

Section 1046

1 1046-3 POSTS AND OFFSET BLOCKS

2 (A) General

3 (1) The Contractor may furnish any one of the following types of steel guardrail posts.
4 Only one type of post will be permitted at any one continuous installation.

5 Use structural steel posts throughout the project, unless otherwise directed or
6 detailed in the plans.

7 (a) Steel W6 x 8.5 or W6 x 9.0 posts

8 (b) Steel 4.5 inches x 6.0 inches C-shape posts

9 (2) The Contractor may at his option furnish either of the following types of treated
10 timber posts if specifically directed or detailed in the plans. Only one type of post
11 will be permitted at any one continuous installation.

12 (a) Timber 6 inch x 8 inch posts

13 (b) Timber 8 inch x 8 inch posts

14 (B) Structural Steel Posts

15 Fabricate steel posts for guardrail of the size and weight shown in the plans from
16 structural steel complying with Section 1072. Metal from which C-shape posts are
17 fabricated shall meet ASTM A1011 for any grade of steel except that mechanical
18 requirements that shall meet ASTM A36. Punch or drill the holes for connecting bolts.
19 Burning will not be permitted. After fabrication the posts shall be galvanized in
20 accordance with Section 1076.

21 (C) Treated Timber Posts

22 Timber guardrail posts shall be of treated southern pine meeting Articles 1082-2
23 and 1082-3.

24 Bore bolt holes to a driving fit for the bolts. A minus tolerance of 1% will be allowed in
25 the length of the post. Perform all framing and boring before the posts receive
26 preservative treatment.

27 (D) Offset Blocks

28 Provide 8 inch deep recycled plastic or composite offset blocks approved for use with the
29 guardrail shown in the *Roadway Standard Drawings* or plans. Only one type of offset
30 block will be permitted at any one continuous installation. Before beginning the
31 installation of recycled offset block, submit the FHWA acceptance letter for each type of
32 block to the Engineer for approval.

33 Treated timber offset blocks with steel beam guardrail will not be allowed unless required
34 by Specifications, directed by the Engineer or detailed in the plans. Steel offset blocks
35 with steel beam guardrail will not be allowed.

36 Recycled plastic or composite offset blocks shall be made from no less than 50%
37 recycled plastic or composite and shall meet the requirements in Table 1046-1.

TABLE 1046-1 WIRE DIAMETER	
Property	Requirement
Minimum Specific Gravity	0.950
Min. Compressive Strength in Lateral Direction	1,600 psi
Maximum Water Absorption	10% by weight
Maximum Termite and Ant Infestation	10%
Testing	Pass NCHRP Report 350, Test Level 3 by Crash Testing
Approval	Approved for use by the FHWA

1 **1046-4 HARDWARE**

2 Provide all hardware as indicated in the plans that is galvanized in accordance with
3 ASTM A153.

4 **1046-5 ANCHORS AND ANCHOR ASSEMBLIES**

5 Each shipment of guardrail terminal end sections, anchors and anchor assemblies shall be
6 shipped from the manufacture with a current parts list and installation guide. Units not having
7 the above documents will be rejected.

8 Articles 1046-1, 1046-2 and 1046-3 are applicable to rail elements, terminal sections, posts,
9 offset blocks and hardware.

10 Reinforcing steel shall meet Article 1070-2. Steel plates shall meet ASTM A36. Anchor rods
11 shall meet ASTM A663 for Grade 65.

12 Anchor cable shall be 3/4 inch wire rope having a minimum breaking strength of 21.4 tons
13 and galvanized. Use commercial quality galvanized steel cable thimbles. Use commercial
14 quality drop forged galvanized steel cable clips. The fitting and stud for the anchor cable
15 shall be suitable for cold swaging and be galvanized. After being swaged on the cable, the
16 fitting and stud assembly, including swaged joint and cable, shall have a minimum breaking
17 strength of 21.4 tons.

18 Perform welding in accordance with Article 1072-18.

19 Welded components shall be galvanized after welding in accordance with ASTM A123. All
20 other metal parts shall be galvanized in accordance with ASTM A153, except where
21 otherwise specified in Articles 1046-1, 1046-2 and 1046-3.

22 **1046-6 REPAIR OF GALVANIZING**

23 Perform repair of galvanizing in accordance with Article 1076-7.

24 **1046-7 CABLE GUIDERAIL**

25 Posts, hardware and miscellaneous components shall meet the applicable requirements of this
26 Section, the plans and the manufacture's requirements.

27 Furnish cable guiderail manufactured in accordance with AASHTO M 30, Type 1, Class A.

28 For concrete anchors, furnish Class A concrete if cast in place or use concrete meeting
29 Section 1077, if using precast concrete anchors.

30 Cable guiderail is not covered under the Brand Certification Program for guardrail materials.
31 Sample cable guiderail according to the *Minimum Sampling Guide*.

32 **1046-8 ACCEPTANCE**

33 Acceptance of guiderail materials and its accessories will be based on, but not limited to,
34 visual inspections, classification requirements and check samples taken from material
35 delivered to the project and conformance to the annual Brand Registration. Guiderail

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1 materials not meeting the above requirements will be rejected, unless written approval is
2 obtained from the State.

3 **SECTION 1050**
4 **FENCE MATERIALS**

5 **1050-1 GENERAL**

6 All fencing material and accessories shall meet Section 106.

7 **(A) Chain Link Fence**

8 Furnish either galvanized steel fence framework or aluminum alloy fence framework
9 unless otherwise specified. Use the same type of fabric and framework materials
10 throughout the project.

11 Where galvanized steel framework is used, the fence fabric may be either galvanized
12 steel or aluminum coated steel, except where galvanized steel fabric is specified in the
13 contract. The Contractor may furnish any of the following galvanized steel framework
14 systems:

15 **System G1**

Line Posts:	Steel Pipe
Terminal Posts (End, Corner, or Brace Posts):	Steel Pipe
Gate Posts, Double Gate:	Steel Pipe
Gate Posts, Single Gate:	Steel Pipe
Brace Rail and Top Rail ^A	Steel Pipe

16 **System G2**

Line Posts:	Steel H Post
Terminal Posts (End, Corner, or Brace Posts):	Steel Pipe
Gate Posts, Double Gate:	Steel Pipe
Gate Posts, Single Gate:	Steel Pipe
Brace Rail and Top Rail ^A	Steel Pipe

17 **System G3**

Line Posts:	Roll Formed Steel
Terminal Posts (End, Corner, or Brace Posts):	Steel Pipe
Gate Posts, Double Gate:	Steel Pipe
Gate Posts, Single Gate:	Steel Pipe
Brace Rail and Top Rail ^A :	Steel Pipe or Roll Formed Pipe

18 **A.** Top rail to be used instead of tension wire only where called for in the itemized
19 proposal.

20 Where an aluminum alloy framework is used, the fence fabric may be either aluminum
21 alloy or aluminum coated steel. The Contractor may furnish any of the following
22 aluminum alloy framework systems:

23 **System A1**

Line Posts:	Aluminum Post
Terminal Posts (End, Corner, or Brace Posts):	Aluminum Pipe
Gate Posts, Double Gate:	Aluminum Pipe
Gate Posts, Single Gate:	Aluminum Pipe
Brace Rail and Top Rail ^A :	Aluminum Pipe