
<tr>
<td>Impact Resistance</td>
<td>D2794</td>
<td>Impact Resistance over 60 inch lb. (Forward impact using 0.625” ball).</td>
</tr>
<tr>
<td>Weathering Resistance</td>
<td>D822, D2244, D523 (60’ Method)</td>
<td>Weathering Resistance over 1,000 hours (Failure mode is 60% loss of gloss or color variance of more than 3 delta-E color units).</td>
</tr>
</tbody>
</table>
The Estate™ design is a statement in itself. It adds value and aesthetics to complete the look of elegance. Private businesses, large estates and condominium complexes are ideal properties for the prestigious appeal of the Estate™ Entry Gate. All framework is 1/4” thick and all intersections are welded. Standard Entry Gates are available either with single leaves (as shown to the right) for openings up to 14’, or with double leaves for openings up to 28’.

Special gates with the same arched top rails can be made in either walk gate or drive gate forms to match the spacings and top designs of all the Ameristar® ornamental fence types (i.e., Aegis II® or Echelon II® Industrial Ornamental, or Aegis Plus®, Montage Plus® or Echelon Plus® Commercial Ornamental) that have straight picket extensions or flush top rails.

| COMPONENT SIZES |
|-----------------|---------------|---------------|
| Pickets         | Rails         | Uprights      |
| 3/4” Square x .125” Wall or 1” Square x .125” Wall | 1” x 2” Channel x .250” Wall | 2” Square x .250” Wall |

**COLORS**
- Black
- Bronze
- White Not Available in Montage Plus®
- Desert Sand Not Available in Montage Plus®

**ADORNMENTS**
- Quad Flare
- Thiad
- Ring
- Bail Cap
- Butterfly
- Florentine
- Letters

**AVAILABILITY**
Shipping
Estate™ Entry Gates are completely shrink-wrapped to ensure the most economical damage-free shipping.

Ordering Information
To order, simply specify the gate design series, color and dimensions desired. Then the quantities needed. Contact Ameristar® for the nearest distributor or if any other assistance is needed.

**MAINTENANCE**
Little or no maintenance is required for Estate™ Entry Gates. Damages to coated surfaces can be readily covered with Ameristar’s matching custom finishes (either spray or paint pen application).
CONSTRUCTION SPECIFICATION

SECTION 32 31 00 - GATE SYSTEMS

Estate™ Arched Aluminum Entry Gates

PART 1 - GENERAL

1.01 WORK INCLUDED
The Contractor shall provide all labor, materials and appurtenances necessary for installation of the architectural metal swing gate system defined herein at [specify project site].

1.02 RELATED WORK
Section 022_ _ - Earthwork
Section 030_ _ - Concrete

1.03 SYSTEM DESCRIPTION
The manufacturer shall supply an aluminum Estate™ entry gate of [specify Classic™, Majestic™, Genesis™, Warrior™, or Conqueror™] style. The system shall include all components (i.e., pickets, rails, gate uprights and hardware) required.

1.04 QUALITY ASSURANCE
The contractor shall provide laborers and supervisors who are thoroughly familiar with the type of construction involved and the materials and techniques specified.

1.05 REFERENCES
ASTM B217 - Practice for Operating Salt-Spray (Fog) Apparatus
ASTM B221 - Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles and Tubes
ASTM D523 - Test Method for Specular Gloss
ASTM D622 - Practice for Conducting Tests on Paint and Related Coatings and Materials using Filtered Open-Flame Carbon-Arc Light and Water Exposure Apparatus
ASTM D1654 - Test Method for Evaluation of Painted or Coated Specimens Subjected to Corrosive Environments
ASTM D2244 - Test Method for Calculations of Color Environments of Painted or Coated Specimens Subjected to Corrosive Environments
ASTM D3359 - Method B
ASTM D523 - Test Method for Specular Gloss
ASTM D822 - Practice for Conducting Tests on Paint and Related Coatings and Materials using Filtered Open-Flame Carbon-Arc Light and Water Exposure Apparatus

1.06 SUBMITTAL
The manufacturer's submittal package shall be provided prior to installation.

1.07 PRODUCT HANDLING AND STORAGE
Upon receipt at the job site, all materials shall be checked to ensure that no damages occurred during shipping or handling. Materials shall be stored in such a manner as to ensure proper ventilation and drainage and to protect against damage, weather, vandalism and theft.

