

# Construction Specification

## SECTION 02825 - STEEL CORRUGATED PALE (PALISADE) FENCE SYSTEM

### Impasse™ - For High-Risk Security Assets and Facilities – Trident™ Style

#### PART 1 – GENERAL

##### 1.01 WORK INCLUDED

The contractor shall provide all labor, materials and appurtenances necessary for installation of the steel corrugated pale (palisade) 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 steel corrugated pale (palisade) fence system of the Ameristar® Impasse™ Trident™ 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

ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy Coated (Galvannealed) by the Hot-Dip Process. ASTM A924/A924M - Standard Specification for General Requirements for Steel Sheet, Metallic-Coated by the Hot-Dip Process. ASTM A1011/A1011M - Standard Specification for Steel, Sheet and Strip, Hot-Rolled, Carbon, Structural, High-Strength and High-Strength Low-Alloy with Improved Formability. ASTM B117 - Practice for Operating Salt-Spray (Fog) Apparatus. 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. ASTM D1654 - Test Method for Evaluation of Painted or Coated Specimens Subjected to Corrosive Environments. ASTM D2244 - Test Method for Calculation of Color Differences from Instrumentally Measured Color Coordinates. ASTM D2794 - Test Method for Resistance of Organic Coatings to The Effects of Rapid Deformation (Impact). ASTM D3359 - Test Method for Measuring Adhesion by Tape Test.

##### 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 steel corrugated pale (palisade) fence system shall conform to Ameristar® Impasse™ Trident™ (specify 2-Rail or 3-Rail) style manufactured by Ameristar Fence Products, Inc., in Tulsa, Oklahoma.

##### 2.02 MATERIAL

A. Steel material for fence framework (i.e., corrugated pales, rails and posts), when galvanized after forming, shall conform to the requirements of ASTM A1011/A1011M, with a minimum yield strength of 50,000 psi (344 MPa). The exterior shall be hot-dip galvanized with a 0.45 oz/ft<sup>2</sup> (138 g/m<sup>2</sup>) minimum zinc weight. The interior surface shall be coated with a minimum of 81% nominal zinc pigmented coating, 0.3 mils (0.0076 mm) minimum thickness.

B. 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 50,000 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/ft<sup>2</sup> (276 g/m<sup>2</sup>), Coating Designation G-90.

C. 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 zinc-rich 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.

D. Material for corrugated pales shall have a nominal material thickness of 0.075 inches. The cross-sectional shape of the rails shall conform to the manufacturer's Impasse™ rail design with a nominal thickness of 0.100 inches. Pre-drilled holes in the Impasse™ rail shall be spaced 6" o.c. Tamperproof fasteners shall be used to fasten each pale to each rail. Posts shall conform to the manufacturer's Impasse™ I-Beam design with a nominal thickness of 0.100 inches.

##### 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 biasable 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 74" 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 fishplates 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.

TABLE 1

Quality Characteristics	ASTM Test Method	Performance Requirements
Adhesion	D3359 – Method B	Adhesion (retention of coating) over 90% of test area (tape and knife test).
Corrosion Resistance	B117 & D1654	Corrosion resistance over 3,500 hours (scribed per D1654; failure mode is accumulation of 1/8" coating loss from scribe or medium #8 blisters).
Impact Resistance	D2794	Impact resistance over 60 inch lb. (forward impact using 0.625" ball).
Weathering Resistance	D822, D2244, D523 (60 Degree Method)	Weathering resistance over 1,000 hours (failure mode is 60% loss of gloss or color variance of more than 3 delta-E color units).