

TECHNICAL SPECIFICATIONS TABLE OF CONTENTS

The following section contains technical specifications to be utilized on this project. These technical specifications are based on the Federal Aviation Administration (FAA) Standard Specifications for Specifying Construction of Airports as found in FAA Advisory Circular 150/5370-10H, and specifications developed specifically for this project.

Modifications to select standard specifications have been made as applicable for this Project in the following two forms:

Strikeouts: Language shown in this manner is to be ignored and is not applicable to the work.

Italics: Language shown in this manner is additional language, which is relevant to, and is part of the contract documents for this specific project.

The following terms as they appear in the Technical Specifications shall be defined as follows:

Owner: Pompano Beach Airport / City of Pompano Beach
Design Engineer: HDR Engineering, Inc. / Quantum Electrical Engineering, Inc.
RPR: Resident Project Representative
Department: Florida Department of Transportation

FAA Specifications (non-standard specifications are marked with “”)**

- Item C-100 – Contractor Quality Control Program (CQCP)
- Item C-102 – Temporary Air and Water Pollution, Soil Erosion, and Siltation Control
- Item C-105 – Mobilization
- Item C-110 – Method of Estimating Percentage of Material Within Specification Limits (PWL)
- Item P-101 – Preparation / Removal of Existing Pavements
- Item P-151 – Clearing and Grubbing
- Item P-152 – Excavation, Subgrade, and Embankment
- Item P-153 – Controlled Low-Strength Material (CLSM)
- Item P-211 – Lime Rock Base Course
- Item P-401 – Asphalt Mix Pavement
- Item P-602 – Emulsified Asphalt Prime Coat
- Item P-603 – Emulsified Asphalt Tack Coat
- Item P-605 – Joint Sealants for Pavements
- Item P-606 – Adhesive Compounds, Two-Component for Sealing Wire and Lights in Pavement
- Item P-608 – Emulsified Asphalt Seal Coat
- Item P-610 – Concrete for Miscellaneous Structures
- Item P-620 – Runway and Taxiway Marking
- Item F-162 – Chain-Link Fence
- Item T-904 – Sodding
- Item T-905 – Topsoil



ITEM F-162 CHAIN-LINK FENCE

DESCRIPTION

162-1.1 This item shall consist of furnishing and erecting a chain-link fence in accordance with these specifications, the details shown on the plans, and in conformity with the lines and grades shown on the plans or established by the RPR.

MATERIALS

162-2.1 Fabric. The fabric shall be woven from a 9 gauge aluminum-coated steel wire in a 2-inch (50 mm) mesh and shall conform to the requirements of ASTM A491.

162-2.2 Barbed wire. Barbed wire shall be 23-strand 12-1/2 gauge zinc-coated wire with 4-point barbs and shall conform to the requirements of ASTM A121, Class 3, Chain Link Fence Grade.

162-2.3 Posts, rails, and braces. Line posts, rails, and braces shall conform to the requirements of ASTM F1043 or ASTM F1083 as follows:

- Galvanized tubular steel pipe shall conform to the requirements of Group IA, (Schedule 40) coatings conforming to Type A, or Group IC (High Strength Pipe), External coating Type B, and internal coating Type B or D.
- Roll Formed Steel Shapes (C-Sections) shall conform to the requirements of Group IIA, and be galvanized in accordance with the requirements of ASTM F1043, Type A.
- Hot-Rolled Shapes (H Beams) shall meet the requirements of Group III, and be galvanized in accordance with the requirements of ASTM F1043, Type A.
- Aluminum Pipe shall conform to the requirements of Group IB.
- Aluminum Shapes shall conform to the requirements of Group IIB.
- Vinyl or polyester coated steel shall conform to the requirements of ASTM F1043, Paragraph 7.3, Optional Supplemental Color Coating.
- Composite posts shall conform to the strength requirements of ASTM F1043 or ASTM F1083. The strength loss of composite posts shall not exceed 10% when subjected to 3,600 hours of exposure to light and water in accordance with ASTM G152, ASTM G153, ASTM G154, and ASTM G155.
- Posts, rails, and braces furnished for use in conjunction with aluminum alloy fabric shall be aluminum alloy or composite.

