Sample

SECTION 02832

AIRPORT SECURITY FENCING

PART 1-GENERAL

1.1 SUMMARY

A. Section includes: Construct airport security chain-link fence and gate at specified areas and conforming lines, grades, details indicated or established by Engineer.

B. Related Sections

1. Section 01300 Submittals.

2. Section 01700 Contract Close-out.

3. Section 03300 Cast-in-Place Concrete.

1.2 REFERENCES

A. American Society for Testing and Materials (ASTM):

1. ASTM A90 Weight of Coating on Zinc-Coated (Galvanized) Iron or Steel Articles

2. ASTM A121 Zinc-Coated (Galvanized) Steel Barbed Wire.

3. ASTM A123 Zinc (Hot Dip Galvanized) Coatings on Iron and Steel Products.

4. ASTM A153 Zinc Coating (Hot Dip) on Iron and Steel Hardware.

5. ASTM A392 Zinc-Coated Steel Chain-Link Fence Fabric.

6. ASTM A446 Specification for Steel Sheet, Zinc-Coated (Galvanized) by the Hot-Dip Process, Structural (Physical) Quality.

7. ASTM A491 Aluminum-Coated Steel Chain-Link Fence Fabric

8. ASTM A569 Steel Carbon (0.15 Maximum, Percent), Hot Rolled Sheet and

Strip-Commercial Quality.

9. ASTM A570 Hot-Rolled Carbon Steels, Sheet and Strip Structural Quality.

10. ASTM A585 Aluminum-Coated Steel Barbed Wire.

11. ASTM A824 Metallic-Coated Steel Marcelled Tension Wire for use with Chain Link Fence.

12. ASTM F1043 Strength and Protective Coating on Metal Industrial Chain Link Fence Framework

13. ASTM F1083 Pipe, Steel, Hot-Dipped Zinc-Coated (Galvanized) Welded, for Fence Structures.

14. ASTM F1345 Zinc-5% Aluminum-Mischmetal Alloy-Coated Steel Chain-Link Fence Fabric.

B. Federal Specifications (FS)

1. FSRR-F-191/3D Fencing, Wire and Post, Metal (Chain-Link Fence Posts, Top Rails and Braces).

2. FSRR-F-191/4 Fencing, Wire and Post, Metal (Chain-Link Accessories).

3. FAA-F-162 Chain-Link Fences

1.3 SUBMITTALS

A. General-Comply with requirements of Section 01300.

B. Product Data

1. Manufacturer's Catalog Data:

a. Complete Fence Assembly

b. Complete Gate Assembly

c. Gate Hardware and Accessories

2. Material Safety Data Sheet

C. Shop Drawings

1. Erection/Installation Drawings:

a. Complete Fence Assembly

b. Complete Gate Assembly

c. Gate Hardware and Accessories

D. Samples

1. Fabric Fence

2. Line Post

3. End, Corner's Posts

4. Sleeves

5. Top Rail

6. Tension Wire

7. Barbed Wire Supporting Arms

8. Barbed Wire

9. Post Tops

10. Gate Post

11. Gate Hardware and Accessories

12. Wire Ties

13. Post Brace Assembly

E. Quality Control Submittals

1. Test Reports for fence posts and braces

2. Certificates

Manufacturer's Certificates certifying that all materials comply with applicable requirements.

3. Manufacturer's Instructions

a. Fence Assembly

b. Gate Assembly

c. Hardware Assembly

d. Accessories

F. Contract Close-out Submittals: Comply with Section 01700

1.4 QUALITY ASSURANCE

A. Manufacturer's Quality Control And Assumed Manual.

B. Engineers may inspect all fence materials at place of manufactures.

C. Engineer will inspect installation for compliance with requirements herein.

1.5 PROJECT CONDITIONS

A. Take Field measurements prior to preparations of shop drawing and fabrication.

B. Coordinate installation with concrete work to insure that all fencing and appurtenances are properly supported to require lines and grades when concrete is placed.