PART 2 - MATERIALS

2.01 MANUFACTURER
The entry gate system shall conform to the Ameristar® Estate™ Entry Gate [specify Classic™, Majestic™, Genesis™, Warrior™, or Conqueror™] style, [specify single or double] with [specify total opening in feet] opening, [specify height in feet at post] to [specify height in feet at center of opening] tall, hinged to [specify cross-sectional size and gauge of posts] posts.

2.01 MATERIAL REQUIREMENTS
A. Aluminum material for gate framework (i.e. tubular pickets, rails and gate ends) shall conform to the requirements of ASTM B221. The aluminum extrusions for uprights and rails shall be Alloy and Temper Designation 6063-T5. The aluminum extrusions for pickets shall be Alloy and Temper Designation 6065-T5. The aluminum extrusions for gate framework shall be [specify 3/4” square or 1” square] by 1/8” wall thickness.

2.02 INSTALLATION
A. Gates shall be fabricated in a manner that ensures each upright and rail intersection is joined by welding. Each pale or picket and rail intersection shall be joined by welding or by the same process used for fence panel assembly.

B. Gates shall be fabricated in a manner that ensures each upright and rail intersection is joined by welding. Each pale or picket and rail intersection shall be joined by welding or by the same process used for fence panel assembly.

C. Completed gates shall be capable of supporting a 400 pound load applied at midspan without permanent deformation (prior to mounting gates to posts).

D. Estate™ Entry Gates shall be subjected to a six-stage pretreatment/wash (with zinc phosphate) followed by an electrostatic spray application of a polyester finish. The finish coat shall be a “no-mo” TGIC polyester powder coat finish with a minimum thickness of 2 mils (0.0508mm). The color shall be [specify Black, Bronze, White, or Desert Sand]. Coated aluminum gates shall be capable of salt spray resistance for 1,000 hours without loss of adhesion on parts scribed per ASTM D1654 and tested in accordance with ASTM Test Method B117. Failure is considered to have occurred when there is either 1/8” coating loss from the scribed mark or an accumulation of medium #8 blisters. Coated aluminum gates shall also be capable of meeting the performance requirements for each quality characteristic shown in Table 1.

PART 3 - EXECUTION

3.01 PREPARATION
All new construction shall be laid out by the Contractor in accordance with the construction plans.

3.02 INSTALLATION
Gates post(s) shall be spaced according to the gate Openings specified in the construction plans. The Earthwork and “Concrete” sections of this specification shall govern post base placement and material requirements.

3.03 CLEANING
The Contractor shall clean the jobsite of excess materials. Post hole excavations shall be scattered uniformly away from post(s).

Table 1 - Coating Performance Requirements

<table>
<thead>
<tr>
<th>Quality Characteristics</th>
<th>ASTM Test Method</th>
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<td>Impact Resistance over 60 inch lb. (Forward impact using 0.625” ball).</td>
</tr>
<tr>
<td>Weathering Resistance</td>
<td>D822, D2244, D523 (60° Method)</td>
<td>Weathering Resistance over 1,000 hours (Failure mode is 60% loss of gloss or color variance of more than 3 delta-E color units).</td>
</tr>
</tbody>
</table>
TransPort™ Cantilever Gate Systems are available for Impasse® Security; Aegis I®; Echelon II® and Estate™ Ornamental; and PermaCoat® and GalvOnAll™ Chain Link applications.

The TransPort™ is an all-weather cantilever gate and aluminum track extrusion with internal roller assemblies. This results in the gate and track system sliding as a single unit.

STRENGTH
TransPort™ Cantilever Gates offer superior strength as the track is 60% heavier (by weight) than competitor extrusions.

