

M-494.4

AC 150/5370-10

CHANGE 15

DATE 8/20/81

# ADVISORY CIRCULAR

CHANGE



DEPARTMENT OF TRANSPORTATION  
Federal Aviation Administration  
Washington, D.C.

**Subject:** Change 15 to STANDARDS FOR SPECIFYING CONSTRUCTION OF AIRPORTS--  
Updates Chain-Link Fence Specification

1. PURPOSE. Item F-162, Chain-Link Fences has been revised to reflect changes in material specifications. It also adds acrylic coated steel pipe, structural shapes, and roll formed posts, rails, and braces.

The Change number and date of changed material are carried at the top of each page.

### PAGE CONTROL CHART

Remove Pages	Dated	Insert Pages	Dated
455-462	10/24/74	455-462	8/20/81

*Leonard E. Mudd*

LEONARD E. MUDD  
Director, Office of Airport Standards

Suggest filing this transmittal at the back of the AC. It will provide a reference authority for changes, a method of determining that all Changes have been received, and a check for determining if the AC contains the proper pages.

Initiated by: AAS-200

ITEM F-162 CHAIN-LINK FENCES

1.5  
1.6

1. DESCRIPTION

3

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

5  
6  
6  
7

2. MATERIALS

9

2.1 FABRIC. The fabric shall be woven with a 9-gage [galvanized steel wire] [aluminum-coated steel wire] [aluminum alloy] [polyvinyl chloride (PVC)-coated steel] wire in a 2-inch mesh and shall meet the requirements of [\*\*\_\_\_\_\_].

13  
15  
17  
18

\*\*\*\*\*

22.1

1. Galvanized steel fabric shall conform to the requirements of ASTM A392, Class II.

23  
24

2. Aluminum-coated steel fabric shall conform to the requirements of ASTM A491.

26  
27

3. Aluminum alloy fabric shall conform to the requirements of ASTM B211, alloy 6061-T94.

29  
30

4. Polyvinyl chloride-coated steel shall conform to the requirements of Federal Specification RR-F-191/1.

32  
33

\*\*\*\*\*

34.2

2.2 BARBED WIRE. Barbed wire shall be 2-strand 12-1/2-gage [zinc-coated] [aluminum-coated] wire with 4-point barbs and shall conform to the requirements of [\*\*\_\_\_\_\_].

40  
43  
44

\*\*\*\*\*

48.1

1. Zinc-coated barbed wire shall conform to the requirements of ASTM A121, Class 3.

49  
50

2. Aluminum-coated barbed wire shall conform to the requirements of ASTM A585, Class II.

52  
53

\*\*\*\*\*

54.2

2.3 POSTS, RAILS AND BRACES. Posts, rails, and braces furnished for use in conjunction with zinc-coated steel fabric or with aluminum-coated steel fabric shall be of zinc-coated steel or acrylic-coated steel pipe, and those furnished for use in conjunction with aluminum alloy fabric shall be aluminum alloy.

62  
62  
63  
65  
66

Line posts, rails, and braces shall be [galvanized steel pipe] [acrylic-coated steel pipe] [vinyl-coated steel] [structural shapes] [roll formed] [aluminum alloy] conforming to the requirements of [\*\*\_\_\_\_\_].

71  
74  
77  
78

ITEM F-162 CHAIN-LINK FENCES 1.5  
1.6

\*\*\*\*\* 82.1

1. Galvanized steel pipe shall conform to the requirements of ASTM A120, Schedule 40, except the hydrostatic testing requirement is waived. Galvanizing shall be in accordance with ASTM A123. 83  
85  
86  
86

2. Acrylic-coated steel pipe shall conform to the requirements of Federal Specification RR-F-191/3 for Class I steel pipe, Grade B. 88  
89  
90

3. The steel used in all structural shapes shall conform to the requirements of ASTM A572, Grade 45, and shall be galvanized in accordance with the requirements of ASTM A123. 92  
95  
95

4. Roll-formed sections shall be fabricated from material meeting the requirements of ASTM A570, Grade 45, and shall be galvanized in accordance with the requirements of ASTM A123. 97  
100  
100  
100

5. Aluminum alloy shall conform to the requirements of ASTM B 429, alloy 6063-T6, Schedule 40, for extruded pipe and tube. 102  
105  
105

6. Aluminum alloy shall conform to the requirements of ASTM B221, alloy 6063-T6, for extruded bar, shape, and tube. 107  
111

7. Vinyl-coated steel shall conform to the requirements of Federal Specification RR-F-191/3. 113  
114

8. ASTM A 123 specifies a zinc coating weight of not less than 2.0 ounces per square foot. Federal Specification RR-F-191/3 specifies a zinc coating weight of not less than 1.0 ounces per square foot for Grade B pipe with an external chromate coating of 30 micro-grams per square inch and an acrylic coating of 0.0005 inches or greater. 114.2  
114.3  
114.3  
114.4  
114.5  
114.5

\*\*\*\*\* 115.2

The dimensions of the posts, rails, and braces shall be in accordance with Tables I through VI of Federal Specification RR-F-191/3. 122  
123  
123

2.4 GATES. Gate frames shall consist of [galvanized steel pipe] [acrylic-coated steel pipe] [aluminum alloy pipe] and conform to the specifications for the same material under Section 2.3. The fabric shall be of the same type material as used in the fence. 127  
130  
131  
131

2.5 WIRE TIES AND TENSION WIRES. Wire fabric ties, wire ties, and tension wire for use in conjunction with a given type of fabric shall be of the same material identified with the fabric type. The tension wire shall be 7-gage coiled spring wire coated similarly to the respective wire fabric being used. 135  
136  
137  
138  
139

ITEM F-162 CHAIN-LINK FENCES

1.5  
1.6

Wire fabric ties shall be hog rings, aluminum wire, or galvanized steel wire not less than 9 gage.

