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American National Standard

for zinc-coated ferrous ground rods for overhead or underground line construction

Approved July 28, 1988 Secretariat: National Electrical Manufacturers Association

1 Scope and application

1.1 Scope

This standard covers zinc-coated ferrous ground rods used in overhead or underground line construction, or both.

1.2 Application

The ground rods covered by this standard shall conform in all respects to the basic dimensional and performance requirements hereinafter stated. The text, specifications or standards references, and associated figures supplement each other and all shall be considered as parts of this standard.

2 Normative references

The following standards contain provisions which, through reference in this text, constitute provisions of this American National Standard. At the time of publication, the editions indicated were valid. All standards are subject to revision, and parties to agreements based on this American National Standard are encouraged to investigate the possibility of applying the most recent editions of the standards indicated below.

ANSI B18.21.1-1972, *Lock washers*[1)]

ANSI C135.1-1987, *Galvanized steel bolts and nuts for overhead line construction*

ANSI/ASTM A153-82, *Specifications for zinc coating (hot-dip) on iron and steel hardware*[1)]

3 Material

All ground rods and couplings shall be made of one of the following classes of materials:

Hot rolled steel which has been produced by the open-hearth, basic oxygen, or electric-furnace process, malleable type ferrous castings, or other ferrous materials. All of these materials shall be of grades and qualities suitable to meet the requirements of this standard.

[1)] This standard has been administratively withdrawn. Contact the Secretariat for more recent information.

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4 Dimensions

4.1 All dimensions shall, before galvanizing, be in accordance with the text and figures.

4.2 Lock washers shall be the regular carbon-steel helical-spring type conforming to ANSI B18.21.1-1972[1], unless another type is specified.

5 Threads

Threads of ground rods and couplings shall be in accordance with ANSI C135.1-1987.

6 Strength and rigidity

Ground rods and couplings shall be of sufficient strength and rigidity to resist bending, to prevent excessive mushrooming of the top (which would prevent installation of the proper clamp), and to prevent distortion of the threads beyond the usable point, when installed by normal driving methods under normal conditions.

7 Corrosion protection

7.1 All ground rods and accessories shall be zinc coated. The coating shall be applied by:

a) the hot-dip process in accordance with ANSI/ASTM A-153-82[1], or

b) another method producing a zinc coating that meets the requirements of ANSI/ASTM A-153-82[1] for adhesion, purity, and thickness applicable to the class of material being coated.

7.2 Internal threads of couplings and nuts and holes in internally coupled rods need not be zinc-coated.

8 Sizes and types

Diameters, lengths, and types of ground rods shall be in accordance with table 1. Tolerances on rod diameters: ±1/32 inch. Tolerance on rod lengths: ±3 inches. Styles of points of ground rods are shown in figure 1. Examples of types of ground rods are shown in figure 2.

9 Finish

Ground rods shall be free of seams, slivers, and other injurious defects. All surfaces except points shall be reasonably smooth and free of sharp edges or projections.

10 Marking of shipments

Each shipment shall be marked with the manufacturer's name and catalog number.

Table 1 – Ground rods

		Type			
Nominal diameter (inches)	**Nominal length** (feet)	**Drive head Ferrous clamps attached**	**Plain**	**Sectional internally**	**Sectional externally**
5/8	6	–	–	X	X
5/8	8	–	X	–	X
5/8	10	–	X	–	X
3/4	8	–	X	–	–
3/4	10	X	X	–	–