TYPES AND STYLES

TransPort™ Impasse® Security Cantilever Gates

TransPort™ Aegis I® and Echelon II® Ornamental Cantilever Gates

TransPort™ PermaCoat® and GalvOnAll™ Chain Link Cantilever Gates

TransPort™ Estate™ Ornamental Cantilever Gates

Smooth roll parallels fence.
GATE OPENING SIZES

<table>
<thead>
<tr>
<th>Gate Type</th>
<th>Opening</th>
<th>Security</th>
<th>Ornamental</th>
<th>Chain Link</th>
</tr>
</thead>
<tbody>
<tr>
<td>Single</td>
<td>6' Through 36'</td>
<td>6' Through 36'</td>
<td>6' Through 36'</td>
<td>6' Through 36'</td>
</tr>
<tr>
<td>Bi Parting</td>
<td>12' Through 72'</td>
<td>12' Through 72'</td>
<td>12' Through 72'</td>
<td>12' Through 72'</td>
</tr>
</tbody>
</table>

All gates to be installed in an off-line configuration.

COLORS

Request Color Chip samples for actual color

For TransPort™ Impasse® Security and Aegis II® or Echelon II® Ornamental Cantilever Gate Systems

- Black
- Bronze
- White
- Desert Sand

For TransPort™ PermaCoat® Chain Link Cantilever Gate Systems

- Black
- Brown
- Green

WARRANTY

Ameristar Fence Products hereby certifies that its TransPort™ gates are free from defects in material or workmanship. (Note: Accidental damages, defects resulting from improper installation techniques, and damage from abuse or vandalism are not included herein).

MAINTENANCE

Little or no maintenance is required for the TransPort™ Cantilever Gates supplied by Ameristar®. The polyester coated aluminum will remain corrosion free for years to come. Damages to coated surfaces can be readily covered with Ameristar's matching custom finishes (either spray or paint pen application).

CONSTRUCTION SPECIFICATION

SECTION 32 31 00 - TRANSPORT® ORNAMENTAL CANTILEVER GATES

ORNAMENTAL CANTILEVER GATES, INDUSTRIAL
TRANSPORT® – ALUMINUM CANTILEVER GATES, ALL STYLES

PART 1 - GENERAL
1.01 WORK INCLUDED
The contractor shall provide all labor, materials, and appurtenances necessary for installation of the industrial cantilever gate system defined herein at (specify project site).

1.02 RELATED WORK
Section _______ - Concrete
Section _______ - Earthwork
Section _______ - Pervious Paving

1.03 SYSTEM DESCRIPTION
The manufacturer shall supply a total industrial ornamental aluminum cantilever gate system of the Ameristar® TransPort® design, (specify style name) style, picket interspace, and height defined herein. The system shall include all components (i.e., tracks, uprights, pickets, hardware, fittings and fasteners) required.

1.04 QUALITY ASSURANCE
The contractor shall provide laborers and supervisors who are thoroughly familiar with the type of construction involved and materials and techniques specified.

1.05 REFERENCES
ASTM B117 - Practice for Operating Salt Spray (Fog) Apparatus
ASTM B221 - Aluminum and Aluminum Alloy Extruded Bars, Shapes and Tubes

1.06 SUBMITTAL
The manufacturer's literature shall be submitted prior to installation.

1.07 PRODUCT HANDLING AND STORAGE
Upon receipt at the job site, all materials shall be checked to ensure that no damage occurred during shipping or handling. Materials shall be stored in such a manner to ensure proper ventilation and drainage, and to protect against damage, weather, vandalism, and theft.

PART 2 - MATERIALS

2.01 MANUFACTURER
All industrial ornamental aluminum cantilever gates shall conform to the Ameristar® TransPort® gate system, (specify style name) design, manufactured by Ameristar Fence Products, Inc., in Tulsa, Oklahoma. The project gate schedule shall include the following additional information for each cantilever gate included in the project scope: (specify nominal opening size range in feet) opening, and (specify size and shape of posts) gate posts.

2.02 MATERIAL
A. The materials used for cantilever gate framing (i.e., uprights, diagonal braces and pickets or pales) shall be manufactured from ASTM B221 aluminum (designation 6063-T-6) with a yield strength of 25,000 PSI and a standard mill finish. The TransPort® FastTrak™ rails shall be manufactured from ASTM B221 aluminum (designation 6063-T-6) with a yield strength of 25,000 PSI, a tensile strength of 30,000 PSI and a standard mill finish.
B. Four Suspension Roller Assemblies shall be included with each gate.