1.6 METHOD OF MEASUREMENT

A. Quality of Chain-Link fence to be paid for shall be number of linear meter, in place, completed and accepted

B. Measurement will be along top of fence from center to center of end posts, excluding length occupied by gate openings.

C. Gates will be measured as complete units

1.7 BASIS OF PAYMENT

A. Accepted quantities of Chain-Link fence will be paid for at contract unit price per linear meter which price and payment shall be full compensation for furnishing and placing all materials, and for all preparation, erection, and installation of these materials, and for all labor, equipment, tools, and incidentals necessary to complete the work.

B. Payment for driveway or walkway gates will be made at a contract unit price for each gate.

C. Payment will be:

1. Chain-Link Fence--per linear meter

2. Driveway Gates--per each
3. Walkway Gates--per each

D. Cost of removing and disposing of material shall not constitute a pay item and shall be considered incidental to fence construction.

E. No extra compensation shall be made for rock excavation

F. Installation of ground rods shall no constitute a pay item and shall be considered incidental to fence construction.

PART 2-PRODUCTS

2.1 MANUFACTURERS

2.2 MATERIALS

A. General: Fence and gate materials shall conform to ASTM Standards requirements

herein.

B. Fabric

1. Fabric shall be woven with 9-gauge (galvanized steel wire) (polyvinyl chloride (PVC)-coated steel) (aluminum coated steel) (zinc-5% aluminum mischmetal) wire in 50mm mesh and shall meet requirements of ( ).) The fabric shall be woven form (9) gauge aluminum-coated steel wire in 50mm mesh and shall conform to requirements of ASTM A 491 or

   Galvanized steel fabric shall conform to requirements of ASTM A 392, Class 2 or

   Zinc-5% aluminum mischmetal alloy coated steel shall conform to requirements of ASTM F1345, Class 2

   Metallic-coated fabric shall have clear acrylic coating applied to selvage area after weaving.

C. Barbed Wire

1. Comply with ASTM A585

2. Each line of barbed wire shall consist of 2-strand of No. 12-½ gauge aluminum coated wire twisted with 4-point No. 14 gauge barbs spaced 125mm on center.

D. Posts, Rails, and Braces

1. Posts, rails, and braces furnished for use in conjunction with zinc-coated, zinc 5% aluminum mischmetal alloy coated, or aluminum-coated steel fabric shall be of zinc-coated steel, zinc/polymer-coated steel, or zinc 5% aluminum mischmetal alloy coated steel framework. Those furnished for use in conjunction with alumumum alloy favric shall be alumunum alloy.

2. Line posts, rails, and braces shall be (galvanized steel pipe) (zince/polumer-coated steel pipe) (vinyl-coated steel) (roll formed) conforming to the requirements of ( ).

   Galvanized steel pipe shall conform to the requirements of ASTM F 1083.

Zinc/polymer-coated steel pipe shall conform to the requirements of ASTM A 569 or ASTM A 446, Grade D. Exterior coating shall be in accordance with ASTM F 1043, Type B or D.

Roll-formed sections shall be fabricated from material meeting the requirements of ASTM A 570, Grade 45, and shall be galvanized in accordance with the requirements of ASTM F 1043, Type A, or coated with zinc-5% aluminum mischmetal alloy in accorfance with ASTM F 1043, Type C .

C. The dimemsions of the posts, rails and braces shall be in accordance with Tables 1 through VI of Federal Spec. RR-F-191/3D.

D. Gates

1. Gates frames shall consist of (galvanized steel pipe) (pplymer-coated steel pipe) (aluminum alloy pipe) and shall conform to specifications for same material under paragraph D.

2. Fabric shall be of te same type material as used in fence.

E. Wire Ties and Tension Wires

1. Wires ties for use in conjunction with given type of fabric shall be of same material and coating weight indentified with fabric type.