Posts, rails, and braces, with the exception of galvanized steel conforming to ASTM F1043 or ASTM F1083, Group 1A, Type A, or aluminum alloy, shall demonstrate the ability to withstand testing in salt spray in accordance with ASTM B117 as follows:

- External: 1,000 hours with a maximum of 5% red rust.
- Internal: 650 hours with a maximum of 5% red rust.

The dimensions of the posts, rails, and braces shall be in accordance with Tables I through VI of Federal Specification RR-F-191/3.

162-2.4 Gates. Gate frames shall consist of galvanized steel pipe and shall conform to the specifications for the same material under paragraph 162-2.3. The fabric shall be of the same type material as used in the fence.

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 A824.

All material shall conform to Federal Specification 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 A153. Barbed wire support arms shall withstand a load of 250 pounds (113 kg) applied vertically to the outermost end of the arm.

162-2.7 Concrete. Concrete shall have a minimum 28-day compressive strength of 3000 psi (2670 kPa).

162-2.8 Marking. Each roll of fabric shall carry a tag showing the kind of base metal (steel, aluminum, or aluminum alloy number), 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, aluminum, or aluminum alloy number), and kind of coating.

CONSTRUCTION METHODS

162-3.1 General. The fence shall be constructed in accordance with the details on the plans and as specified here using new materials. All work shall be performed in a workmanlike manner satisfactory to the RPR. The Contractor shall layout the fence line based on the plans. The Contractor shall span the opening below the fence with barbed wire at all locations where it is not practical to conform the fence to the general contour of the ground surface because of natural or manmade features such as drainage ditches. The new fence shall be permanently tied to the terminals of existing fences as shown on the plans. The Contractor shall stake down the woven wire fence at several points between posts as shown on the plans.

The Contractor shall arrange the work so that construction of the new fence will immediately follow the removal of existing fences. The length of unfenced section at any time shall not exceed 300 feet (90 m). The work shall progress in this manner and at the close of the working day the newly constructed fence shall be tied to the existing fence.

162-3.2 Clearing fence line. Clearing shall consist of the removal of all stumps, brush, rocks, trees, or other obstructions that will interfere with proper construction of the fence. Stumps within the cleared area of the fence shall be grubbed or excavated. The bottom of the fence shall be placed a uniform distance above ground, as specified in the plans. When shown on the plans or as directed by the RPR, the existing fences which interfere with the new fence location shall be removed by the Contractor as a part of the construction work unless such removal is listed as a separate item in the bid schedule. All holes remaining after post and stump removal shall be refilled with suitable soil, gravel, or other suitable material and compacted with tampers.

The cost of removing and disposing of the material shall not constitute a pay item and shall be considered incidental to fence construction.

162-3.3 Installing posts. All posts shall be set in concrete at the required dimension and depth and at the spacing shown on the plans.

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 seven (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 (50 mm) larger than the greatest dimension of the posts shall be drilled to a depth of 12 inches (300 mm). 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.

162-3.4 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.

162-3.5 Installing braces. Horizontal brace rails, with diagonal truss rods and turnbuckles, shall be installed at all terminal posts.

162-3.6 Installing fabric. The wire fabric shall be firmly attached to the posts and braced as 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 one inch (25 mm) or more than 4 inches (100 mm) 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 to span the opening below the fence. The vertical clearance between strands of barbed wire shall be 6 inches (150 mm) or less.

162-3.7 Electrical grounds. Electrical grounds shall be constructed at 500 feet (150 m) intervals. The ground shall be accomplished with a copper clad rod 8 feet (2.4 m) long and a minimum of 5/8 inches (16 mm) in diameter driven vertically until the top is 6 inches (150 mm) 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. The Contractor shall comply with FAA-STD-019, Lightning and Surge Protection, Grounding, Bonding and Shielding Requirements for Facilities and Electronic Equipment, paragraph 4.2.3.8, Lightning Protection for Fences and Gates, when fencing is adjacent to FAA facilities.