143  
143

All material shall conform to Federal Specification RR-F-191/4.

145

2.6 MISCELLANEOUS FITTINGS AND HARDWARE. Miscellaneous steel fittings and hardware for use with [zinc-coated] [aluminum-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.] [Miscellaneous aluminum fittings for use with aluminum alloy fabric shall be wrought or cast aluminum alloy.] Barbed wire support arms shall withstand a load of 250 pounds (113 kg) applied vertically to the outermost end of the arm.

148  
150  
151  
153  
153  
156  
157  
158  
159  
161  
161  
162

2.7 CONCRETE. Concrete shall be of a commercial grade with a minimum 28-day compressive strength of 2500 psi.

165  
166

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 gage 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.

169  
171  
174  
178  
179  
182  
182

3. CONSTRUCTION METHODS

184

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 (0.6 m) on each side of the fence centerline before starting fencing operations. The material removed and disposed of shall not constitute a pay item and shall be considered incidental to fence construction.

191  
191  
192  
193  
194  
195  
195

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.

198  
199  
199

\*\*\*\*\*  
Posts should be spaced not more than 10 feet (3 m) apart and should be set a minimum of 36 inches (1 m) in concrete footings. If the frost depth is greater than 36 inches (1 m), the posts should be set accordingly. The posts should have a minimum of 3 inches (75 mm) of concrete cover.  
\*\*\*\*\*

203.1  
204  
205  
206  
208  
208  
209.2

ITEM F-162 CHAIN-LINK FENCES

1.5  
1.6

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 (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.

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.

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

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 (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 thereon to span the opening below the fence. The vertical clearance between strands of barbed wire shall be 6 inches (150 mm) or less.

\*\*\*\*\*  
Openings below the fence may also be spanned with barbed wire fastened to stakes.  
\*\*\*\*\*

ITEM F-162 CHAIN-LINK FENCES

1.5  
1.6

**3.6 ELECTRICAL GROUNDS.** Electrical grounds shall be constructed 268  
 [where a power line passes over the fence] [at 500-foot (150 m) 270  
 intervals.] The ground shall be installed directly below the 271  
 point of crossing. The ground shall be accomplished with a 272  
 copperclad rod 8 feet (2.4 m) long and a minimum of 5/8 inch (15 273  
 mm) in diameter driven vertically until the top is 6 inches (150 274  
 mm) below the ground surface. A No. 6 solid copper conductor 275  
 shall be clamped to the rod and to the fence in such a manner 276  
 that each element of the fence is grounded. Installation of 277  
 ground rods shall not constitute a pay item and shall be 277  
 considered incidental to fence construction. 278

\*\*\*\*\* 282.1  
 The Engineer shall indicate the location of all electrical 283  
 grounds on the plans. 283  
 \*\*\*\*\* 284.2

**4. METHOD OF MEASUREMENT** 289

**4.1** Chain-link fence will be measured for payment by the linear 291  
 foot (meter). Measurement will be along the top of the fence 292  
 from center to center of end posts, excluding the length occupied 293  
 by gate openings. 293

Gates will be measured as complete units. 295

**5. BASIS OF PAYMENT** 297

**5.1** Payment for chain-link fence will be made at the contract 299  
 unit price per linear foot (meter). 300

Payment for driveway or walkway gates will be made at the 302  
 contract unit price for each gate. 303

The price shall be full compensation for furnishing all 305  
 materials, and for all preparation, erection, and installation of 308  
 these materials, and for all labor equipment, tools, and 311  
 incidentals necessary to complete the item. 311

Payment will be made under: 313

- Item F-162, Chain-Link Fence - per linear foot (meter) 315
- Item F-162, Driveway Gates - per each 316
- Item F-162, Walkway Gates - per each 317

320

## ITEM F-162 CHAIN-LINK FENCES

6. MATERIAL REQUIREMENTS

		1.5
		1.6
ASTM A120	Pipe, Steel, Black and Hot-Dipped Zinc-Coated (Galvanized) Welded and Seamless, for Ordinary Uses	322 323 324
ASTM A121	Zinc-Coated (Galvanized) Steel Barbed Wire	326 327
ASTM A123	Zinc (Hot-Galvanized) Coatings on Products Fabricated from Rolled, Pressed, and Forged Steel Shapes, Plates, Bars, and Strip	329 330 331
ASTM A153	Zinc Coating (Hot-Dip) on Iron and Steel Hardware	333 334
ASTM A392	Zinc-Coated Steel Chain-Link Fence Fabric	336
ASTM A491	Aluminum-Coated Steel Chain-Link Fence Fabric	338 339
ASTM A570	Hot-Rolled Carbon Steel Sheet and Strip Structural Quality	341 342
ASTM A572	High-Strength Low-Alloy Columbium-Vanadium Steels of Structural Quality	344 345
ASTM A585	Aluminum-Coated Steel Barbed Wire	347
ASTM B211	Aluminum-Alloy Bar, Rod, and Wire	349
ASTM B221	Aluminum-Alloy Extruded Bars, Rods, Wire Shapes and Tubes	351 352
Federal Specification RR-F-191/1	Fencing, Wire and Post, Metal (Chain-Link Fence Fabric)	354 355
Federal Specification RR-F-191/3	Fencing, Wire and Post, Metal (Chain-Link Fence Posts, Top Rails and Braces)	357 358 359
Federal Specification RR-F-191/4	Fencing, Wire and Post, Metal (Chain-Link Fence Accessories)	361 362
	+ + END OF ITEM F-162 + +	363.3 364   365