

RR-F-191/3D  
14 May 1990  
SUPERSEDING  
RR-F-191/3C  
July 22, 1981

FEDERAL SPECIFICATION SHEET

FENCING, WIRE AND POST, METAL (CHAIN-LINK  
FENCE POSTS, TOP RAILS AND BRACES)  
(DETAIL SPECIFICATION)

This Federal specification is approved by the Commissioner, Federal Supply Service, General Services Administration, for use of all Federal agencies.

(This specification forms a part of the latest issue of Federal specification RR-F-191K/GEN)

1. SCOPE AND CLASSIFICATION

1.1 Scope. This specification covers general requirements for chain-link fence posts, top rails, and braces.

1.2 Classification. Chain-link fence posts, top rails, and braces will be of the applicable class, size, and grade as specified (see 6.1).

Class 1 - Steel pipe.

Grade A - Hot-dip zinc-coated after fabrication with 1.8 ounces of zinc per square foot of coated surface area.

Grade B - Hot-dip zinc-coated with 0.9 ounces of zinc per square foot of external coated surface area. The interior surface shall be hot-dip zinc-coated or zinc rich painted to a minimum thickness of three mils.

Beneficial comments (recommendations, additions, deletions) and any pertinent data which may be of use in improving this document should be addressed to: Commanding Officer (Code 156), Naval Construction Battalion Center, Port Hueneme, CA 93043-5000, by using the self-addressed Standardization Document Improvement Proposal (DD Form 1426) appearing at the end of this document or by letter.

FSC 5660

DISTRIBUTION STATEMENT A. Approved for public release; distribution is unlimited.

Size - Outside diameter multiplied by (x) minimum wall thickness in inches:

SP1 1.660 OD x 0.111  
 SP2 1.90 OD x 0.120  
 SP3 2.375 OD x 0.130  
 SP4 2.875 OD x 0.160  
 SP5 4.00 OD x 0.226  
 SP6 6.625 OD x 0.280  
 SP7 8.625 OD x 0.322

Class 2 - Aluminum Pipe.

Size - Outside diameter in inches x weight per foot of length (lb/ft):

AP1 1.629 OD x 0.786 lb/ft  
 AP2 1.869 OD x 0.940 lb/ft  
 AP3 2.351 OD x 1.264 lb/ft  
 AP4 2.846 OD x 2.004 lb/ft  
 AP5 3.960 OD x 3.151 lb/ft  
 AP6 6.559 OD x 6.564 lb/ft  
 AP7 8.625 OD x 9.878 lb/ft

Class 3 - Formed steel sections.

Size - Outside dimensions in inches x weight per foot of length (lb/ft):

FS1 1.625 by 1.25 x 1.35 lb/ft  
 FS2 1.875 by 1.625 x 2.40 lb/ft  
 FS3 2.250 by 1.70 x 2.78 lb/ft  
 FS3 3.50 by 3.50 x 5.10 lb/ft

Class 4 - Steel H-sections.

Size - Outside dimensions in inches x weight per foot of length (lb/ft):

SH1 2.25 by 1.70 x 3.43 lb/ft

Class 5 - Aluminum H-sections.

Size - Outside dimensions in inches x weight per foot of length (lb/ft):

AH1 1.875 by 1.565 x 0.91 lb/ft  
 AH2 2.250 by 2.00 x 1.22 lb/ft

Class 6 - Steel square sections.

Size - Outside dimensions in inches x weight per foot of length (lb/ft):

SS1 2.00 by 2.00 x 2.60 lb/ft

SS2 2.50 by 2.50 x 5.10 lb/ft

Class 7 - Aluminum square sections.

Size - Outside dimensions in inches x weight per foot of length (lb/ft):

AS1 2.50 by 2.50 x 1.25 lb/ft

AS2 3.00 by 3.00 x 1.40 lb/ft

AS3 3.00 by 3.00 x 2.45 lb/ft

2. APPLICABLE DOCUMENTS

2.1 Non-Government documents. The following other non-Government documents form a part of this specification to the extent specified herein. Unless otherwise specified, the issues are those cited in the solicitation.

ASTM

- ASTM A 90 - Test for Weight of Coating on Zinc-Coated (Galvanized) Iron or Steel Articles.
- ASTM A 570 - Hot Rolled Sheet and Strip, Structural Quality.
- ASTM A 572/A 572M - High-Strength Low-Alloy Columbium-Vanadium Steel of Structural Quality.
- ASTM B 221 - Aluminum-Alloy Extruded Bars, Rods, Wire, Shapes and Tubes.
- ASTM B 429 - Aluminum Alloy Extruded Structural Pipe and Tube.
- ASTM E 8 - Tension Testing of Metallic Materials.
- ASTM F 1083 - Pipe, Steel, Hot-Dipped Zinc-Coated (Galvanized) Welded for Fence Structures.

