

SECTION 323117
HIGH SECURITY METAL FENCE SYSTEM
New Construction
Meets Buy American Domestic Procurement

1.0 PART 1 – GENERAL

1.1 SUMMARY

A. SCOPE OF WORK

Supply and install all materials and accoutrements required for the new construction of a security fence system.

1.2 SYSTEM DESCRIPTION

- A. The security fence shall consist of an AMIGUARD® Wire Mesh fence fabric of a specified height.
- B. The fence system shall incorporate high strength Infini-rails® that pass through vertical posts without any vertical mesh to mesh overlaps between posts.
- C. The AMIGUARD® Perimeter System, patented US 10,570,640 B2, shall be installed providing the height of barrier required as noted on drawings. The supply of mesh fabric, framework, and accoutrements for the attachment of mesh to framework, and their respective coating shall be supplied by one source to ensure the quality and required level of security.

1.3 DESIGN CRITERIA

- A. Establish the barrier function.
 - 1. New fence construction
 - 2. Anti-Climb panels
 - 3. Anti-Cut panels
- B. System shall be engineered to meet customer's Wind Load requirements.
- C. Post spacing shall be noted on drawings with documented engineering report to support post selection, the mesh style, wind load requirements, and or site conditions.
- D. Attachment locations shall be established by pre-punched holes for 5/16 in. diameter carriage bolts.

1.4 QUALIFICATIONS

- A. Manufacturer shall have a minimum of ten (10) years' experience in manufacture of wire mesh fencing.

1.5 STORAGE AND HANDLING

- A. Materials shall be stored in a clean dry location with proper ventilation to avoid damage from moisture. Materials shall be protected against damage from weather, vandalism, and theft. Any freight damage must be noted on the bill of lading at time of receipt.

1.6 REFERENCES

- A. ASTM International (ASTM): (www.astm.com)
 - 1. A121 Specification for Metallic-Coated Carbon steel Barbed Wire
 - 2. A123 Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products

3. A307 Standard Specification for Carbon Steel Bolts and Studs, 60,000 PSI Tensile Strength
4. A500 Standard Specification for Welded and Seamless Carbon Steel Structural Tubing in Rounds and Shapes
5. A653/A653M Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy Coated (Galvannealed) by the Hot-Dip Process
6. A1011 Specification for Steel, Sheet and Strip, Hot-Rolled, Carbon Structural High Strength Low Alloy with Improved Formability
7. B117 Practice for Operating Salt-Spray (Fog) Apparatus
8. F900 Specification for Industrial and Commercial Swing Gates
9. F1184 Specification for Industrial and Commercial Horizontal Slide Gates
10. F2200 Specification for Automated Vehicular Gate Construction
11. F2453/F 2453M – Standard Specification for Welded Wire Mesh Fence Fabric

1.7 SUBMITTAL

- A. Review Submittals:
Product Data: Manufacturer's data including, product brochures, details, and specifications prior to ordering.

2.0 PART 2 – PRODUCTS

2.1 MANUFACTURERS

- A. The metal fence system shall conform to the AMICO AMIGUARD® Perimeter System as manufactured by Alabama Metal Industries Corporation, 3245 Fayette Ave, Birmingham, Alabama, 35208; Telephone 855.552.6426
- B. The complete fence system shall be procured from a single source.

2.2 MATERIALS

- A. Infill Selection [Delete as needed]

i. **AMIGUARD® 5500**

The AMIGUARD® 5500 Wire Mesh fence panel used shall conform to the following specification: ASTM F2453/F 2453M – Standard Specification for Welded Wire Mesh Fence Fabric.

