



ATIS-0600334.2019 (R2024)

**Electrical Protection of Communications Towers and
Associated Structures**

AMERICAN NATIONAL STANDARD FOR TELECOMMUNICATIONS



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ATIS-0600334.2019(R2024), *Electrical Protection of Communications Towers and Associated Structures*

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American National Standard for Telecommunications

Electrical Protection of Communications Towers and Associated Structures

Alliance for Telecommunications Industry Solutions

Approved November 19, 2019

American National Standards Institute, Inc.

Abstract

Communications towers and the associated structures, by nature of their outdoor location, are often subject to disturbances from lightning. This standard provides the minimum electrical protection, grounding, and bonding criteria necessary to minimize the disruptive and damaging effects of lightning. It is intended to serve as a guide for designers or users of such facilities in the application of electrical protection, grounding, and bonding.

Foreword

The information contained in this Foreword is not part of this American National Standard (ANS) and has not been processed in accordance with ANSI's requirements for an ANS. As such, this Foreword may contain material that has not been subjected to public review or a consensus process. In addition, it does not contain requirements necessary for conformance to the Standard.

The Alliance for Telecommunications Industry Solutions (ATIS) serves the public through improved understanding between providers, customers, and manufacturers. The Sustainability in Telecom: Energy and Protection (STEP) Committee – formerly the Network Interface, Power, and Protection Committee (NIPP) – engages industry expertise to develop standards and technical reports for telecommunications equipment and environments in the areas of energy efficiency, environmental impacts, power and protection. The work products of STEP enable providers, operators and their customers to deploy and operate reliable, environmentally sustainable, energy efficient communications technologies. STEP is committed to proactive engagement with national, regional and international standards development organizations and forums that share its scope of work.

This standard addresses electromagnetic compatibility, safety, and protection of telecommunications equipment that is utilized by telecommunications service providers. This equipment is under the control of the service provider and is either located on the service providers side of the point of demarcation, or is part of the point of demarcation.

Examples include network telecommunications equipment placed in locations such as Central Offices (COs), Electronic Equipment Enclosures (EEEs), Electronic Equipment Cabinets (EECs), the outside plant (OSP), and at the customer premises. Examples of EEEs are Controlled Environmental Vaults (CEVs), and racks.

This standard addresses threats or concerns arising from the environment (including other nearby equipment or the cabling plant). It also addresses threats generated by the equipment itself that may affect other equipment, the cabling plant, persons, or property.

ANSI guidelines specify two categories of requirements: mandatory and recommendation. The mandatory requirements are designated by the word *shall* and recommendations by the word *should*. Where both a mandatory requirement and a recommendation are specified for the same criterion, the recommendation represents a goal currently identifiable as having distinct compatibility or performance advantages.

Subject matter experts were gathered under the auspices of Committee STEP to determine the minimum satisfactory criteria for the electrical protection of telecommunications outside plant.

Suggestions for improvement of this standard will be welcome. These should be sent to the Alliance for Telecommunications Industry Solutions, STEP, 1201 G Street, NW, Suite 500, Washington DC 20005.

At the time of consensus on this document, STEP, which was responsible for its development, had the following leadership:

Ernie Gallo, STEP Chair (Ericsson)
John Fuller, STEP Vice-Chair and STEP NEP Vice-Chair (AT&T)
Dan Ashton, STEP NEP Chair (CenturyLink)

The Network Electrical Protection (NEP) Subcommittee was responsible for the development of this document.

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American National Standard for Telecommunications –

Electrical Protection of Communications Towers and Associated Structures

1 Scope

This standard covers the electrical protection of communications towers and associated structures. The standard specifies baseline electrical protection measures for freestanding radio, microwave, and other telecommunications towers, such as cellular or personal communications service (PCS) sites. It does not include electrical protection of towers or poles associated with high voltage transmission lines. These towers or poles may experience ground potential rise due to transmission line faults and may require electrical protection measures beyond the scope of this standard, such as the high-voltage isolation methods described in ANSI/IEEE 487 [Ref 5], and ATIS-0600316 [Ref 3]. These measures are intended to assist in the protection of personnel and telecommunications equipment located in structures attached to or immediately adjacent to these towers, in the event of lightning strikes to and/or near these towers; equalize potential differences between equipment; and minimize the introduction of electrical noise. This standard does not cover tower construction requirements. For additional information, refer to TIA/EIA 222-G [Ref 4] structural construction requirements.

1.1 Application of Electrical Protection

Not every communications tower or associated building will require the same level of electrical protection. The electrical protection measures and surge protective device applications presented shall be used where electrical protection is required. Other factors, such as those related to telecommunications service reliability or local codes and standards, may dictate the need for electrical protection measures that exceed those described in this standard. For additional requirements and information pertaining to installations of wireless communications facilities, see GR-3171-CORE [Ref 7]. Also, for additional information pertaining to protection from lightning effects, see IEEE Standard 1692 [Ref 8].

2 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.

The following documents or portions thereof are referenced within this standard and shall be considered part of the requirements of this document.