(Application for copies should be addressed to ASTM, 1916 Race Street, Philadelphia, PA 19103.)

3. REQUIREMENTS

3.1 Zinc-coating. Unless otherwise specified herein, all steel material shall be hot-dip zinc-coated on all surfaces with an average weight of not less than 1.8 ounces of zinc per square foot of coated surface area. When the weight of the zinc coating shall be other than 1.8 ounces or other than specified herein (see 6.1).

3.2 Color coating and material. When color coating is required the color shall be as specified (see 6.1), and shall match the color specified for chain-link fabric as cited in RR-F-191/1. Steel posts, rails, and braces shall be zinc-coated in accordance with 3.1, prior to application of color coating.

Unless otherwise specified (see 6.1), color coating material shall be at the option of the manufacturer. shall be zinc-coated in accordance with 3.1, prior to application of color coating. Unless otherwise specified (see 6.1), color coating material shall be at the option of the manufacturer.

3.3 Dimensions and tolerances. Tolerances for weight per foot requirements are minus 5 percent with no limit on plus. The tolerance for the dimensions for posts is minus 2 percent and plus 5 percent.

3.4 Description.

3.4.1 Class 1 steel pipe grades A and B. Pipe conforming to ASTM F 1083 (schedule 40 standard weight) meets or exceeds the requirements for grades A and B. Steel pipe other than ASTM F 1083 (schedule 40 standard weight) shall meet the outside dimensions and minimum wall thickness required and shall have minimum yield strength of 50,000 psi. Grade A pipe shall be hot-dipped zinc coated inside and out with an average weight of not less than 1.8 ounces of zinc per square foot of coated surface area. Unless otherwise specified (see 6.1), grade B pipe shall be hot-dipped zinc-coated with an average weight of not less than 0.9 ounces of zinc per square foot of exterior surface and shall be overcoated with a clear acrylic or polyester. The internal surface of grade B pipe shall have a protective coating of hot dipped zinc or zinc rich paint with a minimum thickness of three mils.

3.4.2 Class 2 - aluminum pipe. Class 2 aluminum pipe material shall conform to ASTM B 429, alloy 6063, temper T6.

3.4.3 Class 3 - formed steel section. Formed steel section material shall be formed from sheet steel conforming to ASTM A 570, grade 35 for FS1 and FS4, and ASTM A 570, grade 45 for FS2 and FS3.

3.4.4 Class 4 - steel H-section. Steel H sections shall be produced from steel conforming to ASTM A 572, grade 45.

3.4.5 Class 5 - aluminum H-section. Aluminum H-section material shall conform ASTM B 221, alloy 6063, temper T6.

3.4.6 Class 6 - steel square section. Steel square sections shall be produced from steel having a minimum yield strength of 40,000 pounds per square inch.

3.4.7 Class 7 - aluminum square section. Aluminum square section material shall conform to ASTM B 221, alloy 6063, temper T6.

3.5 Posts. Unless otherwise specified (see 6.1), posts shall conform to tables I thru VII. Length of posts shall be compatible with the specified fence height, or shall be as specified (see 6.1). The term "Terminal posts" shall apply to end, corner, and pull posts. The term "Line posts" is defined as the vertical posts installed between terminal posts. The term "Gate posts" shall apply to the post supporting the weight of the gate.

TABLE I. Posts of class 1 steel pipe, grades A and B.

| Post Type               | Fabric Heights | Size |
|-------------------------|----------------|------|
| Terminal                | up to 6 ft     | SP3  |
|                         | over 6 ft      | SP4  |
| Line                    | up to 6 ft     | SP2  |
|                         | up to 8 ft     | SP3  |
|                         | over 8 ft      | SP4  |
| <u>Gate Leaf Widths</u> |                |      |
| Gate                    | up to 6 ft     | SP4  |
|                         | up to 13 ft    | SP5  |
|                         | up to 18 ft    | SP6  |
|                         | up to 23 ft    | SP7  |

TABLE II. Posts of class 2 aluminum pipe.

| Post Type               | Fabric Heights | Size |
|-------------------------|----------------|------|
| Terminal                | up to 6 ft     | AP3  |
| Line                    | up to 6 ft     | AP2  |
|                         | up to 8 ft     | AP3  |
| <u>Gate Leaf Widths</u> |                |      |
| Gate                    | up to 13 ft    | AP5  |
|                         | up to 18 ft    | AP6  |
|                         | up to 23 ft    | AP7  |

TABLE III. Posts of class 3 formed steel section.