Physical Properties

1. Mesh Opening – 1.97in (50.0mm) width x 7.97in (200.0mm) height
 2. Mesh Open Area – 84%
 3. Wire diameter – Vertical Wires 0.22 +/- 0.003 (4ga, 6mm),
Horizontal Double Wires 0.30 +/- 0.003 (0ga, 8mm)
 4. Wire Tensile Strength – 79,800 – 108,800psi
 5. Produced by AMICO Security
- Tolerances: Height $\pm 0.4"$ (10.0 mm) and Width $\pm 0.2"$ (5.0 mm)

ii. AMIGUARD® 5500LT

The AMIGUARD® 5500LT Wire Mesh fence panel used shall conform to the following specification: ASTM F2453/F 2453M – Standard Specification for Welded Wire Mesh Fence Fabric.

Physical Properties

1. Mesh Opening –1.97in (50.0mm) width x 7.97in (200.0mm) height
 2. Mesh Open Area – 87%
 3. Wire diameter – Vertical Wires 0.18 +/- 0.002 (6ga, 5mm),
Horizontal Double Wires 0.22 +/- 0.003 (4ga, 6mm)
 4. Wire Tensile Strength – Vertical Wires 87,000 – 116,000psi,
Horizontal Double Wires 79,800 – 108,800psi
 5. Produced by AMICO Security
- Tolerances: Height $\pm 0.4''$ (10.0 mm) and Width $\pm 0.2''$ (5.0 mm)

iii. AMIGUARD® 5600

The AMIGUARD® 5600 Wire Mesh fence panel used shall conform to the following specification: ASTM F2453/F 2453M – Standard Specification for Welded Wire Mesh Fence Fabric.

Physical Properties

1. Mesh Opening –1.97in (50.0mm) width x 7.97in (200.0mm) height
with V shaped bends 1.97in (50.0mm) width x 3.94in (100.0mm) height
 2. Mesh Open Area – 88%
 3. Wire diameter –0.18 +/- 0.002 (6ga, 5mm)
 4. Wire Tensile Strength – 87,600 – 116,800psi
 5. Produced by AMICO Security
- Tolerances: Height $\pm 0.4''$ (10.0 mm) and Width $\pm 0.2''$ (5.0 mm)

iv. AMIGUARD® 5626

The AMIGUARD® 5626 Wire Mesh fence panel used shall conform to the following specification: ASTM F2453/F 2453M – Standard Specification for Welded Wire Mesh Fence Fabric.

Physical Properties

1. Mesh Opening –2.00in (50.8mm) width x 6.00in (152.4mm) height
 2. Mesh Open Area – 84%
 3. Wire diameter – Vertical Wires 0.20 +/- 0.003 (6ga, 5mm),
Horizontal Wires 0.20 +/- 0.003 (6ga, 5mm)
 4. Wire Tensile Strength – 79,800 – 108,800psi
 5. Produced by AMICO Security
- Tolerances: Height $\pm 0.4''$ (10.0 mm) and Width $\pm 0.2''$ (5.0 mm)

v. AMIGUARD® 5700

The AMIGUARD® 5700 Wire Mesh fence panel used shall conform to the following specification: ASTM F2453/F 2453M – Standard Specification for Welded Wire Mesh Fence Fabric.

Physical Properties

1. Mesh Opening – 3.0in (12.7mm) width x 0.50in (30.5mm) height
2. Mesh Open Area – 63%
3. Wire diameter – 0.15 +/- 0.002 (8ga, 4mm)
4. Wire Tensile Strength – 109,000 – 130,000psi
5. Produced by AMICO Security

Tolerances: Height $\pm 0.4''$ (10.0 mm) and Width $\pm 0.2''$ (5.0 mm)

vi. AMIGUARD® 5700LT

The AMIGUARD® 5700LT Wire Mesh fence panel used shall conform to the following specification: ASTM F2453/F 2453M – Standard Specification for Welded Wire Mesh Fence Fabric.