2. Tension wire shall be 7-gauge marcelled steel wire with same coating as fabric type and shall conform to ASTM A 824.

3. All material shall conform to FS-RR-F-191/4.

2.3 ACCESSORIES

A. Miscellaneous Fittings and Hardware

1. Miscellaneous steel fittings and hardware for use with (zinc-coated) (aluminum-coated) (zinc5% aluminum mishcmetal alloycoated) steel fabric shall be of commercial grade steel or better quality, wrought or cast as appropriate to the article, and sufficient in strength to provide a balanced design when used in conjunction with fabric posts, and wires of the quality specified herein. (All steel fittings and hardware shall be protected with a zinc coating applied in conformance with ASTM A 153.)

Barbed wire support arms shall withstand load 113kg applied vertically to outermost end of arm.

B. Concrete: Comply with Section 03300

1. Concrete shall be of a commerial grade with minimum 28day compressive strength of 17250 Kpa.

C. Marking

1. Each roll of fabric shall carry tag showing kind of base metal (steel, aluminum alloy number), kind of coating, gauge of wire, lenght of fencing in roll, and name of manufacturer

.

Part 3 - EXECUTION

3.1 General

A. Fencing installation shall not begin before final grading has been completed and finished elevations have been established, unless otherwise approved.

3.2 PREPARATION

A. Surface Preparation

1. All Trees, brush, stumps, logs, and other debris which would interfere with proper construction of fence in required location shall be removed a minimum width of 61 cm on each side of fence centerline before starting fencing operations.

3.3 INSTALLATION

A. General

1. Fence shall generally follow contour of ground.

2. Grading shall be preformed where necessary to provide neat appeareance.

B. Installing Posts

1. All posts shall be set in concrete at required dimension and depth and at spacing indicated.

2. Posts should be spaced not more than 3 m apart and should be set minimum of 90 cm, posts should be set accordingly. Posts holes shall be in proper alignment so that there is minimum of 75 mm of concrete on all sides of posts.

3. Concrete shall be thoroughly compacted aroud posts by tamping or vibrating and shall have smooth finish slightly higher than ground and sloped to drain away from posts.

4. All Posts shall be set plumb ans to require grade and alignment.

5. No materials shall be installed on posts, nor shall posts be distrubed in any manner within 7 days after individual post footing is complete.

6. Should rock be encountered at depth less than planned footing depth, hole 50mm larger than greatest dimension of posts shall be drilled to depth of 300mm.

7. After posts are set, remainder of drilled hole shall be filled with grout, composed of one part Portland cement and two parts mortar sand.

8. Any remaining space above rock shall be filled with concrete in the manner described above.

9. In lieu of drilling, rock may be excavated to required footing depth.

C. Installing Top Rails

1. Top Rail shall be continnuous and shall pass through post tops.

2. Coupling used to join top rail lengths shall allow for expansion.

D. Installing Braces

1. Install horizontal brace rails, with diagonal truss rods and turnbuckles at all terminal posts.

E. Installing Fabric

1. Wire fabric shall be firmly attached to posts and braced in manner shown

on plans.

2. All wire shall be stretched taut and shall be installed to required elevations.

F. Tolerances

1. Posts Shall be straight and plumb within vertical tolerance of 7mm after fabric has been stretched.

2. Bottom of fence fabric shall be no less than 25 mm or no more than 100mm from ground surface.

3. Fencing and gates shall be true to line wigh no more than 13 mm deviation from established enterline between line posts.

4. Vertical clearance between strands of barbed wire shal be less than 150 mm.

5. At locations of small natural swales or drainage ditches and where it is not pratical to have fence conform to general contour of ground surface, longer posts may be used and multiple strands of barbed wire stretched thereon to span opening below fence.

6. Openings below fence shall be spanned with barbed wire fastened to stakes.

7. Defects shall be repaired as directed.

G. Interface with Others

1. General

a. Electrical grounds shall be constructed where power line passes over fence or indicated locations on plans

b. Ground shall be installed directly below point of crossing or at 150 m intervals.

2. Installing Electrical Grounds

a. Ground shall be accomplished with copper clad rod 8 feet (240 cm)

long and minimum of 15 mm in diameter driven vertically until top is 150 mm below ground surface.

b. No. 6 solid copper conductor shall be clamped to rod and fence in such manner that each element of fence is grounded.