ITEM F-162 CHAIN-LINK FENCES

DESCRIPTION

162-1.1 GENERAL. This item shall consist of furnishing and erecting a chain-link fence, gates, gate operators, security related interface, security badge readers and warning signs in accordance with these specifications and the details shown on the plans and in conformity with the lines and grades shown on the plans and as detailed in WCAA Security Department document “Airport Security Requirements” or established by the Designer.

MATERIALS

162-2.1 FABRIC. Fabric shall be woven with a 9-gauge galvanized steel wire in a 2-inch mesh and shall meet the requirements of ASTM A 392, Class 2. The top and bottom selvages shall be twisted and barbed.

162-2.2 BARBED WIRE. Barbed wire shall be 2-strand 12-1/2 gauge zinc-coated wire with 4-point, 14 gauge barbs and shall conform to the requirements of ASTM A 121, Class 3.

162-2.3 POSTS, RAILS AND BRACES. Line posts and braces furnished for use in conjunction with zinc-coated steel fabric shall be of zinc-coated steel pipe. Line posts and braces shall be galvanized steel pipe conforming to the requirements of ASTM F 1083, Group IA or zinc/polymer-coated steel pipe conforming to the requirements of ASTM A 569 or ASTM A 446, Grade D. External coating shall be in accordance with ASTM F 1043, Type B. Internal coating shall be in accordance with ASTM F 1043, Type B or D. The dimensions of the posts and braces shall be in accordance with Tables I through VI of Fed. Spec. RR-F-191/4 unless shown otherwise on the plans.

162-2.4 GATES. Gate frames shall consist of galvanized steel pipe in accordance with the details shown on the plans and shall conform to the specifications for the same material under paragraph 162-2.3 unless otherwise shown on the plans. Slide gates can be constructed out of aluminum tubing as shown on detail drawings. The fabric shall be of the same type material as used in the fence. To allow proper clearance for Airport Fire Department and Airport Maintenance Equipment, all vehicle gates shall allow a minimum clearance of sixteen feet (16’). The Contractor shall submit shop drawings to the Engineer for approval.

162-2.5 WIRE TIES AND TENSION WIRES. Wire ties for use in conjunction with a given type of fabric shall be of the same material and coating weight identified with the fabric type. Tension wire shall be 7-gauge marcelled steel wire with the same coating as the fabric type and shall conform to ASTM A 824.

All material shall conform to Fed. Spec. RR-F-191/4.

162-2.6 MISCELLANEOUS FITTINGS AND HARDWARE. Miscellaneous steel fittings and hardware for use with zinc-coated 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, either single or double arm as shown on the plans shall be single piece able to withstand a load of 250 pounds applied vertically to the outermost end of the arm.

162-2.7 CONCRETE. Concrete shall comply with Civil Technical Specification Item P-610, Structural Portland Cement Concrete.

162-2.8 MARKING. Each roll of fabric shall carry a tag showing the kind of base metal (steel), kind of coating, the gauge of the wire, the length of fencing in the roll, and the name of the manufacturer. Posts, wire, and other fittings shall be identified as to manufacturer, kind of base metal (steel), and kind of coating.
162-2.9 SIGNS. Warning, perimeter and/or other signs shall be installed at the locations and in accordance with the details as shown on the plans. Fabrication and installation of all signs shall be incidental to the installation of the chain link fence.

162-2.10 RED OBSTRUCTION LIGHTING. Red obstruction lights shall be installed at the locations shown on the plans along the fence. Obstruction light shall meet the requirements of FAA Advisory Circular 150/5345-43F Steady Burning (L-810) light with red globe.

CONSTRUCTION METHODS

162-3.1 CLEARING FENCE LINE. All trees, brush, stumps, logs, and other debris which would interfere with the proper construction of the fence in the required location shall be removed a minimum width of 2 feet on each side of the fence centerline before starting fencing operations. The cost of removing and disposing of the material shall not constitute a pay item and shall be considered incidental to fence construction.

162-3.2 INSTALLING POSTS. All posts shall be set in concrete at the required dimension and depth and at the spacing shown on the plans.

Posts should be spaced not more than 10 feet apart and should be set a minimum of 42 inches in concrete footings. The posts holes shall be in proper alignment so that there is a minimum of 3 inches of concrete on all sides of the posts.

