

INCH-POUND

RR-F-191/3E
7 JUNE 2006
SUPERSEDING
RR-F-191/3D
14 May 1990

FEDERAL SPECIFICATION SHEET

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

The General Services Administration has authorized the use of this federal specification sheet by all Federal agencies.

(This specification forms a part of the latest issue of Federal specification RR-F-191/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 - ASTM F1083 schedule 40 pipe, hot-dip zinc-coated after fabrication with 1.8 ounces of zinc per square foot of coated surface area.

Grade B - ASTM F1043 pipe Group IC, having a Type B external hot-dip zinc-coated with 0.9 ounces of zinc per square foot with a clear organic overcoat. Interior coating to be Type B hot-dip zinc-coating 0.9 ounces per square foot or Type D 81% zinc pigmented coating, minimum thickness of 0.3 mils.

Comments, suggestions, or questions on this document should be addressed to Defense Supply Center Philadelphia (DSCP), ATTN: DSCP-ITAA, 700 Robbins Avenue., Philadelphia, PA 19111-5096 or e-mail to dscpg&inspeccomments@dla.mil. Since contact information can change, you may want to verify the currency of this address information using the ASSIST Online database at <http://assist.daps.dla.mil>.

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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 diameter 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

Class 4 – Steel H-sections.

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

SH1	2.25	by	1.70	x	3.43	lb/ft
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Class 5 – Aluminum H-sections.

Size - Outside diameter 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 diameter 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 diameter 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.

American Society for Testing and Materials Standard (ASTM)

ASTM A90/A90M	Standard Test Method for Weight (Mass) of Coating on Iron and Steel Articles with Zinc or Zinc-Alloy Coatings
ASTM A570/A570M	Standard Specification for Structural Steel, Sheet and Strip, Carbon, Hot-Rolled
ASTM A572/A572M	Standard Specification for High-Strength Low-Alloy Columbium-Vanadium Structural Steel
ASTM B221	Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes
ASTM B429	Standard Specification for Aluminum-Alloy Extruded Structural Pipe and Tube
ASTM E8	Standard Test Methods for Tension Testing of Metallic Materials
ASTM F1043	Standard Specification for Strength and Protective Coatings on Steel Industrial Chain Link Fence Framework
ASTM F1083	Standard Specification for Pipe, Steel, Hot-Dipped Zinc-Coated (Galvanized) Welded, for Fence Structures

(Application for copies should be addressed to the ASTM, 100 Barr Harbor Drive, West Conshohocken, PA 19428-2959 or www.astm.org).

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.

3.3 Dimensions and tolerances. Tolerances for weight per foot requirements are ± 10 percent. 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 over coated 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 0.3 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 to 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 6 ft	FS2
	up to 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 VII. Posts of class 7 steel square section.

Post Type	Fabric Heights	Size
Terminal	up to 6 ft	AS1
	over 6 ft	AS2
<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 brace 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-191/GEN)

4.2 Sampling. (see Section 6 of RR-F-191/GEN).

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	
Materials 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

4.4 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-191/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. When weight of zinc coating is to be other than specified (see 3.1).
- d. Color coating required and color required (see 3.2).
- e. When color coating material is other than specified and material required (see 3.2).
- f. When grade B coatings are other than specified (see 3.4.1).
- g. When posts are other than specified (see 3.5).
- h. When length of posts is specified and length required (see 3.5).
- i. Class, grade and size of top rails specified (see 3.6).
- j. Class, grade and size of braces specified (see 3.6).

6.2 Changes from previous issue. The margins of this specification are marked with vertical lines to indicate where changes from the previous issue were made. This was done as a convenience only and the Government assumes no liability whatsoever for any inaccuracies in these notations. Bidders and contractors are cautioned to evaluate the requirements of this document based on the entire content irrespective of the marginal notations and relationship to the last previous issue.

CUSTODIANS:

Army - CR4
Navy - YD
Air Force - 99

PREPARING ACTIVITY:

DLA - IS

(Project 5660-2006-003)

Reviewing Activities:

Army - CE
Navy - CG, MC
Air Force - 84

NOTE: The activities listed above were interested in this document as of the date of this document. Since organizations and responsibilities can change. You should verify the currency of the information above using the ASSIST online database at <http://assist.daps.dla.mil>.