2.03 FABRICATION
A. Components shall be precut to specified lengths. B. Top and bottom rail extrusions shall be mechanically fastened to vertical uprights and reinforced with diagonal braces, as required by drawing.

PART 3 - EXECUTION

3.01 PREPARATION
All new gate installations shall be laid out by the contractor in accordance with the construction plans.

3.02 INSTALLATION
A. Set gate posts in accordance with the gate elevation drawing. B. Attach Suspension Rollers to gate posts per end view (cross-section) in construction drawings; slide TransPort™ rails onto rollers. C. Install gate stops.

3.03 CLEANING
Contractor shall clean jobsite of excess materials; post hole excavations shall be scattered uniformly away from gate posts.

TRANSPORT™ ORNAMENTAL CANTILEVER GATES

- Black
- Bronze
- White
- Desert Sand

HARDWARE

- Hot-Dip Galvanized
- Extra Heavy-Duty
- U-Bolts for either Round or Square Posts

AVAILABILITY

TransPort™ Cantilever Gate components are carefully banded to specially constructed pallets and hardware and fasteners are packaged in heavy duty cardboard boxes to ensure the most economical damage-free shipping.

TRANS PORT® – ALUMINUM CANTILEVER GATES, ALL STYLES
PASSPORT™
Steel Roll Gates

TYPES AND STYLES

PASSPORT COMMERCIAL ORNAMENTAL ROLL GATES
Ornamental Pickets: 3/4" Square
(Available in Profiles of 2-Rail, 3-Rail & 3-Rail w/Rings)

PASSPORT II INDUSTRIAL ORNAMENTAL ROLL GATES
Ornamental Pickets: 1" Square
(Available in Profiles of 2-Rail, 3-Rail & 3-Rail w/Rings)

Top Rail(s), Uprights and Diagonal Braces: 2" Square x 11 Ga.
Bottom Rail: 2" x 4" x 11 Ga. (Notched & Plated for V-Track Wheels)
Gate Lengths: Up To 36'

PASSPORT IS (IMPASSÉ SECURITY) ROLL GATES
Security Pales: Proprietary Corrugated Impasse® Shape x 1/8" Thick
(Available in Profiles of 2-Rail & 3-Rail)

COMPONENT SIZES
Top Rail(s), Uprights and Diagonal Braces: 2" Square x 11 Ga.
Bottom Rail: 2" x 4" x 11 Ga. (Notched & Plated for V-Track Wheels)
Gate Lengths: Up To 36'
CONSTRUCTION SPECIFICATION
SECTION 32 31 00 - PassPort®, PassPort II® and PassPort IS® - Steel Roll Gates

PART 1 - GENERAL
1.01 WORK INCLUDED
The contractor shall provide all labor, materials and appurtenances necessary for installation of the steel roll gate system defined herein (specify project site).
1.02 RELATED WORK
Section 022_ _ - Earthwork
Section 030_ _ - Concrete

1.03 SYSTEM DESCRIPTION
The manufacturer shall supply a total roll gate system of Ameristar® (specify product line as PassPort® Commercial Ornamental; PassPort® Industrial Ornamental; or PassPort® IS Security Pale) design series and (specify the style as Classic, Majestic, Genesis, or Invincible for PassPort® or PassPort IS® ornamental roll gates or Trident, Stronghold, or Gauntlet for PassPort IS® security roll gates) style. The system shall include all components (i.e., pickets or pales, rails, gate uprights, wheels and hardware) required.
1.04 QUALITY ASSURANCE
The contractor shall provide laborers and supervisors who are thoroughly familiar with the type of construction involved and materials and techniques specified.

1.05 REFERENCES
1.06 SUBMITTAL
The manufacturer's submittal package shall be provided prior to installation.
1.07 PRODUCT HANDLING AND STORAGE
Upon receipt at the jobsite, all materials shall be checked to ensure that no damages occurred during shipping or handling. Materials shall be stored in such a manner to ensure proper ventilation and drainage and to protect against damage, weather, vandalism and theft.