The concrete shall be thoroughly compacted around the posts by tamping or vibrating and shall have a smooth finish slightly higher than the ground and sloped to drain away from the posts. All posts shall be set plumb and to the required grade and alignment. No materials shall be installed on the posts, nor shall the posts be disturbed in any manner within 7 days after the individual post footing is completed.

Should rock be encountered at a depth less than the planned footing depth, a hole 2 inches larger than the greatest dimension of the posts shall be drilled to a depth of 12 inches. After the posts are set, the remainder of the drilled hole shall be filled with grout, composed of one part Portland cement and two parts mortar sand. Any remaining space above the rock shall be filled with concrete in the manner described above.

In lieu of drilling, the rock may be excavated to the required footing depth. No extra compensation shall be made for rock excavation.

162-3.3 INSTALLING TOP RAILS. The top rail shall be continuous and shall pass through the post tops. The coupling used to join the top rail lengths shall allow for expansion.

162-3.4 INSTALLING BRACES. Horizontal brace rails, with diagonal truss rods and turnbuckles, shall be installed at all terminal posts.

162-3.5 INSTALLING FABRIC. The wire fabric shall be firmly attached to the posts and braced in the manner shown on the plans. All wire shall be stretched taut and shall be installed to the required elevations. The fence shall generally follow the contour of the ground, with the bottom of the fence fabric no less than 1 inch or more than 4 inches from the ground surface. Grading shall be performed where necessary to provide a neat appearance.

At locations of small natural swales or drainage ditches and where it is not practical to have the fence conform to the general contour of the ground surface, longer posts may be used and multiple strands of barbed wire stretched thereon to span the opening below the fence. The vertical clearance between strands of barbed wire shall be 6 inches or less.

162-3.6 ELECTRICAL GROUNDS. Electrical grounds shall be constructed where a power line passes over the fence at 500-foot intervals. The ground shall be installed directly below the point of crossing. The ground shall be accomplished with a copper clad rod 8 feet long and a minimum of 5/8 inch in diameter driven vertically until the top is 6 inches below the ground surface. A No. 6 solid copper conductor shall be clamped...
to the rod and to the fence in such a manner that each element of the fence is grounded.

Installation of ground rods shall not constitute a pay item and shall be considered incidental to fence construction.

162-3.7 MAINTENANCE STRIP. Crushed concrete maintenance strip shall be installed per details on drawing.

162-3.8 PERIMETER DETECTION SYSTEM. All new fence shall be installed with a perimeter detection system woven into the fabric. The system shall be Infinity 2000.

162-3.9 INTELLIKEY LOCK. Where indicated the contractor shall supply and install an Intellikey lock mechanism meeting the requirements of 49CRF 1542.207.

METHOD OF MEASUREMENT

162-4.1 CHAIN-LINK FENCE. Chain-link fence will be measured for payment by the linear foot including perimeter detection system. Measurement will be along the top of the fence from center to center of end posts, excluding the length occupied by gate openings.

162-4.2 CHAIN-LINK GATES. Chain-link gates will be measured for payment by each complete unit installed based on opening width.

162-4.3 REMOVAL AND RELOCATION OF EXISTING LIGHT STANDARD AND FIXTURE. Removal and relocation of existing light standards and fixtures will be measured for payment by each complete unit including its foundation.

162-4.4 REMOVAL OF EXISTING WIND CONE. Removal of existing wind cone will be measured for payment by each complete unit removed.

162-4.5 NEW WIND CONE. New wind cone will be measured for payment by each complete unit installed.

162-4.6 OBSTRUCTION LIGHTING. Obstruction lighting will measured for payment by lump sum upon complete installation of all required lights. Items not limited to conduit, wire, and fixtures, shall be incidental to the lump sum.

BASIS OF PAYMENT

162-5.1 CHAIN-LINK FENCE. Payment for chain-link fence will be made at the contract unit price per linear foot. The price shall be full compensation for furnishing all materials, and for all preparation, erection, and installation of these materials, and for all labor, equipment, grounds, signs, tools, drainage channel crossings, maintenance strip and incidentals necessary to complete the item.

162-5.2 CHAIN-LINK GATES. Payment for gates will be made at the contract unit price per each. The price shall be full compensation for furnishing all materials, and for all preparation, erection, and installation of these materials, and for all labor, equipment, grounds, signs, tools, tracks and footings, intellikey, card swipes, chain and lock, related security equipment, electrical gate operators and incidentals necessary to complete the item.