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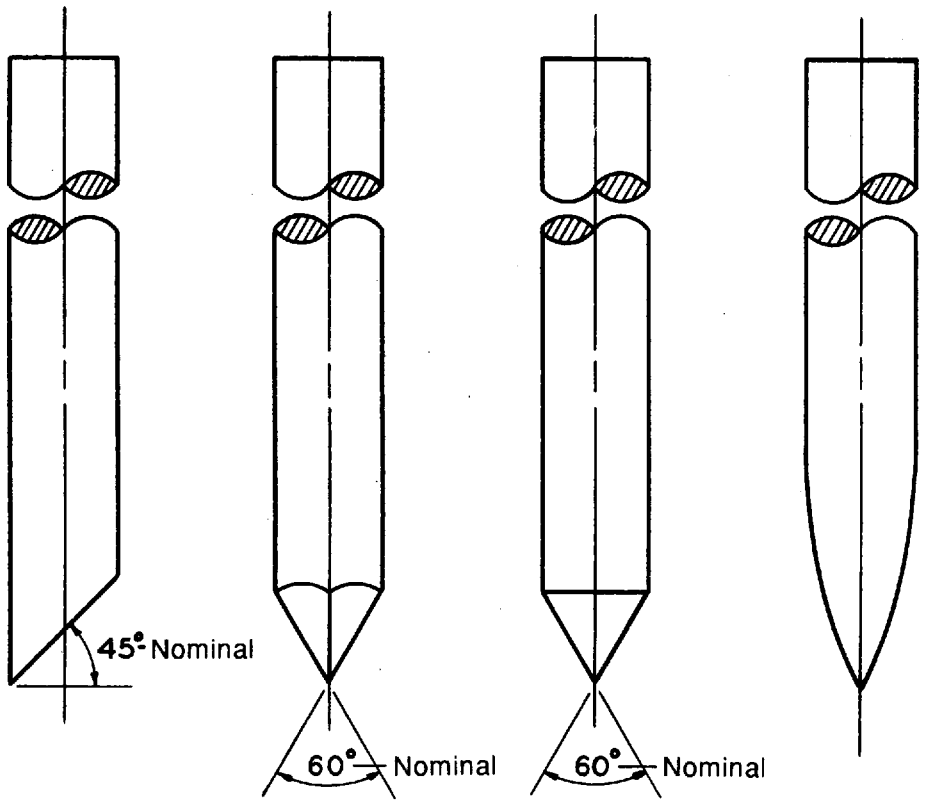
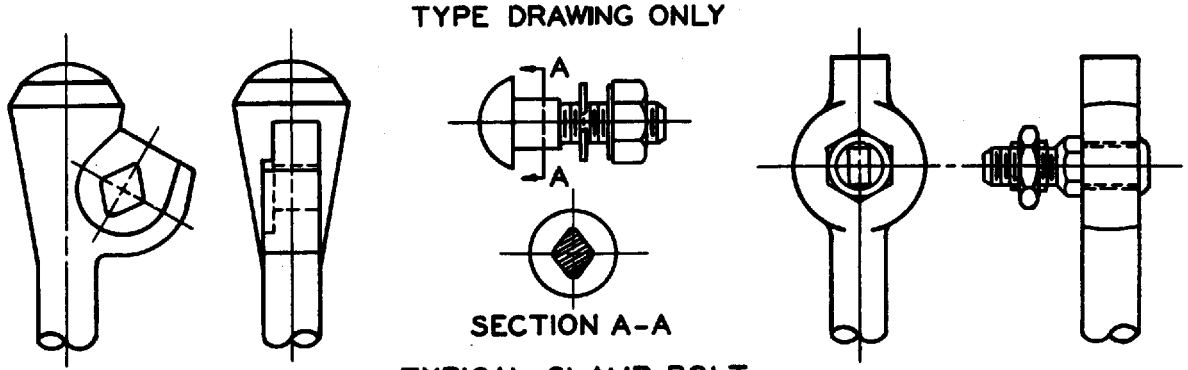


Figure 1 – Ground rods – Points for ground rods

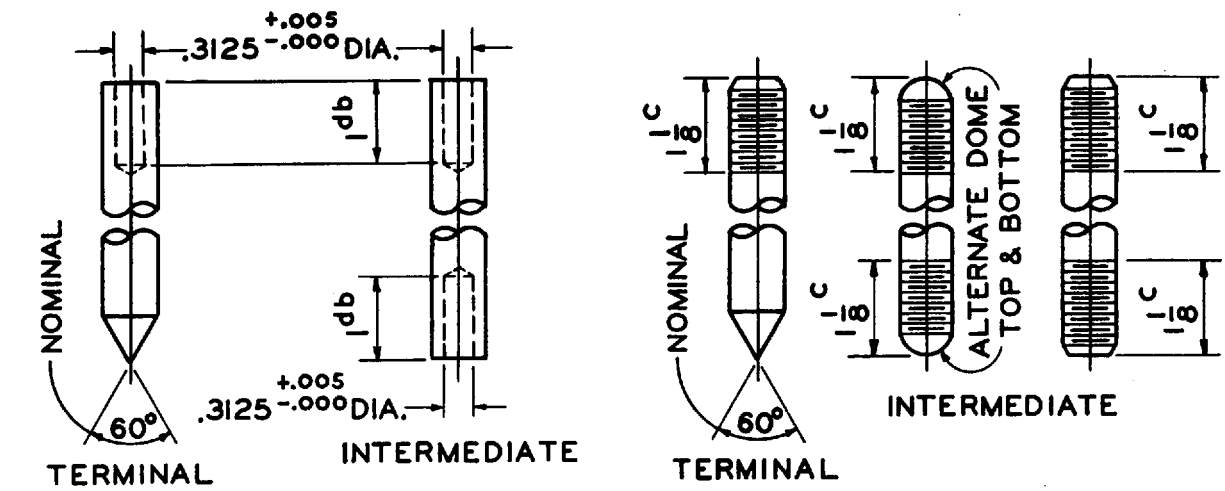
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TYPE DRAWING ONLY



TYPICAL CLAMP BOLT

TYPICAL DRIVE HEADS
OTHER TYPE CLAMPING DEVICES OPTIONAL



Sectional
internally coupled

Sectional
externally coupled

Allowable variations

a = 1/6	c = 1/16	e = 3/16
b = 1/32	d = 1/8	x = 0

A single-letter superscript indicates that the plus and minus value are the same: for example,

$2^c = 2 \pm 1/16$

A double-letter superscript indicates that the plus value is that of the first letter and the minus value is that of the second letter: for example,

$1^{db} = 1 + 1/8 - 1/32$

Figure 2 – Ground rods – Type drawing only (All dimensions in inches)

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