Physical Properties

1. Mesh Opening – 3.0in (12.7mm) width x 0.50in (30.5mm) height
2. Mesh Open Area – 70%
3. Wire diameter – 0.13 +/- 0.002 (10.5ga, 3.3mm)
4. Wire Tensile Strength – 109,000 – 130,000psi
5. Produced by AMICO Security

Tolerances: Height $\pm 0.4''$ (10.0 mm) and Width $\pm 0.2''$ (5.0 mm)

vii. AMIGUARD® 5710

The AMIGUARD® 5710 Wire Mesh fence panel used shall conform to the following specification: ASTM F2453/F 2453M – Standard Specification for Welded Wire Mesh Fence Fabric.

Physical Properties

1. Mesh Opening – 3.0in (12.7mm) width x 0.50in (30.5mm) height
2. Mesh Open Area – 63%
3. Wire diameter – Vertical wires 0.15 +/- 0.002 (8ga, 4mm),
Horizontal double wires 0.15 +/- 0.002 (8ga, 4mm)
4. Wire Tensile Strength – 109,000 – 130,000psi
5. Produced by AMICO Security

Tolerances: Height $\pm 0.4''$ (10.0 mm) and Width $\pm 0.2''$ (5.0 mm)

viii. AMIGUARD® 5712

The AMIGUARD® 5712 Wire Mesh fence panel used shall conform to the following specification: ASTM F2453/F 2453M – Standard Specification for Welded Wire Mesh Fence Fabric.

Physical Properties

1. Mesh Opening – 2.00in (50.80mm) width x 1.00in (25.40mm) height
 2. Mesh Open Area – 76%
 3. Wire diameter – Vertical Wires 0.16 +/- 0.003 (8ga, 4mm),
Horizontal Wires 0.16 +/- 0.003 (8ga, 4mm)
 4. Wire Tensile Strength – 79,800 – 108,800psi
 5. Produced by AMICO Security
- Tolerances: Height $\pm 0.4''$ (10.0 mm) and Width $\pm 0.2''$ (5.0 mm)

ix. AMIGUARD® 5730

The AMIGUARD® 5730 Wire Mesh fence panel used shall conform to the following specification: ASTM F2453/F 2453M – Standard Specification for Welded Wire Mesh Fence Fabric.

Physical Properties

1. Mesh Opening – 3.0in (12.7mm) width x 0.50in (30.5mm) height
 2. Mesh Open Area – 61%
 3. Wire diameter – Vertical Wires 0.22 +/- 0.003 (4ga, 6mm),
Horizontal double wires 0.15 +/- 0.002 (8ga, 4mm)
 4. Wire Tensile Strength – Vertical Wires 80,000 – 109,00psi,
Horizontal Double Wires 109,000 – 130,000psi
 5. Produced by AMICO Security
- Tolerances: Height $\pm 0.4''$ (10.0 mm) and Width $\pm 0.2''$ (5.0 mm)

B. Framework

1. Slotted rectangular/square posts steel shall conform to ASTM A-653 and be cold rolled for a minimum yield strength of 50,000 psi for ASTM A500 Gr. C Steel. The profile of rails shall be designed with ribs to provide additional rigidity. AMICO Security Secura-Sleeve® allows AMICO Infini-Rail® to slide through posts for fast easy installation.
2. Posts shall be prefabricated posts with precision cut holes that are dimensioned to accept Secura Sleeve® inserts.
3. Horizontal rails shall be a design where rails are continuously fastened together by Infini-Rail® splice connectors forming a continuous rail through line posts. Rails shall be pre-punched to allow 5/16-in. diameter bolts for rail to rail and mesh to rail attachment.
4. Number of AMICO Infini-Rails® rails required shall be shown on drawings.
5. Rails shall be pre-punched allowing the required number of attachment points.

C. Fittings

AMICO Security Fittings shall be used to secure the Wire Mesh Fabric to the selected framework. Fittings shall be made from pressed steel, in accordance with the strength standards as manufactured by AMICO Security and sized to the specific framework.