PART 2 - MATERIALS
2.01 MANUFACTURER
The steel roll gate system shall conform to Ameristar® (specify product line as PassPort® Commercial Ornamental; PassPort® Industrial Ornamental; or PassPort® IS Security Pale) design series, (specify the style as Classic, Majestic, Genesis, or Invincible for PassPort® or PassPort IS® ornamental roll gates or Trident, Stronghold, or Gauntlet for PassPort IS® security roll gates) style and (specify frame configuration as Classic, Majestic, Genesis, or Invincible for PassPort® or PassPort IS® ornamental roll gates or Trident, Stronghold, or Gauntlet for PassPort IS® security roll gates) style and (specify frame configuration suitable to other frame configurations). The steel material shall be commercial steel with a minimum yield strength of 45,000 psi (344 MPa).

2.02 MATERIAL
A. Steel material for roll gate components (i.e., pickets or pales, rails, diagonals and uprights), shall be commercial steel with a minimum yield strength of 45,000 psi (344 MPa).

B. Ornamental picket/pale material shall be (specify 2-3/4” square x 14 Ga. tubing for PassPort® Commercial Ornamental gate pickets, 2” square x 11 Ga. tubing for PassPort® II Industrial Ornamental gate pickets, or 2-3/4” wide x 0.077” thick corrugated pales for PassPort IS® security roll gates). Picket/pale spacing shall be (specify 3/4” for PassPort® Commercial Ornamental gate pickets, 2” for PassPort® IS Security Pale roll gates). Material for the bottom rail shall be 2” square x 11 Ga. Material for the door frame shall be 2” x 4” x 11 Ga. Posts shall be 4” square x 11 Ga.

2.03 FABRICATION
A. Pickets/pales, rails, uprights and posts shall be precut to specified lengths. Diagonals shall be precut to specified lengths and angles. Frame materials shall be joined by welding. Pickets/pales shall be face welded to roll gate frame, except for Invincible or Gauntlet style gates over 18’ long. Invincible or Gauntlet style gates over 18’ long shall have pickets face-welded to 2” x 3” angle iron to form panels equal in length to the gate frame bay width.

B. The manufactured roll gates and bolt-on panels (if applicable) shall be subjected to the PermaCoat® thermal stratification coating process (high-temperature, in-line, multi-stage, multi-layer) including, as a minimum, a six-stage “pre-treatment/ wash” (with zinc phosphate), an electrostatic spray application of an epoxy base, and a separate electrostatic spray application of a polyester finish. The base coat shall be a thermosetting epoxy powder coating (gray in color) with a minimum thickness of 2 mils (0.0508mm). The topcoat shall be a “no-melt” TGIC polyester powder coat finish with a minimum thickness of 2 mils (0.0508mm). The color shall be (specify Black, Bronze, White, or Desert Sand). The stratification-coated framework shall be capable of meeting the performance requirements for each quality characteristic shown in Table 1.

C. Completed gates shall be capable of supporting a 200 lbs. load applied at midspan without permanent deformation.

PART 3 - EXECUTION
3.01 PREPARATION
All new installation shall be laid out by the contractor in accordance with the construction plans.

3.02 INSTALLATION
Gate posts shall be set in accordance with the spacing shown in the construction plans. The “Earthwork” and “Concrete” sections of this specification shall govern post base material requirements. 6” wheels shall be bolted to the gate (between the wheel plates welded near the ends of the gate bottom rail). The gate shall be set upright with the V-grooved wheels positioned over the pre-installed steel V-track that traverses the gate opening. Roller guides shall be affixed to the gate posts at a height even with the gate toprail to hold the gate in a vertical position. Gate stops shall be welded to the end of the gate or track so gate cannot pass rollers in either direction.

3.03 CLEANING
The contractor shall clean the jobsite of excess materials; post hole excavations shall be scattered uniformly away from posts.
Decades ago, Europe and the Middle East, threatened constantly by terrorism, abandoned chain link fence as a security defense when they found that wire fences could be breached in seconds. The United State felt safe and continued to believe the chain link security myth. We know different now! The first line of perimeter defense must remain impassable to intrusion attempts for several minutes. Using severely sharpened high-strength steel spears, called pales, fastened securely to rigid framework of specially formed rails and posts, Ameristar® has raised the bar of perimeter security with Impasse®.