162-3.8 Cleaning up. The Contractor shall remove from the vicinity of the completed work all tools, buildings, equipment, etc., used during construction. All disturbed areas shall be seeded per T-901.

METHOD OF MEASUREMENT

162-4.1 *No measurement will be made for direct payment of any chain-link fence as the cost shall be considered subsidiary to Contractor Staging and Storage Area. ~~Chain-link fence will be measured for payment by the linear foot (meter). 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 *No measurement will be made for direct payment of any gates as the cost shall be considered subsidiary to Contractor Staging and Storage Area. ~~Gates will be measured as complete units.~~*

BASIS OF PAYMENT

162-5.1 *No separate payment will be made for this item. All chain-link fence shall be incidental to Contractor Staging and Storage Area. ~~Payment for chain-link fence will be made at the contract unit price per linear foot (meter).~~*

162-5.2 *No separate payment will be made for this item. All vehicle or pedestrian gates shall be incidental to Contractor Staging and Storage Area. ~~Payment for vehicle or pedestrian gates will be made at the contract unit price for each gate.~~*

~~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, tools, and incidentals necessary to complete the item.~~

~~Payment will be made under:~~

~~Item F-162-5.1 Chain-Link Fence per linear foot (meter)~~

~~Item F-162-5.2a Vehicle Gates per each~~

~~Item F-162-5.2b Pedestrian Gates per each~~

REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to within the text by the basic designation only.

ASTM International (ASTM)

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| ASTM A121 | Standard Specification for Metallic-Coated Carbon Steel Barbed Wire |
| ASTM A153 | Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware |
| ASTM A392 | Standard Specification for Zinc-Coated Steel Chain-Link Fence Fabric |
| ASTM A491 | Standard Specification for Aluminum-Coated Steel Chain-Link Fence Fabric |
| ASTM A824 | Standard Specification for Metallic-Coated Steel Marcellled Tension Wire for Use with Chain Link Fence |
| ASTM B117 | Standard Practice for Operating Salt Spray (Fog) Apparatus |
| ASTM F668 | Standard Specification for Polyvinyl Chloride (PVC), Polyolefin and other Organic Polymer Coated Steel Chain-Link Fence Fabric |
| ASTM F1043 | Standard Specification for Strength and Protective Coatings on Steel Industrial Fence Framework |
| ASTM F1083 | Standard Specification for Pipe, Steel, Hot-Dipped Zinc-Coated (Galvanized) Welded, for Fence Structures |
| ASTM F1183 | Standard Specification for Aluminum Alloy Chain Link Fence Fabric |
| ASTM F1345 | Standard Specification for Zinc 5% Aluminum-Mischmetal Alloy Coated Steel Chain-Link Fence Fabric |
| ASTM G152 | Standard Practice for Operating Open Flame Carbon Arc Light Apparatus for Exposure of Nonmetallic Materials |

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| ASTM G153 | Standard Practice for Operating Enclosed Carbon Arc Light Apparatus for Exposure of Nonmetallic Materials |
| ASTM G154 | Standard Practice for Operating Fluorescent Ultraviolet (UV) Lamp Apparatus for Exposure of Nonmetallic Materials |
| ASTM G155 | Standard Practice for Operating Xenon Arc Light Apparatus for Exposure of Nonmetallic Materials |
| Federal Specifications (FED SPEC) | |
| FED SPEC RR-F-191/3 Fencing, Wire and Post, Metal (Chain-Link Fence Posts, Top Rails and Braces) | |
| FED SPEC RR-F-191/4 Fencing, Wire and Post, Metal (Chain-Link Fence Accessories) | |
| FAA Standard | |
| FAA-STD-019 | Lightning and Surge Protection, Grounding, Bonding and Shielding Requirements for Facilities and Electronic Equipment |
| FAA Orders | |
| 5300.38 | AIP Handbook |

END OF ITEM F-162