D. Finish Plates

1. Pre-punched shall have a minimum thickness of 0.95-in. and extend the height of the mesh.
2. Finish Plates have pre-drilled holes for attachment to posts

E. Gates

1. Gate frames shall be of a welded construction and designed to operate under the added weight of the specified high security mesh panels and wind loading. The high security mesh fabric shall fit flush on all sides of the gate frame allowing no open spaces between the fabric and the gate frame.
2. (Non-crash Rated Man Gates)
 - a. Provide AMICO swing type man gate allowing an opening of [three (3-ft), four (4-ft)] x height as noted on drawings.
 - b. Locking device shall be [padlock and chain] [double dead bolt keyed lock] with gate keeper.
3. Gates (Non-Crash Rated Double Drive Vehicle Gates)
 - a. Provide AMICO double drive swing gate providing an opening of [eight (8-ft), [ten (10-ft)], [twelve (12-ft)], [sixteen (16-ft)], [twenty (20-ft)], [twenty four (24-ft)] x height as noted on drawings.
 - b. Locking device shall be [padlock and chain] [double deadbolt keyed lock] with gate keeper.
4. Gates (Non Crash Rated Slide Gates)
 - a. Provide cantilever sliding gates allowing an opening of [ten (10-ft)], twelve [(12-ft)], sixteen] (16-ft)], [twenty (20-ft)], [twenty four (24-ft)] opening x required height of fence as noted on drawings.
 - b. Gate construction shall be AMICO "Fast-Trak" Aluminum Cantilever Gate mounted to 6-in x 6-in x wall thickness; length as noted on drawings.

- F. Gate Operators
 - 1. Slide gate operator shall be able to open and close gate up to 8 feet per second with programmable speed control.
- G. Finish
 - 1. Finish for all carbon materials shall be hot dip galvanized to ASTM A123 (Gates may be aluminum framed and not coated).
 - 2. All mesh panels shall be galvanized to ensure, that acidity and brightener agents remain consistent to ensure color consistency across the entire installation.

-OR-

 - 1. Color Coated finish as manufactured and specified by AMICO Security.
- H. Barbed Wire
 - 1. Each post shall be provided with AMICO barbed arms as required.
 - 2. [Three (3)], [six (6)] strands of barbed wire shall be design number 12-2-4-14R, Class 3 coating.
- 3.0 INSTALLATION
- 3.1 INSTALLATION
 - A. Installation and layout of the job shall be approved by the owner prior to installation.
 - B. The fence shall be completely installed according to the drawings and specifications.
 - C. Posts shall be set in 3,000 psi concrete.
 - D. Fasteners shall be peened, scarfed, welded or breakaway nuts used at owners' request.
- 3.2 PANELS, POSTS, RAILS, AND CONNECTIONS
 - A. Diamond Fasteners® are used with each threaded fastener. Diamond Fasteners are installed on the attack side of the mesh with mesh to rail attachment and behind the mesh with attachment to Finish Plates®.
 - B. Use 5/16 in x 1-1/2 in carriage bolts and nuts per rail between line posts.
 - C. Fence post spacing and support rail spacing shall be set in accordance with the contract documents.
 - D. Finish Plates® attach to posts using tamper resistant ¼-in x 1-in self tapping screws
 - E. Mesh panels shall be attached to AMICO Finish Plates with pre-punched rectangular holes and shall allow 5/16 in. x 1-1/2 in. carriage bolts to secure mesh panels.
 - F. Fasteners shall be peened, scarfed or welded to prevent easy removal.
- 3.3 FABRIC
 - A. Fabric shall be installed so that the bottom of panels is no more than 2-in above grade. Top of panels shall be level and conforming to grade.
- 3.4 GATES
 - A. Gates shall be installed so that the bottom maintains a minimum clearance of one (1) inch above the rock or concrete driveway.
 - B. The gate is to swing or roll freely throughout the entire gate range of motion.
 - C. Install gate operator per manufacturer's recommendations.
 - D. Install UL approved conduit for gate operator electrical and control cables to meet Codes.

END OF SECTION