

SECTION 32 31 00

ANTI-RAM FENCE

(Innovo Cable Net Fence)

PART 1 – GENERAL

1.1 SCOPE

This specification defines the requirements for the manufacture and installation of the Cable Net anti-ram fence system.

1.2 SYSTEM DESCRIPTION

Supply a total anti-ram fence system of the Innovo “Cable Net Fence” engineered design, including all required components (cables, supports, super posts, I-beams, and hardware).

1.3 SUBMITTALS

A. Product data Provide manufacturer’s descriptive literature for standard or customized products used to produce work of this section.

B. Shop Drawings

1. Show locations and details of vehicle fence system including each major element, and details of operation, hardware, and accessories.
2. Indicate materials, dimensions, sizes, weights, and finishes of components.
3. Include plans, elevations, sections, foundation drawings and other required installation and operational clearances, and details of anchorage.
4. Installation procedures and instructions.

C. Fence Certification Provide documentation that anti-ram fence system is confirmed by engineering analysis and certified.

D. Operation and Maintenance Manuals Submit Operation and Maintenance data in accordance with the following:

1. Operation instructions are to provide the step-by-step procedures required for system startup, operation, and shutdown.
2. Maintenance instructions are to include routine maintenance procedures, possible breakdowns and repairs, and troubleshooting guide.
3. Recommended Spare and Replacement Parts List. Provide part number, recommended quantity, brief description, and purchasing source.

1.4 QUALITY ASSURANCE

A. Verification of Compatible Site and Fence Dimensions The contractor is to become familiar with all details of the work and verify dimensions in the field as required for coordination.

B. Nameplates Affix the manufacturer’s name, contact for service, and catalog or serial number permanently to a plate securely attached to the equipment in a suitable location.

C. Label Label each operator (i.e., motor) indicating that the operator mechanism has been tested for full power of all components.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Elements of the fence system are to be prefabricated, prefinished, and equipped with devices and accessories to the greatest extent possible.

B. Elements of the fence system are to be packaged, handled, protected, and delivered from the manufacturer’s facility to the installation site.

1.6 WARRANTY

The manufacturer is to provide its standard 1 year from date of delivery limited warranty.

PART 2 – PRODUCT

2.1 BASIS OF DESIGN MANUFACTURER

A. Innovo Security Works
5410 Homberg Dr. STE 16
Knoxville, TN 37919 USA
Phone: (865) 481-2280
Fax:(865) 381-1610
Website: www.innovosecurity.com

B. All elements of the anti-ram fence system, including all associated cables, supports, super posts, I-beams and hardware are to be obtained from a single source.

2.2 CABLE NET FENCE

A. Configuration

1. The anti-ram fence system is comprised of three strands of steel cable between anchored super posts and supported between the super posts by support posts or attached to host fence.
2. Perimeter layout to match terrain and other obstacles.

B. Super Post Foundation

1. Anchor depth of 60 inches.
2. Anchor Dimensions at each super post of 48 in x 36 in (Rectangle).

C. Crash Rating

1. Provide certification based on engineering analysis that the fence design meets or exceeds:
 - i. DOS SD-STD-0201, Rev. A: K4, K8, or K12
 - ii. ASTM F2656-15: M30, M40, or M50

D. Recurring Panel Width

1. Super Post every 100 feet to 200 feet or less where penetration is restricted.

E. Support Posts

1. Cables are held in place between super posts by break-away support posts or by attachment to host fence to add crash resistance to an otherwise non-crash rated fence.

F. Height

1. All fence elements are to be less than 60 inches in height.

G. Materials

1. Steel Shapes, Plates, and Bars ASTM A36; except where otherwise indicated.
2. Pipe and Tubular Products ASTM A53 grade B, or ASTM A500 grade B; except where otherwise indicated.
3. Cable Independent Wire Rope Core (IWRC) wire rope, 6 x 19, Galvanized Extra Improved Plowed Steel (EIPS).
4. Welding Rods and Bare Electrodes Welding is to be in accordance with AWS D1.1/D1.1M using welding materials recommended by AWS specifications for the metal and alloy being welded in each element of the fabrications.

5. Bolts and Fasteners
 - i. Commercial bolts and fasteners to be used as needed to accomplish design requirements.
 - ii. Where within reach of intruders working from attack-side of facilities, including working from inside sallyports, non-removable bolt/nut units (not removable by use of commonly available hand tools) are to be used.
 6. Concrete 4,000 psi (28 MPa) Portland Type 1 concrete with an industry standard cure time of 28 days. Normal maximum aggregate size shall be 1.5 inches (38 mm). Vibrate concrete to fill all voids.
 7. Concrete Inserts Furnish anchorage units to be placed in concrete substrates, of hot-dip galvanized cast-iron/malleable-iron body, design/type as indicated; ASTM A153 zinc coating, ASTM A47 casting.
 8. Setting/Anchoring Cement Provide non-shrinking, non-staining, expansion-type cementitious compound intended for the installed design, factory pre-packaged for mixing with water at project for a pourable and trowellable mix, recommended by manufacturer for exterior exposure (ASTM C109 or ASTM C33).
- H. Finishes
1. Powder Coat
 2. (Optional) Metallized Coating
 3. (Optional) Galvanized Coating
 4. (Optional) Epoxy Coating
 5. (Optional) Rust Preventative Coating

PART 3 - EXECUTION

3.1 EXAMINATION, COORDINATION, PREPARATION

- A. Manufacturer to provide the service of a manufacturer's representative who is experienced in the installation, adjustment, and operation of the equipment supplied.
- B. Contractor and purchaser will coordinate installation of fence system with installation of related work.
- C. Contractor will delivery anchorage inserts, sleeves, and other elements to be cast in concrete work.

3.2 INSTALLATION

Installers are to perform installation in accordance with manufacturer's instructions.

3.3 TRAINING

When requested by purchase order, the manufacturer is to provide operator training to include:

1. An overview of the system.
2. Essential controls and displays.
3. Safety precautions.