162-5.3 REMOVAL AND RELOCATION OF EXISTING LIGHT STANDARD AND FIXTURE. Payment for removing and relocating existing light standards and fixtures will be made at the contract unit price per each. The price shall be full compensation for furnishing all materials, and for all preparation, erection, and installation of these materials, and for all labor, equipment, grounds, cable splicing, conduit, foundations and incidentals necessary to complete the item.
162-5.4 REMOVAL OF EXISTING WIND CONE. Payment for removing existing wind cone will be made at the contract unit price per each. The price shall be full compensation for furnishing all materials, and for all labor, equipment, tools and incidentals necessary to complete the item.

162-5.5 NEW WIND CONE. Payment for new wind cone will be made at the contract unit price per each. The price shall be full compensation for furnishing all materials, and for all preparation, erection, and installation of these materials, and for all labor, equipment, grounds, tools and incidentals necessary to complete the item.

162-5.6 OBSTRUCTION LIGHTING. Payment for red obstruction lighting along the fence will be made at the contract unit price per lump sum. The price shall be full compensation for furnishing all materials, and for all preparation, installation, and for all labor, equipment, tools and incidentals necessary to complete the item.

Payment will be made under:

Item F-162-5.1 10 Foot A.O.A. Chain Link Fence – per linear foot
Item F-162-5.2 Slide Gate with Card Swipes and Motor Operators – per each Install New Slide Gate Between Hangars 714A and 714B. Make AOA Compliant with New Motor Operator and Security Interface – per each
Item F-162-5.3 Rebuild Existing Slide Gate with Card Swipes and New Motor Operators – per each Rebuild Existing Slide Gate with Two Card Swipes, Motor Operator meeting AOA Requirements, Located at Hangar 715 – per each
Item F-162-5.4 Relocate Existing Double Slide Gate with Card Swipes and Motor Operators – per each Relocate Existing Gate 62 – Double Sided Gate with One Existing Card Swipe and Two Existing Motor Operators. Connect to Security Interface at New Location East of Hangar 711 – per each
Item F-162-5.5 16 Foot Single Swing Gate with Intellikey – per each
Item F-162-5.6 16 Foot Single Swing Gate with Chain and Lock Provisions – per each 8 Foot Single Swing Gate with Chain and Lock Provisions Located at Fed-Ex – per each
Item F-162-5.7 32 Foot Double Swing Gate with Intellikey at Hangar 719 Area – per each
Item F-162-5.8 Remove and Relocate Existing Light Standard and Fixture – per each
Item F-162-5.9 Remove Existing Wind Cone – per each
Item F-162-5.10 New Wind Cone – per each
Item F-162-5.11 Red Obstruction Lighting – per lump sum

Item F-162-5.12 10 Foot High AOA Chain Link Fence with PDS – per linear foot
Item F-162-5.13 8 Foot High AOA Chain Link Fence – per linear foot

CONTRACTOR QUALITY CONTROL

162-6.1 The Contractor shall be responsible for developing and implementing a Contractor Quality Control Program including inspection and testing to assure compliance with the requirements of this section in accordance with the General Provisions Section 100.
MATERIAL REQUIREMENTS

ASTM A 121  Zinc-Coated (Galvanized) Steel Barbed Wire
ASTM A 123  Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products
ASTM A 153  Zinc Coating (Hot-Dip) on Iron and Steel Hardware
ASTM A 392  Zinc-Coated Steel Chain-Link Fence Fabric
ASTM A 572  High-Strength Low-Alloy Columbium-Vanadium Steels of Structural Steel Quality
ASTM A 653  Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvanized) by the Hot-Dip Process
ASTM A 824  Metallic-Coated Steel Marcelled Tension Wire for Use With Chain Link Fence
ASTM A 1011 Steel Sheet and Strip, Hot-Rolled, Carbon, Structural, High-Strength Low-Alloy and High-Strength Low-Alloy with Improved Formability
ASTM F 1043 Strength and Protective Coatings on Metal Industrial Chain Link Fence Framework
ASTM F 1083 Pipe, Steel, Hot-Dipped Zinc-coated (galvanized) Welded, for Fence Structures
FED SPEC Fencing, Wire and Post, Metal (Chain-Link Fence Posts, Top Rails and Braces) RR-F-191/3
FED SPEC Fencing, Wire and Post, Metal (Chain-Link Fence Accessories) RR-F-191/4

END OF ITEM F-162