| Post Type | Fabric Heights | Size |
|-----------|----------------|------|
| Line      | up to 8 ft     | FS2  |
|           | over 8 ft      | FS3  |
| Terminal  | All heights    | FS4  |

TABLE IV. Posts of class 4 steel H-section.

| Post Type | Fabric Heights | Size |
|-----------|----------------|------|
| Line      | All heights    | SH1  |

TABLE V. Posts of class 5 aluminum H-section.

| Post Type | Fabric Heights | Size |
|-----------|----------------|------|
| Line      | All heights    | AH2  |

TABLE VI. Posts of class 6 steel square section.

| Post Type               | Fabric Heights | Size |
|-------------------------|----------------|------|
| Terminal                | up to 6 ft     | SS1  |
|                         | over 6 ft      | SS2  |
| <u>Gate Leaf Widths</u> |                |      |
| Gate                    | up to 6 ft     | SS2  |

TABLE VIII. Posts of class 7 aluminum square section.

| Post Type               | Fabric Heights | Size |
|-------------------------|----------------|------|
| Terminal                | up to 6 ft     | AS1  |
|                         | over 6 ft      | AS3  |
| <u>Gate Leaf Widths</u> |                |      |
| Gate                    | up to 6 ft     | AS2  |

3.6 Top rails and braces. Top rails and braces, when required, shall be of the class, grade, and size as specified (see 6.1).

3.6.1 Rail connectors. Top rail lengths shall be fitted with 6-inch connectors of the same material as the rail or shall have a 3-inch long swage on one end for connecting into a continuous run. Suitable fittings shall be provided for securing top rail to each gate, corner, and end posts.

3.6.2 Braces. Braces shall be provided for gate posts and each terminal post when a top rail is not used. When fabric height is 6 feet (ft) or greater, braces shall be furnished with or without top rail. Braces extending to line post shall be connected back to the base of the braced post by a 5/16 inch minimum outside diameter truss rod and tightener. Double braces shall be furnished when fabric height is over 9 ft.

#### 4. QUALITY ASSURANCE PROVISIONS

4.1 Responsibility for inspection. (See RR-F-191K/GEN)

4.2 Sampling. (See RR-F-191K/GEN, section 6)

4.3 Examination. Examine posts, top rails, and braces for defects listed in table VIII.

TABLE VIII. Classification of defects, posts, rails, and braces.

| Defects   | Major | Minor |
|---|-------|-------|
| Class, size, and grade not as specified.                    | x     |       |
| Material not as specified.                                  | x     |       |
| Dimensions and weights not within tolerance.                | x     |       |
| Color not as specified.                                     | x     |       |
| Weight of zinc coating not as specified.                    | x     |       |
| Coating cut, scratched, or abraded exposing bare metal.     | x     |       |
| Damage or defects affecting function or serviceability.     | x     |       |
| Damage or defects not affecting function or serviceability. |       | x     |

4.5 Test methods.

4.4.1 Yield strength. Prepared a specimen obtained from the material and determine yield strength in accordance with ASTM E 8 (see 3.4.6).

4.4.2 Zinc-coat on steel posts, top rails, and braces. Determine weight of zinc in accordance with ASTM A 90 (see 3.1).

5. PREPARATION FOR DELIVERY (See RR-F-191K/GEN)

6. NOTES

(This section contains information of a general or explanatory nature that may be helpful, but is not mandatory.)

6.1 Ordering data. Purchasers should select the preferred options permitted herein and include the following information in acquisition documents:

- a. Title, number, and date of this specification.
- b. Class, size, and grade required (see 1.2).
- c. Issue of DODISS to be cited in the solicitation, and if required, the specific issue of individual documents referenced (see 2.1).
- d. When weight of zinc coating is to be other than specified (see 3.1).
- e. Color coating required and color required (see 3.2).
- f. When color coating material is other than specified and material required (see 3.2).
- g. When grade B coatings are other than specified (see 3.4.1).
- h. When posts are other than specified (see 3.5).
- i. When length of posts is specified and length required (see 3.5).
- j. Class, grade and size of top rails specified (see 3.6).
- k. Class, grade and size of braces specified (see 3.6).

MILITARY CUSTODIANS:

Army - ME  
Navy - YD  
Air Force - 99

Review Activities

Air Force - 84  
DLA - CS

User Activities

Army - CE  
Navy - MC, CG

CIVIL AGENCY COORDINATING ACTIVITIES:

GSA - FSS  
HHS - FEC  
INTERIOR - BLM  
USDA - AFS

PREPARING ACTIVITY:

Navy - YD

(Project 5660-0090)

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Orders for this publication are to be placed with General Services Administration, acting as an agent for the Superintendent of Documents. See section 2 of this specification to obtain extra copies and other documents referenced herein.